BIDDING DOCUMENTS
FOR THE
LOS ANGELES UNIFIED SCHOOL DISTRICT

W/Plans

VOLUME 1 of 1

OUTDOOR CLASSROOM AND CAMPUS UPGRADE

AT

SYLVAN PARK EARLY EDUCATION CENTER
15011 Delano St., Van Nuys, CA 91411
In the Los Angeles Unified School District

Prepared by OWNER:

LOS ANGELES UNIFIED SCHOOL DISTRICT
FACILITIES SERVICES DIVISION
333 South Beaudry Avenue, 23rd Floor
Los Angeles, California 90017

For OWNER:

LOS ANGELES UNIFIED SCHOOL DISTRICT
Los Angeles, California
May 2026

OWNER PROJECT NO.: Colin 10374546 / 233171

Digitally signed by Maria Lachica
DN: cn=Maria Lachica, o=Los Angeles Unified School District, ou=PEX, email=marialourdes.lachica@lausd.net, c=US
Date: 2026.05.06 13:12:01 -07'00'

MARIA LACHICA, OWNER'S AUTHORIZED REPRESENTATIVE (OAR)

2610077

BIDDING DOCUMENTS
FOR THE
LOS ANGELES UNIFIED SCHOOL DISTRICT

VOLUME 1_ of 1

OUTDOOR CLASSROOM AND CAMPUS UPGRADE

AT

SYLVAN PARK EARLY EDUCATION CENTER
PREVIOUSLY SYLVAN PARK SCHOOL CHILDREN' S CENTER
15011 DELANO ST, VAN NUYS, CA 91411 In the Los Angeles Unified School District

Prepared by OWNER:

LOS ANGELES UNIFIED SCHOOL DISTRICT
FACILITIES SERVICES DIVISION
333 South Beaudry Avenue, 23rd Floor
Los Angeles, California 90017

For OWNER:

LOS ANGELES UNIFIED SCHOOL DISTRICT
Los Angeles, California
April 7, 2025

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-125367 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 02/04/2026

OWNER PROJECT NO.: 10374546
DSA APPLICATION NO.: 03-125367

LICENSED ARCHITECT — HERRICK Y. AU — No. C 26770 — REN. 1-31-27 — STATE OF CALIFORNIA

Herrick Au, ARCHITECT

REGISTERED PROFESSIONAL ENGINEER — PAUL VAN BENSCHOTEN — No. S-4715 — STRUCTURAL — STATE OF CALIFORNIA

Paul Van Benschoten, STRUCTURAL ENGINEER

REGISTERED PROFESSIONAL ENGINEER — GILAD NAHARI — M-36698 — 3/2026 — MECHANICAL — STATE OF CALIFORNIA

Gilad Nahari, MECHANICAL ENGINEER

REGISTERED PROFESSIONAL ENGINEER — VIRGILIO C. ARANAS — No. C36079 — Exp. 6/30/26 — CIVIL — STATE OF CALIFORNIA

REGISTERED LANDSCAPE ARCHITECT — ALLEN COMPTON #5585 — SIGNATURE — 5 / 31 / 2026 — RENEWAL DATE — STATE OF CALIFORNIA

Allen Compton, LANDSCAPE ARCHITECT

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INVITATION TO BID

Subject to all conditions prescribed by OWNER, sealed bids for a lump sum, fixed price contract are invited for the following Work:

SYLVAN PARK EARLY EDUCATION CENTER

COLIN# 10374546 / DSA#03-125367

LOS ANGELES UNIFIED SCHOOL DISTRICT AS OWNER

EDUCATIONAL SERVICES CENTER – LOCAL DISTRICT NORTH

DESCRIPTION OF WORK: **Outdoor Classroom and Campus Upgrade (BV)(PSA)**

OWNER is committed to sustainable or "high performance" design and construction in all of its schools because high performance schools enhance student and teacher performance, reduce operating costs, and protect the environment. To implement this commitment, the Owner endorses the high performance school strategies defined in the Collaborative for High Performance School (CHPS) Best Practices Manuals (available at www.chps.net), and requires that all qualified projects achieve, at a minimum, a "CHPS School" rating. The Owner shall be responsible for monitoring compliance with the CHPS criteria necessary to achieve this objective.

The Los Angeles Unified School District's electronic bid submittal process has changed. Bidders are now required to utilize the Ariba Business (Supplier) Network to submit a bid package electronically.

Bidders will need their company's user ID and password to access the Ariba Business (Supplier) Network at https://LAUSD.sourcing3.ariba.com/ad/webjumper?itemID=NYm0APjDCflX5K8&awcharset=UTF-8. If an existing LAUSD vendor is unaware of the user ID and password associated with their Ariba Business (Supplier) Network account, they should contact the Vendor Services Unit for assistance via email at psg-vsu@lausd.net or via telephone at (562) 654-9404.

A bidder will need to access the Ariba Business (Supplier) Network and submit the bid package for the transaction number identified below by the Bid Due Date. Virtual drop-in sessions have been scheduled for Tuesdays and Thursdays, 11 am to 12 pm, to provide instructions on accessing and responding to LAUSD solicitations in the Ariba Business (Supplier) Network. You should join a session via the following link: https://teams.microsoft.com/l/meetup-join/19%3ameeting_ZmI4MjU3ZTYtZmYxNC00MjZhLTk0MGQtNDljNTg3YmNlMzQ4%40thread.v2/0?context=%7b%22Tid%22%3a%22042a40a1-b128-4ac4-8648-016ffa121487%22%2c%22Oid%22%3a%22ec989ceb-0c29-4836-86b7-03f004059bc2%22%7d. A job aid on accessing and responding to LAUSD solicitations in the system is attached to Section 00 2113 - Instructions to Bidders. If unsuccessful in uploading the file, a bidder should e-mail fat3559@lausd.net at least two (2) days prior to the Bid Due Date for assistance.

The vendor is solely responsible for ensuring timely submission of its electronic solicitation response. A vendor should allow itself adequate time for bid submittal and possible technical support as bids will not be accepted after the deadline.

The vendor must complete its bid entry and upload all required documents before the end of the bid submission period. The District is not responsible for contractor system problems/errors.

To ensure that your bid is submitted properly and on time, please submit well before the Bid Due Date/Time, at least two (2) days in advance as suggested above.

The applicable reference number for this project in the Ariba Business (Supplier) Network is Ariba Sourcing project #Doc2221376577.

Bidding Documents will be available to bidder after the first date of advertisement and can be obtained at:

CRISP IMAGING
Los Angeles Office (Downtown)
1829 S. Main Street
Los Angeles, CA 90015
Business Hours:
Monday through Friday
7:00 a.m. to 6:00 p.m.
Telephone: (213) 741-9560

Additional office locations are listed at www.crispimg.com.

Bidders may also view and order Bidding Documents through the website by clicking on the "Planroom" button, click "Public Jobs".

Bid will only be accepted from a pre-qualified and qualified bidder pursuant to the OWNER prequalification process and RFQ requirements. To apply for prequalification or renewal, contractors should now go to lausd.qualitybidders.com to submit the prequalification questionnaires.

Bidders should note that the OWNER's prequalification requirements include mechanical, electrical, and plumbing contractors (i.e., contractors licensed pursuant to Sections 7056–7059 of the Business and Professions Code, specifically holding A, B, C-4, C-7, C-10, C-16, C-20, C-34, C-36, C-38, C-42, C-43, or C-46 licenses pursuant to regulations of the Contractors' State License Board) that contract directly with a bidder to perform any such component work on the Project ("MEP subcontractors"). Bidders that intend to contract with any MEP subcontractors to perform any such component work on the Project shall only select MEP subcontractors that have been prequalified by the OWNER at least five (5) business days before the date fixed for the public opening of bids. Non-MEP subcontractors do not need to be prequalified to perform non-MEP component work on the Project. Bidders and MEP subcontractors shall not be eligible to bid or perform work on the Project if they (a) have not submitted completed prequalification questionnaires and financial statements to the OWNER at least ten (10) business days before the date fixed for the public opening of bids, and (b) have not been prequalified by the OWNER at least five (5) business days before the date fixed for the public opening of bids. The OWNER's lists of prequalified contractors can be found online at https://procurement.lausd.org/apps/pages/Prequalification under "List of Prequalified Contractors." The lists are updated on an ongoing basis. If an MEP subcontractor does not appear on the list, bidder should verify with the subcontractor to determine if subcontractor has received a notice from OWNER that confirms its prequalification by the above deadline. Unless prohibited by the OWNER, bidders licensed pursuant to Section 7057 of the Business and Professions Code, specifically holding general building contractor B licenses pursuant to regulations of the Contractors' State License Board, may self-perform any work on the Project to the extent permitted by law. Bids that fail to adhere to these requirements will be deemed non-responsive by the OWNER.

Bidder should note the disclaimer in Section 00 2113, 1.09 E, concerning the use of District prequalified subcontractors.

Bidder is advised that no contractor or subcontractor may be listed on a bid proposal for a public works project (submitted on or after March 1, 2015) unless registered with the Department of Industrial Relation pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)].

No contractor or subcontractor may be awarded a contract for public work on a public works project (awarded on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.

This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations (DIR) and the Los Angeles Unified School District's DIR-approved Labor Compliance Program.

BID DUE DATE: Bid will only be accepted before **2:00 PM, THURSDAY, JUNE 25, 2026.**

Deadline for MEP subcontractors to be prequalified by the OWNER: **JUNE 18, 2026.** Bidder must only list MEP subcontractors that are prequalified by the OWNER as of this date. OWNER will attempt to ensure that all prequalified MEP subcontractors are placed on the OWNER's List of Prequalified MEP Subcontractors in a timely manner. However, if an MEP subcontractor does not appear on the list, bidder should verify with the subcontractor to determine if subcontractor has received a notice from OWNER that confirms its prequalification by the deadline. Bids that fail to adhere to this requirement will be deemed non-responsive by the OWNER.

Bidder is responsible for the cost of bid package. Cost for bid package is non-refundable. Bid package is non-returnable.

Bid security in the amount of ten (10) percent of the lump sum base bid, excluding bid items, as set forth in Section 01 2300, shall accompany each bid. Surety issuing the bid bond shall meet the requirements set forth in Article 5.17 of the General Conditions. A mandatory pre-bid meeting and pre-bid job walk will be held in accordance with Section 00 2513. The bidder is responsible for ensuring that they have complete Bidding Documents including all Addenda provided by the OWNER, prior to the bid due date.

Pursuant to Labor Code Section 1771.7, this Project will be subject to the Owner approved Labor Compliance Program (Final Approval, December 7, 1996). For questions or assistance concerning the Labor Compliance Program, contact the Labor Compliance Department at (213) 241-4665 or lcp@lausd.net, or go to https://facilities.lausd.org/apps/pages/lcp on the internet. Any Contractor to whom a contract for the Work is awarded by the Owner shall comply with the provisions of the California Labor Code, as well as the Owner Labor Compliance Program for the Project, including, without limitation, the obligation to pay the general prevailing rates of wages in the locality in which the Work is to be performed in accordance with, without limitation, Sections 1771, 1773.1, 1774, 1775 and 1776 of the California Labor Code and the obligation to comply with Section 1777.5 of the California Labor Code governing employment of apprentices. Copies of the prevailing rates of per diem wages are available to any interested party at www.laschools.org//new-site/labor-compliance/dir or www.dir.ca.gov/oprl.

The successful bidder will be required to pay prevailing wages in accordance with law and is required to have the following State of California Contractor license current at the time of bid submission:

In accordance with the provisions of Public Contract Code section 3300, OWNER has determined that the CONTRACTOR performing this project must hold the following license as the prime contractor: **B – General Building Contractor**. A prime CONTRACTOR self-performing any of the following specialty trades must also hold the required specialty license:

N/A

To perform abatement and demolition work, including removal of roofing materials, bidders must select a subcontractor from the Owner's List of Asbestos Abatement Subcontractors as per Section 00 3126. The only license required to perform abatement and demolition work, including removal of roofing materials, is C-22. A dual license of C-22 and C-39 is not a requirement.

Bidder is required to participate in an OWNER Controlled Insurance Program (OCIP) as set forth in Section 00 7316 and Article 5 of the General Conditions.

Bidder is subject to the Small Business Enterprises participation requirements as set forth in Section 00 7339.

It is the responsibility of the Prime contractor to ensure that its subcontractors/suppliers register to become LAUSD certified prior to award. Please have all subcontractors/suppliers utilize the following link to access the online registration: https://facilities.lausd.org/apps/pages/small-business.

WORKER CERTIFICATION - Only Workers skilled in the various trades required on this Contract shall be employed upon the Work. In addition to all other requirements stated in the Bidding Documents, all craftsmen must adhere to the following requirement(s): Journeyman plumbers must possess a plumbing certificate issued by the Los Angeles County and City of Los Angeles, Building and Safety Divisions. All HVAC technicians must possess an EPA-608 Certification. Electricians working for a contractor with a C-10 license must possess a California State Electrician certification. Electricians that are certified can be verified via the State database at https://www.dir.ca.gov/dlse/ecu/ElectricalTrade.html. Elevator companies must possess a Certified Qualified Conveyance Company License (CQCC). Journeymen will be required to have their Certified Competent Conveyance Mechanics License (CCCM) from the State of California and Journeymen working within the City limits of Los Angeles will be required to have their Journeymen Elevator Mechanic's License. The State of California (Elevator, Ride and Tram Unit) will inspect all County Elevator Modernizations and Alterations.

Bidder is subject to the Project Stabilization Agreement (PSA) as set forth in Document 00 4500 and Section 00 7349.

The District's contract bond estimate is **$4,412,000.**

The Contract Time is **560** days.

CONTRACTOR should consult the General Conditions, Supplementary Conditions, and General Requirements regarding Milestones and Liquidated Damages. CONTRACTOR has those options regarding retention as set forth in Public Contract Code Section 22300.

CONTRACTOR is advised that fraud is investigated by the Office of the Inspector General. The Inspector General of the Los Angeles Unified School District has statutory authority to audit and investigate persons and companies that do business with the District. Identified criminal acts including fraud, kickbacks, theft, and conspiracy are pursued to the greatest extent of the law, in conjunction with Federal, State, and Local law enforcement partner agencies.

Examples of offenses and corresponding maximum sentences are:

- 15 U.S.C. §1 Conspiracy to Restrain Trade - 10 years
- 18 U.S.C. §1341 Mail Fraud - 20 years
- 18 U.S.C. §1344 Bank Fraud - 30 years
- 18 U.S.C. §1349 Conspiracy to Commit Wire Fraud - 20 years
- 18 U.S.C. §1956 Money Laundering - 20 years
- California Penal Code §487 Grand Theft – 3 years

Offenses carry potential fines of up to $1,000,000.

Call the OIG Hotline at **(213) 241-7778** or visit **https://oig.lausd.org/**

END OF SECTION

SECTION 00 2113

INSTRUCTIONS TO BIDDERS

1.01 GENERAL

A. This Section provides bidder instructions on bidding conditions, requirements, and procedures and stipulates the classification of licenses bidder must possess in order to bid on the Project.

B. Bidder shall complete and submit the following documents as part of its bid. Failure to submit the documents with solid borders shall render the bid non-responsive. **The documents shall be submitted electronically as set forth herein and Document 00 1116 - Invitation to Bid.** The documents for actual use by the bidder can be found in Section 00 4001 – Required Bid Forms.

1. Document 00 4100 - Bid and Acceptance Form (signature required)
2. Addendum of Provisions Required of Federally Funded Contracts - FEMA Awards (signatures required)
3. Document 00 4313 - Bid Security Form (signatures required)
4. Document 00 4336 - Subletting and Subcontracting Fair Practices Act List
5. Document 00 4340 - Disabled Veteran Business Enterprise (DVBE) School Facilities Program
6. Document 00 4500 - Certification Requirements (signature required)
7. Document 00 4519 - Non-Collusion Affidavit (signature required)

C. Bidder shall submit a copy of a current and valid certificate if you are a Small Business Enterprise, Micro-business, or Veteran Business Enterprise.

D. Bidder shall submit Small Business Enterprises compliance requirements and additional supplemental subcontractor information within five (5) days from the date of OWNER request. The document for actual use by the bidder will be provided to the bidder by the OWNER. Failure to submit within five (5) days may render the bid non-responsive.

1.02 RELATED SECTIONS

A. Section 00 2513 - Pre-Bid Meeting (Mandatory)

B. Section 00 3000 - Available Information

C. Section 00 3126 - OWNER List of Pre-qualified Asbestos Abatement Subcontractors

D. Section 00 3148 - Project Directory

E. Section 00 4001 - Required Bid Forms

F. Section 00 6113 - Payment Bond (Labor and Material) (CC § 9550, 9554)

G. Section 00 6114 - Performance Bond

H. Section 00 6217 - Certificate of Insurance for Hazardous Materials

I. Section 00 7000 - General Conditions

J. Section 00 7300 - Supplementary Conditions

K. Section 00 7316 - Owner Controlled Insurance Program (OCIP)

L. Section 00 7339 - Small Business Enterprises (SBE)

M. Section 00 7349 - Project Stabilization Agreement (PSA)

N. Section 00 9110 - Pre-Proposal/-Bid Clarification

1.03 LICENSE REQUIREMENTS

A. At the time of bid submission and throughout performance of the Work, bidder shall ensure bidder and all subcontractors, regardless of tier, possess the appropriate license issued by the California Contractors State License Board for the Work to be performed under the Contract.

B. OWNER will verify bidder license before the Notice of Award.

1.04 OBTAINING BIDDING DOCUMENTS

A. Bidding Documents, including envelopes for submission of bids, may be ordered and obtained from:

Crisp Imaging
1829 S. Main Street
Los Angeles, CA 90015
Business Hours:
Monday through Friday
7:00 a.m. to 6:00 p.m.
Telephone: (213) 741-9560

Additional office locations are listed at the end of Section 00 3148.

B. Bidder shall utilize a complete set of Bidding Documents in preparing a bid.

C. The failure or omission of bidder to receive any Bidding Document, form, instrument, Addendum, or other document shall not relieve bidder from any obligations with respect to the bid and/or Contract.

1.05 EXAMINATION OF PROJECT SITE, WORK AND BIDDING DOCUMENTS

A. Bidder shall thoroughly examine and be familiar with the Bidding Documents.

B. Bidder shall, prior to submission of bid, inspect and examine the Project site of the Work and sites adjacent to the Work, compare them with any other Work being bid or presently under construction which relates to the Project for which the bid is submitted, examine the grounds and all improvements and must satisfy by examination, testing and/or other means the bidder may prefer in order to determine the actual conditions and requirements under which the Work must be performed. Refer to Section 00 3000 – Available Information.

C. If upon inspection and examination by bidder there is any existing improvement, condition, matter or thing, or condition or requirement of the Work which bidder does not completely understand, bidder shall inquire as set forth in Section 00 2113 – Instructions to Bidders and Section 00 9110 – Pre-Bid Clarification.

D. The failure or omission of bidder to examine any Bidding Document, form, instrument, Addenda, or other document or to visit the Project site and be acquainted with existing conditions shall not relieve bidder from any obligations with respect to the bid and/or Contract.

1.06 HAZARDOUS MATERIALS ON OWNER PROPERTY

A. California Code of Regulations, Title 8, Section 5194 requires bidder be notified of hazardous materials they may encounter while on OWNER property.

B. In order to comply with these regulations, reference is made to Section 00 3000 – Available Information for identification of, but not limited to, the chemical inventory and all historical hazardous materials reports for the Project site.

C. If the scope of Work for the Project includes hazardous materials abatement, OWNER representatives may prepare, and/or cause to be prepared, specific reports to be used and relied on for

the Project. If such reports have been prepared for the Project, the reports will be included as Attachments to Division 02, Existing Conditions.

D. If the scope of Work for the Project includes asbestos abatement exceeding specifications allowable for bidder to perform as set forth in Section 02 8213 – Asbestos Abatement and Asbestos Related Disturbance, the bidder or subcontractor performing the work shall be listed on the OWNER's List of Pre-qualified Asbestos Abatement Subcontractors as set forth in Section 00 3126.

E. It is a bidder's obligation to review all hazardous materials documents, whether identified in Section 00 3000 – Available Information or included as Attachments to Division 02, Existing Conditions, before submitting the bid to ensure employee protection and to ensure that all costs for performing the Work are included in the bid.

F. Refer to Section 00 7000 – General Conditions for additional requirements affecting the Work of the Project.

1.07 PREVAILING WAGE RATES

A. Bidder will be required to comply with, but not limited to, the provisions of Section 00 4500 – Certification Requirements in its entirety.

1.08 ADDENDA

A. Clarification or any other notice of a change in the Bidding Documents will be issued only by the OWNER office of Facilities Construction Contracts and only in the form of a written Addendum, transmitted by fax or e-mail to all who are known by the issuing office to have received a complete set of Bidding Documents. Any other purported Addenda are void and unenforceable.

B. Bidder is responsible for ascertaining the disposition of all addenda issued regardless of OWNER notification and to acknowledge all addenda in the submitted sealed bid prior to the bid opening.

C. Copies of Addendum will be made available for inspection wherever Bidding Documents are on file for inspection.

D. Each Addendum will be numbered, dated and identified with the Project number.

E. Oral statements or any instructions in any form, other than Addendum as described above, shall be void and unenforceable.

F. Addendum issued by the Owner office of Facilities Construction Contracts and not noted as being acknowledged by bidder as required in Document 00 4100 – Bid and Acceptance Form, may result in the bid being deemed non-responsive.

1.09 COMPLETION OF BID FORMS

A. All documents listed in subparagraph 1.01(B) of this Section shall be completed in their entirety.

B. Blanks: All blanks shall be completed by filling in the requested information; the bid may be deemed non-responsive if this requirement is not met.

C. Erasures: The submitted bid shall not contain any erasures, delineation or other corrections unless each such correction is authenticated by affixing in the margin immediately opposite the correction the signature or signatures of the person or persons signing the bid.

D. Modifications: Changes in, or additions to the bid form, recapitulations of the Work bid upon, alternative proposals, or any other modifications of the form which is not specifically called for in the Bidding Documents may result in the bid being deemed non-responsive.

E. Subcontractors: Bidder shall follow all instructions herein regarding the listing of subcontractors as set forth in Document 00 4336 – Subletting and Subcontracting Fair Practices Act List. The OWNER's prequalification requirements include mechanical, electrical, and plumbing contractors (i.e., contractors licensed pursuant to Sections 7056–7059 of the Business and Professions Code, specifically holding A, B, C-4, C-7, C-10, C-16, C-20, C-34, C-36, C-38, C-42, C-43, or C-46 licenses pursuant to regulations of the Contractors' State License Board) that contract directly with a bidder to perform any such component work on the Project ("MEP subcontractors"). Bidders that intend to contract with any MEP subcontractors to perform any such component work on the Project shall only select MEP subcontractors that have been prequalified by the OWNER at least five (5) business days before the date fixed for the public opening of bids. Non-MEP subcontractors do not need to be prequalified to perform non-MEP component work on the Project. Bidders and MEP subcontractors shall not be eligible to bid or perform work on the Project if they (a) have not submitted completed prequalification questionnaires and financial statements to the OWNER at least ten (10) business days before the date fixed for the public opening of bids, and (b) have not been prequalified by the OWNER at least five (5) business days before the date fixed for the public opening of bids. The OWNER's lists of prequalified contractors can be found online at https://procurement.lausd.org/apps/pages/Prequalification under "List of Prequalified Contractors." The lists are updated on an ongoing basis. If an MEP subcontractor does not appear on the list, bidder should verify with the subcontractor to determine if subcontractor has received a notice from OWNER that confirms its prequalification by the above deadline. Unless prohibited by the OWNER, bidders licensed pursuant to Section 7057 of the Business and Professions Code, specifically holding general building contractor B licenses pursuant to regulations of the Contractors' State License Board, may self-perform any work on the Project to the extent permitted by law. Bids that fail to adhere to these requirements will be deemed non-responsive by the OWNER.

DISTRICT DISCLAIMER OF LIABILITY: The District requires prequalification of subcontractors in certain specialty trades. The District provides all prospective bidders with a list of prequalified subcontractors. Bidder is required to list a prequalified subcontractor for each specified trade as set forth in the Bid Documents, or else its bid will be rejected by the District as non-responsive.

The District only represents that each specialty subcontractor identified on the list of prequalified subcontractors has satisfied the District's prequalification requirements. The District makes no representations, express or implied, regarding the ability of any prequalified subcontractor to perform work or fulfill its obligations to bidder with respect to this Project or any other project. Contractor shall be solely responsible to the District for the performance of any prequalified subcontractor.

Bidder, in submitting a bid for this Project, acknowledges the District makes no warranties, express or implied, concerning the abilities of any prequalified subcontractor, and bidder agrees to hold the District harmless from any claims, demands, or causes of action arising out of, or alleged to have arisen out of, any act or failure to act by a prequalified subcontractor.

F. Small Business Enterprises: Bidder shall follow instructions herein regarding the listing of Small Business Enterprises as set forth in Document 00 7339 – Small Business Enterprises.

G. Name and nature of bidder legal entity: bidder shall complete the bid form according to the following:

1. The firm name or name style of the bidder shall agree with bidder license issued by the California Contractors State License Board.

2. Bid shall be signed by bidder or an individual on behalf of the bidder and only a handwritten signature shall be acceptable.

3. Successful bidder may be required to furnish a letter setting forth the organizational structure of bidder and further describing the firm members and those persons authorized to sign legal documents.

H. Bidder shall make no stipulations on the bid form nor qualify the bid in any manner.

I. Bidder, by not submitting a price for any bid item or unit price, agrees subject bid item or unit price is included in the base bid amount submitted to the OWNER. Bidder failure to submit a price for any bid item or unit price will result in the bid being deemed non-responsive. If bid items are called for and no change in the lump sum base bid is required, enter "No Change".

1.10 BID GUARANTEE

A. Bidder shall attach to the bid a bid guarantee, if required herein, in the form of a certified or cashier's check or a bid bond. If bidder intends to submit a bid bond, bidder shall utilize the Bid Security Form, Document 00 4313, which shall be secured by a California-admitted surety company satisfactory to OWNER.

B. The bid guarantee shall be applied toward, but shall not be considered a limitation upon, any damage, which may be sustained by OWNER if the bidder fails to abide by any provisions of the Notice of Intent to Award.

C. In the case of an irregular bid bond, OWNER will contact the surety to confirm the validity of the bid bond.

D. Attorneys-in-Fact who sign bid bonds must file with each bond a certified and effective dated copy of their powers of attorney.

E. An annual bid and performance bond on file in the offices of OWNER is not acceptable as a guarantee of this bid.

F. Bid shall be guaranteed for a period of sixty (60) days from the date of submission, or as extended by mutual agreement.

1.11 BIDDER REPRESENTATIONS

Bidder, by submitting a bid, warrants and represents:

A. Bidder has read, comprehends and submits bid in full accordance with provisions of the Bidding Documents.

B. Bidder has visited the Project site and is completely familiar with the conditions under which the Work is to be performed and the local conditions as related to the requirements of the Bidding Documents.

C. Bid is based upon the scope, materials, equipment, and systems required by the Bidding Documents without exception.

D. Bidder has the expertise and financial capacity to perform and complete all obligations under the Bidding Documents.

E. The individual executing the bid forms is duly authorized and empowered to execute the bid forms on behalf of the bidder.

F. Bidder is aware of and will comply with all applicable code requirements in the performance of the Work.

G. All expenses incurred by bidder in preparing the bid shall be borne solely by bidder.

1.12 SUBMISSION OF BID FORMS

A. **Submit all required documents listed in paragraph 1.01 (B) of this Section for the electronic bid as described herein and Document 00 1116 - Invitation to Bid. A job aid on submitting the bid electronically is attached to this document.**

B. Submit all supplemental documents as set forth in paragraph 1.01 (D) of this Section within five (5) business days of OWNER's request.

C. OWNER invites bid on Document 00 4100 – Bid and Acceptance Form, to be submitted by the time and in the manner indicated in Document 00 4100.

D. A bid arriving on or after the specified time is deemed non-responsive and will not be accepted.

E. Bidder assumes all responsibility for timely delivery of the bid at the location designated for receipt of bids.

F. Oral, telephonic, facsimile, or telegraphic bids are invalid and will not be accepted.

G. The submission of a bid shall be taken as prima facie evidence of compliance with Section 00 2113 - Instructions to Bidders.

1.13 MODIFICATION OR WITHDRAWAL OF BID

A. Prior to bid deadline, a submitted bid package may be modified or withdrawn from the electronic system

B. A withdrawn bid may be resubmitted up to the bid deadline, provided it then fully complies with the bidding requirements.

C. Bid security shall be ten (10) percent of the amount of the base bid.

D. If bidder claims to have made a mistake in its bid pursuant to Public Contract Code Sections 5100 et seq., OWNER must receive a written request for release from bid within five (5) business days after the opening of the bid. In this written request, bidder must indicate the date of the bid, the Project name, ask to be released from bid, and certify under penalty of perjury:

1. That a mistake was made,
2. Provide details of how the mistake occurred,
3. That the mistake made the bid materially different than intended (include original unaltered bid estimate sheets), and
4. That the mistake was made in filling out the bid, and was not due to error in judgment, or to carelessness in inspecting the site of the project, or in reading the plans or specifications.

1.14 REJECTION OF BID

A. OWNER has the right to reject any and all bids.

B. OWNER has the right to deem any bid not accompanied by all items required by the Bidding Documents, or a bid which is in any other way deemed materially incomplete or irregular, as a non-responsive bid.

1.15 BID PROTEST

A. All District procurements shall be conducted in a manner which assures that all prospective contractors/consultants are afforded fair and equal consideration, and the award of District contracts preserves and protects the integrity of the procurement process. To that end, any interested party

who desires to raise concerns regarding a District award shall have the right to have its complaint considered and resolved administratively by the District in an expeditious manner. "Interested party," as used herein, means an actual or prospective Proposer whose direct economic interest would be affected by the award of a contract or by the failure to award a contract.

B. All protests shall be filed, handled, and resolved in a manner consistent with the District's protest procedures. The District will respond to each substantive issue raised in the protest. Protests relating to the content of this solicitation must be filed within ten (10) business days after the release of the solicitation. Failure to file a timely protest is a failure to exhaust an administrative remedy and shall act as a waiver of the right to challenge the solicitation and process even if a protest regarding a recommendation for contract award is filed.

C. Protests relating to a recommendation for contract award must be filed by an "interested party" within five (5) business days after release of the solicitation results. Failure to file a timely protest is a failure to exhaust an administrative remedy and shall act as a waiver of the right to challenge the recommendation for contract award.

D. All protests shall be filed via email to **protest@lausd.net** and in writing with the District's Chief Procurement Officer (CPO) or designee. Emailed protests must contain in the "Subject" line the advertised solicitation name and number with the name of the Contracting Officer.

E. Written protests shall be filed with the **Chief Procurement Officer, Los Angeles Unified School District, 333 S. Beaudry Avenue – 28th Floor, Los Angeles, CA 90017**. Include identification of the proposed solicitation name and number on the outside of the envelope/package with the Contracting Officer's name.

F. The protest shall, at a minimum, contain the following:

1. The name and address of the interested party and its relationship to the solicitation;
2. Identification of the solicitation name and number with Contracting Officer's name (include the school name, project number, and project description, as applicable);
3. Substantive description of the nature of the protest;
4. All documentation supporting the allegations of the protest;
5. Statement of the specific relief requested;
6. Identification of the provision(s) of the solicitation, regulations, or laws upon which the protest is based; and
7. Signature of an authorized executive with the authority to bind the company.

G. The Chief Procurement Officer or designee shall make a determination on the protest normally within (10) business days after the receipt. The Chief Procurement Officer or designee has the authority to make a final determination and the decision shall constitute the protestor's final administrative remedy.

1.16 AWARD

A. OWNER shall determine award of each contract on the basis of the pre-established best value criteria set forth in the RFQ.

B. OWNER has the right to waive immaterial irregularities in a bid and to accept the bid of the most qualified bidder.

C. OWNER may ask bidder to submit a bid breakdown, additional information, and clarifications prior to award. Failure of bidder to timely submit the requested information may render a bid non-responsive.

D. OWNER will transmit a Notice of Intent to Award or reject all bids. Within ten (10) days after receipt of the Notice of Intent to Award, bidder shall submit to OWNER the following:

1. One (1) executed original of the payment bond.

2. One (1) executed original of the performance bond.

3. Confirmation that bidder has submitted the required paperwork to enroll in Owner Controlled Insurance Program (OCIP) as set forth in Article 5 of the General Conditions.

E. If bidder submits all items as required by the Notice of Intent to Award within the specified time, and if all such items comply with the requirements of the Bidding Documents and are acceptable to OWNER, OWNER will execute the Contract and issue a Notice of Award with copy of the executed Contract to the CONTRACTOR.

1.17 CONTRACT DOCUMENTS

A. After execution of the Contract by OWNER, OWNER shall provide to CONTRACTOR, at OWNER expense, three (3) copies of the Contract Documents. Any further copies of the Contract Documents are at the sole expense of the CONTRACTOR.

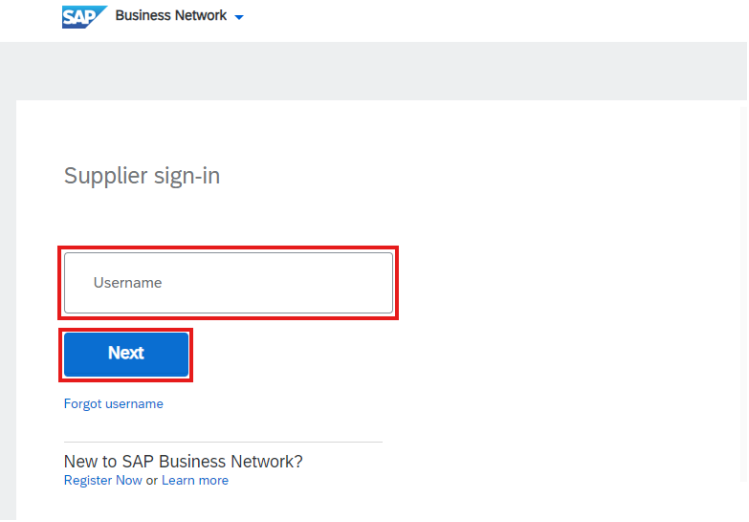
1.18 ELECTRONIC BID SUBMITTAL

A. <u>In accordance with Document 00 1116 – Invitation to Bid, bidder is advised to use the job aid attached as a guide to assist in the electronic bid submittal.</u>

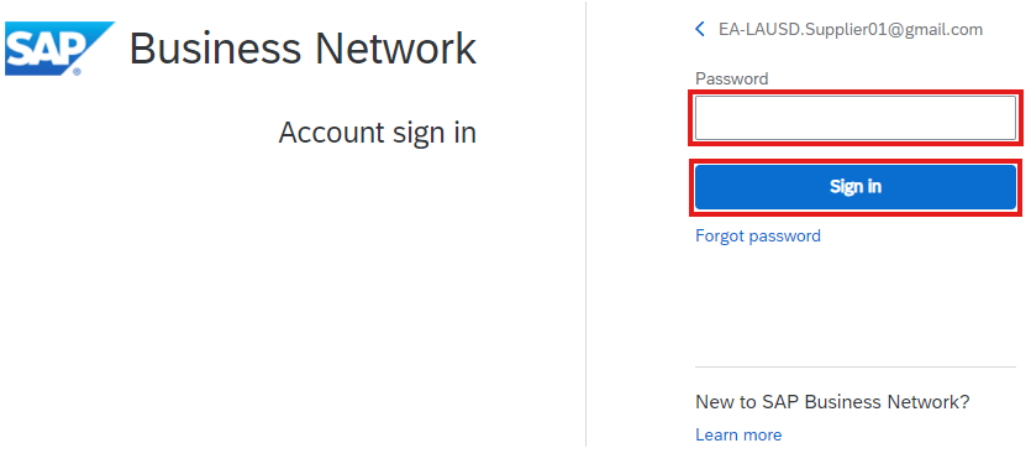
END OF SECTION

Log on to Ariba Supplier Network

1. Enter your Ariba **Supplier sign-in**
2. Click **Next**

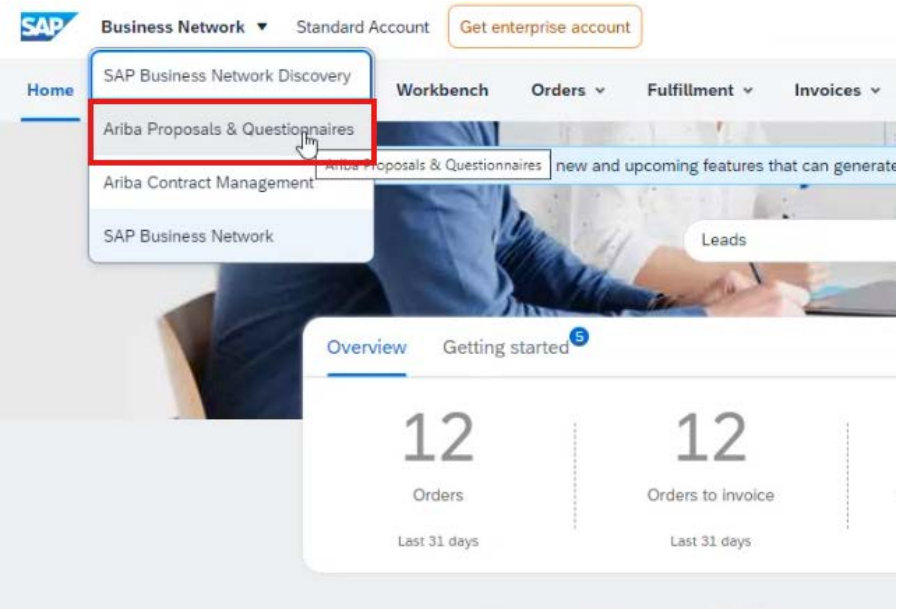


3. Enter your Ariba User **Password**
4. Click **Sign In**

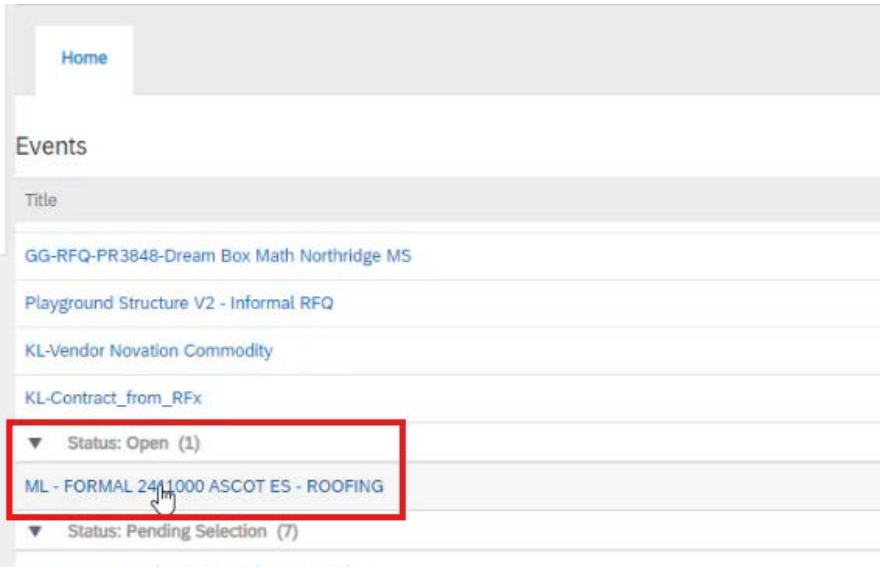


Finding Bid Opportunities

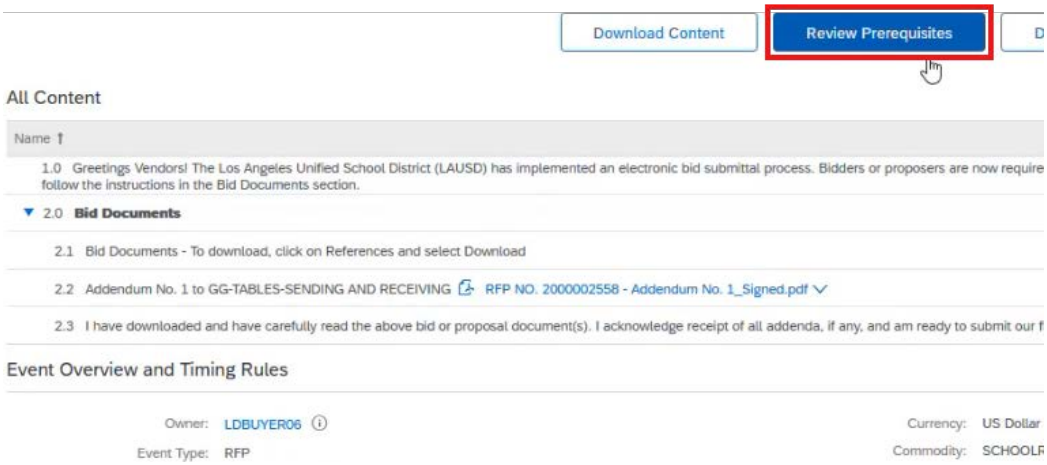
5. Under **Business Network** click on **Ariba Proposals & Questionnaires**



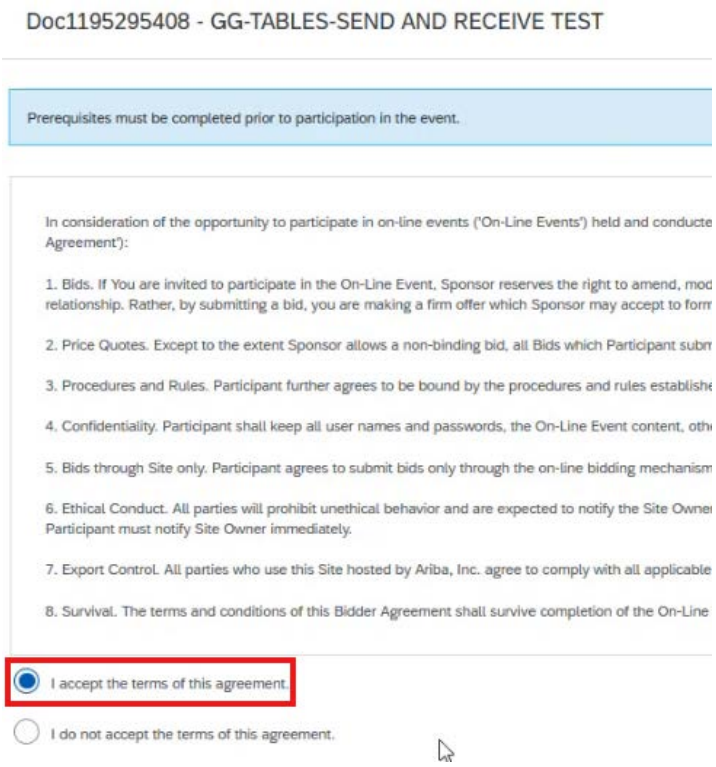
6. Under **Events** scroll down to **Status:Open** and click on the event



7. Read through content regarding the project. To view Prerequisites, click **Review Prerequisites**



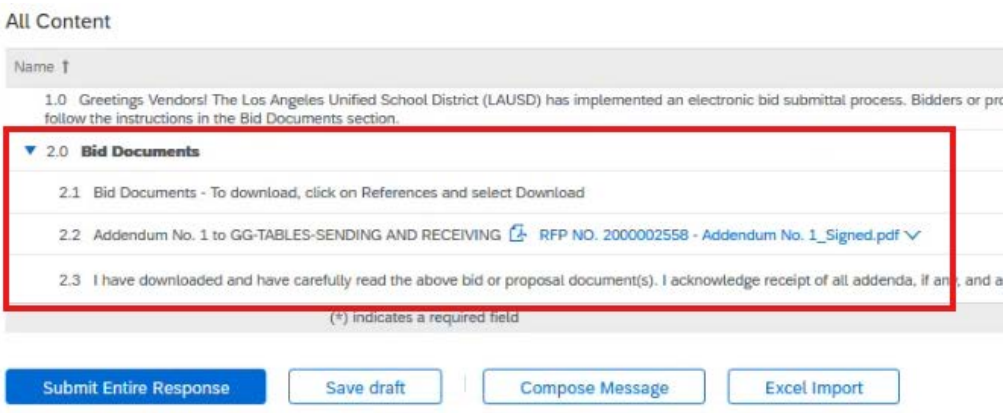
8. Accept Ariba Terms and Conditions to participate. *



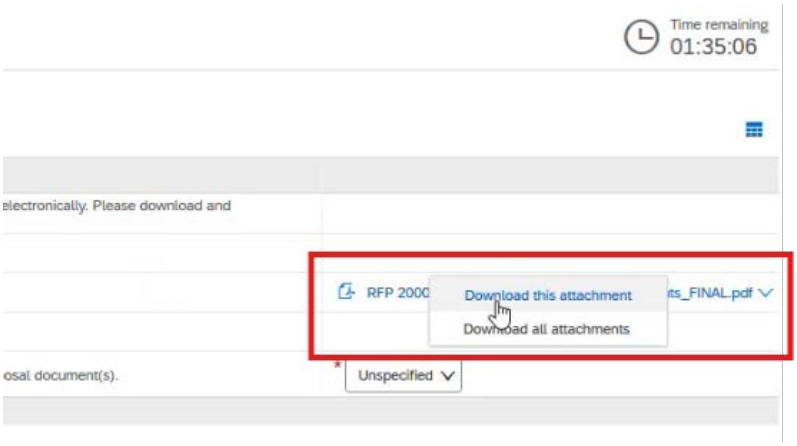
*If you do not agree to the Terms and Conditions, you will not be able to propose your bid

Download and Review the Bid Document

9. Go to Section 2.0 **Bid Documents**

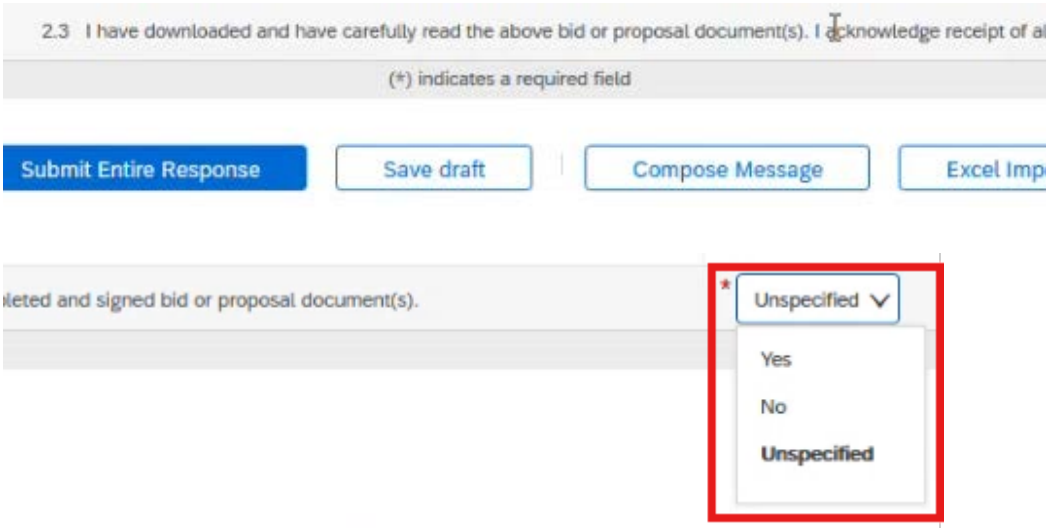


10. To download the file click the blue file name then click **Download this attachment**

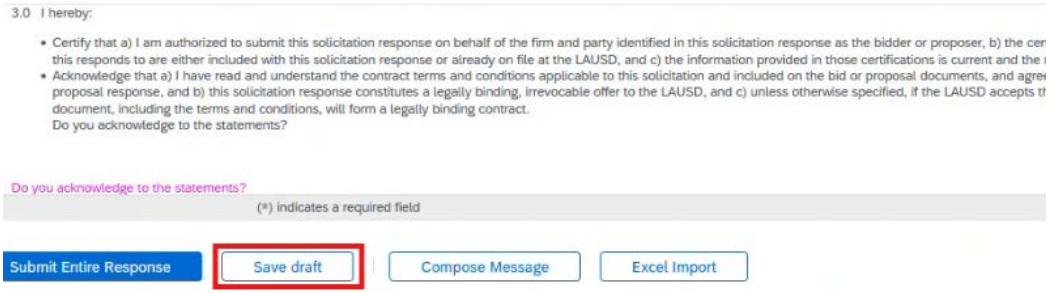


Responding/Submitting Bid Documents

11. After reviewing documents, go to section **2.3** and acknowledge receipt of documents

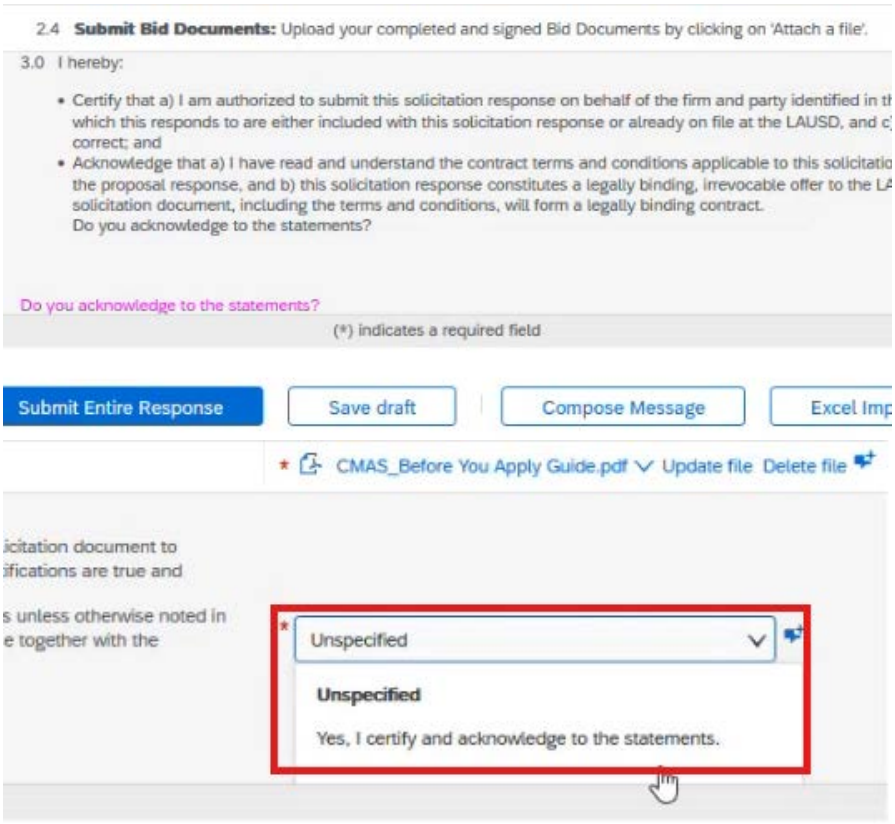


12. Once acknowledge, line items to respond appear. If not ready to respond, can **Save draft**

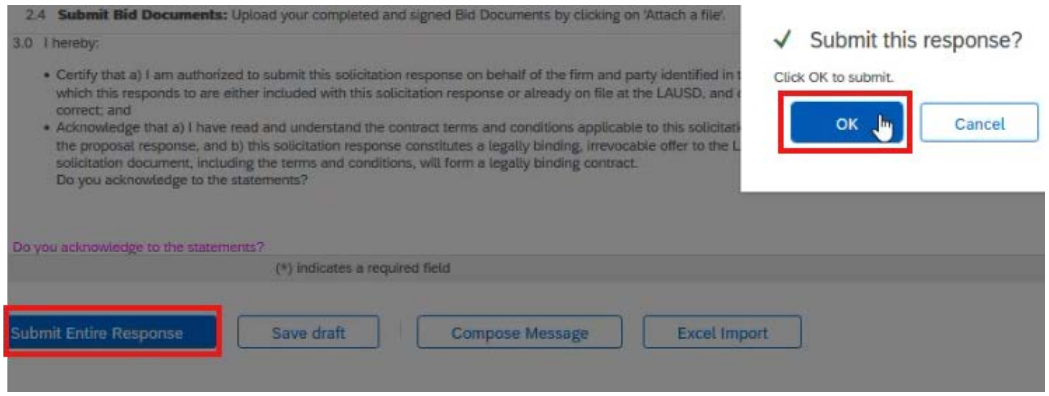


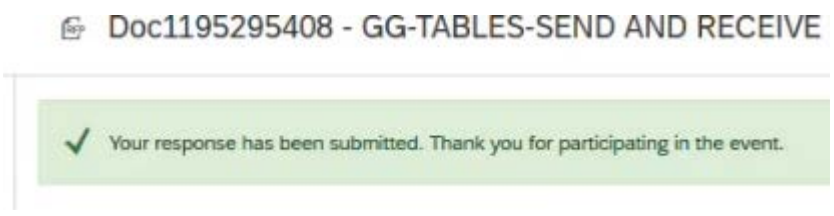
13. When ready to respond, go to section 2.4 **Submit Bid Documents** and attach file/bid documents

14. After attaching file/bid documents go to section **3.0** and certify you are authorized to submit the solicitation response



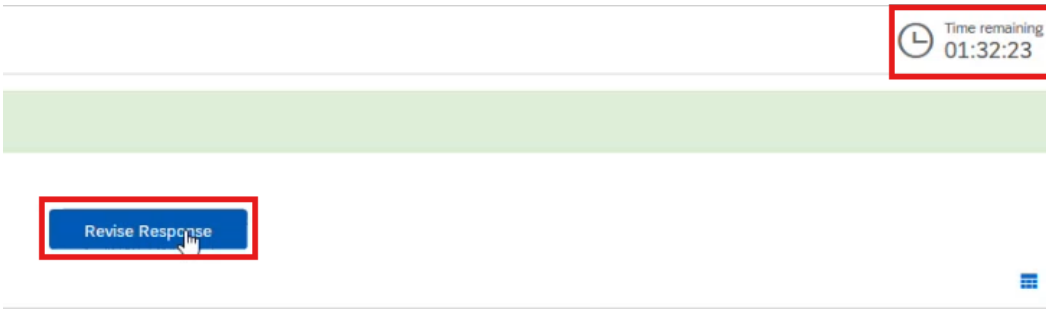
15. Once acknowlged, click on **Submit Entire Response.** A pop up will appear and confirming your selection. Click **OK.** You will see a green banner confirming your submission.





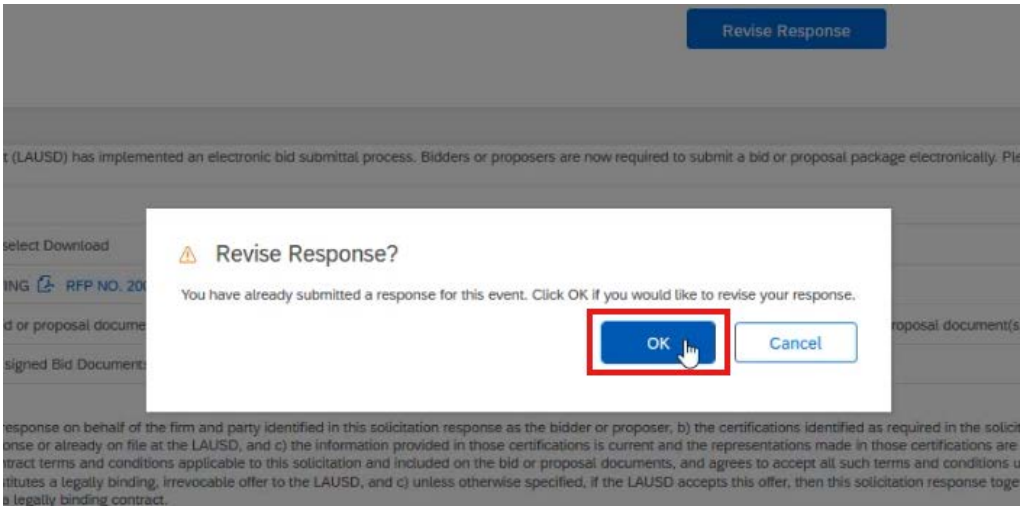
Revising a response

1. To revise a response, check how much time is remaining and click the **Revise Response** button.*

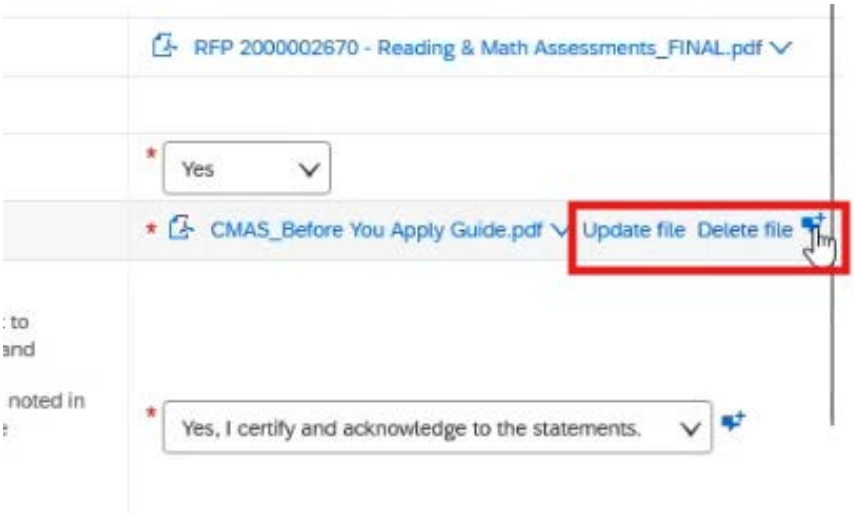


*As long as the revised response is within the time frame it can be revised multiple times.

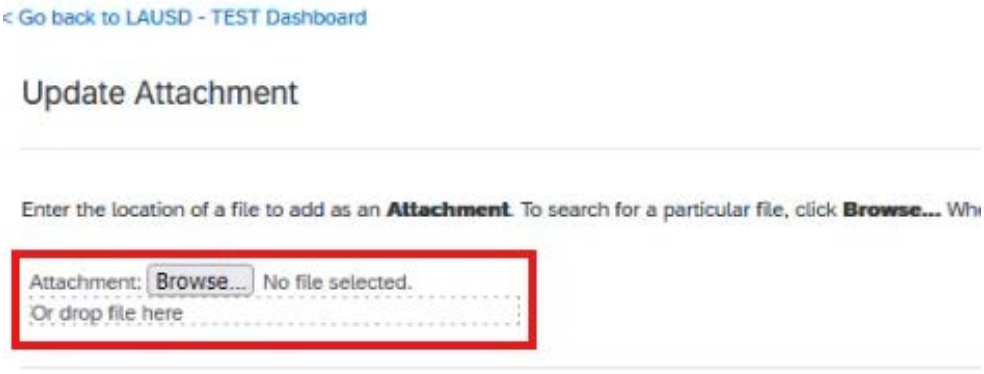
2. Confirm you want to revise the response and click **OK**.



3. From here you will now be able to update or delete the response files submitted. Click either **Update file** or **Delete File**.



4. This will route to another view where you can attach or drag the updated document file. Click **OK** when finished.

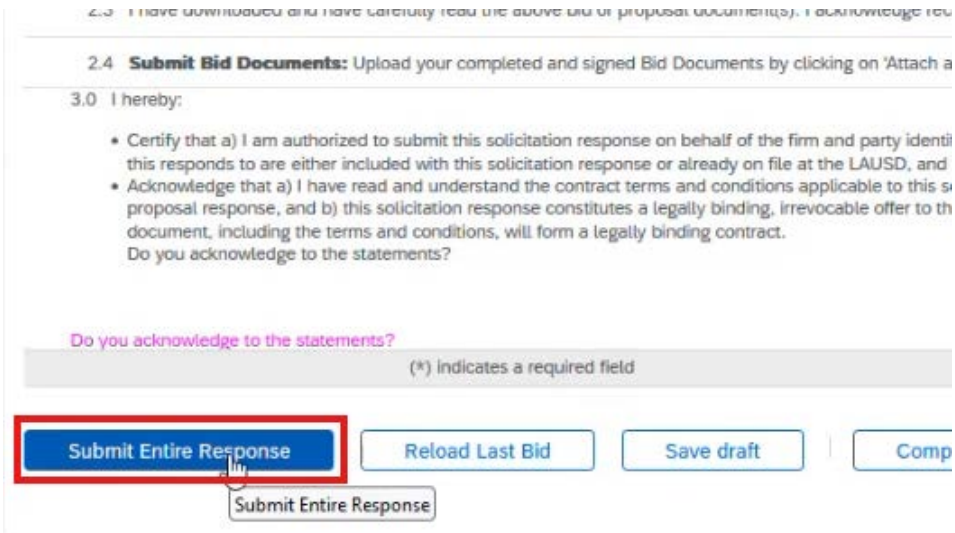


NOTE: You **CANNOT** attach multiple files. Existing file will be replaced. If you want to replace the existing file, the new file **will need to contain a different file name.**

IF you need to attach multiple files, put them in a folder, create a zip folder then attach the file.

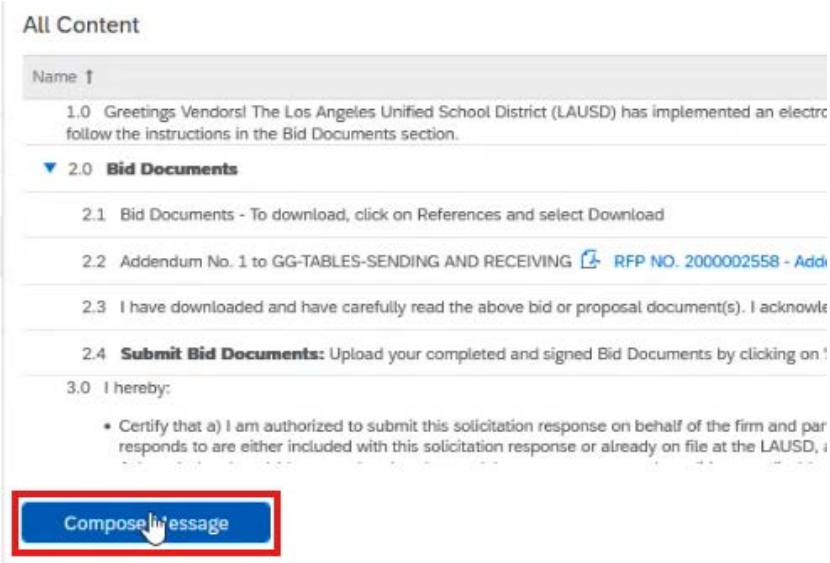
Max File size:100MB

5. Once you have attached the new file, Click on **Submit Entire Response** and confirm **OK**.

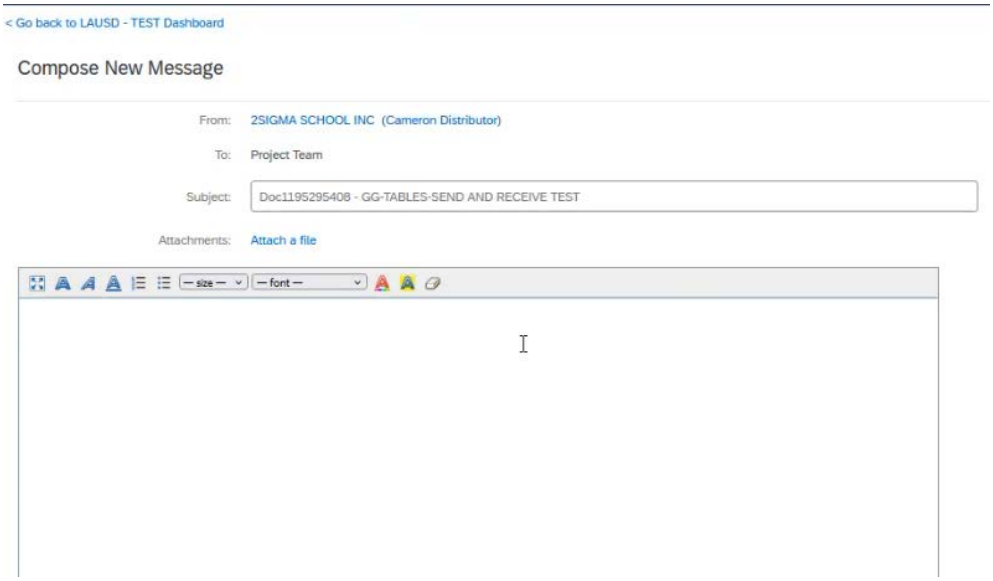


Composing a Message and viewing a Response

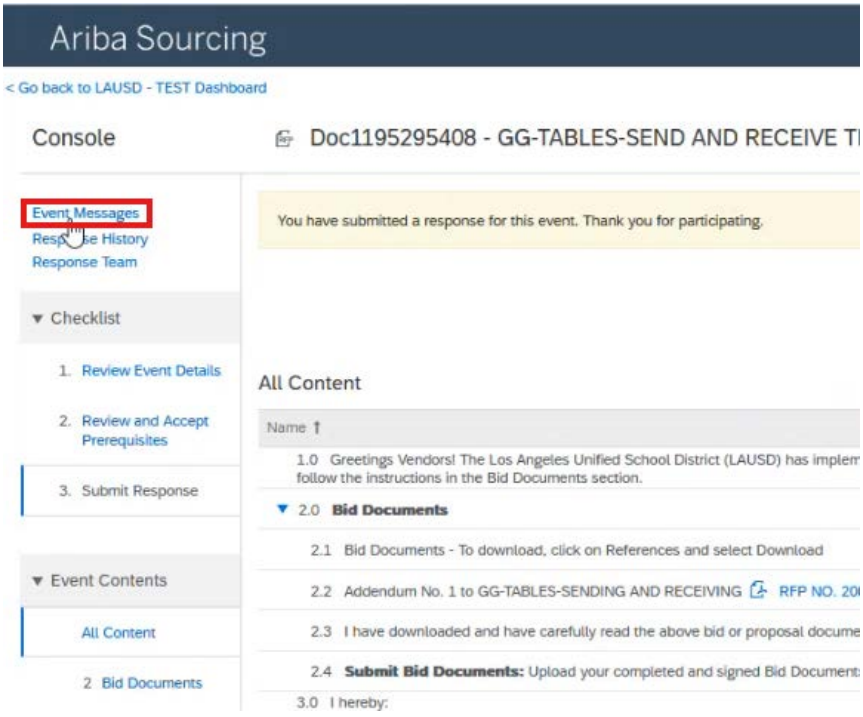
1. To compose a message to the project owner click on **Compose Message** in the event page.



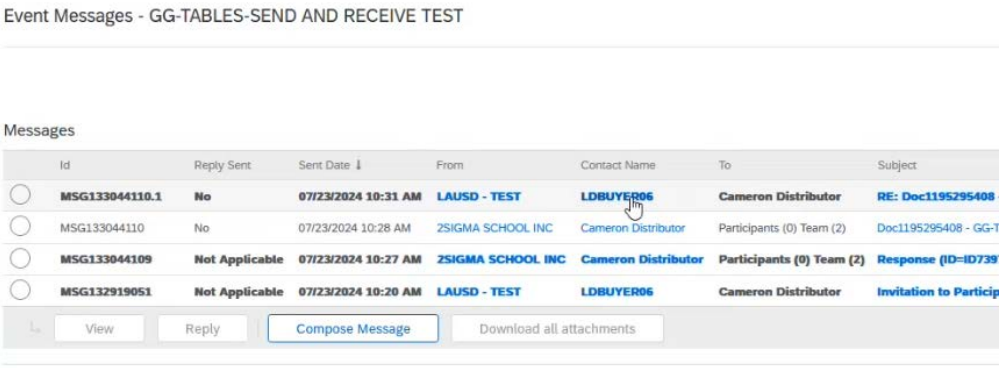
2. This will route to another page where you can compose your message and attach a file (if needed). Hit **Send** when finish.



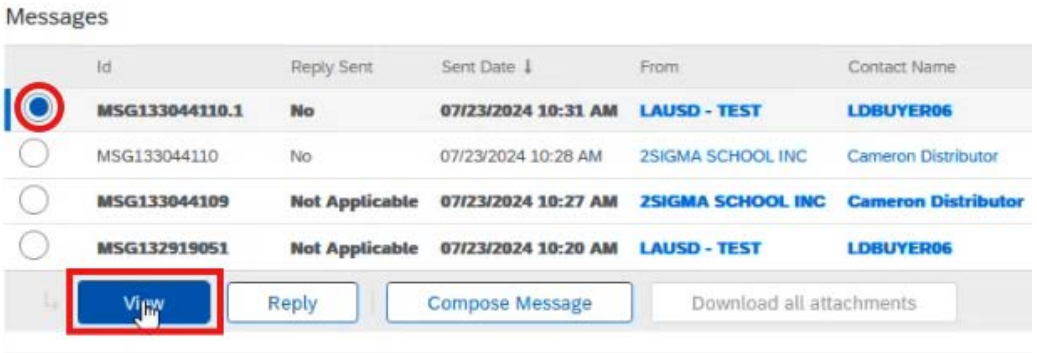
3. To see response to messages go to the open event and click on it (refer to Finding Request for Proposal on Page 1). On the left hand side, under **Console** go to **Event Messages** and click.



4. This will route to a new page where all messages pertaining to the event are visible



5. To view a message, click the circle by the message you want to view and then click **View**.



SECTION 00 2513
PRE-BID MEETING
(MANDATORY)

1.01 GENERAL

A. Bidder must attend a pre-bid meeting for comprehensive scope delineation of the Work and/or Project or be declared ineligible to bid.

B. Bidder shall visit the Project site(s) prior to the bid date in order to determine the conditions normally encountered and generally recognized as inherent in or to the Work; take measurements, perform and/or cause to be performed all quantitative tests; observe and gather all information necessary in order to determine a comprehensive bid amount.

C. Additional visits to the Project site(s) shall be coordinated through the Owner Authorized Representative (OAR).

1.02 PRE-BID MEETING

A. A pre-bid meeting will occur in the administrative office as listed below:

1. School: SYLVAN PARK EARLY EDUCATION CENTER
2. Street: 15011 DELANO ST.
3. City: VAN NUYS, CA 91411
4. Time: 10:00 A.M.
5. Day: TUESDAY
6. Date: JUNE 2, 2026

B. Bidder failure to attend this pre-bid meeting will result in OWNER not accepting bid.

C. Sign-in sheets will be provided for issuing any changes to Bidding Documents. Bidders must print their names legibly, sign their names, submit business cards for identification purposes, and comply with all requirements of the sign-in sheets. Bidders will not be allowed to sign-in for more than one (1) company and/or entity.

D. Bidder is responsible for ensuring that it has complete Bidding Documents, including all Addendum provided by OWNER, prior to the bid due date.

1.03. NO VERBAL CHANGES

A. Nothing said or discussed before, during, at or after the mandatory pre-bid meeting shall in any way affect bidder’s obligation to strictly comply with the Bidding Documents.

END OF SECTION

SECTION 00 3000

AVAILABLE INFORMATION

1.01 GENERAL

A. This Section sets forth the following information made available to bidder. The provided information is not part of the Contract Documents.

B. The information is provided in conjunction with, but not limited to, the provisions of Sections 4.2, 4.3, 4.5, and 4.6 of the General Conditions.

1.02 SUBSURFACE CONDITIONS

A. In the preparation of the Drawings and Specifications, ARCHITECT and/or ARCHITECT Consultants have relied upon the following reports of exploration and tests of subsurface conditions at, or contiguous, to the Project site of the Work:

1. **Limited Geotechnical Investigation, dated March 19, 2025, Prepared by Geocon West, Inc.**

2. **Hydrology and Hydraulics Report, dated May 23, 2025, Prepared by VCA Engineers, Inc.**

B. The information is provided for bidder investigation. OWNER does not warrant the accuracy or completeness thereof. Bidder is responsible for conducting all tests, investigations, sampling, and/or inquiries to ascertain all actual conditions that may affect the Work.

1.03 PHYSICAL CONDITIONS

A. In the preparation of the Drawings and Specifications, ARCHITECT and/or ARCHITECT Consultants have relied upon the following drawings, descriptions, photographs, and/or mapping of physical conditions, other than Subsurface Facility, which are at, or contiguous, to the site of the Work:

1. N/A

2. Asbestos and lead reports supplied by the OWNER's consultants to be identified and inserted in Division 02, under Section 02 8213 for Asbestos Abatement and Section 02 8333 for Lead Abatement.

B. The information is provided for bidder investigation. OWNER does not warrant the accuracy or completeness thereof. Bidder is responsible for conducting all tests, investigations, sampling, and/or inquiries to ascertain all actual conditions that may affect the Work.

1.04 SUBSURFACE FACILITY

A. In the preparation of the Drawings and Specifications, ARCHITECT and/or ARCHITECT Consultants have relied upon the following drawings, descriptions and/or mapping of subsurface facility which are at, or contiguous, to the site of the Work:

1. N/A

B. The information is provided for bidder investigation. OWNER does not warrant the accuracy or completeness thereof. Bidder is responsible for conducting all tests, investigations, sampling, and/or inquiries to ascertain all actual conditions that may affect the Work.

1.05 AVAILABILITY

A. Copies of these reports, assessments, drawings and other information may be examined at **Los Angeles Unified School District Headquarters, Herrik Au**, during regular business hours of ARCHITECT.

END OF SECTION

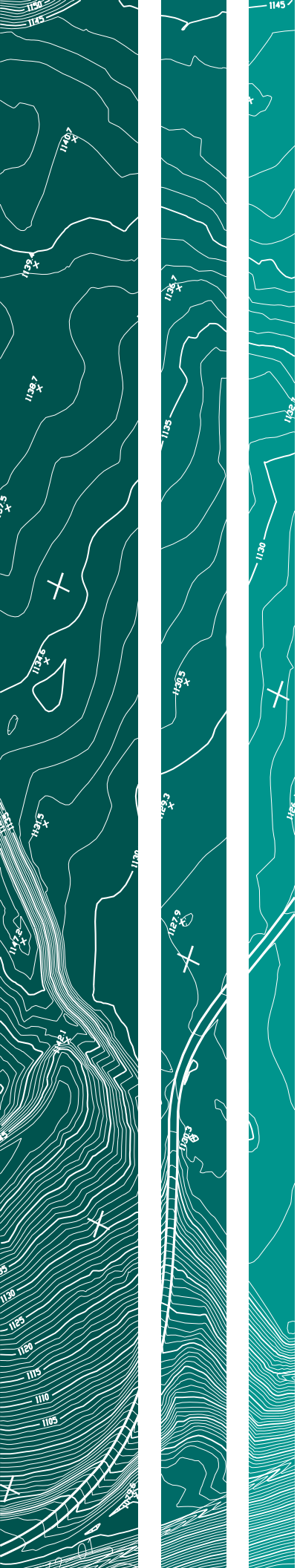


EXHIBIT A

GEOCON

LIMITED GEOTECHNICAL INVESTIGATION

PROPOSED EXTERIOR UPGRADES
SYLVAN PARK EARLY EDUCATION CENTER
15011 DELANO STREET
VAN NUYS, CALIFORNIA

MARCH 19, 2025
PROJECT NO. A8326-06-107C

PREPARED FOR:
LOS ANGELES UNIFIED SCHOOL DISTRICT
LOS ANGELES, CALIFORNIA

GEOCON
WEST, INC.
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

Project No. A8326-06-107C
March 19, 2025

Los Angeles Unified School District
333 S. Beaudry Avenue, 22nd Floor
Los Angeles, CA 90017

Subject: LIMITED GEOTECHNICAL INVESTIGATION
PROPOSED EXTERIOR UPGRADES
SYLVAN PARK EARLY EDUCATION CENTER
15011 DELANO STREET, VAN NUYS, CALIFORNIA

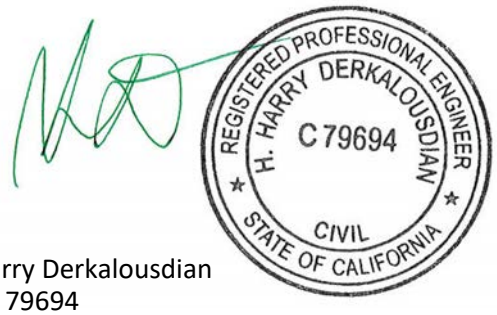
Ladies and Gentlemen:

In accordance with your authorization of our proposal dated November 27, 2024, we have performed a limited geotechnical investigation for proposed improvements to the Sylvan Park Elementary Early Education Center campus located at 15011 Delano Street in the City of Van Nuys, California. The accompanying report presents the findings of our study and our conclusions and recommendations pertaining to the geotechnical aspects of proposed design and construction. Based on the results of our investigation, it is our opinion that proposed improvements can be constructed as proposed, provided the recommendations of this report are followed and implemented during design and construction.

If you have any questions regarding this report, or if we may be of further service, please contact the undersigned.

Very truly yours,

GEOCON WEST, INC.



Manuel Ramirez
Staff Engineer

Harry Derkalousdian
PE 79694

(email) Addressee

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LIMITATIONS AND UNIFORMITY OF CONDITIONS

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GEOTECHNICAL INVESTIGATION

1. PURPOSE AND SCOPE

This report presents the results of a limited geotechnical investigation for the exterior upgrades to the Sylvan Park Early Education Center campus located at 15011 Delano Street in the City of Van Nuys, California (see Vicinity Map, Figure 1). The purpose of the investigation was to evaluate subsurface soil and geologic conditions underlying the site and, based on conditions encountered, to provide conclusions and recommendations pertaining to the geotechnical aspects of proposed design and construction.

The scope of this investigation included a site reconnaissance, field exploration, laboratory testing, engineering analysis, and the preparation of this report. The site was explored on February 5 and 6, 2025, by excavating seven 3½-inch-diameter borings using manual hand auger drilling equipment to a maximum depth of 6 feet beneath the ground surface. Additionally, percolation testing to determine the feasibility of stormwater infiltration was performed in five borings, B3 through B7. The approximate locations of the exploratory borings are depicted on the Site Plan (see Figure 2). A detailed discussion of the field investigation, including boring logs, is presented in Appendix A.

Laboratory tests were performed on selected soil samples obtained during the investigation to determine pertinent physical and chemical soil properties. Appendix B presents a summary of the laboratory test results.

The recommendations presented herein are based on analysis of the data obtained during the investigation and our experience with similar soil and geologic conditions. References reviewed to prepare this report are provided in the *List of References* section.

If project details vary significantly from those described herein, Geocon should be contacted to determine the necessity for review and possible revision of this report.

2. SITE AND PROJECT DESCRIPTION

The Sylvan Park Early Education Center campus is located at 15011 Delano Street in the City of Van Nuys, California. The site is currently occupied by two single-story classroom structures and playground areas. The campus is bounded by Sylvan Park Elementary School campus to the north and west, by Delano Street to the south, and by Lemona Avenue to the east. The site slopes gently to the south and surface water drainage at the site appears to flow to the city streets.

Based on the information provided by the Client, it is our understanding that the proposed improvements will consist of exterior upgrades that include new asphalt and concrete paving, stamped and colored decorative concrete pavements, and outdoor learning spaces. It is our understanding that the outdoor learning spaces will generally consist of benches and tables. A preliminary plan depicting the proposed improvements is provided on the Site Plan (see Figure 2).

Once the design phase and foundation loading configuration proceeds to a more finalized plan, the recommendations within this report should be reviewed and revised, if necessary. Any changes in the design, location or elevation of any structure, as outlined in this report, should be reviewed by this office. Geocon should be contacted to determine the necessity for review and possible revision of this report.

3. SOIL AND GEOLOGIC CONDITIONS

Based on our field investigation and published geologic maps of the area, the site is underlain by artificial fill and Holocene age alluvial fan deposits (CGS, 2012). Detailed stratigraphic profiles are provided on the boring logs in Appendix A.

3.1 Artificial Fill

Artificial fill was encountered in our field explorations to a maximum depth of 5 feet beneath existing ground surface. The artificial fill generally consists of light brown to dark brown sandy to yellowish brown silty sand. The fill is characterized as slightly moist and loose or soft. The fill is likely the result of past grading and construction activities at the site. Deeper fill may exist between excavations and on other portions of the site that were not directly explored.

During our exploration, a layer of asphalt pavementwas found in borings B1, B2, B4, and B6. The asphalt pavement layer was encountered at depths of 1½ to 3 feet below the existing ground surface.

3.2 Younger Alluvium

The artificial fill is underlain by Holocene age alluvial fan deposits. The alluvial deposits generally consist of light brown to brown silt and sandy silt with trace amounts of clay. The soils are primarily slightly moist and firm.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 General

4.1.1 It is our opinion that neither soil nor geologic conditions were encountered during the investigation that would preclude the construction of the proposed improvements provided the recommendations presented herein are followed and implemented during design and construction.

4.1.2 Up to 5 feet of existing artificial fill was encountered during the site investigation. The existing fill is believed to be the result of past grading and/or construction activities at the site. Deeper fill may exist in other areas of the site that were not directly explored. It is our opinion that the existing fill, in its present condition, is not suitable for direct support of proposed foundations. The existing fill and site soils are suitable for re-use as engineered fill provided the recommendations in the *Grading* section of this report are followed (see Section 4.4).

4.1.3 Foundations for small outlying structures, such as block walls up to 6 feet high, benches, tables, planter walls or trash enclosures, which will not be tied to structures, may be supported on conventional foundations bearing on a minimum of 12 inches of newly placed engineered fill which extends laterally at least 12 inches beyond the foundation area. Where excavation and proper compaction cannot be performed, foundations may derive support directly in undisturbed alluvium and should be deepened as necessary to maintain a minimum 12-inch embedment into the recommended bearing materials. If the soils exposed in the excavation bottom are soft or loose, compaction of the soils will be required prior to placing steel or concrete. Compaction of the foundation excavation bottom is typically accomplished with a compaction wheel or mechanical whacker and must be observed and approved in writing by a Geocon representative.

4.1.4 All trench and foundation excavation bottoms must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon), prior to placing bedding materials, fill, steel, gravel or concrete.

4.1.5 Where new paving is to be placed, it is recommended that all existing fill soils and soft alluvium be excavated and properly compacted for paving support. The client should be aware that excavation and compaction of all existing fill or unsuitable soils in the area of new paving is not required; however, paving constructed over existing uncertified fill or unsuitable soils may experience increased settlement and/or cracking, and may therefore have a shorter design life and increased maintenance costs. As a minimum, the upper 12 inches of soil should be scarified and properly compacted for paving support. Paving recommendations are provided in the *Pavement Recommendations* section of this report (see Section 4.8).

4.1.6 It is anticipated that stable excavations for construction of the proposed improvements can be achieved with sloping measures. However, if excavations in close proximity to an adjacent property line, existing slope, and/or structure are required, special excavation measures may be necessary in order to maintain lateral support of offsite improvements. Excavation recommendations are provided in the *Temporary Excavations* section of this report (Section 4.9).

4.1.7 During the field exploration, percolation testing was performed in all of the borings excavated at the site. Based on the results of the percolation testing, a stormwater infiltration system is considered feasible for this project. A detailed discussion of the results and infiltration recommendations are provided in the *Stormwater Infiltration* section of this report (see Section 4.10).

4.1.8 Once the design and foundation loading configurations for the proposed improvements proceed to a more finalized plan, the recommendations within this report should be reviewed and revised, if necessary. Based on the final foundation loading configurations, the potential for settlement should be re-evaluated by this office.

4.1.9 Any changes in the design, location or elevation, as outlined in this report, should be reviewed by this office. Geocon should be contacted to determine the necessity for review and possible revision of this report.

4.2 Soil and Excavation Characteristics

4.2.1 The in-situ soils can be excavated with moderate effort using conventional excavation equipment. Some caving should be anticipated in unshored excavations, especially where granular soils are encountered.

4.2.2 It is the responsibility of the contractor to ensure that all excavations and trenches are properly shored and maintained in accordance with applicable OSHA rules and regulations to maintain safety and maintain the stability of existing adjacent improvements.

4.2.3 All onsite excavations must be conducted in such a manner that potential surcharges from existing structures, construction equipment, and vehicle loads are resisted. The surcharge area may be defined by a 1:1 projection down and away from the bottom of an existing foundation or vehicle load. Penetrations below this 1:1 projection will require special excavation measures such as sloping or shoring. Excavation recommendations are provided in the *Temporary Excavations* section of this report (see Section 4.9).

4.2.4 The upper existing site soils encountered during the investigation are considered to have a "low" expansive potential (EI = 23) and are classified as "expansive" in accordance with the 2022 California Building Code (CBC) Section 1803.5.3. The recommendations presented herein assume that foundations and slabs will derive support in these materials.

4.3 Water-Soluble Sulfate

4.3.1 Laboratory tests were performed on a representative sample of the on-site soils to measure the percentage of water-soluble sulfate content. Results from the laboratory water-soluble sulfate tests are presented in Appendix B (Figure B7) and indicate that the on-site materials possess a sulfate exposure class of "S0" to concrete structures as defined by 2022 CBC Section 1904 and ACI 318-19 Chapter 19.

4.3.2 Geocon West, Inc. does not practice in the field of corrosion engineering and mitigation. If corrosion sensitive improvements are planned, it is recommended that a corrosion engineer be retained to evaluate corrosion test results and incorporate the necessary precautions to avoid premature corrosion of buried metal pipes and concrete structures in direct contact with the soil.

4.4 Grading

4.4.1 A preconstruction conference should be held at the site prior to the beginning of excavation operations with the owner, contractor, civil engineer, geotechnical engineer, and building official in attendance. Special soil handling requirements can be discussed at that time.

4.4.2 Earthwork should be observed, and compacted fill tested by representatives of Geocon West, Inc. The existing fill and alluvium encountered during exploration are suitable for re-use as an engineered fill, provided any encountered oversize material (greater than 6 inches) and any encountered deleterious debris are removed.

4.4.3 If grading is required, grading should commence with the removal of all existing vegetation and existing improvements from the area to be graded. Deleterious debris such as wood and root structures should be exported from the site and should not be mixed with the fill soils. Asphalt and concrete should not be mixed with the fill soils unless approved by the Geotechnical Engineer. All existing underground improvements planned for removal should be completely excavated and the resulting depressions properly backfilled in accordance with the procedures described herein. Once a clean excavation bottom has been established it must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon West, Inc.).

4.4.4 Foundations for small outlying structures, such as block walls up to 6 feet high, benches, tables, planter walls or trash enclosures, which will not be tied to structures, may be supported on conventional foundations bearing on a minimum of 12 inches of newly placed engineered fill which extends laterally at least 12 inches beyond the foundation area. Where excavation and proper compaction cannot be performed, foundations may derive support directly in undisturbed alluvium and should be deepened as necessary to maintain a minimum 12-inch embedment into the recommended bearing materials. If the soils exposed in the excavation bottom are soft or loose, compaction of the soils will be required prior to placing steel or concrete. Compaction of the foundation excavation bottom is typically accomplished with a compaction wheel or mechanical whacker and must be observed and approved in writing by a Geocon representative.

4.4.5 All excavations must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon) prior to placing any fill.

4.4.6 All fill and backfill soils should be placed in horizontal loose layers approximately 6 to 8 inches thick, moisture conditioned to near optimum moisture content, and properly compacted to a minimum of 90 percent of the laboratory maximum dry density in accordance with ASTM D 1557 (latest edition).

4.4.7 Where new paving is to be placed, it is recommended that all existing fill and soft alluvium be excavated and properly compacted for paving support. As a minimum, the upper 12 inches of soil should be scarified, moisture conditioned to near optimum moisture content, and compacted to at least 95 percent relative compaction, as determined by ASTM Test Method D 1557 (latest edition). Paving recommendations are provided in the *Pavement Recommendations* section of this report (see Section 4.8).

4.4.8 Although not anticipated for this project, all imported fill shall be observed, tested, and approved by Geocon West, Inc. prior to bringing soil to the site. Import fill should consist of the characteristics presented in the table on the following page.

SUMMARY OF IMPORT FILL RECOMMENDATIONS

Soil Characteristic	Values
Expansion Potential	Expansion Index of 30 or less
Particle Size	Maximum Dimension Less Than 6 Inches
	Free of Debris
Corrosivity	Equal to or Less Detrimental Than Existing Onsite Soils

4.4.9 Utility trenches should be properly backfilled in accordance with the following requirements. The pipe should be bedded and shaded with clean sands (Sand Equivalent greater than 30) to a depth of at least 1 foot over the pipe, and the bedding material must be inspected and approved in writing by the Geotechnical Engineer (a representative of Geocon). The use of gravel is not acceptable unless used in conjunction with filter fabric to prevent the gravel from having direct contact with soil. The remainder of the trench backfill may be derived from onsite soil or approved import soil, compacted as necessary, until the required compaction is obtained. The use of minimum 2-sack slurry is also acceptable as backfill. Prior to placing any bedding materials or pipes, the excavation bottom must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon).

4.4.10 All trench and foundation excavation bottoms must be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon), prior to placing bedding materials, fill, steel, gravel, or concrete.

4.5 Miscellaneous Foundations

4.5.1 Foundations for small outlying structures, such as block walls up to 6 feet high, benches, table, planter walls or trash enclosures, which will not be tied to structures, may be supported on conventional foundations bearing on a minimum of 12 inches of newly placed engineered fill which extends laterally at least 12 inches beyond the foundation area. Where excavation and compaction cannot be performed, foundations may derive support directly in the undisturbed alluvium and should be deepened as necessary to maintain a minimum 12-inch embedment into the recommended bearing materials.

4.5.2 If the soils exposed in the excavation bottom are soft, compaction of the soft soils will be required prior to placing steel or concrete. Compaction of the foundation excavation bottom is typically accomplished with a compaction wheel or mechanical whacker and must be observed and approved by a Geocon representative. Miscellaneous foundations may be designed for a bearing value of 1,500 psf and should be a minimum of 12 inches in width, 24 inches in depth below the lowest adjacent grade and 12 inches into the recommended bearing material. The allowable bearing pressure may be increased by up to one-third for transient loads due to wind or seismic forces.

4.5.3 The maximum expected static settlement for outlying structures supported on a conventional foundation system deriving support in the recommended bearing materials and designed with a maximum bearing pressure of 1,500 psf is estimated to be less than ¼ inch. Settlement of the foundation system is expected to occur on initial application of loading. Differential settlement is not expected to exceed ¼ inch over a distance of 20 feet.

4.5.4 Foundation excavations should be observed and approved in writing by the Geotechnical Engineer (a representative of Geocon West, Inc.), prior to the placement of reinforcing steel and concrete to verify that the excavations and exposed soil conditions are consistent with those anticipated.

4.6 Lateral Design

4.6.1 Resistance to lateral loading may be provided by friction acting at the base of foundations, slabs and by passive earth pressure. An allowable coefficient of friction of 0.35 may be used with the dead load forces in the undisturbed alluvial soils or engineered fill.

4.6.2 Passive earth pressure for the sides of foundations and slabs poured against the alluvial soils or properly compacted engineered fill may be computed as an equivalent fluid having a density of 250 pcf with a maximum earth pressure of 2,500 pcf. When combining passive and friction for lateral resistance, the passive component should be reduced by one-third.

4.7 Exterior Slabs-on-Grade

4.7.1 Exterior concrete slabs-on-grade subject to vehicle loading should be designed in accordance with the recommendations in the *Pavement Recommendations* section of this report (Section 4.8).

4.7.2 Exterior concrete slabs-on-grade for walkways or flatwork, not subject to vehicle loading, should be a minimum of 4 inches thick and minimum slab reinforcement should consist of No. 3 steel reinforcing bars placed 18 inches on center in both horizontal directions. Steel reinforcing should be positioned vertically near the slab midpoint. Prior to construction of slabs, the upper 12 inches of subgrade should be moisture conditioned to near optimum moisture content and properly compacted to at least 95 percent relative compaction, as determined by ASTM Test Method D 1557 (latest edition). Crack control joints should be spaced at intervals not greater than 10 feet and should be constructed using saw-cuts or other methods as soon as practical following concrete placement. Crack control joints should extend a minimum depth of one-fourth the slab thickness. Construction joints should be designed by the project structural engineer.

4.7.3 No special subgrade presaturation is required prior to placement of concrete. However, the slab and foundation subgrade should be sprinkled as necessary; to maintain a moist condition as would be expected in any concrete placement.

4.7.4 The recommendations of this report are intended to reduce the potential for cracking of slabs due to settlement. However, even with the incorporation of the recommendations presented herein, foundations and slabs-on-grade may exhibit some cracking due to minor soil movement and/or concrete shrinkage. The occurrence of concrete shrinkage cracks is independent of the supporting soil characteristics. Their occurrence may be reduced and/or controlled by limiting the slump of the concrete, proper concrete placement and curing, and by the placement of crack control joints at periodic intervals, in particular, where re-entrant slab corners occur.

4.8 Pavement Recommendations

4.8.1 Where new paving is to be placed, it is recommended that all existing fill and soft or unsuitable alluvium be excavated and properly compacted for paving support. The client should be aware that excavation and compaction of all existing artificial fill and soft alluvium in the area of new paving is not required; however, paving constructed over existing unsuitable material may experience increased settlement and/or cracking, and may therefore have a shorter design life and increased maintenance costs. As a minimum, the upper 12 inches of paving subgrade should be scarified, moisture conditioned to near optimum moisture content, and properly compacted to at least 95 percent relative compaction, as determined by ASTM Test Method D 1557 (latest edition).

4.8.2 The following typical pavement sections are based on an assumed R-value of 20. Pavement thicknesses presented in the table on the following page were determined following procedures outlined in the *California Highway Design Manual* (Caltrans) for pavements with a 20-year design life. If pavement sections for Traffic Indices other than those listed below are required, Geocon should be contacted to provide additional recommendations.

NEW FLEXIBLE PAVEMENT SECTION

Location	Traffic Index (TI)	Minimum Asphalt Concrete Thickness (inches)	Minimum Aggregate Subbase Thickness (inches)	Full Asphalt Section Thickness – No Aggregate Subbase (inches)
Playground	3.0	3.0	4.0	3.5
Automobile Parking & Drive Aisles	4.0	3.0	4.0	5.0
Trash Truck & Fire Lanes	7.0	4.0	12.5	9.5

4.8.3 Asphalt concrete should conform to Section 203-6 of the Greenbook. Aggregate base materials should be approved by LAUSD and conform to LAUSD standard specifications. The use of Crushed Miscellaneous Base (CMB) is not acceptable.

4.8.4 Unless specifically designed and evaluated by the project structural engineer, where exterior concrete paving will be utilized for support of vehicles, it is recommended that the concrete be a minimum of 6 inches of concrete reinforced with No. 3 steel reinforcing bars placed 18 inches on center in both horizontal directions. Concrete paving supporting vehicular traffic should be underlain by a minimum of 4 inches of aggregate base and a properly compacted subgrade. The subgrade and base material should be compacted to 95 percent relative compaction, respectively, as determined by ASTM Test Method D 1557 (latest edition).

4.8.5 The performance of pavements is highly dependent upon providing positive surface drainage away from the edge of pavements. Ponding of water on or adjacent to the pavement will likely result in saturation of the subgrade materials and subsequent cracking, subsidence, and pavement distress. If planters are planned adjacent to paving, it is recommended that the perimeter curb be extended at least 12 inches below the bottom of the aggregate base to minimize the introduction of water beneath the paving.

4.9 Temporary Excavations

4.9.1 Excavations up to 5 feet in height may be required for construction of the proposed improvements. The excavations are expected to expose artificial fill and alluvium, which are suitable for vertical excavations up to 5 feet where loose soils or caving sands are not present or where not surcharged by adjacent traffic or structures.

4.9.2 Vertical excavations greater than 5 feet or where surcharged by existing structures will require sloping or shoring measures in order to provide a stable excavation. Where sufficient space is available, temporary unsurcharged embankments could be sloped back at a uniform 1:1 (H:V) slope gradient or flatter up to maximum height of 10 feet. A uniform slope does not have a vertical portion.

4.9.3 If excavations in close proximity to an existing adjacent structure or utility are required, special excavation measures may be required, such as slot cutting or shoring, may be necessary in order to maintain lateral support of existing improvements. Continuous vertical excavation adjacent to and which extend below the surcharge area of an existing foundation could remove vertical and lateral support from the existing footings and are not permitted. Recommendations for special temporary excavation measures can be provided under a separate cover, as the project progresses.

4.9.4 Where temporary construction slopes are utilized, the top of the slope should be barricaded to prevent vehicles and storage loads at the top of the slope within a horizontal distance equal to the height of the slope. If the temporary construction slopes are to be maintained during the rainy season, berms are suggested along the tops of the slopes where necessary to prevent runoff water from entering the excavation and eroding the slope faces. The soils exposed in the cut slopes should be inspected during excavation by our personnel and the contractor's competent person so that modifications of the slopes can be made if variations in the soil conditions occur. All excavations should be stabilized within 30 days of initial excavation.

4.10 Stormwater Infiltration

4.10.1 During the site exploration on February 5 and 6, 2025, five borings were utilized to perform percolation testing. The borings were excavated to the depths listed in the table below. Slotted casing was placed in the borings, and the annular space between the casing and excavation were filled with sand. The borings were then filled with water to pre-saturate the soils. On February 5 through 6, 2025, the casings were refilled with water and percolation test readings were performed after repeated flooding of the cased excavation.

4.10.2 Based on the test results, the field-measured percolation rate and the design infiltration rate are provided in the following table. The Reduction Factor (RF), to convert the field-measured percolation rate to an infiltration rate, is also shown in the table below. This value has been calculated in accordance with the Small Diameter Boring Infiltration Test Procedure in the County of Los Angeles Department of Public Works GMED *Guidelines for Design, Investigation, and Reporting Low Impact Development Stormwater Infiltration* (June 2021). Calculations of the percolation rate, reduction factor, and infiltration rate are provided on Figures 5 through 11.

Boring	Infiltration Depth (ft)	Field Measured Percolation Rate (in/hour)	Reduction Factor (RF)	Design Infiltration Rate (in / hour)
B3	3 – 5	2.11	3	0.70
B4	4 – 5	1.04	3	0.35
B5	2.5 – 5	0.96	3	0.32
B6	2.5 – 5	2.64	3	0.88
B7	3 – 5	1.13	3	0.38

4.10.3 Based on the test method utilized (Small Diameter Boring), the reduction factor RF_t may be taken as 1.0 in the infiltration system design. Based on the number of tests performed and consistency of the soils throughout the site, it is suggested that the reduction factor RF_v be taken as 1.0. In addition, provided proper maintenance is performed to minimize long-term siltation and plugging, the reduction factor RF_s may be taken as 1.0. Additional correction factors may be required and should be applied by the engineer in responsible charge of the design of the stormwater infiltration system and based on applicable guidelines.

4.10.4 The results of the percolation testing indicate that the infiltration rate of the site soils at the depths and locations listed in the table above are conducive to infiltration and suitable for infiltration of stormwater.

4.10.5 It is our further opinion that infiltration of stormwater and will not induce excessive hydro-consolidation (see Figures B3 and B4), will not create a perched groundwater condition, will not affect soil structure interaction of existing or proposed foundations due to expansive soils, will not saturate soils supported by existing or proposed retaining walls. Resulting settlements are anticipated to be less than ¼ inch, if any.

4.10.6 The infiltration system must be located such that the closest distance between an adjacent foundation is at least 15 feet in all directions from the zone of saturation. The zone of saturation may be assumed to project downward from the discharge of the infiltration facility at a gradient of 1:1. Additional property line or foundation setbacks may be required by the governing jurisdiction and should be incorporated into the stormwater infiltration system design as necessary.

4.10.7 Where the 15-foot horizontal setback cannot be maintained between the infiltration system and an adjacent footing, and the infiltration system penetrates below the foundation influence line, the proposed stormwater infiltration system must be designed to resist the surcharge from the adjacent foundation. The foundation surcharge line may be assumed to project down away from the bottom of the foundation at a 1:1 gradient. The stormwater infiltration system must still be sufficiently deep to maintain the 15-foot vertical offset between the bottom of the footing and the zone of saturation.

4.10.8 Subsequent to the placement of the infiltration system, it is acceptable to backfill the resulting void space between the excavation sidewalls and the infiltration system with minimum two-sack slurry provided the slurry is not placed in the infiltration zone. It is recommended that pea gravel be utilized adjacent to the infiltration zone so communication of water to the soil is not hindered.

4.11 Surface Drainage

4.11.1 Proper surface drainage is critical to the future performance of the project. Uncontrolled infiltration of irrigation excess and storm runoff into the soils can adversely affect the performance of the planned improvements. Saturation of a soil can cause it to lose internal shear strength and increase its compressibility, resulting in a change in the original designed engineering properties. Proper drainage should be maintained at all times.

4.11.2 All site drainage should be collected and controlled in non-erosive drainage devices. Drainage should not be allowed to pond anywhere on the site, and especially not against any foundation or retaining wall. The site should be graded and maintained such that surface drainage is directed away from structures in accordance with 2022 CBC 1804.4 or other applicable standards. In addition, drainage should not be allowed to flow uncontrolled over any descending slope. Discharge from downspouts, roof drains and scuppers are not recommended onto unprotected soils within 5 feet of the building perimeter. Planters which are located adjacent to foundations should be sealed to prevent moisture intrusion into the soils providing foundation support. Landscape irrigation is not recommended within 5 feet of the building perimeter footings except when enclosed in protected planters.

4.11.3 Positive site drainage should be provided away from structures, pavement, and the tops of slopes to swales or other controlled drainage structures. Pavement areas should be fine graded such that water is not allowed to pond.

4.11.4 Landscaping planters immediately adjacent to paved areas are not recommended due to the potential for surface or irrigation water to infiltrate the pavement's subgrade and base course. Either a subdrain, which collects excess irrigation water and transmits it to drainage structures, or impervious above-grade planter boxes should be used. In addition, where landscaping is planned adjacent to the pavement, it is recommended that consideration be given to providing a cutoff wall along the edge of the pavement that extends at least 12 inches below the base material.

4.12 Plan Review

4.12.1 Grading and foundation plans (if required) should be reviewed by the Geotechnical Engineer (a representative of Geocon West, Inc.), prior to finalization to verify that the plans have been prepared in substantial conformance with the recommendations of this report and to provide additional analyses or recommendations.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. The firm that performed the geotechnical investigation for the project should be retained to provide testing and observation services during construction to provide continuity of geotechnical interpretation and to check that the recommendations presented for geotechnical aspects of site development are incorporated during site grading, construction of improvements, and excavation of foundations. If another geotechnical firm is selected to perform the testing and observation services during construction operations, that firm should prepare a letter indicating their intent to assume the responsibilities of project geotechnical engineer of record. A copy of the letter should be provided to the regulatory agency for their records. In addition, that firm should provide revised recommendations concerning the geotechnical aspects of the proposed development, or a written acknowledgement of their concurrence with the recommendations presented in our report. They should also perform additional analyses deemed necessary to assume the role of Geotechnical Engineer of Record.

2. The recommendations of this report pertain only to the site investigated and are based upon the assumption that the soil conditions do not deviate from those disclosed in the investigation. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that anticipated herein, Geocon Incorporated should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous or corrosive materials was not part of the scope of services provided by Geocon Incorporated.

3. This report is issued with the understanding that it is the responsibility of the owner or his representative to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project and incorporated into the plans, and the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

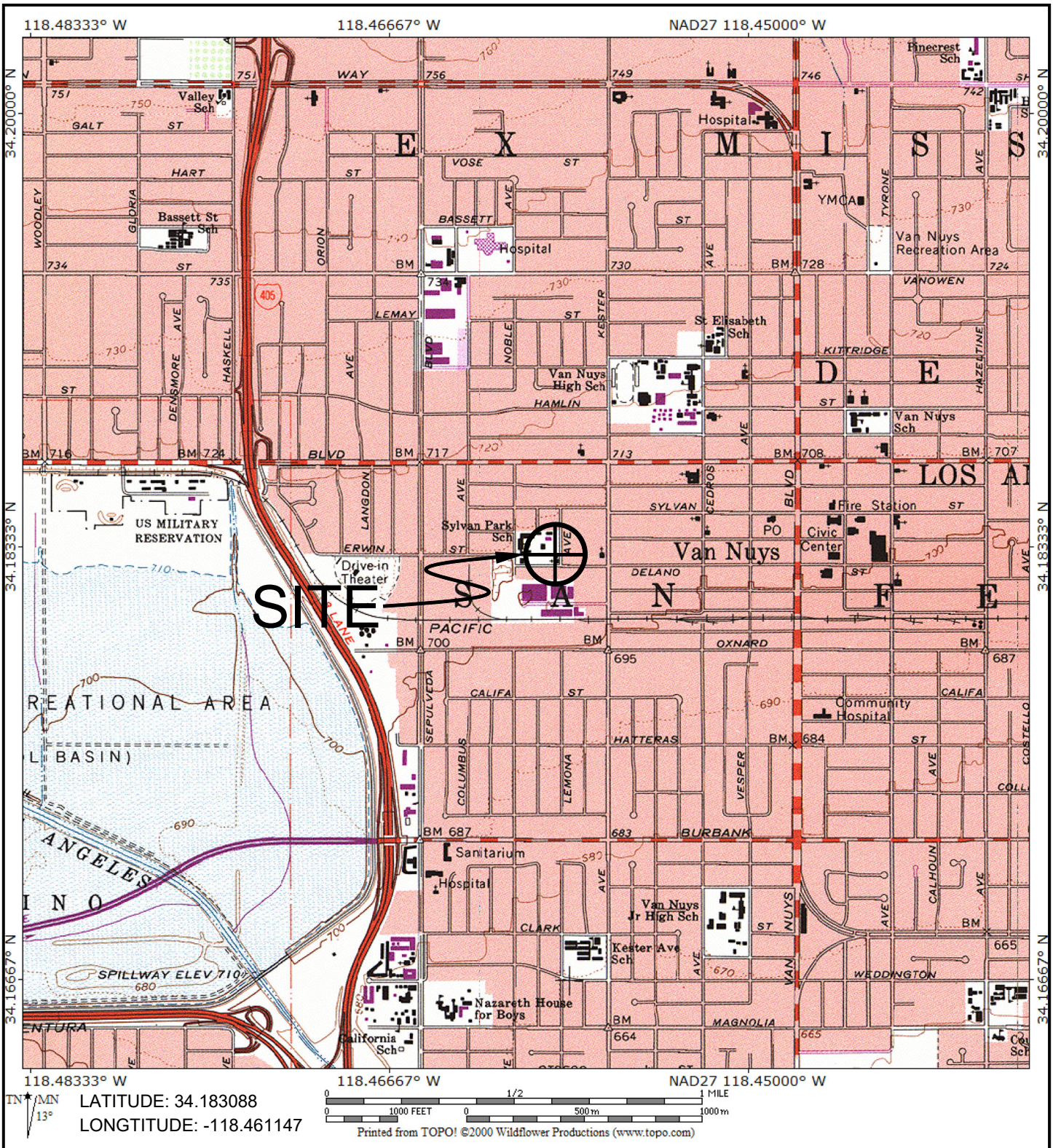
4. The findings of this report are valid as of the date of this report. However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of three years.

LIST OF REFERENCES

1. California Division of Mines and Geology, 1998, *Seismic Hazard Evaluation of the Van Nuys 7.5-Minute Quadrangle, Los Angeles County, California,* Open File Report 008.

2. California Geological Survey, 2012, *Geologic Compilation of Quaternary Surficial Deposits in Southern California, Los Angeles 30' X 60' Quadrangle*, A Project for the Department of Water Resources by the California Geological Survey, Compiled from existing sources by Trinda L. Bedrossian, CEG and Peter D. Roffers, CGS Special Report 217, Plate 9, Scale 1:100,000.

3. Los Angeles County Department of Public Works, 2024, Ground Water Wells Website, https://dpw.lacounty.gov/general/wells/.



REFERENCE: U.S.G.S. TOPOGRAPHIC MAPS, 7.5 MINUTE SERIES, VAN NUYS, CA QUADRANGLE

GEOCON
W E S T, I N C.

ENVIRONMENTAL GEOTECHNICAL MATERIALS
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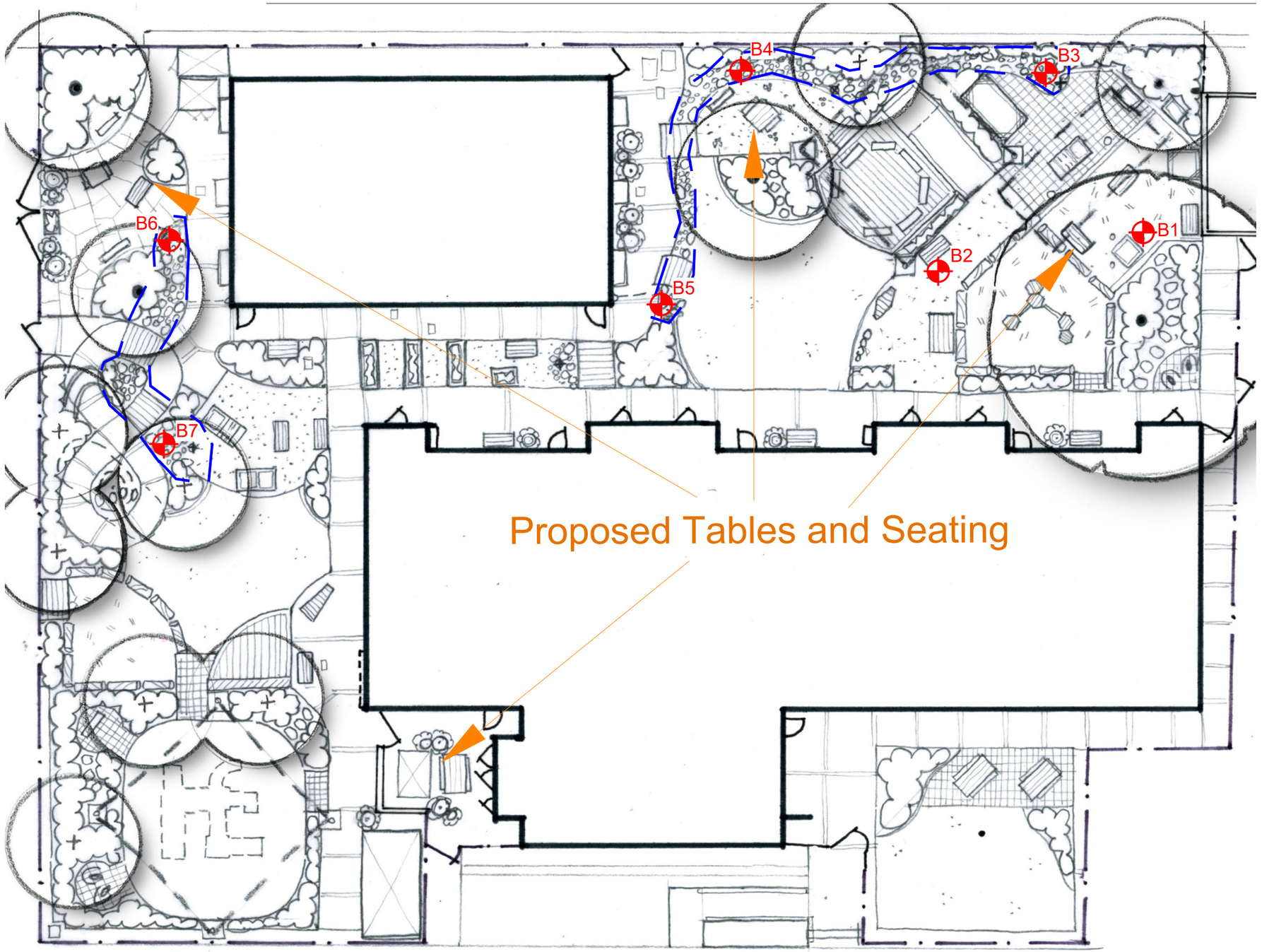
PHONE (818) 841-8388 - FAX (818) 841-1704

DRAFTED BY: MR	CHECKED BY: HHD

VICINITY MAP

LAUSD Sylvan Park EEC
15011 Delano Street
Van Nuys, CA 91411

MARCH 2025	PROJECT NO. A8326-06-107C	FIG. 1



LEGEND

B7 Approximate Location of Boring

Proposed Bioswales

NORTH

0 15 30

GEOCON WEST, INC.

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DRAFTED BY: MR	CHECKED BY: HHD

SITE PLAN

LAUSD SYLVAN PARK EEC
15011 DELANO STREET
VAN NUYS, CALIFORNIA

MARCH 2025	PROJECT NO. A8326-06-107C	FIG. 2

BORING PERCOLATION TEST FIELD LOG

Date:	Wednesday, February 5, 2025		**Boring/Test Number:**	Boring 3 / Test 1	
Project Number:	A8326-06-107C		**Diameter of Boring:**	3.5	inches
Project Location:	15011 Delano St		**Diameter of Casing:**	2	inches
Earth Description:	ML		**Depth of Boring:**	5	feet
Tested By:	MR		**Depth to Invert of BMP:**	3	feet
Liquid Description:	Water		**Depth to Water Table:**	25	feet
Measurement Method:	Sounder		**Depth to Initial Water Depth (d_1):**	36	inches
Start Time for Pre-Soak:	9:30 AM		**Water Remaining in Boring (Y/N):**	Yes	
Start Time for Standard:	10:30 AM		**Standard Time Interval Between Readings:**	30 min	

Reading Number	Time Start (hh:mm)	Time End (hh:mm)	Elapsed Time Δtime (min)	Water Drop During Standard Time Interval, Δd (in)	Soil Description Notes Comments
1	10:30 AM	10:40 AM	10	13.3	
2	11:00 AM	11:10 AM	10	12.1	
3	11:30 AM	11:40 AM	10	11.3	
4	12:00 PM	12:10 PM	10	10.3	
5	12:30 PM	12:40 PM	10	10.4	
6	1:00 PM	1:10 PM	10	10.1	Stabilized Readings
7	1:30 PM	1:40 PM	10	10.0	Achieved with Readings
8	2:00 PM	2:10 PM	10	10.0	6, 7, and 8

MEASURED PERCOLATION RATE & DESIGN INFILTRATION RATE CALCULATIONS*

* Calculations Below Based on Stabilized Readings Only

Boring Radius, r: 1.75 inches

Test Section Height, h: 24.0 inches

$$Test\ Section\ Surface\ Area, A = 2\pi rh + \pi r^2$$

A = **274** in^2

$$Discharged\ Water\ Volume, V = \pi r^2 \Delta d$$

$$Percolation\ Rate = \left(\frac{V/A}{\Delta T}\right)$$

Reading 6	V =	**97**	in^3	Percolation Rate =	**2.13**	inches/hour
Reading 7	V =	**96**	in^3	Percolation Rate =	**2.10**	inches/hour
Reading 8	V =	**96**	in^3	Percolation Rate =	**2.10**	inches/hour

Measured Percolation Rate = **2.11** inches/hour

Reduction Factors

Small Diameter Boring, RF_t = 1

Site Variability, RF_v = 1

Long Term Siltation, RF_s = 1

$$Total\ Reduction\ Factor, RF = RF_t + RF_v + RF_s$$

Total Reduction Factor = 3

Design Infiltration Rate

$$Design\ Infiltration\ Rate = Measured\ Percolation\ Rate\ /RF$$

Design Infiltration Rate = **0.70** inches/hour

FIGURE 3

BORING PERCOLATION TEST FIELD LOG

Date:	Wednesday, February 5, 2025		**Boring/Test Number:**	Boring 4 / Test 1	
Project Number:	A8326-06-107C		**Diameter of Boring:**	3.5	inches
Project Location:	15011 Delano St		**Diameter of Casing:**	2	inches
Earth Description:	ML		**Depth of Boring:**	5	feet
Tested By:	MR		**Depth to Invert of BMP:**	4	feet
Liquid Description:	Water		**Depth to Water Table:**	25	feet
Measurement Method:	Sounder		**Depth to Initial Water Depth (d_1):**	48	inches
Start Time for Pre-Soak:	9:45 AM		**Water Remaining in Boring (Y/N):**	No	
Start Time for Standard:	10:45 AM		**Standard Time Interval Between Readings:**	10 min	

Reading Number	Time Start (hh:mm)	Time End (hh:mm)	Elapsed Time Δtime (min)	Water Drop During Standard Time Interval, Δd (in)	Soil Description Notes Comments
1	10:45 AM	10:55 AM	10	4.9	
2	11:15 AM	11:25 AM	10	3.7	
3	11:45 AM	11:55 AM	10	3.5	
4	12:15 PM	12:25 PM	10	3.0	
5	12:45 PM	12:55 PM	10	2.8	
6	1:15 PM	1:25 PM	10	2.6	Stabilized Readings
7	1:45 PM	1:55 PM	10	2.5	Achieved with Readings
8	2:15 PM	2:25 PM	10	2.5	6, 7, and 8

MEASURED PERCOLATION RATE & DESIGN INFILTRATION RATE CALCULATIONS*

* Calculations Below Based on Stabilized Readings Only

Boring Radius, r: 1.75 inches

Test Section Height, h: 12.0 inches

$$Test\ Section\ Surface\ Area, A = 2\pi rh + \pi r^2$$

A = **142** in^2

$$Discharged\ Water\ Volume, V = \pi r^2 \Delta d$$

$$Percolation\ Rate = \left(\frac{V/A}{\Delta T}\right)$$

Reading 6	V =	**25**	in^3	Percolation Rate =	**1.08**	inches/hour
Reading 7	V =	**24**	in^3	Percolation Rate =	**1.03**	inches/hour
Reading 8	V =	**24**	in^3	Percolation Rate =	**1.03**	inches/hour

Measured Percolation Rate = **1.04** inches/hour

Reduction Factors

Small Diameter Boring, RF_t = 1

Site Variability, RF_v = 1

Long Term Siltation, RF_s = 1

$$Total\ Reduction\ Factor, RF = RF_t + RF_v + RF_s$$

Total Reduction Factor = 3

Design Infiltration Rate

$$Design\ Infiltration\ Rate = Measured\ Percolation\ Rate\ /RF$$

Design Infiltration Rate = **0.35** inches/hour

FIGURE 4

BORING PERCOLATION TEST FIELD LOG

Date:	Thursday, February 6, 2025		**Boring/Test Number:**	Boring 5 / Test 1	
Project Number:	A8326-06-107C		**Diameter of Boring:**	3.5	inches
Project Location:	15011 Delano St		**Diameter of Casing:**	2	inches
Earth Description:	ML		**Depth of Boring:**	5	feet
Tested By:	MR		**Depth to Invert of BMP:**	2.5	feet
Liquid Description:	Water		**Depth to Water Table:**	25	feet
Measurement Method:	Sounder		**Depth to Initial Water Depth (d_1):**	36	inches
Start Time for Pre-Soak:	9:30 AM		**Water Remaining in Boring (Y/N):**	No	
Start Time for Standard:	10:30 AM		**Standard Time Interval Between Readings:**	10 min	

Reading Number	Time Start (hh:mm)	Time End (hh:mm)	Elapsed Time Δtime (min)	Water Drop During Standard Time Interval, Δd (in)	Soil Description Notes Comments
1	10:30 AM	10:40 AM	10	6.1	
2	10:45 AM	10:55 AM	10	5.8	
3	11:05 AM	11:15 AM	10	5.4	
4	11:20 AM	11:30 AM	10	5.0	
5	11:35 AM	11:45 AM	10	4.9	
6	11:50 AM	12:00 PM	10	4.6	Stabilized Readings
7	12:10 PM	12:20 PM	10	4.6	Achieved with Readings
8	12:30 PM	12:40 PM	10	4.6	6, 7, and 8

MEASURED PERCOLATION RATE & DESIGN INFILTRATION RATE CALCULATIONS*

* Calculations Below Based on Stabilized Readings Only

Boring Radius, r: 1.75 inches

Test Section Height, h: 24.0 inches

$$Test\ Section\ Surface\ Area, A = 2\pi rh + \pi r^2$$

A = **274** in^2

$$Discharged\ Water\ Volume, V = \pi r^2 \Delta d$$

$$Percolation\ Rate = \left(\frac{V/A}{\Delta T}\right)$$

Reading 6	V =	**44**	in^3	Percolation Rate =	**0.96**	inches/hour
Reading 7	V =	**44**	in^3	Percolation Rate =	**0.96**	inches/hour
Reading 8	V =	**44**	in^3	Percolation Rate =	**0.96**	inches/hour

Measured Percolation Rate = **0.96** inches/hour

Reduction Factors

Small Diameter Boring, RF_t = 1

Site Variability, RF_v = 1

Long Term Siltation, RF_s = 1

$$Total\ Reduction\ Factor, RF = RF_t + RF_v + RF_s$$

Total Reduction Factor = 3

Design Infiltration Rate

$$Design\ Infiltration\ Rate = Measured\ Percolation\ Rate\ /RF$$

Design Infiltration Rate = **0.32** inches/hour

FIGURE 5

BORING PERCOLATION TEST FIELD LOG

Date:	Thursday, February 6, 2025		**Boring/Test Number:**	Boring 6 / Test 1	
Project Number:	A8326-06-107C		**Diameter of Boring:**	3.5	inches
Project Location:	15011 Delano St		**Diameter of Casing:**	2	inches
Earth Description:	ML		**Depth of Boring:**	5	feet
Tested By:	MR		**Depth to Invert of BMP:**	2.5	feet
Liquid Description:	Water		**Depth to Water Table:**	25	feet
Measurement Method:	Sounder		**Depth to Initial Water Depth (d_1):**	30	inches
Start Time for Pre-Soak:	10:15 AM		**Water Remaining in Boring (Y/N):**	No	
Start Time for Standard:	11:15 AM		**Standard Time Interval Between Readings:**	10 min	

Reading Number	Time Start (hh:mm)	Time End (hh:mm)	Elapsed Time Δtime (min)	Water Drop During Standard Time Interval, Δd (in)	Soil Description Notes Comments
1	11:15 AM	11:25 AM	10	18.7	
2	11:25 AM	11:35 AM	10	17.3	
3	11:35 AM	11:45 AM	10	16.2	
4	11:55 AM	12:05 PM	10	15.8	
5	12:10 PM	12:20 PM	10	15.7	
6	12:25 PM	12:35 PM	10	15.6	Stabilized Readings
7	12:40 PM	12:50 PM	10	15.5	Achieved with Readings
8	12:55 PM	1:05 PM	10	15.5	6, 7, and 8

MEASURED PERCOLATION RATE & DESIGN INFILTRATION RATE CALCULATIONS*

* Calculations Below Based on Stabilized Readings Only

Boring Radius, r: 1.75 inches

Test Section Height, h: 30.0 inches

$$Test\ Section\ Surface\ Area, A = 2\pi rh + \pi r^2$$

A = **339** in^2

$$Discharged\ Water\ Volume, V = \pi r^2 \Delta d$$

$$Percolation\ Rate = \left(\frac{V/A}{\Delta T}\right)$$

Reading 6	V =	**150**	in^3	Percolation Rate =	**2.65**	inches/hour
Reading 7	V =	**149**	in^3	Percolation Rate =	**2.63**	inches/hour
Reading 8	V =	**149**	in^3	Percolation Rate =	**2.63**	inches/hour

Measured Percolation Rate = **2.64** inches/hour

Reduction Factors

Small Diameter Boring, RF_t = 1

Site Variability, RF_v = 1

Long Term Siltation, RF_s = 1

$$Total\ Reduction\ Factor, RF = RF_t + RF_v + RF_s$$

Total Reduction Factor = 3

Design Infiltration Rate

$$Design\ Infiltration\ Rate = Measured\ Percolation\ Rate\ /RF$$

Design Infiltration Rate = **0.88** inches/hour

FIGURE 6

BORING PERCOLATION TEST FIELD LOG

Date:	Thursday, February 6, 2025		**Boring/Test Number:**	Boring 7 / Test 1	
Project Number:	A8326-06-107C		**Diameter of Boring:**	3.5	inches
Project Location:	15011 Delano St		**Diameter of Casing:**	2	inches
Earth Description:	SM		**Depth of Boring:**	5	feet
Tested By:	MR		**Depth to Invert of BMP:**	3	feet
Liquid Description:	Water		**Depth to Water Table:**	25	feet
Measurement Method:	Sounder		**Depth to Initial Water Depth (d_1):**	36	inches
Start Time for Pre-Soak:	10:20 AM		**Water Remaining in Boring (Y/N):**	No	
Start Time for Standard:	11:20 AM		**Standard Time Interval Between Readings:**	10 min	

Reading Number	Time Start (hh:mm)	Time End (hh:mm)	Elapsed Time Δtime (min)	Water Drop During Standard Time Interval, Δd (in)	Soil Description Notes Comments
1	11:20 AM	11:30 AM	10	7.4	
2	11:35 AM	11:45 AM	10	6.6	
3	11:50 AM	12:00 PM	10	6.4	
4	12:05 PM	12:15 PM	10	5.8	
5	12:25 PM	12:35 PM	10	5.5	
6	12:45 PM	12:55 PM	10	5.4	Stabilized Readings
7	1:05 PM	1:15 PM	10	5.4	Achieved with Readings
8	1:20 PM	1:30 PM	10	5.3	6, 7, and 8

MEASURED PERCOLATION RATE & DESIGN INFILTRATION RATE CALCULATIONS*

* Calculations Below Based on Stabilized Readings Only

Boring Radius, r: 1.75 inches

Test Section Height, h: 24.0 inches

$$Test\ Section\ Surface\ Area, A = 2\pi rh + \pi r^2$$

A = **274** in^2

$$Discharged\ Water\ Volume, V = \pi r^2 \Delta d$$

$$Percolation\ Rate = \left(\frac{V/A}{\Delta T}\right)$$

Reading 6	V =	**52**	in^3	Percolation Rate =	**1.14**	inches/hour
Reading 7	V =	**52**	in^3	Percolation Rate =	**1.14**	inches/hour
Reading 8	V =	**51**	in^3	Percolation Rate =	**1.11**	inches/hour

Measured Percolation Rate = **1.13** inches/hour

Reduction Factors

Small Diameter Boring, RF_t = 1

Site Variability, RF_v = 1

Long Term Siltation, RF_s = 1

$$Total\ Reduction\ Factor, RF = RF_t + RF_v + RF_s$$

Total Reduction Factor = 3

Design Infiltration Rate

$$Design\ Infiltration\ Rate = Measured\ Percolation\ Rate\ /RF$$

Design Infiltration Rate = **0.38** inches/hour

FIGURE 7

APPENDIX A

APPENDIX A
FIELD INVESTIGATION

The site was explored on February 5 and 6, 2025, by excavating seven 3½-inch-diameter borings using manual hand auger drilling equipment to a maximum depth of 6 feet beneath the ground surface. Representative and relatively undisturbed samples were obtained by driving a 3-inch, O. D., California Modified Sampler into the "undisturbed" soil mass with blows from a slide hammer. The California Modified Sampler was equipped with 1-inch by 2 ⅜-inch diameter brass sampler rings to facilitate soil removal and testing. Bulk samples were also obtained.

The soil conditions encountered in the borings were visually examined, classified and logged in general accordance with the Unified Soil Classification System (USCS). The logs of the borings are presented on Figures A1 through A7. The logs depict the soil and geologic conditions encountered and the depth at which samples were obtained. The logs also include our interpretation of the conditions between sampling intervals. Therefore, the logs contain both observed and interpreted data. We determined the lines designating the interface between soil materials on the logs using visual observations, penetration rates, excavation characteristics and other factors. The transition between materials may be abrupt or gradual. Where applicable, the logs were revised based on subsequent laboratory testing. The approximate locations of the borings are shown on Figure 2.

GEOCON

SOIL BORING NUMBER: B - 1

PROJECT NAME Sylvan ES
PROJECT NUMBER A8326-06-107C
BORING DATE 02/05/2025 **FIGURE NUMBER** A1
LOCATION 15011 Delano, Van Nuys, CA
DRILLING FIRM -
METHOD Cal-Mod **BORING DIAMETER** 3.5 in

LOGGED BY MR
LATITUDE / LONGITUDE -, -
DEPTH 6.00' **SURFACE ELEVATION** N/A
EQUIPMENT Hand Auger
HAMMER TYPE -
HAMMER WEIGHT / DROP - / -

Depth (ft)	Water Levels	Graphic Log	USCS	Material Description	Bulk	Driven	Sample Number	Dry Density (pcf)	Moisture Content (%)
0			Fill	**ARTIFICIAL FILL** (**AC: 3.5" BASE: NONE**) **Silty SAND**, loose, slightly moist, yellowish brown, fine-grained			BULK 0-5'		
2				asphalt section					
			Fill	**Sandy SILT**, loose, slightly moist, light brown, fine-grained, asphalt fragments		■	B1@2.5'	111.9	9.2
4									
			ML	**Sandy SILT**, firm, slightly moist, brown, fine-grained		■	B1@5.5'	107.2	12.0
6				Total depth of boring: 6 feet Fill to 5 feet. No groundwater encountered. Backfilled with soil cuttings and tamped. Patched with AC cold patch.					
8									
10									
12									
14									
16									
18									

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THE STRATIFICATION LINES PRESENTED HEREIN REPRESENT THE APPROXIMATE BOUNDARY BETWEEN EARTH TYPES; THE TRANSITIONS MAY BE GRADUAL.

SOIL BORING NUMBER: B - 2

PROJECT NAME Sylvan ES
LOGGED BY MR
PROJECT NUMBER A8326-06-107C
LATITUDE / LONGITUDE -, -
BORING DATE 02/05/2025
FIGURE NUMBER A2
DEPTH 5.50'
SURFACE ELEVATION N/A
LOCATION 15011 Delano, Van Nuys, CA
DRILLING FIRM -
EQUIPMENT Hand Auger
METHOD Cal-Mod
BORING DIAMETER 3.5 in
HAMMER TYPE -
HAMMER WEIGHT / DROP - / -

Depth (ft)	Water Levels	Graphic Log	USCS	Material Description	Bulk	Driven	Sample Number	Dry Density (pcf)	Moisture Content (%)
			Fill	**ARTIFICIAL FILL** (**AC: 4" BASE: NONE**) **Sandy SILT**, soft, slightly moist, brown, fine-grained, trace gravel			BULK 0-5'		
2				asphalt			B2@2.5'	101.8	8.5
4			ML	**ALLUVIUM** **SILT**, firm, slightly moist, light brown, fine-grained, (????) porosity			B2@5'	99.9	11.0
6				Total depth of boring: 5.5 feet Fill to 4 feet. No groundwater encountered. Backfilled with soil cuttings and tamped. Patched with AC.					
8									
10									
12									
14									
16									
18									

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THE STRATIFICATION LINES PRESENTED HEREIN REPRESENT THE APPROXIMATE BOUNDARY BETWEEN EARTH TYPES; THE TRANSITIONS MAY BE GRADUAL.

SOIL BORING NUMBER: B - 3

PROJECT NAME Sylvan ES
LOGGED BY MR
PROJECT NUMBER A8326-06-107C
LATITUDE / LONGITUDE -, -
BORING DATE 02/05/2025
FIGURE NUMBER A3
DEPTH 5.00'
SURFACE ELEVATION N/A
LOCATION 15011 Delano, Van Nuys, CA
DRILLING FIRM -
EQUIPMENT Hand Auger
METHOD Cal-Mod
BORING DIAMETER 3.5 in
HAMMER TYPE -
HAMMER WEIGHT / DROP - / -

Depth (ft)	Water Levels	Graphic Log	USCS	Material Description	Bulk	Driven	Sample Number
0			Fill	**ARTIFICIAL FILL** (**AC: 3.5" BASE: NONE**) **Silty SAND**, loose, slightly moist, brown, fine-grained			
4			ML	**ALLUVIUM** **Sandy SILT**, firm, slightly moist, light brown, fine-grained			
6				Total depth of boring: 5 feet Fill to 3 feet. No groundwater encountered. Backfilled with soil cuttings and tamped. Patched with AC.			

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THE STRATIFICATION LINES PRESENTED HEREIN REPRESENT THE APPROXIMATE BOUNDARY BETWEEN EARTH TYPES; THE TRANSITIONS MAY BE GRADUAL.

SOIL BORING NUMBER: B - 4

PROJECT NAME Sylvan ES
LOGGED BY MR
PROJECT NUMBER A8326-06-107C
LATITUDE / LONGITUDE -, -
BORING DATE 02/05/2025
FIGURE NUMBER A4
DEPTH 5.00'
SURFACE ELEVATION N/A
LOCATION 15011 Delano, Van Nuys, CA
DRILLING FIRM -
EQUIPMENT Hand Auger
METHOD Cal-Mod
BORING DIAMETER 3.5 in
HAMMER TYPE -
HAMMER WEIGHT / DROP - / -

Depth (ft)	Water Levels	Graphic Log	USCS	Material Description	Bulk	Driven	Sample Number
0			Fill	**ARTIFICIAL FILL** (**AC: 3" BASE: NONE**) **Silty SAND**, loose, slightly moist, brown, fine-grained, trace coarse-grained			
2				asphalt			
4			ML	**ALLUVIUM** **Sandy SILT**, firm, slightly moist, light brown, fine-grained			
6				Total depth of boring: 5 feet Fill to 4 feet. No groundwater encountered. Backfilled with soil cuttings and tamped. Patched with AC.			
8							
10							
12							
14							
16							
18							

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THE STRATIFICATION LINES PRESENTED HEREIN REPRESENT THE APPROXIMATE BOUNDARY BETWEEN EARTH TYPES; THE TRANSITIONS MAY BE GRADUAL.

GEOCON

SOIL BORING NUMBER: B - 5

PROJECT NAME Sylvan ES
LOGGED BY MR
PROJECT NUMBER A8326-06-107C
LATITUDE / LONGITUDE -, -
BORING DATE 02/06/2025
FIGURE NUMBER A5
DEPTH 5.00'
SURFACE ELEVATION N/A
LOCATION 15011 Delano, Van Nuys, CA
DRILLING FIRM -
EQUIPMENT Hand Auger
METHOD Cal-Mod
BORING DIAMETER 3.5 in
HAMMER TYPE -
HAMMER WEIGHT / DROP - / -

Depth (ft)	Water Levels	Graphic Log	USCS	Material Description	Bulk	Driven	Sample Number
			Fill	**ARTIFICIAL FILL** (**AC: 3" BASE: NONE**) **Sandy SILT**, soft, slightly moist, brown, fine-grained			
2			ML	**ALLUVIUM** **Sandy SILT**, firm, slightly moist, light brown, fine-grained			
4							
6				Total depth of boring: 5 feet Fill to 1.5 feet. No groundwater encountered. Backfilled with soil cuttings and tamped. Patched with AC.			
8							
10							
12							
14							
16							
18							

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THE STRATIFICATION LINES PRESENTED HEREIN REPRESENT THE APPROXIMATE BOUNDARY BETWEEN EARTH TYPES; THE TRANSITIONS MAY BE GRADUAL.

GEOCON

SOIL BORING NUMBER: B - 6

PROJECT NAME Sylvan ES
LOGGED BY MR
PROJECT NUMBER A8326-06-107C
LATITUDE / LONGITUDE -, -
BORING DATE 02/06/2025
FIGURE NUMBER A6
DEPTH 5.00'
SURFACE ELEVATION N/A
LOCATION 15011 Delano, Van Nuys, CA
DRILLING FIRM -
EQUIPMENT Hand Auger
METHOD Cal-Mod
BORING DIAMETER 3.5 in
HAMMER TYPE -
HAMMER WEIGHT / DROP - / -

Depth (ft)	Water Levels	Graphic Log	USCS	Material Description	Bulk	Driven	Sample Number
0			Fill	**ARTIFICIAL FILL** (**AC: 3.5" BASE: NONE**) **Silty SAND**, loose, slightly moist, brown, fine-grained asphalt			
2			ML	**ALLUVIUM** **Sandy SILT**, firm, slightly moist, light brown, fine-grained			
4							
5				Total depth of boring: 5 feet Fill to 2 feet. No groundwater encountered. Backfilled with soil cuttings and tamped. Patched with AC.			
6							
8							
10							
12							
14							
16							
18							

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THE STRATIFICATION LINES PRESENTED HEREIN REPRESENT THE APPROXIMATE BOUNDARY BETWEEN EARTH TYPES; THE TRANSITIONS MAY BE GRADUAL.

SOIL BORING NUMBER: B - 7

PROJECT NAME Sylvan ES
LOGGED BY MR
PROJECT NUMBER A8326-06-107C
LATITUDE / LONGITUDE -, -
BORING DATE 02/06/2025
FIGURE NUMBER A7
DEPTH 5.00'
SURFACE ELEVATION N/A
LOCATION 15011 Delano, Van Nuys, CA
DRILLING FIRM -
EQUIPMENT Hand Auger
METHOD Cal-Mod
BORING DIAMETER 3.5 in
HAMMER TYPE -
HAMMER WEIGHT / DROP - / -

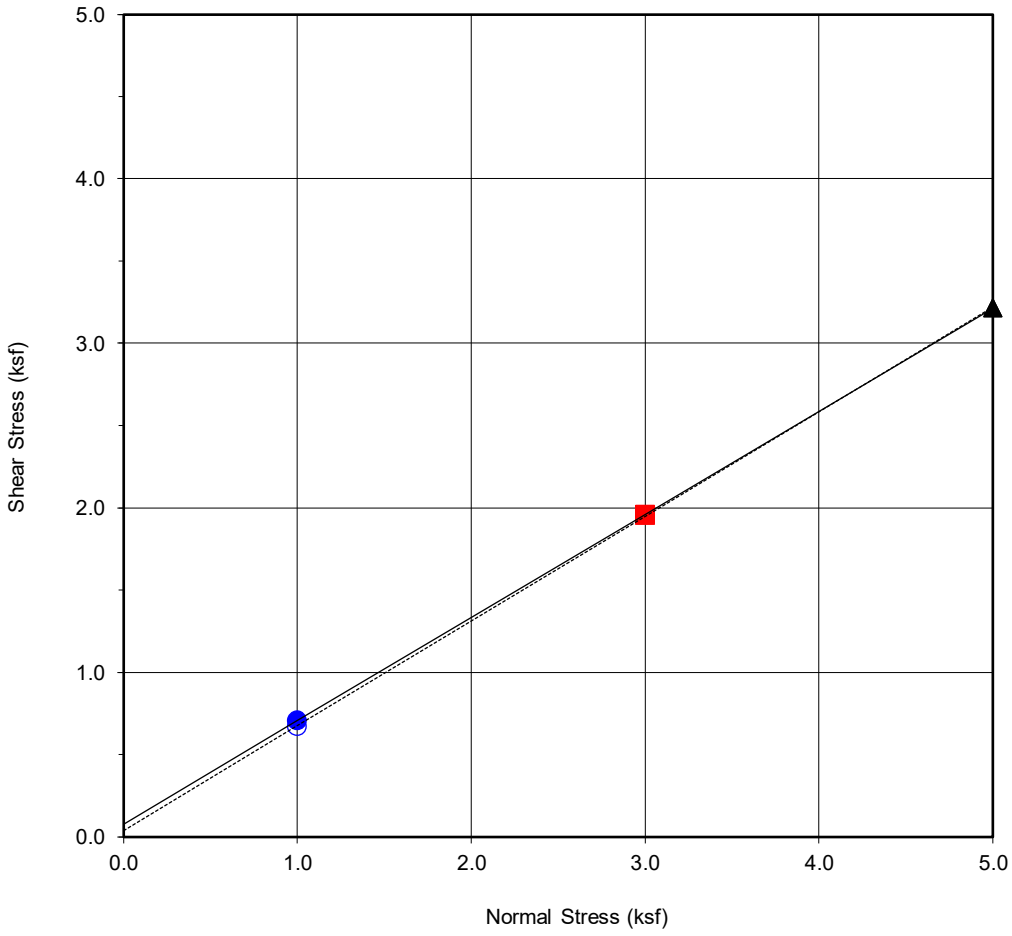
Depth (ft)	Water Levels	Graphic Log	USCS	Material Description	Bulk	Driven	Sample Number
			Fill	**ARTIFICIAL FILL** (**AC: 3.5" BASE: NONE**) **Silty SAND**, loose, slightly moist, brown, fine-grained			
2			ML	**ALLUVIUM** **Sandy SILT**, firm, slightly moist, light brown, fine-grained, trace clay			
4							
6				Total depth of boring: 5 feet Fill to 1.5 feet. No groundwater encountered. Backfilled with soil cuttings and tamped. Patched with AC.			
8							
10							
12							
14							
16							
18							

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES. THE STRATIFICATION LINES PRESENTED HEREIN REPRESENT THE APPROXIMATE BOUNDARY BETWEEN EARTH TYPES; THE TRANSITIONS MAY BE GRADUAL.

APPENDIX B

APPENDIX B
LABORATORY TESTING

We performed laboratory tests in accordance with generally accepted test methods of the American Society for Testing and Materials (ASTM) or other suggested procedures. We tested selected soil samples for in-place dry density/moisture content, expansion index, maximum dry density, corrosivity, consolidation, and direct shear strength. The results of the laboratory tests are summarized in Figures B1 through B7. The in-place dry density and moisture content of the samples tested are presented on the boring logs, Appendix A.



Boring No.	**B1B2**
Sample No.	**B1B2@0-5'**
Depth (ft)	**0-5'**
Sample Type:	Bulk

Soil Identification:		
Silty Sand (SM)		
Strength Parameters		
	C (psf)	ϕ (^{o})
Peak	79	32
Ultimate	40	32

Normal Stress (kip/ft²)	1	3	5
Peak Shear Stress (kip/ft²)	● 0.71	■ 1.96	▲ 3.22
Shear Stress @ End of Test (ksf)	○ 0.67	□ 1.96	△ 3.22
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	10.1	10.1	10.0
Initial Dry Density (pcf)	111.0	111.0	111.0
Initial Degree of Saturation (%)	52.4	52.4	52.2
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	17.0	16.2	15.9

GEOCON

DIRECT SHEAR TEST RESULTS

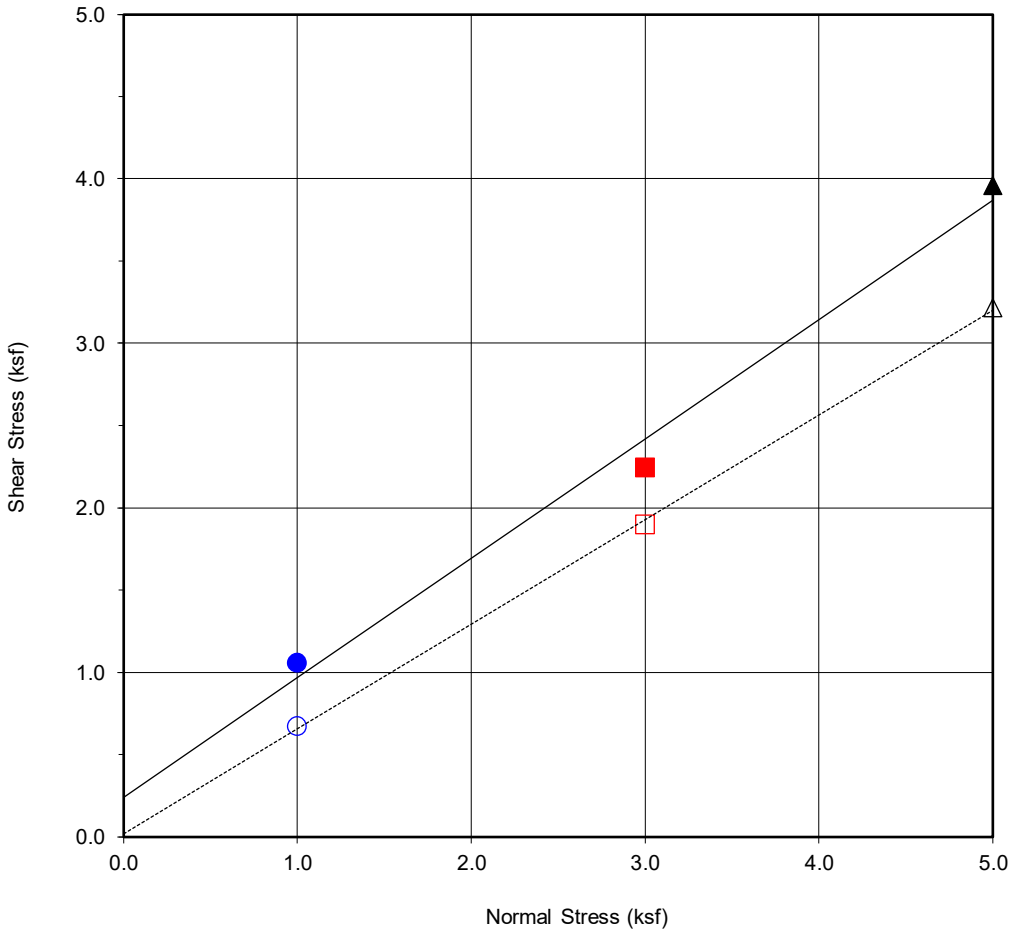
Consolidated Drained ASTM D-3080

Checked by: MR

Project No.: A8326-06-107C

LAUSD Sylvan Park EEC
15011 Delano Street
Van Nuys, CA

March 2025 Figure B1



Boring No.	**B1**
Sample No.	**B1@5.5**
Depth (ft)	**5.5**
Sample Type:	Ring

Soil Identification:		
Sandy Silt (ML)		
Strength Parameters		
	C (psf)	ϕ (^{o})
Peak	242	36
Ultimate	20	32

Normal Stress (kip/ft²)	1	3	5
Peak Shear Stress (kip/ft²)	● 1.06	■ 2.24	▲ 3.96
Shear Stress @ End of Test (ksf)	○ 0.67	□ 1.90	△ 3.22
Deformation Rate (in./min.)	0.05	0.05	0.05
Initial Sample Height (in.)	1.0	1.0	1.0
Ring Inside Diameter (in.)	2.375	2.375	2.375
Initial Moisture Content (%)	15.2	16.9	16.2
Initial Dry Density (pcf)	105.8	106.1	113.1
Initial Degree of Saturation (%)	69.2	77.6	89.3
Soil Height Before Shearing (in.)	1.2	1.2	1.2
Final Moisture Content (%)	22.8	22.2	20.5

GEOCON

DIRECT SHEAR TEST RESULTS

Consolidated Drained ASTM D-3080

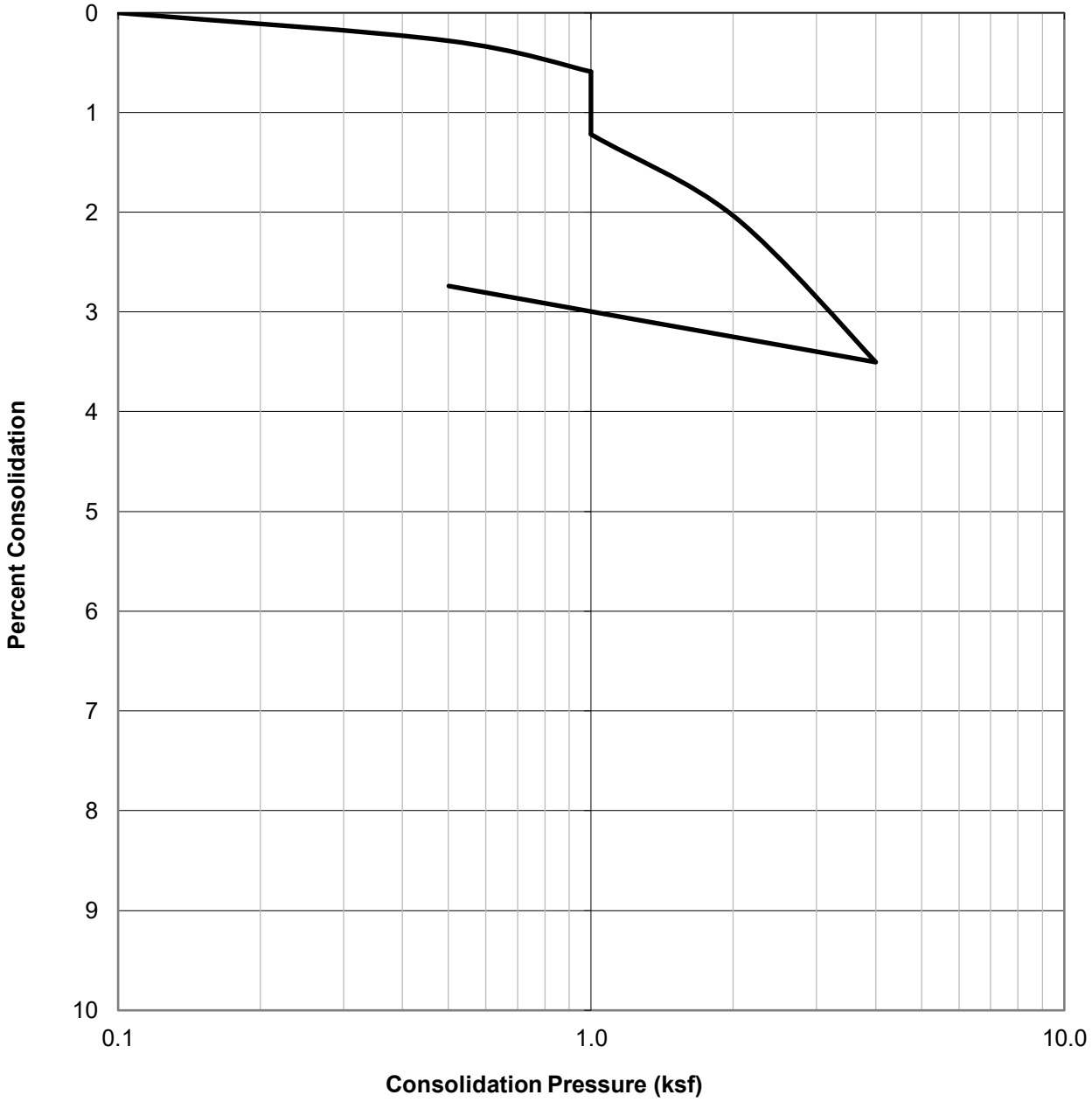
Checked by: MR

Project No.: A8326-06-107C

LAUSD Sylvan Park EEC
15011 Delano Street
Van Nuys, CA

March 2025 Figure B2

WATER ADDED AT 1.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B1@5.5	Sandy Silt (ML)	103.7	12.0	19.8

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

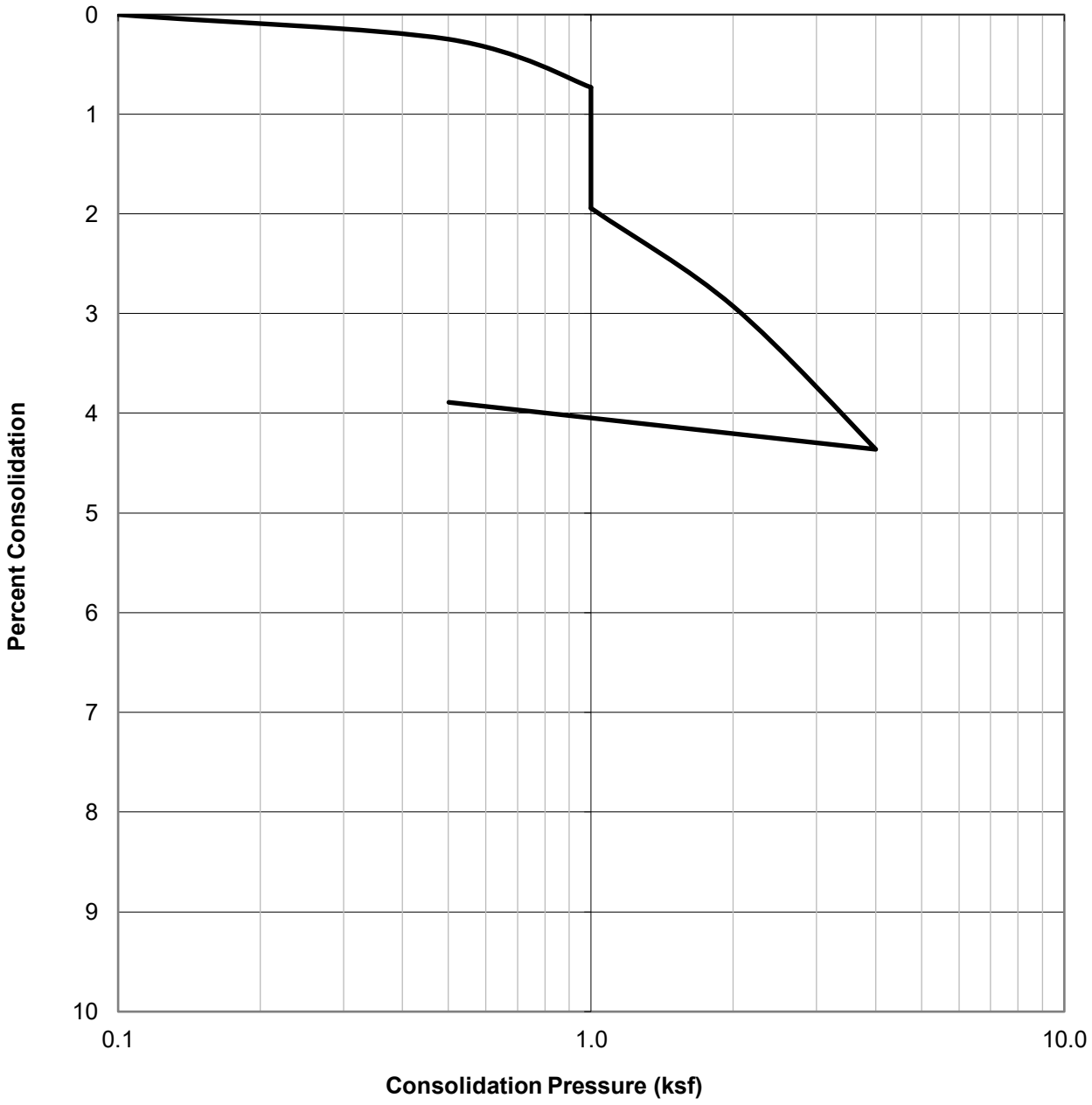
Checked by: MR

Project No.: A8326-06-107C

LAUSD Sylvan Park EEC
15011 Delano Street
Van Nuys, CA

March 2025 Figure B3

WATER ADDED AT 1.0 KSF



SAMPLE ID.	SOIL TYPE	DRY DENSITY (PCF)	INITIAL MOISTURE (%)	FINAL MOISTURE (%)
B2@5	Silt (ML)	77.6	11.0	23.0

GEOCON

CONSOLIDATION TEST RESULTS

ASTM D-2435

Checked by: MR

Project No.: A8326-06-107C

LAUSD Sylvan Park EEC
15011 Delano Street
Van Nuys, CA

March 2025 Figure B4

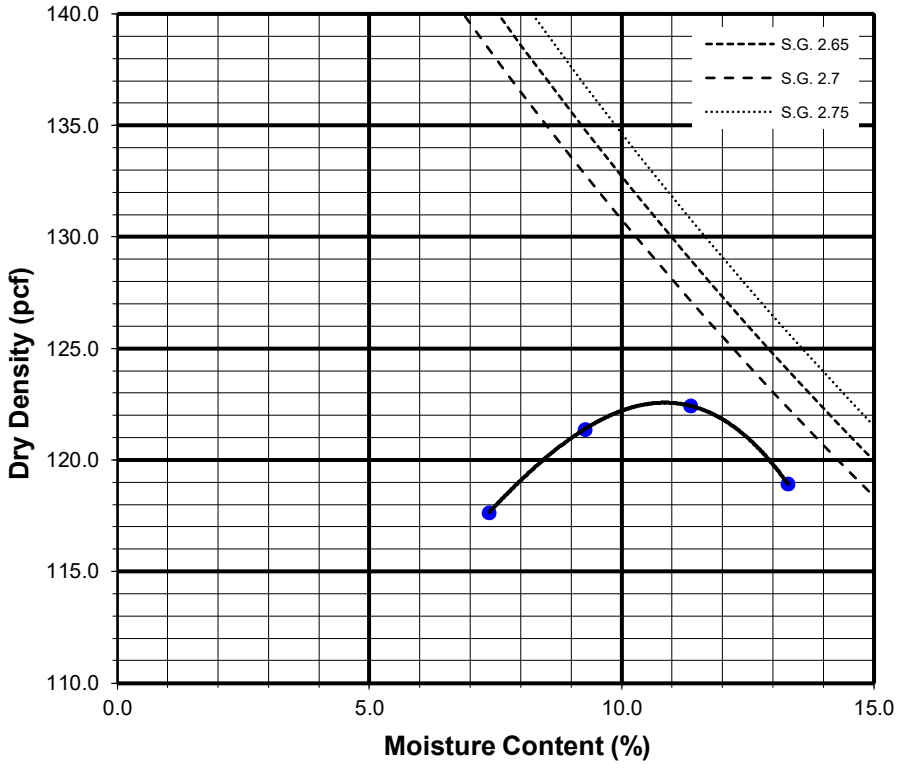
Sample No:

B1B2@0-5'	Silty Sand (SM)

TEST NO.		1	2	3	4	5	6
Wt. Compacted Soil + Mold	(g)	6104	6199	6255	6231		
Weight of Mold	(g)	4196	4196	4196	4196	4196	
Net Weight of Soil	(g)	1908	2003	2059	2035	-4196	
Wet Weight of Soil + Cont.	(g)	761.6	717.9	703.8	718.1		
Dry Weight of Soil + Cont.	(g)	719.5	669.6	645.9	649.5		
Weight of Container	(g)	148.5	148.5	136.4	133.6		
Moisture Content	(%)	7.4	9.3	11.4	13.3		
Wet Density	(pcf)	126.3	132.6	136.3	134.7	-277.8	
Dry Density	(pcf)	117.6	121.4	122.4	118.9		

Maximum Dry Density (pcf)	**123.0**

Optimum Moisture Content (%)	**10.5**



Preparation Method: A

GEOCON

COMPACTION CHARACTERISTICS USING MODIFIED EFFORT TEST RESULTS

ASTM D-1557

Checked by: MR

Project No.: A8326-06-107C

LAUSD Sylvan Park EEC
15011 Delano Street
Van Nuys, CA

March 2025 Figure B5

B1B2@0-5

MOLDED SPECIMEN		BEFORE TEST	AFTER TEST
Specimen Diameter	(in.)	4.0	4.0
Specimen Height	(in.)	1.0	1.0
Wt. Comp. Soil + Mold	(gm)	761.8	798.9
Wt. of Mold	(gm)	367.8	367.8
Specific Gravity	(Assumed)	2.7	2.7
Wet Wt. of Soil + Cont.	(gm)	491.8	798.9
Dry Wt. of Soil + Cont.	(gm)	461.1	353.7
Wt. of Container	(gm)	191.8	367.8
Moisture Content	(%)	11.4	21.9
Wet Density	(pcf)	118.8	129.9
Dry Density	(pcf)	106.7	106.5
Void Ratio		0.6	0.6
Total Porosity		0.4	0.4
Pore Volume	(cc)	76.0	80.7
Degree of Saturation	(%) [S_{meas}]	53.5	96.0

Date	Time	Pressure (psi)	Elapsed Time (min)	Dial Readings (in.)
3/11/2025	10:00	1.0	0	0.337
3/11/2025	10:10	1.0	10	0.336
Add Distilled Water to the Specimen				
3/12/2025	10:00	1.0	1430	0.3585
3/12/2025	11:00	1.0	1490	0.3585

Expansion Index (EI meas) =	22.5
Expansion Index (Report) =	**23**

Expansion Index, EI_{50}	CBC CLASSIFICATION *	UBC CLASSIFICATION **
0-20	Non-Expansive	Very Low
21-50	Expansive	Low
51-90	Expansive	Medium
91-130	Expansive	High
>130	Expansive	Very High

* Reference: 2022 California Building Code, Section 1803.5.3

** Reference: 1997 Uniform Building Code, Table 18-I-B.

GEOCON

EXPANSION INDEX TEST RESULTS

ASTM D-4829

Checked by: MR

Project No.: A8326-06-107C

LAUSD Sylvan Park EEC
15011 Delano Street
Van Nuys, CA

March 2025 Figure B6

SUMMARY OF LABORATORY WATER SOLUBLE SULFATE TEST RESULTS
AASHTO T290 ASTM C1580

Sample No.	Water Soluble Sulfate (% SO_4)	Sulfate Exposure
B1B2@0-5	0.034	S0

GEOCON

CORROSIVITY TEST RESULTS

Checked by: MR

Project No.: A8326-06-107C

LAUSD Sylvan Park EEC
15011 Delano Street
Van Nuys, CA

March 2025 Figure B7

SECTION 00 3126 (00625)
OWNER'S LIST OF PRE-QUALIFIED ASBESTOS ABATEMENT SUBCONTRACTORS
December 22, 2025

COMPANY	CONTACT	ADDRESS	PHONE	FAX	VENDOR #	DOSH #	LIC. #	Prequal Expiration	E-mail
American Services Group of California, Inc.	Carl Adams Samuel Adams	300 S. Walnut Avenue, #403 San Dimas, CA 91773	909-592-6007	909-592-8660	1000010281	736	769061	12/6/2026	Samuel.Adams@ASGofCA.com
Asbestos Instant Response, Inc.	Gabriel Cristofaro	3517 W. Washington Boulevard Los Angeles, CA 90018	323-733-0508	323-732-3414	1000002152	812	795278	5/6/2026	joy@airinc.ws gabriel@airinc.ws alma@airinc.ws miguel@airinc.ws ari@airinc.ws
ATI Restoration, LLC	Tom Sandoval Julian Pacheco	3360 E. La Palma Avenue Anaheim, CA 92806	714-493-5313	714-283-9995	1000013123	213	1075543	8/28/2026	tom.sandoval@atirestoration.com julian.pacheco@atirestoration.com
Eagle Contracting, Inc.	Rey Rivera	8204 Garfield Avenue Bell Gardens, CA 90201	562-249-8131	562-381-8131	1000002679	1044	970089	5/15/2026	reyr@eaglecontractinginc.net tonyv@eaglecontractinginc.net
Janus Corporation	Campbell Scott	2025 Tandem Way Norco, CA 92860	951-479-0700	951-479-0701	1000014521	224	572682	6/12/2026	campbells@januscorp.com
Karcher Environmental, Inc.	Erik Celis Jason Tingley	2300 E. Orangewood Avenue Anaheim, CA 92806	714-385-1490 Ext. 300	714-385-1878	1000000678	045	481416	C21, C22	ecelis@karcherenv.com jtingley@karcherenv.com
Miller Environmental, Inc.	Lauren Quirk	1130 West Trenton Avenue Orange, CA 92867	714-385-0099	714-385-0011	1000003789	741	772797	7/3/2026	lauren@millerenvironmental.com
TRI SPAN, Inc.	Jake Araiza	591 W. Explorer Street Brea, CA 92821	714-257-9680	714-257-9681	1000020505	218	611639	9/25/2026	JakeA@trispaninc.com

FOR ROOFING ONLY:

Eberhard Roofing	Dave Stefko	15220 Raymer Street Van Nuys, CA 91405	818-782-4604	818-782-5099	1000006283	R-023	329087	5/1/2026	dstefko@eberhardco.com

SECTION 00 3148

PROJECT DIRECTORY

1.01 GENERAL

A. This Section provides contact information relative to the Work of the Project.

1.02 SPECIFIC

A.	Name of Project: Project Number(s): Project Description:	Sylvan Park Early Education Center 10374546 / 233171 Outdoor Classroom and Campus Upgrade
B.	Location(s):	15011 Delano St., Van Nuys, CA 91411
C.	OWNER:	Los Angeles Unified School District (LAUSD) Facilities Services Division 333 South Beaudry Avenue, 23rd Floor Los Angeles, CA 90017
D.	OWNER Authorized Representative (OAR):	Maria Lourdes Lachica, ADA PEX (213) 605-1687 / marialourdes.lachica@lausd.net
E.	All Pre-Bid Clarifications shall be directed to:	Maria Lourdes Lachica, ADA PEX (213) 605-1687 / marialourdes.lachica@lausd.net *and* Haebhin Jung, ADA PEX (213) 505-8754 / haebhin.jung@lausd.net
F.	OWNER Consultants:	TBD
G.	ARCHITECT:	Herrick Au LAUSD 333 S. Beaudry Ave., LA, CA, 90017 213-241-3952 Herrick.au@lausd.net
H.	ARCHITECT Consultants:	Virgil Aoanan – Civil Engineer 631 S. Atlantic Blvd., Monerey Park, CA, 91754 Allen Compton – Landscape 448 S. Hill Street, Suite 708, LA, CA, 90013 Gilad Nahari – Mechanical, Plumbing & Fire Sprinkler 110 East 9th Street, Suite C841, LA, CA, 90079-2827 John D. Gumawid – Electrical 11020 Sun Center Drive, Suite 100, Rancho Cordova, CA 95670 Paul Van Benschoten – Structural 6320 Canoga Ave, Suite 1300, Woodland Hills, CA, 91367
I.	Distribution of Bidding Documents:	Crisp Imaging 1829 S. Main Street Los Angeles, CA 90015 Business Hours: 7:00AM – 6:00PM

		Phone: (213) 741-9560 Additional locations are listed at www.crispimg.com
J.	Prequalification/ Safety Requirements/ Bidding Information/ Addenda/ Notices to Proceed/ Stop Notices:	LAUSD – Facilities Construction Contracts 333 S. Beaudry Ave., 28th Floor Los Angeles, CA 90017 Business Hours: 7:30 AM – 4:00PM Phone: (213) 241-1188 Email address: BVDBContracts@lausd.net
K	OCIP Administrator	LAUSD – Division of Risk Management & Insurance Services 333 South Beaudry Avenue, 28th Floor Los Angeles, CA 90017-5141 Phone: (213) 241-1843 Fax: (213) 241-8956
L.	Prevailing Wage Issues / Information:	LAUSD – Labor Compliance Program 333 South Beaudry Avenue 21st Floor Los Angeles, CA 90017 Phone: (213) 241-4665
M.	Project Stabilization Agreement	LAUSD – Project Stabilization Agreement Administration 333 South Beaudry Avenue, 23rd Floor Los Angeles, CA 90017 Fax: (213) 241-8356 Email: psa@lausd.net
N.	Filing of Claims/ Copies	Los Angeles Unified School District Executive Officer of the Board 333 S. Beaudry Avenue, 24th Floor Los Angeles, CA 90017 Copies to: OAR as listed in item D. above. Office of the General Counsel – FSD Los Angeles Unified School District 333 South Beaudry Avenue, 23rd Floor Los Angeles, CA 90017 LAUSD – Construction Claims Unit 333 South Beaudry Avenue, 23rd Floor Los Angeles, CA 90017
0.	Owner contact as per Section 00 2113, 1.06, C.	Los Angeles Unified School District Facilities Environmental Technical Unit 1240 South Naomi Avenue Los Angeles CA 90021 (213) 745-1450
P.	Owner contact as per Section 08 7100, 2.03, C, 1, b.	Los Angeles Unified School District Central Lock Shop 1240 South Naomi Avenue Los Angeles CA 90021 (213) 745-1650

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Anaheim Location	
4051 E. La Palma, Suite F, Anaheim, CA 92807 Hours: 7:00 am - 6:00 pm	714.279.3088
Irvine Location	
14 Goddard Irvine, CA 92618 Hours: 7:00 am - 5:30 pm	949.768.8066
Los Angeles Location	
1829 S. Main St., Los Angeles, CA 90015 Hours: 7:00 am - 6:00 pm	213.741.9560
San Diego Location	
8375 Camino Santa Fe #B, San Diego, CA 92121 Hours: 7:30 am - 6:00 pm	858.535.0607
Santa Monica Location	
706 Santa Monica Blvd., Santa Monica, CA 90401 Hours: 7:30 am - 5:30 pm	310.395.3291
Seattle Location	
3317 3rd Avenue South, Seattle, WA 98134 Hours: 7:00 am - 6:00 pm	206.309.9224
Torrance Location	
2221 W. 190th St., Unit A, Torrance, CA 90504 Hours: 7:30 am - 6:00 pm	310.327.3776
Inglewood Location	
426 W. Florence Ave, Inglewood, CA 90301 Hours: 7:00 am - 6:00 pm	310.981.4090
Oakland Location	
555 12th Street, Suite 104, Oakland, CA 94607 Hours: 7:30 am - 6:00 pm	510.844.5494
Murrieta Location	
41571 Corning Pl # 112, Murrieta, CA 92562 Hours: 8:00 am - 5:00 pm	951.677.0097

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END OF SECTION

SECTION 00 4001

REQUIRED BID FORMS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. As stated in Section 00 2113 – Instructions to Bidders, this Section contains the original bid forms and supplemental bid forms that shall be utilized by the bidder in preparing and submitting the bid, except for the document referenced in section 1.02B below.

1.02 ORIGINAL BID FORMS FOR USE BY BIDDER

A. Fill out and submit the following original bid forms for your **electronic** bid:

1. Document 00 4100 - Bid and Acceptance Form (signature required)

2. Addendum of Provisions Required of Federally Funded Contracts – FEMA Awards (signatures required)

3. Document 00 4313 - Bid Security Form (signatures required)

4. Document 00 4336 - Subletting and Subcontracting Fair Practices Act List

5. Document 00 4340 - Disabled Veteran Business Enterprise (DVBE) School Facilities Program

6. Document 00 4500 - Certification Requirements (signature required)

7. Document 00 4519 - Non-Collusion Affidavit (signature required)

B. Bidder shall submit a copy of a current and valid SBE certificate if you are a Small Business Enterprise.

C. Bidder shall submit Small Business Enterprises compliance requirements and additional supplemental subcontractor information within five (5) days from the date of OWNER request. The document for actual use by the bidder will be provided to the bidder by the OWNER. Failure to submit within five (5) days may render the bid non-responsive.

END OF SECTION

DOCUMENT 00 4100

BID AND ACCEPTANCE FORM

Bidder Name: _____

1.01 BID SUBMISSION INSTRUCTIONS

A. **Submit this form, along with all other required bid forms, electronically as indicated in Section 00 2113 - Instructions to Bidders. The bid shall be submitted by the Bid Due Date.**

B. Bidders shall keep the Bid and Acceptance Form intact and return all pages when submitting bid.

C. Failure to submit the complete Bid and Acceptance Form may invalidate the bid.

1.02 BID DUE DATE: **BEFORE 2:00 P.M. ON THURSDAY, JUNE 25, 2026**

The only acceptable time of receipt is the date/time stamp imprinted upon the bid package by the representative of Facilities Contracts.

1.03 PROJECT IDENTIFICATION:

A. The undersigned is familiar with the terms of the Contract, the local conditions affecting performance of Contract, the cost of the Work at the place where the Work is to be done, and with the Drawings, Specifications and all other Bidding Documents. The undersigned hereby proposes and agrees to perform, within the Contract Time stipulated, the Work including all of its component parts; and to provide and furnish any and all of the labor, materials, tools, apparatus, facilities, expendable equipment, and all utility and transportation services necessary to perform the Work in accordance with the Contract and complete all Work in a workmanlike manner for: **SYLVAN PARK EARLY EDUCATION CENTER, OUTDOOR CLASSROOM AND CAMPUS UPGRADE (BV)(PSA), COLIN ID #10374546 / SCOPE ID #233171**

in strict conformity with the Drawings and Specifications prepared by:

Facilities Services Division
Los Angeles Unified School District

1.04 Bidder acknowledges the following Addendum:

Number Number Number Number Number Number Number Number Number Number Number Number
_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____

1.05 BASE BID (MUST BE FULLY COMPLETED BY BIDDER)

Bidder will complete the Work in accordance with the Contract Documents for the following base bid amount:

($_____)
(numeric figures)

1.06 N/A

1.07 The base bid amount includes all Contract Allowances, if any, as set forth in the Specifications or as described in Section 01 2100 - Allowances. **N/A**

1.08 The base bid amount includes all applicable taxes and does not include Federal Excise Tax as set forth in Article 6.38 of the General Conditions.

1.09 BASIS OF AWARD OF CONTRACT:

A. Pursuant to Public Contract Code 20119, OWNER shall award the contract to the bidder whose bid is determined to be the best value to the District. To determine the best value contractor, the District shall divide each bidder's price by its qualifications score. The lowest resulting cost per quality point will represent the best value bid.

B. The use of Public Contract Code Section 20119 does not preclude the OWNER from adding to or deducting from the Contract to be awarded any of the additive or deductive bid items identified in the bid solicitation.

A. OWNER RESERVES THE RIGHT TO REJECT ANY AND ALL BIDS.

Article 1 - Scope of Work

The CONTRACTOR shall perform, within the time stipulated in the Contract Documents, all of which are incorporated herein and shall provide all labor, materials, equipment, tools, utility services, transportation and everything else necessary to complete in a workmanlike manner, and in exact compliance with the terms of the Contract Documents, all of the Work required in connection with the following titled Project:

SYLVAN PARK EARLY EDUCATION CENTER – OUTDOOR CLASSROOM AND CAMPUS UPGRADE

2610077 / 10374546 / 233171

[Contract Number/Project Number(s) – to be filled in by Facilities Contracts]

Article 2 - Time for Completion

The Work shall be commenced on the date stated in the OWNER Notice to Proceed. The time period for Contract Completion of the Work shall be **560** calendar days from the date set forth in the Notice to Proceed issued by the OWNER, and in accordance with the Contract regarding milestones and liquidated damages.
TIME IS OF THE ESSENCE.

Article 3 - Hold Harmless, Defense and Indemnification

To the fullest extent permitted by law, the CONTRACTOR, even if it is without fault itself, shall indemnify, defend and hold harmless the OWNER, the Board, the OCIP Administrator, and its and their respective officers, employees, program administrators, representatives, agents and consultants, from every liability, claim, loss, cause of action, action, demand, penalty, cost, expense (including without limitation, attorneys' fees) related to or arising from:

1. Any injury to person or property sustained by the CONTRACTOR or by any person, firm, or corporation, employed directly or indirectly by it upon or in connection with the Work;

2. Any injury to person or property sustained by any person, firm, or corporation, caused by any act, neglect, default, or omission of the CONTRACTOR or any person, firm, or corporation, directly or indirectly employed by it upon or in connection with the Work, whether the injury or damage occurs upon or adjacent to the Work;

3. The furnishing or use of any copyrighted or uncopyrighted composition, secret process, patented or unpatented invention, article, or appliance under the Contract Documents; and

4. As otherwise provided in the Contract Documents.

The CONTRACTOR at its own cost, expense, and risk, shall defend all legal proceedings that may be brought against all such potential indemnities for any such liability, claim, loss, cause of action, action, demand, penalty, cost and expense, and satisfy any resulting judgment that may be rendered against any of them whether or not the liability, claim, loss, cause of action, action, demand, penalty, cost and expense (including without limitation, attorneys' fees) was actually or allegedly caused wholly or in part through the negligence or other tortious conduct of any of them. OWNER shall have the right to approve counsel proposed for any such defense and shall be consulted with regard to any proposed settlement. This Article 3 is not meant to require the CONTRACTOR to defend, indemnify or hold harmless the potential indemnities from their own active negligence, such as is prohibited by Civil Code Section 2782.

Article 4 - Insurance

The OWNER maintains an Owner Controlled Insurance Program (OCIP). The specific provisions of that program are set forth in the General Conditions. CONTRACTOR will provide its own insurance coverage as to all types of insurance not provided for in the program and relevant to the Project in amounts of coverage and by carriers approved by the OWNER.

Article 5 - Bonding

If the amount of original award of the Contract exceeds TWENTY-FIVE THOUSAND DOLLARS ($25,000.00), the CONTRACTOR shall furnish to the OWNER a Payment Bond (Material and Labor). CONTRACTOR shall also provide a Faithful Performance Bond. Both Bonds shall be for 100% of the Contract Amount and contain the terms and conditions required by Articles 5.16 through 5.17 of the General Conditions. The CONTRACTOR is also required to submit all other bonds as required by the Contract Documents.

Article 6 - Provisions Required by Law Deemed Inserted

Each and every provision of law and clause required by law to be inserted in the Contract Documents shall be deemed to be inserted and the Contract Documents shall be read and enforced as though it were included in the Contract Documents. If through mistake or otherwise any such provision is not inserted, or is not correctly inserted, upon application of either party the Contract Documents shall forthwith be physically amended to make such insertion or correction.

Article 7 - Lead Renovation, Repair & Paint (RRP) Rule Requirements

A. Bidder Requirement

1. The below requirement applies to all District projects at all District sites regardless of the construction date of the building and/or building occupant's age.
2. Bidder must have a valid USEPA Lead-Safe Renovator Firm Certificate.
3. Firms cannot advertise or perform renovation activities covered by RRP Rule without firm certification.
4. Firms that are paid to perform work that disturb paint must be certified. This includes all firms, even sole proprietorships. Firms covered under this requirement are General Contractors, sub-contractors, and Special trade contractors, including but not limited to painters, plumbers, carpenters, electricians, window installers and replacers, telecommunication, remodeling, and repair/maintenance firms.

B. General Requirement

1. The below requirement applies to all District projects at all District sites regardless of the construction date of the building and/or building occupant's age.
2. Contractor (Firm) performing lead-related construction work must possess a current US EPA Lead-Safe Renovator Firm training completion certificate and provide a copy of the USEPA Lead-Safe Renovator Firm Certificate. *The certificate must be submitted prior to starting work.*
3. Each laborer/journeyperson level worker performing lead-related construction work must possess a current USEPA Lead Renovation, Repair and Paint ("RRP") Rule training completion certificate and *provide a copy* of the USEPA Lead Renovation, Repair and Paint ("RRP") Rule Certificate. *The certificate must be submitted prior to starting work.*

Article 8 - Internal Revenue Code Section 179D

For the purposes of this section, the term "CONTRACTOR" shall refer to the Architect-Engineer or other entity with whom the OWNER has entered into the Contract and that would qualify as the entity primarily responsible for designing certain energy efficient improvements for property owned by a Federal, State, or local government or a political subdivision as defined by Internal Revenue Code Section 179D, as amended ("Section 179D").

If this contract pertains to a project that includes energy-efficiency improvements to (a) the interior lighting systems, (b) the heating, cooling, ventilation, and hot water systems, or (c) the building envelope, and CONTRACTOR qualifies as a "Designer" of these improvements, CONTRACTOR may opt to be treated as the taxpayer for the purposes of Section 179D, and if so, shall coordinate the allocation of that deduction as follows:

1. LAUSD has retained an Energy Policy Act ("EPAct") Coordinator to act on its behalf in connection with the allocation of the Section 179D tax deduction. No other companies or individuals are authorized to represent LAUSD in relation to this allocation; only the District's EPAct Coordinator is authorized.

2. LAUSD intends to allocate a portion of the tax deduction to CONTRACTOR, following third-party certification of the required energy savings under Section 179D. In exchange, CONTRACTOR shall provide cash compensation (sometimes referred to as a "rebate") to LAUSD in an amount calculated to yield equal net values for both parties, where net value is defined as the value of the benefit remaining after relevant adjustments are made. (See paragraph 5 below.) The form of the rebate will be a check payable to Los Angeles Unified School District issued within 45 days of CONTRACTOR's receipt of the tax refund or other realization of the tax savings generated by CONTRACTOR's claim of the Section 179D deduction on CONTRACTOR's federal tax return for the year the energy efficiency improvements were placed in service.

3. CONTRACTOR will arrange, at its own expense, for certification by a qualified third party that the installed energy-efficiency property meets the requirements established by Section 179D, and will submit that certification to LAUSD's Facilities Legislation, Grants and Funding office (FLGF) within 15 days of obtaining it.

4. FLGF will submit the certification to the LAUSD Chief Facilities Executive (CFE) along with a completed allocation statement (template attached), which the CFE will sign and submit to CONTRACTOR within 15 days of FLGF's receipt of the certification.

5. CONTRACTOR will submit to the U.S. Internal Revenue Service a tax return (or amended tax return) that includes the Section 179D deduction. Within 15 days of receiving the tax refund or other benefit of the tax deduction, CONTRACTOR will provide all information necessary for EPAct Coordinator to calculate the gross and net values of the tax benefit, where the gross value to LAUSD will be the amount of the check to be issued by CONTRACTOR to LAUSD (i.e. the rebate); the net value, which will be equal for both parties, will be the value of the benefit remaining after all relevant adjustments for each party have been made. CONTRACTOR's information needed for the calculation just mentioned will consist of invoices for legal, accounting, and certification services; an adjustment will also be made for the value of the tax deductibility of CONTRACTOR's rebate to LAUSD. LAUSD's relevant adjustment will consist of its fee and expenses for the EPAct Coordinator. (See attached Sample 179D Assumptions and Calculations.)

6. EPAct Coordinator will provide this calculation to CONTRACTOR so that CONTRACTOR can submit the rebate check to LAUSD. The check must be delivered to FLGF within 45 days of CONTRACTOR's receipt of the tax refund or other realization of the tax savings generated by CONTRACTOR's claim of the Section 179D deduction on CONTRACTOR's federal tax return.

7. CONTRACTOR will remain solely liable for any penalties, interest, or costs that might result from the preparation, submittal, or any other future disposition of its claim of the Section 179D tax deduction. If this contract pertains to a project that includes energy-efficiency improvements to be installed in a building as part of (a) the interior lighting systems, (b) the heating, cooling, ventilation, and hot water systems, or (c) the building envelope, and CONTRACTOR does not qualify as a "Designer" of these improvements according to Section 179D, then CONTRACTOR will identify its Designer subcontractors and the energy-efficiency improvements for which each subcontractor is responsible so that LAUSD can contact them directly regarding possible allocation of LAUSD's Section 179D tax deduction benefits.

BID DATE:_____, 20_____

By_____ (SEAL)
(Firm Name as it appears on Contractor's State License)

_____
(Authorized person to sign bid – print name)

_____
(Signature of authorized person to sign bid)

Business Address: _____

_____

Phone No._____

Fax No._____

Email Address_____

FOR FC USE ONLY
Contract Number **2610077**
☑ **with Plans** ☑ **with Specs**

1.10 ACCEPTANCE

This Contract is made and entered into on the date set forth on Page 4 of this Contract, by and between the Los Angeles Unified School District, by and through its Board of Education (hereinafter the "OWNER"), and

_____,
{Name as it appears on Contractor's State License – to be filled in by OWNER / Facilities Contracts }
_____, a _____.
{sole ownership, partnership, corporation, joint venture, or other}

This Contract is for the purpose of constructing that Project identified as **SYLVAN PARK EARLY EDUCATION CENTER** and commonly referred to as **OUTDOOR CLASSROOM AND CAMPUS UPGRADE (BV)(PSA)**
CONTRACTOR is the lowest responsible bidder in response to an Invitation to Bid issued by the OWNER and represents that it is qualified to perform all of the terms, covenants, promises and conditions of this Contract.

Article 9 - Contract Amount

The OWNER shall pay, and the CONTRACTOR shall accept, in full payment for performance as required by the Contract Documents, the sum of _____
(To be filled in by OWNER / Office of Facilities Contracts)
($_____), subject to any additions or deductions, if any, as provided in the Contract Documents. It is understood and agreed that all applicable taxes are included in the Contract Amount and that the Federal Excise Tax, from which the OWNER is exempt, is not included. The OWNER, upon request, will furnish the CONTRACTOR such Tax Exemption Certificates as may be required by the Manufacturer or Dealer.

All of the above-named Contract Documents are intended to be complementary. Work required by one of the above-named Contract Documents and not by others shall be done as if required by all.

Executed on _____, 20_____ at Los Angeles, California.
(To be filled in by Chief Procurement Officer, Deputy Chief Procurement Officer (Facilities) (up to $20M), Director of Facilities Contracts (up to $10M), Sr. Contract Administration Manager (up to $5M), Contract Administration Manager (up to $2.5M), Assistant Contract Administration Manager (up to $1M), or Contract Administration Analyst (up to $500K))

LOS ANGELES UNIFIED SCHOOL DISTRICT

By:_____
CHIEF PROCUREMENT OFFICER, DEPUTY CHIEF PROCUREMENT OFFICER (FACILITIES), DIRECTOR OF FACILITIES CONTRACTS, SR. CONTRACT ADMINISTRATION MANAGER, CONTRACT ADMINISTRATION MANAGER, ASSISTANT CONTRACT ADMINISTRATION MANAGER, OR CONTRACT ADMINISTRATION ANALYST

BLUE INK SIGNATURE REQUESTED
FAILURE TO SUBMIT THIS FORM OR ANY MODIFICATION(S) TO THIS FORM SHALL RENDER THE BID NON-RESPONSIVE

END OF DOCUMENT

ADDENDUM OF PROVISIONS REQUIRED OF FEDERALLY FUNDED CONTRACTS - FEMA AWARDS[1]

This addendum ("Addendum"), agreed to by both _____ ("Contractor") and the Los Angeles Unified School District ("District") (referred to jointly as "the Parties"), is effective as of the last date of signature by the Parties, below ("Effective Date").
The Parties agree that modifications to Contract No. **2610077**, effective _____ (the "Agreement"), are necessary to ensure compliance with the laws, regulations, and/or policies affecting the District. This Addendum is made a part of and incorporated into the Agreement.

Unless otherwise specified herein, all terms provided in this Addendum shall apply. Should any terms and conditions of this Addendum, unless inapplicable as stated herein or as expressly stated in the Agreement or Addendum thereto, conflict with terms of the original Agreement or any subsequent Amendment, the terms and conditions of this Addendum shall govern.

Contractor acknowledges and agrees that should the District seek federal funds to pay for or reimburse expenses for equipment or services under that certain Agreement, the applicable clauses provided in Appendix II to Part 200-Uniform Administrative Requirements, Cost Principles, and Audits Requirements for Federal Awards (Contract Provisions for Non-Federal Entity Contracts Under Federal Awards) under 2 C.F.R. § 200.326 in addition to certain contract clauses recommended by FEMA shall apply to the Agreement. A list of the required contract provisions and their applicability are provided in Exhibit A, which is attached hereto and incorporated herein. Contractor and the District agree to the following terms and conditions:

1. EQUAL EMPLOYMENT OPPORTUNITY

During the performance of this contract, the Contractor agrees as follows:

(1) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following:

Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The Contractor will, in all solicitations or advertisements for employees

[1] Created 2/2025, based on guidance provided in *Contract Provisions Guide: Navigating Contract Provisions for Recipient and Subrecipient Contracts Under FEMA Awards*, Version 2, Effective October 1, 2024 (FI-21-0001), Procurement Under Grants Division, Federal Emergency Management Agency (FEMA), Department of Homeland Security. https://www.fema.gov/sites/default/files/documents/fema_contract-provisions-guide_fy24.pdf

placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

(3) The Contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the Contractor's legal duty to furnish information.

(4) The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(5) The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(6) The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(7) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(8) The Contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the administering agency may

direct as a means of enforcing such provisions, including sanctions for noncompliance:

Provided, however, that in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

The applicant further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: *Provided,* That if the applicant so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract.

The applicant agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance.

The applicant further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a Contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of the Executive Order. In addition, the applicant agrees that if it fails or refuses to comply with these undertakings, the administering agency may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such applicant; and refer the case to the Department of Justice for appropriate legal proceedings.

2. DAVIS-BACON ACT

a. All transactions regarding this contract shall be done in compliance with the Davis-Bacon Act (40 U.S.C. 3141- 3144, and 3146-3148) and the requirements of 29 C.F.R. pt. 5 as may be applicable. The Contractor shall comply with 40 U.S.C. 3141-3144, and 3146-3148 and the requirements of 29 C.F.R. pt. 5 as applicable.

b. Contractors are required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made

by the Secretary of Labor.

c. Additionally, Contractors are required to pay wages not less than once a week.

3. COPELAND ANTI-KICKBACK ACT

a. Contractor. The Contractor shall comply with 18 U.S.C. §874, 40 U.S.C. § 3145, and the requirements of 29 C.F.R. pt. 3 as may be applicable, which are incorporated by reference into this contract.

b. Subcontracts. The Contractor or subcontractor shall insert in any subcontracts the clause above and such other clauses as FEMA may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime Contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all of these contract clauses.

c. Breach. A breach of the contract clauses above may be grounds for termination of the contract, and for debarment as a Contractor and subcontractor as provided in 29 C.F.R. §5.12."

4. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

a. *Overtime requirements*. No Contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

b. *Violation; liability for unpaid wages; liquidated damages*. In the event of any violation of the clause set forth in paragraph (b)(1) of this section the Contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such Contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (b)(1) of this section, in the sum of $27 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1) of this section.

c. *Withholding for unpaid wages and liquidated damages.* The (write in the name of the Federal agency or the loan or grant recipient) shall upon its own action or upon written request of an authorized representative of the

Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the Contractor or subcontractor under any such contract or any other Federal contract with the same prime Contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime Contractor, such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

d. *Subcontracts*. The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime Contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (4) of this section.

5. RIGHTS TO INVENTIONS MADE UNDER A CONTRACT OR AGREEMENT

a. Standard. If the FEMA award meets the definition of "funding agreement" under 37C.F.R. § 401.2(a) and the non-Federal entity wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that "funding agreement," the non-Federal entity must comply with the requirements of 37 C.F.R. Part 401 (Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements), and any implementing regulations issued by FEMA. See 2 C.F.R. Part 200, Appendix II (F).

b. Applicability. This requirement applies to "*funding agreements*," but it DOES NOT apply to the Public Assistance, Hazard Mitigation Grant Program, Fire Management Assistance Grant Program, Crisis Counseling Assistance and Training Grant Program, Disaster Case Management Grant Program, and Federal Assistance to Individuals and Households – Other Needs Assistance Grant Program, as FEMA awards under these programs do not meet the definition of "funding agreement."

c. Funding Agreement Definition. The regulation at 37 C.F.R. § 401.2(a) defines "funding agreement" as any contract, grant, or cooperative agreement entered into between any Federal agency, other than the Tennessee Valley Authority, and any Contractor for the performance of experimental, developmental, or research work funded in whole or in part by the Federal government. This term also includes any assignment, substitution of parties, or subcontract of any type entered into for the performance of experimental, developmental, or research work under a funding agreement as defined in the first sentence of this paragraph.

6. CLEAN AIR ACT AND THE FEDERAL WATER POLLUTION CONTROL ACT

Clean Air Act

a. The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. § 7401 et seq.

b. The Contractor agrees to report each violation to the District and understands and agrees that the District will, in turn, report each violation as required to assure notification to the Federal Emergency Management Agency, and the appropriate Environmental Protection Agency Regional Office.

c. The Contractor agrees to include these requirements in each subcontract exceeding $150,000 financed in whole or in part with Federal assistance provided by FEMA.

Federal Water Pollution Control Act

a. The Contractor agrees to comply with all applicable standards, orders, or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq.

b. The Contractor agrees to report each violation to the District and understands and agrees that the District will, in turn, report each violation as required to assure notification to the Federal Emergency Management Agency, and the appropriate Environmental Protection Agency Regional Office.

c. The Contractor agrees to include these requirements in each subcontract exceeding $150,000 financed in whole or in part with Federal assistance provided by FEMA.

7. DEBARMENT AND SUSPENSION

Suspension and Debarment

(1) This contract is a covered transaction for purposes of 2 C.F.R. pt. 180 and 2 C.F.R. pt. 3000. As such, the Contractor is required to verify that none of the Contractor's principals (defined at 2 C.F.R. § 180.995) or its affiliates (defined at 2 C.F.R. § 180.905) are excluded (defined at 2 C.F.R. § 180.940) or disqualified (defined at 2 C.F.R. § 180.935).

(2) The Contractor must comply with 2 C.F.R. pt. 180, subpart C and2 C.F.R. pt. 3000, subpart C, and must include a requirement to comply with these regulations in any lower tier covered transaction it enters into.

(3) This certification is a material representation of fact relied upon by the District. If it is later determined that the Contractor did not comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C, in addition to remedies available to the District, the Federal Government may pursue available remedies, including but not limited to suspension and/or

debarment.

(4) The bidder or proposer agrees to comply with the requirements of 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C while this offer is valid and throughout the period of any contract that may arise from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

8. BYRD ANTI-LOBBYING AMENDMENT 31 U.S.C. § 1352

Contractors who apply or bid for an award of $100,000 or more shall file the required certification as shown on Exhibit B to this Addendum. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, officer or employee of Congress, or an employee of a Member of Congress in connection with obtaining any Federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Each tier shall also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the recipient who in turn will forward the certification(s) to the awarding agency.

9. PROCUREMENT OF RECOVERED MATERIALS

a. In the performance of this contract, the Contractor shall make maximum use of products containing recovered materials that are EPA-designated items unless the product cannot be acquired—
   1. Competitively within a timeframe providing for compliance with the contract performance schedule;
   2. Meeting contract performance requirements; or
   3. At a reasonable price.

b. Information about this requirement, along with the list of EPA- designated items, is available at EPA's Comprehensive Procurement Guidelines web site, https://www.epa.gov/smm/comprehensive- procurement-guideline-cpg-program.

c. The Contractor also agrees to comply with all other applicable requirements of Section 6002 of the Solid Waste Disposal Act."

10. PROHIBITION ON CONTRACTING FOR COVERED TELECOMMUNICATIONS EQUIPMENT OR SERVICES

a. Definitions. As used in this clause, the terms backhaul; covered foreign country; covered telecommunications equipment or services; interconnection arrangements; roaming; substantial or essential component; and telecommunications equipment or services have the meaning as defined in FEMA Policy 405-143-1, Prohibitions on Expending

FEMA Award Funds for Covered Telecommunications Equipment or Services, as used in this clause—

b. Prohibitions.

1) Section 889(b) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019, Pub. L. No. 115-232, and 2 C.F.R. § 200.216 prohibit the head of an executive agency on or after Aug.13, 2020, from obligating or expending grant, cooperative agreement, loan, or loan guarantee funds on certain telecommunications products or from certain entities for national security reasons.

2) Unless an exception in paragraph (c) of this clause applies, the contractor and its subcontractors may not use grant, cooperative agreement, loan, or loan guarantee funds from the Federal Emergency Management Agency to:

i. Procure or obtain any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology of any system;

ii. Enter, extend, or renew a contract to procure or obtain any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology of any system;

iii. Enter, extend, or renew contracts with entities that use covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system; or 56 2 C.F.R. Part 200, Appendix II, § K (citing 2 C.F.R. § 200.216).

iv. Provide, as part of its performance of this contract, subcontract, or other contractual instrument, any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system.

c. Exceptions.

1) This clause does not prohibit contractors from providing—

i. A service that connects to the facilities of a third-party, such as backhaul, roaming, or interconnection arrangements; or

ii. Telecommunications equipment that cannot route or redirect user data traffic or permit visibility into any user data or packets that such equipment transmits or otherwise handles.

2) By necessary implication and regulation, the prohibitions also do not apply to: i. Covered telecommunications equipment or services that: a. Are not used as a substantial or essential component of any system; and b. Are not used as critical technology of any system. ii. Other telecommunications equipment or services that are not considered covered telecommunications equipment or services.

d. Reporting requirement.

1) In the event the contractor identifies covered telecommunications equipment or services used as a substantial or essential component of any

system, or as critical technology as part of any system, during contract performance, or the contractor is notified of such by a subcontractor at any tier or by any other source, the contractor shall report the information in paragraph (d)(2) of this clause to the recipient or subrecipient, unless elsewhere in this contract are established procedures for reporting the information.

2) The Contractor shall report the following information pursuant to paragraph (d)(1) of this clause:

i. Within one business day from the date of such identification or notification: The contract number; the order number(s), if applicable; supplier name; supplier unique entity identifier (if known); supplier Commercial and Government Entity (CAGE) code (if known); brand; model number (original equipment manufacturer number, manufacturer part number, or wholesaler number); item description; and any readily available information about mitigation actions undertaken or recommended.

ii. Within 10 business days of submitting the information in paragraph (d)(2)(i) of this clause: Any further available information about mitigation actions undertaken or recommended. In addition, the contractor shall describe the efforts it undertook to prevent use or submission of covered telecommunications equipment or services, and any additional efforts that will be incorporated to prevent future use or submission of covered telecommunications equipment or services.

e. Subcontracts. The Contractor shall insert the substance of this clause, including this paragraph (e), in all subcontracts and other contractual instruments."

11. DOMESTIC PREFERENCE FOR PROCUREMENTS

The Contractor should, to the greatest extent practicable and consistent with law, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States. This includes, but is not limited to, iron, aluminum, steel, cement, and other manufactured products. For purposes of this clause: Produced in the United States means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.

12. BUILD AMERICA, BUY AMERICA ACT (BABAA)

Contractors and their subcontractors who apply or bid for an award for an infrastructure project subject to the domestic preference requirement in the Build America, Buy America Act shall file the required certification with each bid or offer for an infrastructure project, unless a domestic preference requirement is waived by FEMA. Contractors and subcontractors certify that no federal financial assistance funding for infrastructure projects will be provided unless all the iron, steel, manufactured projects, and construction materials used in the project are produced in the United States. BABAA, Pub. L. No. 117-58, §§ 70901-52. Contractors and subcontractors shall also disclose any use of federal financial assistance for infrastructure projects that does not ensure compliance with BABAA domestic preference requirements. Such disclosures shall be

forwarded to the recipient who, in turn, will forward the disclosures to FEMA, the federal agency; subrecipients will forward disclosures to the passthrough entity, who will, in turn, forward the disclosures to FEMA.

13. ACCESS TO RECORDS

a. The following access to records requirements apply to this Agreement:

(1) The Contractor agrees to provide the District, the FEMA Administrator, the Comptroller General of the United States, or any of their authorized representatives access to any books, documents, papers, and records of the Contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts, and transcriptions.

(2) The Contractor agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.

(3) The Contractor agrees to provide the FEMA Administrator or his authorized representatives access to construction or other work sites pertaining to the work being completed under the contract.

(4) In compliance with the Disaster Recovery Act of 2018, the District and the Contractor acknowledge and agree that no language in this contract is intended to prohibit audits or internal reviews by the FEMA Administrator or the Comptroller General of the United States.

14. DHS SEAL, LOGO, AND FLAGS

The Contractor must obtain written permission from DHS prior to using the DHS seals, logos, crests, or reproductions of flags, or likenesses of DHS agency officials. This includes use of DHS component (e.g., FEMA, CISA, etc.) seals, logos, crests, or reproductions of flags, or likenesses of component officials.

15. COMPLIANCE WITH FEDERAL LAW, REGULATIONS, AND EXECUTIVE ORDERS

This is an acknowledgement that FEMA financial assistance may be used to fund all or a portion of the contract. The Contractor will comply with all applicable Federal law, regulations, executive orders, FEMA policies, procedures, and directives.

16. NO OBLIGATION BY FEDERAL GOVERNMENT

The Contractor hereby acknowledges and accepts that the Federal Government is not a party to this contract and is not subject to any obligations or liabilities to the non-Federal entity, Contractor, or any other party pertaining to any matter resulting from the contract.

17. PROGRAM FRAUD AND FALSE OR FRAUDULENT STATEMENTS OR RELATED ACTS

Contractor acknowledges that 31 U.S.C. Chap. 38 (Administrative Remedies for False Claims and Statements) applies to the Contractor's actions pertaining to this contract.

18. SOCIOECONOMIC CONTRACTING

The Contractor is encouraged to take all necessary steps identified in 2 C.F.R. § 200.321(b)(1)- (5) to ensure small businesses, minority businesses, women's business enterprises, veteran owned businesses, and labor surplus area firms are considered when possible and in accordance with applicable law.

19. LICENSE AND DELIVERY OF WORKS SUBJECT TO COPYRIGHT

If applicable, the Contractor grants to the District, a paid-up, royalty-free, nonexclusive, irrevocable, worldwide license in data first produced in the performance of this contract to reproduce, publish, or otherwise use, including prepare derivative works, distribute copies to the public, and perform publicly and display publicly such data. For data required by the contract but not first produced in the performance of this contract, the Contractor will identify such data and grant to the District or acquires on its behalf a license of the same scope as for data first produced in the performance of this contract. Data, as used herein, shall include any work subject to copyright under 17 U.S.C. § 102, for example, any written reports or literary works, software and/or source code, music, choreography, pictures or images, graphics, sculptures, videos, motion pictures or other audiovisual works, sound and/or video recordings, and architectural works. Upon or before the completion of this contract, the Contractor will deliver to the District data first produced in the performance of this contract and data required by the contract but not first produced in the performance of this contract in formats acceptable by the District.

20. PROVIDING GOOD, SAFE JOBS TO WORKERS

Creating Good Jobs

Pursuant to FEMA Information Bulletin No. 520, the contractor will comply with all applicable federal labor and employment laws. To maximize cost efficiency and quality of work, the contractor commits to strong labor standards and protections for the project workforce by creating an effective plan for ensuring high-quality jobs and complying with federal labor and employment laws. The contractor acknowledges applicable minimum wage, overtime, prevailing wage, and health and safety requirements, and will incorporate Good Jobs Principles wherever appropriate and to the greatest extent practicable

21. BUY CLEAN

The District encourages the use of environmentally friendly construction practices in the performance of this Agreement. In particular, the District encourages that the performance of this agreement include considering the use of low-carbon materials which have substantially lower levels of embodied greenhouse-gas emissions associated with all relevant stages of production, use, and disposal, as compared to estimated industry averages of similar materials or products as demonstrated by their environmental product declaration.

IN WITNESS WHEREOF, Contractor and the District have executed this Addendum on the date set forth below.

Signed:	_____	Signed:	_____
Name:	_____	Name:	_____
Title:	_____	Title:	_____
Date:	_____	Date:	_____

Exhibit A

	Provision	Contract Criteria	Required/Applicability
1.	Equal Employment Opportunity	Construction work	Yes, exact language required. 41 CFR Part 60-1.4(b)
2.	Davis Bacon Act	Construction work	**Not required for PA or HGMP grants**
3.	Copeland Anti-Kickback Act	Construction work > $2k	**Not required for PA or HGMP grants**
4.	Contract Work Hours and Safety Standards Act	> $100k + mechanics or laborers	Yes. 29 CFR 5.5(b)
5.	Rights to inventions made under a contract or agreement	Funding agreement	**Not required for PA or HGMP grants**
6.	Clean Air Act and Federal Water Pollution Control Act	>$150k	Yes
7.	Debarment and Suspension	All (>$25k)	Yes
8.	Byrd Anti-Lobbying Amendment	All (>$100k: Certification)	Yes. Exact language and certification (certification required for contracts exceeding $100,000)
9.	Prohibition on Contracting for Covered Telecommunications Equipment or Services	Contracts and subcontracts under FEMA declaration or grant award issued on or after November 12, 2020.	Yes.
10.	Domestic Preferences for Procurements	Contracts under FEMA declaration or grant award issued on or after November 12, 2020	Yes.
11.	Build America, Buy America Act (BABAA)	Infrastructure projects under applicable grant awards issued on or after January 2, 2023.	**Not applicable for PA or HGMP grants**
12.	Procurement of Recovered Materials	All	Yes
13.	Access to Records	All	Recommended by FEMA and deemed incorporated unless otherwise stated in the Agreement or amendment thereto.
14.	DHS Seal, Logo, and Flags	All	Recommended by FEMA and deemed incorporated unless otherwise stated in the Agreement or amendment thereto.
15.	Compliance with Federal Law, Regulations and Executive Orders	All	Recommended by FEMA and deemed incorporated unless otherwise stated in the Agreement or amendment thereto.
16.	No Obligation by Federal		Recommended by FEMA and deemed incorporated unless otherwise stated in

	Provision	Contract Criteria	Required/Applicability
	Government	All	the Agreement or amendment thereto.
17.	Program Fraud and False or Fraudulent Statements or Related Acts	All	Recommended by FEMA and deemed incorporated unless otherwise stated in the Agreement or amendment thereto.
18.	Socioeconomic Contracting	All	Recommended by FEMA and deemed incorporated unless otherwise stated in the Agreement or amendment thereto.
19.	Copyright	All contracts that may involve creation of copyrightable material	Recommended by FEMA and deemed incorporated to contracts that involve creation of copyrightable material, unless otherwise stated in the Agreement or amendment thereto.
20.	Providing Good, Safe Jobs to Workers	All	Recommended by FEMA and deemed incorporated unless otherwise stated in the Agreement or amendment thereto.
21.	Buy Clean	All	Recommended by FEMA and deemed incorporated unless otherwise stated in the Agreement or amendment thereto

Exhibit B

APPENDIX A, 44 C.F.R. PART 18 – CERTIFICATION REGARDING LOBBYING

Certification for Contracts, Grants, Loans, and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

The Contractor,_____, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. Chap. 38, Administrative Remedies for False Claims and Statements, apply to this certification and disclosure, if any.

_____
Signature of Contractor's Authorized Official

_____
Name and Title of Contractor's Authorized Official

Date _____

LOS ANGELES UNIFIED SCHOOL DISTRICT

Facilities Services Division

Internal Revenue Code Section 179D Allocation Statement

OWNER INFORMATION

Property owner	Los Angeles Unified School District
Authorized representative	Krisztina Tokes
Title	Chief Facilities Executive
Address	333 South Beaudry Avenue, 23rd Floor, Los Angeles, California 90017
Phone	213-241-4811

DESIGNER INFORMATION

Designer	
Authorized representative	
Title	
Address	
Phone	

BUILDING INFORMATION

Building & school names and addresses	
Qualifying capital cost	
Square footage	
Date placed in service	

ALLOCATION TO DESIGNER

Dollar amount	
Percentage of deduction	

Under penalties of perjury, I declare that I have examined this allocation, including accompanying documents, and to the best of my knowledge and belief, the facts presented in support of this allocation are true, correct, and complete.

LAUSD Chief Facilities Executive **Date**

Designer Authorized Representative **Date**

Los Angeles Unified School District - Facilities Services Division:
333 S. Beaudry Ave., 23rd Floor, Los Angeles, CA 90017
Telephone (213) 241-4811 ● Fax (213) 241-8384

SAMPLE 179D ASSUMPTIONS AND CALCULATIONS

ASSUMPTIONS:

- Building area = 100,000 SF
- Building systems affected: 3 (interior lighting, HVAC & hot water, and building envelope)
- Each building system meets the criteria for the maximum tax deduction of $0.60 per square foot
- Designer tax rate: 35%
- Certification, legal, and accounting fees: $9,000

CALCULATIONS:

			Building Area	100,000	square feet
			x 179D Deduction/SF	x $1.80	per square foot
			= 179D Deduction Total	= $180,000	
			x Designer Tax Rate	x 35%	
			= Tax Benefit Gross Value (Total)	= $63,000	
Tax Benefit Gross Value to LAUSD ("Rebate")	$36,000		Tax Benefit Gross Value to Designer	$27,000	
Minus: EPAct Coordinator Fee and Expenses	- $5,400		Minus: Certification, Legal, & Accounting Fees	- $9,000	
			Plus: Rebate Deductibility	+ $12,600	
Tax Benefit Net Value to LAUSD	= $30,600	=	Tax Benefit Net Value to Designer	= $30,600	

DOCUMENT 00 4313

BID SECURITY FORM

Bond Number _____

_____ Surety

_____ Bidder

THE LOS ANGELES UNIFIED SCHOOL DISTRICT, acting by and through its BOARD OF EDUCATION OF THE CITY OF LOS ANGELES …….. OWNER/Obligee

TEN PERCENT (10%) OF THE AMOUNT OF THE BASE BID ATTACHED……...Amount of Bond

Project Description: **SYLVAN PARK EEC – OUTDOOR CLASSROOM AND CAMPUS UPGRADE (BV)(PSA)**
Date of Bid Opening:
Project Number(s): **10374546 / 233171**
Contract Number: **2610077**

WHEREAS, the bidder is herewith submitting to OWNER the above described bid, which is attached hereto and made part thereof.

NOW, THEREFORE, the Surety and the bidder are firmly held and bound, jointly and severally, to OWNER in the amount set forth above, lawful money of the United States, for which payment we bind ourselves, our heirs, executors, administrators, and assigns, jointly and severally, by these presents.

If the bid or any part of the bid shall be accepted and a contract awarded to the bidder by OWNER, and if the bidder shall well, truly and fully perform all the terms, conditions, and obligations to be kept and performed on the part of the bidder, and shall within the required time enter into a written contract and shall furnish bond(s) as required by the contract and specifications, or the call for bids, or by law, with a surety acceptable to OWNER, then this obligation shall be void; otherwise it shall remain in full force and effect for a minimum period of 60 days from the date of the bid, or longer if required by law, or longer through mutual agreement of the OWNER and bidder.

This instrument and the amount of money set forth above shall be applied toward, but shall not be considered a limitation upon, any damages which may be sustained by OWNER if the bidder fails to execute a written contract, or fails to secure the necessary bond(s), or fails to comply with all the terms, conditions and obligations to be kept and performed on the part of the bidder.

The maximum amount of Surety's liability claimable and recoverable under this instrument shall be and hereby is expressly limited to the amount of money set forth above. In addition to the liability of the Surety under this bond, the Court shall award to the prevailing party in any suit brought on this bond reasonable attorneys' fees and costs, even if such amounts exceed the penal sum of this bond.

Dated this _____ day of _____ 20 _____

_____
BIDDER

By (signed) _____
Signature of Authorized Person

Title _____

_____
SURETY

By (signed) _____
Signature of Attorney-In-Fact

Address _____

City, State _____

Telephone _____

ACKNOWLEDGMENT BY AN ATTORNEY-IN-FACT

State of _____ SS

County of _____

On _____, before me,

_____, a Notary Public

Personally appeared _____
Personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to this instrument and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.
WITNESS my hand and official seal.

(Notary Seal)

_____
Signature of Notary

ATTACH CERTIFIED COPY OF POWER OF ATTORNEY AND ALL-PURPOSE ACKNOWLEDGMENT.
(THIS DOCUMENT CANNOT BE ALTERED, MODIFIED, OR CHANGED.)
[If you do not submit a certified or cashier's check, failure to submit this form shall render your bid non-responsive]

END OF DOCUMENT

DOCUMENT 00 4336

SUBLETTING AND SUBCONTRACTING FAIR PRACTICES ACT LIST

1.01 GENERAL Bidder Name: _____

A. In performance of Work, bidder is required to comply with the Subletting and Subcontracting Fair Practices Act as set forth in, but not limited to, Public Contract Code Sections 4100 et. seq. Violation of any provision of the Act shall subject the bidder to the penalties and other consequences prescribed in the Act.

B. In compliance with Section 4104 of the Public Contract Code, bidder submits the following complete list of each subcontractor who will perform Work or labor or render service or specially fabricate and install a portion of the Work in an amount in excess of one-half of one percent of the total bid.

C. Bidder shall list only one subcontractor for each portion of the Work. Bidders should note that the OWNER's prequalification requirements include mechanical, electrical, and plumbing contractors (i.e., contractors licensed pursuant to Sections 7056–7059 of the Business and Professions Code, specifically holding A, B, C-4, C-7, C-10, C-16, C-20, C-34, C-36, C-38, C-42, C-43, or C-46 licenses pursuant to regulations of the Contractors' State License Board) that contract directly with a bidder to perform any such component work on the Project ("MEP subcontractors"). Bidders that intend to contract with any MEP subcontractors to perform any such component work on the Project shall only select MEP subcontractors that have been prequalified by the OWNER at least five (5) business days before the date fixed for the public opening of bids. Non-MEP subcontractors do not need to be prequalified to perform non-MEP component work on the Project. Bidders and MEP subcontractors shall not be eligible to bid or perform work on the Project if they (a) have not submitted completed prequalification questionnaires and financial statements to the OWNER at least ten (10) business days before the date fixed for the public opening of bids, and (b) have not been prequalified by the OWNER at least five (5) business days before the date fixed for the public opening of bids. The OWNER's list of prequalified contractors can be found online at https://www.laschools.org/new-site/prequalification/additional-resources by clicking on "Safety PQ Program Approved List." The list is updated on an ongoing basis. If an MEP subcontractor does not appear on the list, bidder should verify with the subcontractor to determine if subcontractor has received a notice from OWNER that confirms its prequalification by the above deadline. Unless prohibited by the OWNER, bidders licensed pursuant to Section 7057 of the Business and Professions Code, specifically holding general building contractor B licenses pursuant to regulations of the Contractors' State License Board, may self-perform any work on the Project to the extent permitted by law. Bids that fail to adhere to these requirements will be deemed non-responsive by the OWNER.

D. Bidder, by not listing a subcontractor for a certain portion of the Work, certifies bidder is qualified to perform and will perform said portion of Work itself.

E. Certain penalties may be imposed for the subsequent employment of an unlisted subcontractor.

F. No contractor or subcontractor may be listed on a bid proposal for a public works project (submitted on or after March 1, 2015) unless registered with the Department of Industrial Relations (DIR) pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)].

TYPE(S) OF WORK	NAME OF SUBCONTRACTOR(S) (Firm Name as it appears on Contractor's State License)	LICENSE NO.	DIR REGISTRATION NO.	LOCATION OF BUSINESS (CITY, STATE)

(THIS DOCUMENT CANNOT BE ALTERED, MODIFIED, OR CHANGED)
[YOU MUST SUBMIT THIS FORM EVEN IF YOU DO NOT INTEND TO LIST SUBCONTRACTORS.
FAILURE TO SUBMIT THIS FORM SHALL RENDER THE BID NON-RESPONSIVE]

END OF DOCUMENT

DOCUMENT 00 4340

DISABLED VETERAN BUSINESS ENTERPRISES (DVBE)
SCHOOL FACILITIES PROGRAM

1.01 DVBE REQUIREMENTS Bidder Name: _____

A. In accordance with the Education Code Section 17076.11 participation goal of at least three percent (3%) for Disabled Veteran Business Enterprise (DVBE), per year, of the overall dollar amount of funds allocated to the District by the State Allocation Board pursuant to the Leroy F. Greene School Facilities Act of 1998, the District requires bidders to submit DVBE information as set forth in this section. This goal will be included in each Contract entered into related to construction or modernization funded in whole or in part with funds allocated to the District by the State Allocation Board pursuant to the Leroy F. Greene School Facilities Act of 1998.

B. To identify certified DVBE participants, you may consult the Office of Small Business and Disabled Veteran Business Enterprise Services (OSDS) website at https://caleprocure.ca.gov/pages/sbdvbe-index.aspx or by contacting their office at (916) 375-4940 or by visiting the Los Angeles Unified School District Small Business Outreach Program website at http://www.laschools.org/new-site/small-business/sbe-certification.

LIST ANY DVBE SUBCONTRACTORS/SUPPLIERS YOUR FIRM HAS CONTACTED.

NAME OF FIRM / LOCATION (CITY/STATE) / TELEPHONE

_____

_____

_____

_____

_____

LIST DVBE SUBCONTRACTORS/SUPPLIERS YOUR FIRM WILL USE AS PART OF THIS PROJECT.
If your firm is a DVBE, please list value of work that will be self-performed. For each firm listed, include a copy of the DVBE certification with the bid submittal. Certification from either the State of California – Department of General Services (DGS) or LAUSD will be accepted at the time of bid. However, if bidder's certification from DGS is provided, the most qualified bidder must also provide an LAUSD certificate prior to issuance of the Notice of Intent to Award. It is the responsibility of the Prime contractor to ensure that its subcontractors/suppliers register to become LAUSD certified prior to award. Please have all subcontractors/suppliers utilize the following link to access the online registration:
http://www.laschools.org/new-site/small-business/sbe-certification.

NAME OF FIRM / LOCATION (CITY/STATE) / AMOUNT OF SUBCONTRACT

_____ $ _____

_____ $ _____

_____ $ _____

_____ $ _____

_____ $ _____

☐ **No DVBE utilization (check, if applicable)**

(THIS DOCUMENT CANNOT BE ALTERED, MODIFIED, OR CHANGED.)

END OF DOCUMENT

DOCUMENT 00 4500

CERTIFICATION REQUIREMENTS

1.01 GENERAL Bidder Name: _____

A. Bidder must comply and abide by the certification requirements contained herein by completing this document in its entirety and submitting with the **electronic** bid.

B. Failure to submit this document shall render the bid non-responsive.

C. Bidder is advised that no contractor or subcontractor may be listed on a bid proposal for a public works project (submitted on or after March 1, 2015) unless registered with the Department of Industrial Relations (DIR) pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)].

No contractor or subcontractor may be awarded a contract for public work on a public works project (awarded on or after April 1, 2015) unless registered with the DIR pursuant to Labor Code section 1725.5.

This project is subject to compliance monitoring and enforcement by the DIR and the Los Angeles Unified School District's DIR-approved Labor Compliance Program.

1.02 ETHICS POLICY

A. This certifies and confirms bidder is familiar with and in compliance with all provisions of the OWNER Ethics Policy including: 1) any employees, subcontractors or consultants, who, within the last three (3) years have been or are employees of the OWNER are disclosed below; 2) the bidder or its subcontractors have not compensated any former OWNER employee or consultant to influence any action on a matter pending with the OWNER, if that employee, within the last 12 months, held a OWNER position in which they personally and substantially participated in that matter; 3) the bidder or its subcontractors does not employ a former OWNER employee or consultant who, while serving in a OWNER position within the last two (2) years, substantially participated in the development of the bidding requirements, specifications, or in any part of the contract's contracting process; 4) the bidder has not employed as a lobbyist any former OWNER employee who left the OWNER within the last 12 months; and 5) the bidder did not receive any confidential information in connection with the procurement.

B. The bidder further certifies that set forth below are the names of all former Board of Education Members and employees it intends to employ in connection with the services to be performed by the contract, who have been Board of Education Members or employed by the OWNER **within the last three (3) years**.

(IF THIS SECTION DOES NOT APPLY, PLEASE INDICATE "NONE" OR "N/A" BELOW.)

Former Board of Education Members, Employees, Consultants, Subcontractors:

_____ _____ _____

_____ _____ _____

C. The OWNER Ethics Policy is available online through the following link:

https://achieve.lausd.net/Page/14037

D. Bidder shall answer the questions below to determine its need to register under the OWNER's revamped Lobbying Disclosure Program.

1. Do you or others in your organization do the following: (*please check all that apply*)

- ❑ Attend or arrange meetings with OWNER officials in person or over the phone;
- ❑ Draft recommendations for OWNER officials to consider;
- ❑ Give gifts, meals, event tickets or other benefits to OWNER officials;
- ❑ Introduce or market your organization's products or services to OWNER officials;
- ❑ Provide advice or recommend a strategy to a client on OWNER matters;
- ❑ Seek support or opposition from a third party (e.g. the public) on OWNER matters;
- ❑ Send letters or write emails to OWNER officials in order to influence their decision-making; or
- ❑ Take any action to influence purchasing, contracting, policy, or other decisions under consideration by OWNER officials? (*Outside of the service requirements of a contract or written agreement with OWNER and outside of a specific OWNER-issued bid process*)

❑ **CHECK THIS BOX IF NONE OF THE ABOVE ARE APPLICABLE.**

If the bidder indicated that it performs one or more of the activities above, the bidder shall proceed to the question(s) below. If the bidder checked that none of the activities in question 1 are applicable, the bidder is to skip questions 2 and 3 and note the information for all prospective bidders provided after the instructions below.

2a. Does your organization perform these activities in-house (i.e. with internal staff) on its own behalf?
OR
2b. Does a client pay your organization to conduct these activities on *the client's* behalf?

If the bidder answered "yes" to question 2a, the bidder shall proceed directly to question 3. If the bidder answered "yes" to question 2b, the bidder shall skip question 3 and follow the instructions provided immediately after question 3.

3. Will your organization spend over $10,000 this year performing these activities?
Use the grid below to estimate the total amount of money your organization as a whole expects to spend during the entire calendar year (Jan 1 – Dec 31) to conduct these activities.

Item	Total
Salaries, wages, and commissions for the people who conduct these activities	$
Copies, publications, and other materials	$
Transportation and meals	$
Gifts, meals, and benefits for OWNER officials	$
Media and advertisements	$
Other expenses to support the selected activities	$
Grand Total	$

INSTRUCTIONS
If bidder answered "yes" to question 3 (or question 2b), the bidder apparently meets at least one registration trigger. Bidder is therefore required to visit https://achieve.lausd.net/Page/14037 to access the OWNER's training materials and to register. Answers to various questions can be obtained either at the website referenced above or by calling the Ethics Office at 213-241-3330.

All prospective bidders on OWNER projects are advised of the following:

- Bidder should keep updated about the Lobbying Policy & Program by signing up on our mailing list. Bidder should visit https://achieve.lausd.net/Page/14037 for more information.

- Even if the bidder does not hit the registration trigger now, bidder should keep a mental track of their organization's spending in order to be ready to register when necessary.

- Bidder should review who is lobbying the OWNER by visiting our website and clicking on "Lobbying Disclosure."

1.03 SWEAT-FREE PROCUREMENT POLICY

A. The OWNER has established policies to restrict purchases to only those products and services that have been manufactured without the illegal use of sweatshop (including exploitive, "child", "forced", "convict", and indentured") labor. All sales/goods provided to the OWNER by the bidder and/or their subcontractor shall be in abidance with the OWNER's official policy regarding "sweat-free" schools.

B. The objective of this policy is specifically to discourage and prevent the use of any form of "exploitive labor" but not cause undue and unnecessary economic hardship for laborers. This policy targets those types of child labor that effects the mental, physical, and emotional developments of children such as those types of exploitive labor which fall under the broader category of "sweatshop labor".

C. The Sweat-Free Procurement Policy includes the following principle/requirements:
   a. Safe and healthy working conditions
   b. Prohibition of child labor
   c. Disclosure of manufacturing plant locations
   d. Verification and enforcement mechanisms
   e. Compliance with applicable codes
   f. Penalties for violations
   g. Responsible bidder forms
   h. Non-Poverty wage standard (domestic and international)

D. For the purpose of establishing a non-poverty wage, the OWNER uses the definition of non-poverty wages as formulated by the Union of Needletrades, Industrial and Textile Employees (UNITE), utilizing the Department of Health and Human Services' guidelines to determine non-poverty wages domestically. Internationally, the OWNER recognizes the World Bank's Gross National Income Per Capita Purchasing Power Parity figures to determine comparable wages in other countries.

E. The consequence for any violation by the bidder in the adherence to the aforementioned laws and /or provisions may result in action being taken by the OWNER against the bidder, which may include, but not limited to, contract cancellations, vendor defaults, and/or debarment.

F. Bidder certifies that the products and services provided to the OWNER are manufactured in strict compliance with all applicable sweatshop, child and slave labor laws of this and all other countries of the products origin.

G. This further certifies that the bidder and its subcontractors shall abide by all the provisions of the District's Sweat-Free Procurement Policy as set forth in this section.

1.04 PREVAILING WAGES

A. In compliance with provisions of the California Labor Code, all workers employed by bidder or any bidder subcontractor in the execution of Work shall be paid not less than the general prevailing rate of per diem wages, including payment for travel and subsistence; and not less than the general prevailing rate of per diem wages for holiday and overtime work, as determined by the California State Director of Industrial Relations for each craft, classification or type of worker needed to execute the Work. (See Article 6.48, General Conditions).

B. Copies of the prevailing rate of per diem wages are on file in the following OWNER Office and shall be made available to an interested party on request:

Labor Compliance Program
333 South Beaudry Avenue, 21st Floor

Los Angeles, CA 90017
(213) 241-4665

C. Information on the prevailing rate of per diem wages and the OWNER Labor Compliance Program is available at the following link:

http://www.laschools.org/new-site/labor-compliance/dir

D. Bidder certifies that it will submit the certified payroll records of Bidder and all subcontractors, of any tier, including Non-Performance payroll records, on a weekly basis to the OWNER Labor Compliance Program in the method provided by the OWNER Web-based Certified Payroll Reporting System.

E. Bidder certifies that its bid amount includes funds sufficient to allow Bidder to comply with all applicable local, state and federal laws and regulations governing the labor and services to be provided for the performance of the Work of the Contract and shall indemnify, defend and hold District harmless from and against any and all claims, demands, losses, liabilities and damages arising out of or relating to Bidder's failure to comply with applicable law in this regard.

1.05 PREQUALIFICATION

A. To be considered for award, bidder must (i) abide by and comply with the OWNER Construction Safety Standards, including prime contractor, subcontractor and/or safety prequalification requirements for bidder and all tiers of its subcontractors, as applicable, before tendering the bid to OWNER, and (ii) enroll bidder prior to commencement of the Work, and all eligible subcontractors prior to commencement of their subcontracted Work, in the OWNER Controlled Insurance Program (OCIP) (See Article 5, General Conditions). An experience modification rate exceeding 1.00 at the time of the bid may disqualify subcontractors from enrollment in OCIP.

B. This certifies and confirms that the bidder is in compliance with the OWNER's prime contractor prequalification requirements at the time of bid, and that the bidder has safety pre-qualified in accordance with OWNER safety prequalification requirements all tiers of subcontractors other than mechanical, electrical and plumbing subcontractors (i.e., contractors licensed pursuant to Sections 7056–7059 of the Business and Professions Code, specifically holding A, B, C-4, C-7, C-10, C-16, C-20, C-34, C-36, C-38, C-42, C-43, and C-46 licenses pursuant to regulations of the Contractors' State License Board) that contract directly with a bidder to perform any such component work on the Project ("MEP subcontractors"). If the bidder intends to contract with any MEP subcontractors to perform any such component work on the Project, this certifies that the bidder has selected MEP subcontractors in accordance with Document 00 1116 and Document 00 2113 and that all MEP subcontractors have been listed on Document 00 4336.

1.06 PROJECT STABILIZATION AGREEMENT (PSA)

A. If the Work, or any portion thereof, meets the provisions of Section 2.2 of the 2024 Project Stabilization Agreement (Effective Date: January 1, 2024) as entered into between OWNER and the Los Angeles/Orange Counties Building and Construction Trades Council and signatory craft unions ("Project Stabilization Agreement" or "PSA"), then the Contract for the Project is subject to the Project Stabilization Agreement (See Article 6.48 of the General Conditions).

Bidder shall require all subcontractors of whatever tier to become similarly bound for all their Work within the scope of the Project Stabilization Agreement by executing a certification or letter of assent in terms substantially identical to Attachment A–Letter of Assent of the Project Stabilization Agreement.

B. This certifies and confirms bidder has read and agrees to abide by and be bound to the Project Stabilization Agreement, as it may be amended from time to time or interpreted pursuant to its terms thereof.

1.07 DEBARMENT, SUSPENSION, INELIGIBILTY FOR AWARD

A. By signing and submitting this document, bidder certifies:

Neither bidder nor any of its principals is presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any Federal agency, and;

[ ] Have, [ ] have not, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a Federal, state or local government contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, or receiving stolen property; and are not presently indicted for, or otherwise criminally or civilly charged by a Government entity with, commission of any of these offenses.

B. If bidder answers "Have", a responsibility hearing may be held prior to award to determine the eligibility of bidder to remain qualified to bid and perform OWNER projects.

1.08 BIDDER CERTIFICATION

A. "The signature below binds bidder to all the above conditions and bidder certifies under penalty of perjury under the laws of the State of California that the foregoing is true and correct."

Executed on _____, at _____, California.

By: _____
Signature and Title of Bidder Representative

Certification shall be signed by bidder or an authorized representative of bidder.

(THIS DOCUMENT CANNOT BE ALTERED, MODIFIED, OR CHANGED.)
[FAILURE TO SUBMIT THIS FORM SHALL RENDER YOUR BID NON-RESPONSIVE]

END OF DOCUMENT

DOCUMENT 00 4519

NON-COLLUSION AFFIDAVIT

1.01 GENERAL

A. The following affidavit is required by Section 7106 of the California Public Contract Code.

B. The Non-Collusion Affidavit shall be executed by bidder and submitted with bid.

C. Failure to submit this affidavit, filled out and signed in its entirety, shall result in the bid being deemed non-responsive.

State of California
County of _____ ss.

_____, being first duly sworn, deposes and says that he or she
(Name of person signing bid)

_____ of _____ is the party making the
(Title of Signer) (Name of Licensee Bidding)

foregoing bid, the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; the bid is genuine and not collusive or sham; the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Bidder Name _____ Check One:
Name as it appears on Contractor's State License

Sole Ownership _____

IRS Employers Identification Number: _____

Partnership _____

Contractor's State License: _____ _____
Number Classification(s)

Corporation _____

Name of License Holder: _____ Other _____

Expiration Date: _____

Address _____ Phone (_____) _____

City _____ State _____ Zip Code _____ Fax (_____) _____

"The signature below binds bidder to all the stated conditions and bidder certifies under penalty of perjury under the laws of the State of California the foregoing is true and correct."

By _____ _____
Print Name Signature and Title

(Affidavit shall be signed by bidder or an authorized representative of bidder. Do not type or use rubber stamp.)

Dated this _____ day of _____ 20 _____

(THIS DOCUMENT CANNOT BE ALTERED, MODIFIED, OR CHANGED.)
[FAILURE TO SUBMIT THIS FORM SHALL RENDER THE BID NON-RESPONSIVE]

END OF DOCUMENT

DOCUMENT 00 6113

PAYMENT BOND
(LABOR AND MATERIAL)

WHEREAS, LOS ANGELES UNIFIED SCHOOL DISTRICT BOARD OF EDUCATION,

hereinafter called the OWNER, and _____

hereinafter called the CONTRACTOR, have entered into a Contract

dated _____

for _____

Contract
Amount _____

NOW, THEREFORE, the CONTRACTOR, as Principal, and the following named Surety, _____

are held and firmly bound to the OWNER in the amount set forth under the bond, for the payment whereof in the manner specified, the Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns jointly and severally, firmly by these presents:

PAYMENT BOND

In an amount equal to One Hundred Percent (100%) of the above Contract Amount. The condition of this obligation is that if the Contractor or his Subcontractors, fail to pay for any materials, provisions, provender or other supplies, or teams, used in, upon, for or about the performance of the Work contracted to be done, or for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Code with respect to such work or labor, or for any amounts required to be deducted, withheld, and paid over to the Franchise Tax Board from the wages of employees of the CONTRACTOR and his Subcontractors pursuant to Section 18806 of the Revenue and Taxation Code, with respect to such work and labor that the surety will pay for the same, in an amount not exceeding the sum specified above, and also, in case suit is brought upon the bond, a reasonable attorney's fee, to be fixed by the court.

This bond is executed in accordance with the requirements of Section 9550 *et seq.* of the Civil Code and acts amendatory thereof; and shall inure to the benefit of any and all persons, companies, and corporations entitled to file claims under and by virtue of the provisions of Section 9100 of the Civil Code and acts amendatory thereof, or to their assigns.
This bond covers claims whether such claims arise before or after the date on which this bond is issued.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the Work to be performed thereunder shall in anywise affect its obligations on the above bonds, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract Documents.

Signed and sealed this _____day of_____20_____

CONTRACTOR/PRINCIPAL

By_____

Title _____

SURETY

By _____
Attorney-in-Fact

Address_____

Telephone Number_____

Bond Number_____

(THIS DOCUMENT CANNOT BE ALTERED, MODIFIED, OR CHANGED)
END OF DOCUMENT

SAMPLE

DOCUMENT 00 6114

PERFORMANCE BOND

WHEREAS, LOS ANGELES UNIFIED SCHOOL DISTRICT BOARD OF EDUCATION,

Hereinafter called OWNER, and _____

hereinafter called CONTRACTOR, have entered into a Contract, which is incorporated by reference herein in its entirety,

denominated as number _____,

described as _____at _____

and is in the Contract Amount of _____,

NOW, THEREFORE, for value received, the receipt and sufficiency of which is hereby deemed acknowledged, CONTRACTOR, as Principal, and _____, as surety (hereafter "SURETY"), for themselves and each of their respective heirs, executors, administrators, successors and assigns, are jointly and severally held and firmly bound to OWNER in the amount of _____ Dollars ($_____), as may be adjusted under paragraph numbered 7 below ("Penal Sum"), for the full and faithful performance of the Contract, subject, however, to the following:

SAMPLE

1. The condition of this obligation is that if the CONTRACTOR shall in a workmanlike manner promptly, competently, and faithfully perform the Work and all of the terms, conditions and provisions of the Contract, in strict conformity therewith, then this Bond shall be null and void; otherwise, this Bond shall remain in full force and effect.

2. In the event CONTRACTOR breaches the Contract and OWNER exercises its right to terminate CONTRACTOR's right to proceed with the Work, and subject to the terms of the Contract, OWNER shall notify CONTRACTOR and SURETY in writing, and SURETY shall promptly:

a. Arrange for CONTRACTOR, with consent of OWNER which OWNER may withhold in its sole discretion, to perform and complete the Contract; or

b. Undertake to perform and complete the Contract itself, through its agents or through independent contractors, provided that OWNER either has prequalified such person or has no reasoned objection to such person performing the Work; or

c. Obtain bids or negotiated proposals from qualified contractors acceptable to and prequalified by OWNER for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by the OWNER and the contractor selected with OWNER's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to OWNER any excess of the amount of the completion contract over the remaining balance of the Contract Amount; or

d. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances, and no later than thirty (30) days of SURETY's receipt of notice of termination from OWNER, or such longer period to which OWNER may agree:

(i) subject to a full reservation of all rights of OWNER, CONTRACTOR and SURETY, deny liability in whole or in part and notify OWNER in writing of the reasons and bases therefore; or

(ii) determine the amount for which SURETY may be liable to OWNER, and thereafter promptly tender payment thereof to OWNER.

During the period in which SURETY determines which of its options to pursue under this paragraph 2, OWNER may take such actions it determines are appropriate to perform the Work and/or protect the Project, and OWNER's costs and expenses of such efforts may be charged against the contract balance.

3. In addition to any costs incurred in meeting its obligations pursuant to paragraph 2 above, SURETY shall pay OWNER any amounts due to Owner or for which Owner has become obligated in connection with the Contract arising from CONTRACTOR's failure to perform in accordance with the Contract, including any liquidated damages or other delay damages recoverable under the Contract; provided, however, that the aggregate liability of SURETY under this Bond, including under paragraph 2 and this paragraph 3, shall not exceed the amount of the Penal Sum as adjusted as provided in paragraph 7.

4. CONTRACTOR and SURETY agree that for purposes of exercising its rights under this Bond after Substantial Completion, OWNER may terminate CONTRACTOR's right to proceed, and call on SURETY to perform pursuant to this Bond, for CONTRACTOR's failure to perform Punch List work, warranty work or other items of work, which might not otherwise constitute a breach justifying termination of the Contract.

SAMPLE

5. OWNER and SURETY shall cooperate with each other to assure prompt completion of the Contract, and, if SURETY exercises its option to proceed under subparagraphs 2a, 2b or 2c, Owner shall perform its obligations under the Contract with respect to any such completion contractor, including payment for work satisfactorily completed, in accordance with applicable law and the terms of the Contract except to the extent the Contract is modified by the OWNER and SURETY.

6. SURETY hereby stipulates and agrees that no adjustment to the Contract Amount or Contract Time, nor any other alteration, addition and/or deletion to the terms of the Contract, or to the Work to be performed thereunder, shall in any way affect its obligations under this Bond, and SURETY waives notice of any such change, adjustment, alteration, addition or deletion to the terms of the Contract Documents.

7. The Penal Sum of this Bond shall automatically increase as the Contract Amount increases; provided, however, the initial Penal Sum shall not increase more than fifteen percent (15%) absent written consent from the SURETY. SURETY's refusal to consent to such an increase in the Penal Sum shall not be a breach of this Bond.

8. SURETY shall be held and firmly bound by this Bond for any breach of CONTRACTOR's obligations, including any warranty of the Work, occurring within two (2) years of Substantial Completion of the entire Work. Any action on this Bond shall be commenced within three (3) years of the date of Substantial Completion.

9. OWNER may name SURETY and demand that SURETY participate in any arbitration authorized by the Contract, or SURETY may elect to intervene in any such arbitration as provided by law, in which case SURETY shall be bound by the arbitration award. If OWNER does not name SURETY or demand SURETY's participation in any arbitration, and SURETY does not elect to intervene, SURETY will not be bound by the arbitration award except to the extent the arbitration award determines CONTRACTOR'S obligations under the Contract and that determination is binding on SURETY under applicable law.

10. In case any suit, arbitration or other action is brought upon this Bond, reasonable attorneys' fees

shall be awarded to the prevailing party, only the amount thereof being within the Court's or arbitrator's discretion.

11. Where they are used herein, the following terms that are specially defined in the Contract shall have the same meaning ascribed to them in the Contract: OWNER, CONTRACTOR, Contract, Work, Contract Documents, Contract Amount, Contract Time, Day, Punch List, and Substantial Completion.

Signed and sealed this _____ day of _____ 20 _____

CONTRACTOR/PRINCIPAL

By_____ Title_____

Surety Name _____

Address of Surety _____

_____

Telephone Number _____

Bond Number _____

By _____
Attorney-in-Fact :

Address _____

_____

Telephone Number _____

#

SAMPLE

(THIS DOCUMENT CANNOT BE ALTERED, MODIFIED, OR CHANGED)
END OF DOCUMENT

DOCUMENT 00 6217
CERTIFICATE OF INSURANCE FOR HAZARDOUS MATERIALS
FOR MATTERS NOT OTHERWISE COVERED BY THE OWNER CONTROLLED INSURANCE PROGRAM (OCIP)

This is to certify that policies of insurance as described below have been issued to the Insured named below (CONTRACTOR) and are in force for the period indicated for operations in California.
See below for Cancellation Clause.

Name and Address of Insured (Contractor)			Certificate Holder (OWNER) LOS ANGELES UNIFIED SCHOOL DISTRICT 333 S. Beaudry Ave., 28th Fl., Los Angeles, CA 90017 (Attn: Facilities Construction Contracts)	
Coverage	Carrier and Policy Number	Effective Date	Expiration Date	Limits of Liability
WORKERS' COMPENSATION				Statutory in compliance with the compensation laws of the State of California
COMPREHENSIVE GENERAL LIABILITY Combined Single Limit (Bodily Injury and/or Property Damage)				$2,000.000.00 each Occurrence
AUTOMOBILE LIABILITY (Includes all OWNED, NONOWNED and HIRED)				$1,000,000.00 each Occurrence
POLLUTION LIABILITY (Includes Asbestos Abatement)				$5,000,000.00 each Occurrence
Name of school where Work is being performed:				

SAMPLE

The Comprehensive General Liability policy includes coverage designated below:

a. Contractual Assumed Liability, relating to Contract(s) between the Named Insured and the Los Angeles Unified School District (OWNER).
b. Contractors Protective (Contingency) Liability, when Subcontractors are engaged.
c. Products Liability or Completed Operations.
d. Pollution Liability (including Asbestos) when Named Insured has a Contract with the OWNER that involves the removal of these materials.

This certificate of insurance is not an insurance policy and of itself does not amend, extend or alter the coverage afforded by the policies listed herein. Notwithstanding any conditions of any Contract(s) with respect to which this certificate is issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions and conditions of such policies.

THE LIABILITY POLICY(IES) REFERENCED ABOVE HAS/HAVE BEEN ENDORSED TO NAME THE OWNER AS AN ADDITIONAL INSURED AND TO PROVIDE SPECIFICALLY THAT ANY INSURANCE CARRIED BY THE DISTRICT WHICH MAY BE APPLICABLE TO ANY CLAIM OR LOSS RELATING TO CONTRACT(S) BETWEEN CONTRACTOR AND OWNER SHALL BE DEEMED EXCESS AND THE ABOVE CONTRACTOR'S INSURANCE PRIMARY DESPITE ANY CONFLICTING PROVISIONS TO THE CONTRARY WHICH MAY HAVE APPEARED IN THE POLICY(IES) PRIOR TO EXECUTION OF SAID ENDORSEMENT.

CANCELLATION CLAUSE: THE ABOVE-NAMED CERTIFICATE HOLDER SHALL BE NOTIFIED BY MAIL AT LEAST THIRTY (30) DAYS IN ADVANCE OF THE EFFECTIVE DATE OF CANCELLATION OR ANY MATERIAL CHANGE IN THE POLICY.

Dated at:
_____, 20_____

_____
Insurance Company
_____
Number and Street
_____
City and State
By: (signed) _____
Signature of Authorized Representative or Insurer
_____
Name (typed)
_____
Organization
_____
Address
_____
Telephone

(THIS DOCUMENT CANNOT BE ALTERED, MODIFIED, OR CHANGED.)
END OF DOCUMENT

SECTION 00 7000

GENERAL CONDITIONS

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GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS

The terms used in these General Conditions and within the Contract Documents have the following meanings assigned to them applicable in both the singular and plural tense. Certain terms are fully capitalized for no other reason than ease of reading.

1.1 Addenda - Additional written or graphical instructions issued prior to the opening of bids, which clarify, modify, correct, amend, add, delete and/or otherwise change the Division 00 – Bidding Requirements or other Contract Documents.

1.2 Administrative Closeout –All Work required for completion of all Contract requirements after Substantial Completion such as Punch List items, submittal of final warranties and guaranties, and record documents.

1.3 Adverse Impact - A perceived and/or actual delay, disruption, interference, hindrance, labor or wage escalation, material cost escalation, labor inefficiency, loss of productivity and/or acceleration related to the Work, or any portion thereof.

1.4 Applicable Laws – All federal, state, and local statutes, law, ordinance, provision, rule, regulation pertaining to the furnishing of or performance of the Work.

1.5 Application for Payment - The OWNER approved invoice form along with other supportive documentation as specified in the Contract Documents to be certified and submitted by CONTRACTOR in requesting progress and/or final payment.

1.6 ARCHITECT - The person, firm, corporation or entity licensed to practice architecture or engineering in the State of California and identified in the Bidding Documents as the entity recognized by the Division of the State Architect as the Design Professional in General Responsible Charge for the Project.

1.7 Asbestos Containing Construction Material – Means any manufactured construction material, which contains more than 0.1% asbestos by weight.

1.8 "As-Built" – A set of the Drawings marked by the CONTRACTOR during the performance of the Work to indicate completely and accurately the actual as-built condition of the Work. The As-Built Drawings shall be sufficient for a capable and qualified draftsman to modify the Drawings to reflect and indicate the Work actually in place at Contract Completion.

1.9 Bidding Documents – All documents made available to bidders.

1.10 CCR - California Code of Regulations.

1.11 Change Order - A written instrument confirming a change or adjustment to the Contract Amount, Milestones and/or Contract Time and/or an addition, deletion or revision in the Work. A Change Order is only effective upon approval by the OWNER's Board of Education or the Deputy Chief Procurement Officer (Facilities) by delegated authority by the OWNER's Board of Education.

1.12 Change Order Proposal (COP) – A written instrument prepared and issued by CONTRACTOR, setting forth proposed adjustments to the Contract Amount, Milestones or Contract Time, if any, in response to a Construction Directive and/or proposed addition, deletion or revision of the Work.

1.13 Construction Directive (CD) - A written directive issued by OAR, on or after the Effective Date of the Contract, directing CONTRACTOR to proceed regarding an issue of dispute, or requiring CONTRACTOR to take a specified action regarding the Work, Project and/or Contract. A Construction Directive may, but not always will, result in an addition, deletion, and/or revision in the Work, and may contain a proposed basis for adjustments to, if any, the Contract Amount, Milestones and/or Contract Time.

1.14 Contract Completion – When all CONTRACT requirements have been satisfied, including Administrative Closeout.

1.15 Contract Amount – The dollar amount stated in the Contract payable by OWNER to CONTRACTOR. The Contract Amount may be increased or decreased only by Change Order.

1.16 Contract Documents - The Bid and Acceptance Form, Addenda, bid (including documentation accompanying the bid and any post bid documentation submitted after the Notice of Intent to Award) when attached as an exhibit to the Bid and Acceptance Form, the Notice to Proceed, the bonds, these General Conditions, the Supplementary Conditions, the Insurance Manual as further described in Article 5.1, the Safety Standards Manual, the Specifications and the Drawings, together with all Change Orders, Construction Directives, and ARCHITECT written interpretations and clarifications issued pursuant to General Condition Article 9.4. All of the foregoing Contract Documents constitute the "Contract."

Reports, drawings and/or other documents referenced in Section 00 3000, Product Data and Sample submittals reviewed relative to Articles 6.45 and 6.46 are not Contract Documents. In addition, Shop Drawings are not Contract Documents unless they bear the signature and seal of the Project Architect of Record on file with DSA.

1.17 Contract Time - The duration in calendar days, including Change Order adjustments, established by the Contract Documents for achieving completion of the Work.

1.18 CONTRACTOR - The person, firm, corporation or entity with whom the OWNER has entered into the Contract.

1.19 Cost of the Work – All costs incurred by CONTRACTOR in connection with the proper furnishing and/or performance of the Work as defined in Article 1.60 and amended by Change Order as defined in Article 1.11.

1.20 Day - Means calendar day in every case, including all Federal, State and District holidays.

1.21 Defective - When preceding the term Work, it references Work deemed to be unacceptable, faulty, unsuitable, unsightly or otherwise not in compliance with the Contract Documents including any inspection, standard, test, submittal, and/or approvals required by the Contract Documents.

1.22 Deferred Approval Item - Those portions of the design requiring submittals by CONTRACTOR, within the time specified, to ARCHITECT, DSA, and/or others.

1.23 Drawings - Pictorial or graphical portions of the Contract Documents, prepared by or on behalf of the ARCHITECT, generally denoting the scope, design, extent, location, character, and dimensions of the Work to be performed and may include plans, elevations, sections, details, schedules and diagrams, etc., however, Shop Drawings are not Drawings as so defined herein.

1.24 DSA - Division of State Architect.

1.25 Effective Date of the Contract – The date on which OWNER's Board of Education approves and/or ratifies the Contract or if OWNER's Board of Education has delegated such authority in writing to an OWNER employee, then the date on which the designated OWNER employee signs the Contract.

1.26 General Requirements - Division 01 Sections of the Specifications.

1.27 Insurance Manual – The document describing the District's Owner Controlled Insurance Program (OCIP), including its coverages, limits and exclusions.

1.28 Lead Based Paint – Paint or other surface coatings containing an amount of lead equal to or greater than .06% lead dry weight (600 parts per million).

1.29 Liquidated Damages - A set daily amount to compensate OWNER for delay caused by CONTRACTOR. Liquidated Damages do not preclude recovery of direct consequential damages incurred by OWNER during any delay.

1.30 Milestones – Designated events as set forth in the Construction Schedule in which Work or portions thereof are required to be started and/or completed. Supplementary Conditions may provide for the assessment of Liquidated Damages if CONTRACTOR fails to achieve one or more Milestones.

1.31 NCIL – Non-Conformance Items List. A working list of corrective items issued by the Project Inspector to CONTRACTOR prior to Substantial Completion. Once the Certificate of Substantial Completion is executed by the OAR, the Project Inspector issues the Substantial Completion Punch List to the CONTRACTOR and the NCIL is discarded.

1.32 Notice of Award – Notice by OWNER advising the successful bidder that the OWNER has signed the Contract.

1.33 Notice of Intent to Award - Notice by OWNER advising the successful bidder that it is the apparent responsive and responsible low (or most qualified) bidder, contingent on timely compliance with terms and conditions specified in said Notice.

1.34 Notice to Proceed – The written notice issued by OWNER to CONTRACTOR establishing the date of commencement of the Contract Time and authorizing CONTRACTOR to proceed with the Work.

1.35 OCIP - OWNER Controlled Insurance Program.

1.36 Off-Site Work – Any construction Work performed as part of the Project Scope of Work as defined in the Contract Documents, that is outside of the Site, including construction Work in public thoroughfares, rights of way or utility easements.

1.37 OWNER - The Los Angeles Unified School District.

1.38 OWNER Authorized Representative (OAR) - The designated authorized representative of OWNER who shall administer the Contract.

1.39 OWNER forces - Is defined as work for the Project undertaken by OWNER and/or Contract executed in accordance with Sections 20113 & 20114 of the Public Contract Code.

1.40 Partial Use or Occupancy - Use or occupancy by OWNER of a partially completed portion, part, space or area of the Work, prior to Substantial Completion of the Work.

1.41 Product Data - CONTRACTOR furnished literature, illustrations, standard schedules, performance charts, instructions, brochures, diagrams, catalog cuts, color charts, templates, installation and maintenance instructions, test data, agency or regulatory approvals, or other required product information furnished by CONTRACTOR relative to the Work.

1.42 Project - The Project is the public works approved by OWNER's governing board, and for which the Work is being performed.

1.43 Project Inspector – The person approved by the DSA and employed by the OWNER in accordance with the requirements of Title 24 of the California Code of Regulations.

1.44 PSA - Project Stabilization Agreement.

1.45 Punch List – A list of minor, corrective items, which does not include uncompleted Work.

1.46 Request for Clarification (RFC) - A written instrument prepared by CONTRACTOR and issued to ARCHITECT and OAR requesting clarification of the Contract Documents.

1.47 Request for Proposal (RFP) - A written instrument issued by OAR directing CONTRACTOR submission of a written estimate detailing the proposed changes to the Contract Amount, Milestones and/or Contract Time in response to the proposed Work contained therein.

1.48 Samples - CONTRACTOR furnished physical specimens such as swatches, natural materials, materials, fabricated items, equipment, devices, appliances, cuts, containers, color boards, textures, fabrications, finishes, or other required samples furnished by CONTRACTOR relative to the Work.

1.49 Schedule of Values – The line item breakdown of the Contract Amount prepared by the CONTRACTOR and approved by OAR in accordance with Article 2.5.2 and Specification 01 2973 of the General Requirements.

1.50 Separate Work Contract - OWNER contract separate from but in conjunction with the Project and/or Work of this Contract.

1.51 Shop Drawings - CONTRACTOR furnished original drawings such as illustrations, diagrams, schedules, fabrications, erection, coordination, layout, setting, details, standards, performance charts or curves, installation, routing, iso-metric, wiring, control, piping, or other required shop drawings furnished by CONTRACTOR relative to the Work.

1.52 Site - The physical area designated in the Contract Documents for CONTRACTOR's performance, construction and installation of the Work.

1.53 Specifications - Those portions of the Contract Documents consisting of the written technical and/or administrative descriptions of materials, equipment, systems, codes, regulations, procedures, standards, workmanship, services, facilities, supplies, instructions, transportation, quality, etc., as applied to the Work.

1.54 Subcontractor – The person, firm, corporation or entity executing a direct contract with CONTRACTOR or any subcontractor of any tier performing any portion of the Work.

1.55 Substantial Completion - The stage in the progress of the Work when all scope and requirements of the Contract are completed, except minor Punch List items, final warranties and guaranties, and record documents submittals.

1.56 Subsurface Facility - All underground or below grade facilities and/or improvements, including but not limited to, any and/or all encasements such as pipelines, wells, conduits, raceways, duct banks, ducts, cables, conductors, sensors, manholes, valve boxes, metering devices, storage tanks, cisterns, leach fields or other such facilities which collect, furnish, supply, distribute, and/or transport to this or any other Site or property electricity, telephone, data, steam, gases, petroleum, cable or satellite signals, sewage, signal systems, water, storm drainage, traffic signals, or other control systems.

1.57 Supplementary Conditions - The Contract Document amending and/or supplementing these General Conditions.

1.58 Unit Price Work - Work which is measured and paid for by OWNER to CONTRACTOR on a unit price basis.

1.59 Work - All of the terms and conditions set forth in the Contract Documents, including the various separately identifiable parts thereof to be furnished thereunder. The Work shall include, without limitation, all labor, materials, apparatus, supplies, services, facilities, utilities, transportation, manuals, warranties, training, and the like, necessary for CONTRACTOR to faithfully perform and complete all of its obligations under the Contract.

ARTICLE 2 - PRIOR TO CONSTRUCTION

2.1 ***Furnishing of Contract Documents:***

After the Effective Date of the Contract, CONTRACTOR will be furnished copies of the Contract Documents as set forth in the Instructions to Bidders.

2.2 ***Notice to Proceed and Contract Time Commencement:***

The Contract Time will commence on the date specified in the Notice to Proceed. OWNER will issue the Notice to Proceed within sixty (60) days after the Notice of Award. If, for any reason, OWNER does not issue the Notice to Proceed within this sixty (60) day period, OWNER shall have an additional sixty (60) day period to issue the Notice to Proceed. However, OWNER shall pay to CONTRACTOR, as reverse Liquidated Damages, not as a penalty, but rather as a reasonable approximation of all damages to CONTRACTOR, the following sum based on the Contract Amount beginning on the sixty first (61st) day of the date of the Notice of Award until the date that the Notice to Proceed is issued: $100 per day for Contracts less than $1,000,000; $250 per day for Contracts between $1,000,000 and $10,000,000; $500 per day for Contracts between $10,000,001 and $40,000,000; and $1,000 per day for Contracts in excess of $40,000,000. The amount of reverse

Liquidated Damage is CONTRACTOR's exclusive remedy for delay of issuance of the Notice to Proceed. If the Notice to Proceed is not issued within one hundred and twenty (120) days after the Notice of Award, the Contract will be terminated for convenience by OWNER, unless OWNER and CONTRACTOR mutually agree in writing to extend the period within which the Notice to Proceed may be issued.

2.3 ***No Commencement of Work without Insurance and Bonds:***

CONTRACTOR shall not commence Work on the Project Site or elsewhere before the effective date of the insurance and bonds CONTRACTOR is required to obtain by the Contract Documents. The established date of commencement of the Contract Time will not be changed by the effective date of such insurance and/or bonds.

2.4 ***Before Starting Construction of the Work:***

In addition to all pre-bid obligations of CONTRACTOR, and prior to commencing any and each portion of the Work, CONTRACTOR shall carefully examine all of the Contract Documents and any other information available to CONTRACTOR relative to materials and methods of construction of the Work and/or Project requirements. CONTRACTOR shall file any needed Request for Clarification a minimum of nine (9) days prior to the commencement of any Work for any perceived or alleged error, inconsistency, ambiguity, or lack of details or explanation of the intent of the Contract Documents. If CONTRACTOR performs any portion of the Work for which the CONTRACTOR contends the Contract Documents are ambiguous, inconsistent, lack details or are otherwise in error, and CONTRACTOR knew or should have known of such alleged defects in the Contract Documents before commencing the Work in question, then CONTRACTOR shall bear any and all resulting costs including, without limitation, the cost of correction, without a corresponding adjustment to the Contract Amount, Milestones, and/or the Contract Time. If CONTRACTOR performs, permits, or causes the performance of any portion of the Work under those portions of the Contract Documents prepared by or on behalf of CONTRACTOR which is in error, inconsistent or ambiguous, or not sufficiently detailed or explained, CONTRACTOR shall bear any and all resulting costs, including, without limitation, the cost of correction, without a corresponding adjustment to the Contract Amount, Milestones, and/or the Contract Time.

2.5 ***Preliminary Matters:***

2.5.1 Within ten (10) days from Notice to Proceed CONTRACTOR shall submit to OAR for review:

2.5.1.1 the name, address, telephone number, fax number, license number, and classification of all Subcontractors and of all other parties furnishing labor, material, or equipment to CONTRACTOR, along with the amount of each such subcontract or the total price of such labor, material, and equipment needed for each Subcontractor's total portion of the Work;

2.5.1.2 in accordance with applicable Division 01 Requirements, a Preliminary Construction Schedule with Milestones based upon Specification 01 1219 Appendix A, indicating the duration in days of starting and completing the Work, including but not limited to, any and all Milestone dates specified in the Contract Documents;

2.5.1.3 in accordance with applicable Division 01 Requirements and in conjunction with the Preliminary Construction Schedule as specified in Article 2.5.1.2, a preliminary schedule of Shop Drawing, material list, Product Data and Sample submittals setting forth the scheduled durations for submission, review and processing.

2.5.2 At least fourteen (14) days before the Initial Application for Payment, the CONTRACTOR shall submit to the OAR, for review and approval:

2.5.2.1 A Schedule of Values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the OWNER may require. This Schedule of Values, as approved by the OAR, shall be used as the basis for the CONTRACTOR's Applications for Payment. The CONTRACTOR agrees that for the purpose of Applications for Payment, the Schedule of Value items shall correspond to the appropriate construction specification sections and in accordance with applicable Division 01 requirements.

2.5.2.2 If the Schedule of Values is not submitted by the CONTRACTOR and/or approved by the OAR:

2.5.2.2.1 During the first ninety (90) days from Notice to Proceed, the OAR shall use the default percentages (%) as set forth in Schedule of Values form under Specification 01 3239 Project Forms to determine the monthly amounts for the Initial Application for Payments.

2.5.2.2.2 After the expiration of the first ninety (90) days, OWNER reserves the right to refuse to make payments in whole or in part, and/or engage independent estimating and/or scheduling consultants to fulfill these requirements.

Upon notice to CONTRACTOR, OWNER will assess all incurred costs for these additional services against CONTRACTOR.

2.6 ***Job Start Meeting:***

Before issuance of the Notice to Proceed, CONTRACTOR and all Subcontractors listed in bid documents of CONTRACTOR are required to (1) attend a mandatory job start meeting conducted by OAR and further attended by, but not limited to, ARCHITECT and the Project Inspector; and (2) complete the online Pre-Job Conference available at http://www.laschools.org/new-site/labor-compliance/pre-job-conference-video.

2.6.1 OWNER shall, in accordance with Labor Code Section 1771.5, discuss federal and state labor law in addition to OWNER requirements applicable to the Contract. A checklist of the prevailing wage requirements formalizing record keeping responsibilities, requirements for submission of certified payroll records to OWNER, and the prohibition against discrimination in employment is available online at http://www.laschools.org/new-site/labor-compliance/pre-job-conference-video. CONTRACTOR and Subcontractors of all tiers will be required to sign the checklist thereby acknowledging their understanding of an agreement to continuously comply with said requirements. A Pre-Job Conference Checklist will be collected from CONTRACTOR and Subcontractors of all tiers.

2.6.2 OAR, ARCHITECT, and CONTRACTOR shall discuss procedures to develop the Preliminary Construction Schedule as referenced in Articles 2.5.1.2, 2.5.1.3 and the Schedule of Values as referenced in Article 2.5.2.1. OAR, ARCHITECT, CONTRACTOR, and the Project Inspector shall review required procedures for handling submittals, processing of Applications for Payment, and the roles, duties and limitations of OAR, ARCHITECT, CONTRACTOR, and the Project Inspector.

2.6.3 Other related items such as safety requirements as specified in, but not limited to, the Division 01 General Requirements, Contract Documents and/or other topics as determined by OAR may be discussed.

2.7 ***Survey of Existing Conditions:***

In addition to all pre-bid obligations of the CONTRACTOR, and prior to the commencement of any Work, CONTRACTOR shall, in presence of the Project Inspector, perform a thorough existing conditions survey of the Project Site, adjacent sites and public right of way approaches, in order to document, photograph, video record and/or otherwise memorialize existing conditions and/or defects of existing improvements. Once completed and acknowledged in writing by CONTRACTOR and the Project Inspector, it shall be filed with OAR with copies transmitted to ARCHITECT and the Project Inspector.

2.8 ***Baseline Schedule:***

The CONTRACTOR shall submit a complete, detailed Baseline Schedule that includes all the identifiable Work outlined in the Contract Drawings and Specifications. It shall be in full compliance with all related Sections of the Division 01 General Requirements. If CONTRACTOR fails to comply with Article 2.8, OWNER reserves the right to engage independent estimating and scheduling consultants to fulfill these requirements. Upon notice to CONTRACTOR, OWNER will assess all incurred costs for these additional services against CONTRACTOR.

ARTICLE 3 - THE CONTRACT DOCUMENTS

3.1 ***Contract Documents Complementary and Inclusive:***

Contract Documents are complementary, and what is called for by one shall be as binding as if called for by all. The Contract Documents are intended to include all items required for the proper execution and completion of the Work. Any item of Work mentioned in the Specifications and not shown on the Drawings, or shown on the Drawings and not mentioned in the Specifications, shall be provided by CONTRACTOR as if shown or mentioned in both.

3.2 ***Intent of the Drawings and Specifications:***

The intent of the Drawings and Specifications is to describe the Work to be performed by CONTRACTOR. The Specifications describe Work, which cannot be readily indicated on the Drawings such as quality of materials, workmanship, and execution whereas the Drawings generally describe dimensions, elevations and general layout of the Work. It is not the intent to specify every item of the Work in the Specifications, which is shown on the Drawings, or to show on the Drawings all items of the Work described or specified in the Specifications even if such items could have been shown and/or specified. All aspects of the Work, on the Drawings or in the Specifications, or which are reasonably inferable therefrom as being necessary to complete the Work, shall be provided by

CONTRACTOR whether or not such aspects of the Work are expressly described or depicted in the Drawings or the Specifications. It is intended the Work be of sound, quality construction, and CONTRACTOR is responsible for the inclusion of all direct and indirect costs and expenses to cover all items indicated, described, or implied in the Work to be performed.

3.3 ***Conformance with Laws:***

In addition to all pre-bid obligations of the CONTRACTOR, and before commencing any portion of the Work, CONTRACTOR shall check and review the Contract Documents from a construction standpoint for conformance and compliance with all laws, ordinances, codes, rules and regulations of all governmental authorities and public utilities affecting the construction and operation of the physical portion of the Project, all quasi-governmental and other regulations affecting the construction and operation of the physical portion of the Project, and other special requirements, if any, designated in the Contract Documents. In the event CONTRACTOR observes any violation of any law, ordinance, code, rule or regulation, or inconsistency with any such restrictions or special requirements of the Contract Documents, CONTRACTOR shall provide notice to ARCHITECT and OAR and shall ensure such violation or inconsistency is corrected in the prescribed manner prior to the commencement of said portion of the Work. Unless specifically stated otherwise in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any violation and/or inconsistency between the provisions of the Contract Documents and the provisions of any laws, ordinances, codes, rules and regulations applicable to the Work, unless such application of the provisions of the Contract Documents would directly result in a violation of such laws, ordinances, codes, rules, and/or regulations. In the event the requirements of Article 3.3 or the written interpretation or clarifications of ARCHITECT do not resolve the violation or inconsistency the decisions and directives of OAR shall be final for the purpose of proceeding with the Work.

3.4 ***Priority of Addenda:***

Addenda shall govern over all other Contract Documents at the time of bid. Addenda subsequently issued shall govern over prior Addenda only to the extent specified. Where applicable, and in accordance with Title 24, California Code of Regulations, Addenda shall be approved by the DSA.

3.5 ***Division of Contract Documents:***

The Contract Documents, including, without limitation, the Specifications, are divided into titled sections for convenience only and not to dictate or determine the trade or craft involved.

3.6 ***Similar Words of Import:***

Where "as shown," "as indicated," "as detailed," or words of similar import are used, reference is made to the Drawings accompanying the Specifications unless otherwise stated. Where “provide,” “furnish,” “install,” “complete,” or words of similar import are used, it shall mean to put in place for the intended use or operation. Where "as directed," "as required," "as permitted," "as authorized," "as accepted," "as selected," or words of similar import are used, the direction, requirement, permission, authorization, approval, acceptance, or selection by ARCHITECT and/or OAR is intended unless otherwise stated.

3.7 ***General Conditions, Supplementary Conditions and General Requirements:***

The General Conditions, Supplementary Conditions and Division 01 General Requirements are a part of each and every section of the Contract Documents.

3.8 ***Brevity in Abbreviations:***

The Contract Documents are written in an abbreviated form and may not include complete sentences. Omission of words or phrases such as "CONTRACTOR shall," "shall be," etc., are intentional. Nevertheless, the requirements of the Contract Documents are mandatory. Omitted words or phrases shall be supplied by inference.

3.9 ***Singular and Plural Tense:***

Words in the singular shall include the plural whenever applicable or the context so indicates or requires.

3.10 ***Metric Units of Measurement:***

The Contract Documents may indicate metric units of measurement as a supplement to U.S. customary units. When indicated thus: 1 " (25 mm), the U. S. customary unit is specific, and the metric unit is nonspecific. When not shown with parentheses, the unit is specific. The metric units correspond to the "International System of Units" (SI) and generally follow ASTM E 380, "Standard for Metric Practice."

3.11 ***Standard Technical Specifications of Societies, Institutes, Associations, Etc.:***

Any reference to standard technical specifications of any society, institute, association, or governmental authority is a reference to the respective organization's standard technical specifications, which are in effect on the date of bid submission for the Work. If applicable standard technical specifications are revised before completion of any part of the Work, CONTRACTOR may, if acceptable to OAR, perform such Work in accordance with the revised standard technical specifications. The standard technical specifications, except as modified in the Contract Documents, shall have full force and effect as though printed in the Contract Documents. Before commencing any portion of the Work, CONTRACTOR shall check and review the Contract Documents from a construction standpoint for conformance and compliance with the provisions of all standard technical specifications, listed or otherwise. In the event CONTRACTOR observes a conflict, ambiguity or discrepancy between the provisions of the Contract Documents and standard technical specifications, CONTRACTOR shall provide notice to ARCHITECT and OAR and shall ensure such conflict, ambiguity or discrepancy is corrected in the prescribed manner prior to the commencement of said portion of the Work. Unless stated otherwise in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, ambiguity or discrepancy between the provisions of the Contract Documents and standard technical specifications. In the event the requirements of Article 3.11 or the written interpretation or clarifications of ARCHITECT do not resolve the conflict, ambiguity or discrepancy the decisions and directives of OAR shall be final for the purpose of proceeding with the Work. If CONTRACTOR believes a Construction Directive establishes a basis for an adjustment in the Contract Amount, Milestones and/or Contract Time, CONTRACTOR shall, pursuant to Articles 10.7 through 10.17, submit a Change Order Proposal within ten (10) days of the date of issuance of the Construction Directive.

3.12 ***Absence of Modifiers:***

In the interest of brevity, the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

3.13 ***Rules of Contract Document Interpretation:***

3.13.1 In case of conflict between the various components of the Contract Documents including the Drawings and Specifications, it is the intent of the Contract Documents that the more stringent, higher quality of material and/or workmanship, and/or greater quantities shall be provided by the CONTRACTOR into the Work.

3.13.2 Where applicable, the requirements approved by the DSA on any item submitted as a Deferred Approval in accordance with Title 24, California Code of Regulations, shall take precedence over any previously issued Addenda, Drawing or Specification.

3.13.3 Except as provided in Article 3.13.1, in the event of conflict between the Drawings, the following shall govern:

3.13.3.1 specific notes shall govern over all other notes;

3.13.3.2 general notes, when identified as such, shall be incorporated into other portions of Drawings;

3.13.3.3 schedules, when identified as such, are complementary with other notes and other portions of Drawings including those identified as general notes;

3.13.3.4 larger scale Drawings shall govern over smaller scale Drawings;

3.13.3.5 calculated, derived, or numerical dimensions shall govern over dimensions obtained by scaling and at no time shall CONTRACTOR perform and/or allow Work to be performed based on dimensions obtained by scaling of the Drawings.

3.14 ***Ownership and Use of Contract Documents:***

Neither CONTRACTOR, Subcontractor, or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications, and other Contract Documents. They are not to be used by CONTRACTOR, Subcontractor, or material or equipment supplier on other jobs.

3.15 ***Contract Document Amendment and Supplements:***

3.15.1 After the Effective Date of the Contract, OWNER may, without breaching this Contract, direct changes in the Contract Documents or Work, including additions, deletions, modifications thereto. However, such changes may be made only by way of Construction Directive and/or Change Order.

3.15.2 In addition, supplements to the requirements of the Contract Documents and/or minor deviations and/or variations in the Work may be authorized and accomplished in one of the following ways:

3.15.2.1 ARCHITECT review of a Shop Drawing, Product Data or Sample subject to the provisions of Articles 6.44 and 6.45;

3.15.2.2 ARCHITECT written interpretation or clarification;

3.15.2.3 OAR written interpretation or directive.

3.15.3 However, a direction or authorization under Articles 3.15.1 or 3.15.2 shall not consequentially entitle CONTRACTOR to any adjustment to the Contract Amount and/or Contract Time.

3.16 ***Document Retention Policy:***

CONTRACTOR shall, at its sole expense, maintain a full set of Project records including plans, Specifications, correspondences, submittals, record documents and all other Project documentation for a period of ten (10) years after the date of Substantial Completion. Such documents may be maintained in hard copy or electronic form and will be produced or made available for review and photocopying or electronic reproduction upon ten (10) days written request by the OWNER or designated agent or representative.

ARTICLE 4 - LAND AVAILABILITY, PHYSICAL AND SUBSURFACE CONDITIONS AND REFERENCES

4.1 ***Availability and Access to Lands:***

OWNER shall, as indicated in the Contract Documents, secure and pay for easements and right of ways to the lands and/or to the Project Site where the Work is to be performed. OWNER shall identify any encumbrances or restrictions not of general application but specifically related to use of lands so furnished with which CONTRACTOR will have to comply in performing the Work. Easements for permanent structures or permanent changes in existing facilities, if any, shall be secured by and paid for by OWNER. CONTRACTOR is responsible for providing any additional lands and access to such lands required by CONTRACTOR for temporary storage of equipment and materials, temporary construction facilities, staging of equipment or materials or parking of vehicles.

4.2 ***Physical and Subsurface Conditions:***

4.2.1 ***Reports, drawings, data and assessments:*** Reference is made to Section 00 3000 – Available Information for identification of:

4.2.1.1 ***Subsurface Conditions:*** Those reports, drawings, data and/or assessments of tests and/or exploration of subsurface conditions at or contiguous to the Project Site that were utilized in preparing the Bidding Documents.

4.2.1.2 ***Physical Conditions:*** Those drawings, descriptions, photographs, reports, assessments and/or mapping of physical conditions, other than Subsurface Facility, relating to existing surface and/or subsurface structures at or contiguous to the Project Site that were utilized in preparing the Bidding Documents.

4.2.2 ***Differing Subsurface or Physical Conditions:*** If CONTRACTOR believes any subsurface or physical condition uncovered, revealed or otherwise exposed at the Project Site is:

4.2.2.1 of such a character and/or nature as to require a change in the Contract Documents;

4.2.2.2 materially different from that shown, indicated or described in the Bidding Documents;

4.2.2.3 of an unusual nature materially different from conditions normally encountered and generally recognized as inherent in Work of the character provided for in the Bidding Documents, then;

4.2.2.4 CONTRACTOR shall, upon discovery, and before further disturbance of conditions or performing Work in connection with, provide notice to OAR and ARCHITECT setting forth a description of such conditions. CONTRACTOR shall not further disturb such conditions until directed to do so by OAR and;

4.2.2.5 OAR and ARCHITECT shall review the described conditions and shall determine the necessity to secure additional explorations and/or tests and shall provide notice to CONTRACTOR of the findings and conclusions.

4.2.3 ***Possible Change in Contract Documents:*** If OAR determines a change in the Contract Documents is warranted as a result of a differing subsurface or physical condition as noted in Articles 4.2.2.1 through 4.2.2.3 a Construction Directive may be issued to reflect and document the change. If CONTRACTOR believes a Construction Directive establishes a basis for an adjustment in the Contract Amount, Milestones and/or Contract Time, CONTRACTOR shall, pursuant to Articles 10.7 through 10.17, submit a Change Order Proposal within ten (10) days of the date of issuance of the Construction Directive.

4.2.4 ***Contract Amount, Milestones and Contract Time Adjustments:*** Adjustment of the Contract Amount, Milestones and/or Contract Time will be allowed to the extent the existence of such revealed conditions directly causes an increase in CONTRACTOR cost and/or time of performance of the Work subject to the following:

4.2.4.1 the condition must meet one or more of the limitations as set forth in Articles 4.2.2.1 through 4.2.2.3, inclusive;

4.2.4.2 a change in the Contract Documents as set forth in Article 4.2.3 shall not necessarily serve as an entitlement to any adjustments to the Contract Amount, Milestones and/or Contract Time;

4.2.4.3 in respect to Work which is paid on a Unit Price basis, any adjustment to the Contract Amount shall be as set forth in Article 11.5;

4.2.4.4 CONTRACTOR shall not be entitled to an adjustment in the Contract Amount, Milestones and/or Contract Time if:

4.2.4.4.1 CONTRACTOR was aware of the condition at the time of bid;

4.2.4.4.2 the existence or discovery of the condition could have been discovered as a result of any examination, investigation, exploration, test and/or examination of the Project Site and areas adjoining the

Project Site as required by the Bidding Documents prior to CONTRACTOR submission of bid;

4.2.4.4.3 CONTRACTOR failed to provide notice in accordance with Article 4.2.2.4.

4.2.4.5 Any adjustment to the Contract Time shall be subject to the requirements of Article 12.

4.3 ***Physical Conditions - Subsurface Facility:***

4.3.1 ***Shown or Indicated in Bidding Documents:*** The information shown or indicated in the Bidding Documents in respect to existing Subsurface Facility at or adjacent to the Project Site is based on information provided to OWNER, OWNER Consultant or ARCHITECT by the owners of such facility or by others. Unless it is specifically expressed otherwise in the Contract Documents:

4.3.1.1 OWNER, OAR, OWNER Consultant, and ARCHITECT shall not be responsible for the accuracy and completeness of any information or data by others;

4.3.1.2 the costs to perform all of the following shall be included in the Contract Amount and CONTRACTOR shall be responsible for: reviewing, checking and verifying all such information and data; locating all Subsurface Facility shown, indicated and/or described in the Bidding Documents; coordination and construction of the Work in conjunction with the owners of all such Subsurface Facility; the continuous operation of all existing Subsurface Facility; the furnishing and maintenance of all temporary in kind and place Subsurface Facility; the safety and protection of all such Subsurface Facility and the repair and/or replacement of any damaged Subsurface Facility resulting from the Work.

4.3.2 ***Not Indicated or Shown:*** If CONTRACTOR reveals and/or uncovers any Subsurface Facility not shown or indicated in the Bidding Documents, CONTRACTOR shall, upon discovery and before further disturbance of such Subsurface Facility, identify the owner of such Subsurface Facility and provide notice to the owner of such Subsurface Facility, OAR and ARCHITECT. OAR and ARCHITECT shall review the Subsurface Facility and determine the extent of any change to the Contract Documents. If OAR determines a change in the Contract Documents is required, a Construction Directive may be issued and CONTRACTOR shall be responsible for the safety and protection of such Subsurface Facility. CONTRACTOR shall only be entitled to an adjustment in the Contract Amount, Milestones and/or Contract Time to the extent they are directly related to the existence of any Subsurface Facility which was not shown and/or indicated in the Bidding Documents and which CONTRACTOR could not have known or could have been reasonably expected to be aware of or could have reasonably expected. If CONTRACTOR believes a Construction Directive establishes a basis for an adjustment in the Contract Amount, Milestones and/or Contract Time, CONTRACTOR shall, pursuant to Articles 10.7 through 10.17, submit a Change Order Proposal within ten (10) days of the date of issuance of the Construction Directive.

4.4 ***Reference Points and Elevations:***

When required by the scope of the Work, OWNER will furnish at its expense, an engineering survey of the Project Site, giving as applicable, benchmark elevation points, property lines and corners. CONTRACTOR shall layout the Work and shall be responsible for the preservation of all established benchmark elevation points, property lines and corners and shall not demolish, relocate and/or change the location of any benchmark elevation point, property line or corner without the prior written approval of OAR. CONTRACTOR shall, upon the loss, destruction and/or relocation of any benchmark elevation points, property line or corner promptly notify ARCHITECT and OAR prior to such replacement and/or relocation of benchmark elevation point, property line or corner. CONTRACTOR shall, at expense of CONTRACTOR, engage the services of State of California licensed surveyor to replace and/or relocate benchmark elevation points, property line or corners lost, destroyed and/or relocated.

4.5 ***Asbestos, PCB's & Mercury Waste, Lead Based Paint, Petroleum or other Hazardous Material:***

4.5.1 If, during construction of the Work in areas where CONTRACTOR is required to perform Work, CONTRACTOR, OAR or ARCHITECT discovers, uncovers and/or otherwise reveals a material reasonably believed to be:

4.5.1.1 Asbestos

4.5.1.2 polychlorinated biphenyl's (PCB's)

4.5.1.3 mercury waste

4.5.1.4 Lead Based Paint

4.5.1.5 petroleum

4.5.1.6 hazardous material

4.5.1.7 hazardous substance

4.5.1.8 hazardous waste

4.5.1.9 radioactive materials, or

4.5.1.10 ground water

which was not identified, described, shown or indicated in the Bidding Documents to be within the scope of the Work, CONTRACTOR shall immediately stop Work in the affected area and provide notice to OAR and ARCHITECT, advising of the circumstances of such discovery, Work stoppage and whether or not such material was generated by CONTRACTOR, OWNER or others.

4.5.2 OWNER shall retain an independent testing laboratory to determine the nature of the material encountered and whether corrective measures or remedial action is required.

4.5.3 If test results indicate and/or otherwise confirm the material to be any of the materials listed in Articles 4.5.1.1 through 4.5.1.10 and requiring treatment and/or removal, OAR may issue a Construction Directive for the legal treatment and/or removal and disposal thereof.

4.5.3.1 CONTRACTOR shall be responsible for treatment and/or removal of any discovered, uncovered and/or otherwise revealed materials listed in Articles 4.5.1.1 through 4.5.1.10 at the Project Site brought to or otherwise introduced to the Project Site by CONTRACTOR, Subcontractor, material supplier or anyone else for whom CONTRACTOR is directly or indirectly responsible.

4.5.3.2 OWNER shall be responsible for treatment and/or removal of any discovered, uncovered and/or otherwise revealed materials listed in Articles 4.5.1.1 through 4.5.1.10 at the Project Site which were not identified, described, shown or indicated in the Bidding Documents to be within the scope of the Work and not introduced to the Project Site by CONTRACTOR, Subcontractor, material supplier or anyone else for whom CONTRACTOR is directly or indirectly responsible.

4.5.3.3 If CONTRACTOR believes the Construction Directive establishes a basis for a Change Order for treatment and/or removal of any discovered, uncovered and/or otherwise revealed materials at the Project Site listed in Articles 4.5.1.1 through 4.5.1.10 and not introduced to the Project Site by CONTRACTOR, Subcontractor, material supplier or anyone else for whom CONTRACTOR is directly or indirectly responsible, CONTRACTOR shall, pursuant to Articles 10.7 through 10.17, submit a Change Order Proposal within ten (10) days of the date of issuance of the Construction Directive.

4.5.4 For the legal treatment and/or removal and disposal of asbestos material, CONTRACTOR, or Subcontractor that performs the Work, shall be on the list of OWNER approved asbestos abatement Contractors available from OWNER's Facilities Environmental Technical Unit.

4.5.5 After treatment and/or removal of the material by CONTRACTOR or others, the independent testing laboratory shall test and certify the material has been removed and/or controlled to within legal limits and requirements. Upon receipt of such test results, OAR will provide notice to CONTRACTOR to proceed with construction in affected Work areas.

4.5.6 The provisions as set forth in Articles 4.2 and 4.3 are not intended to apply to any materials listed in Articles 4.5.1.1 through 4.5.1.10 that are uncovered, revealed and/or otherwise exposed at the Project Site.

4.6 ***Indemnification by OWNER for Presence of Materials Not Caused by CONTRACTOR:***

In the event the presence of the materials as set forth in Article 4.5.1 is not caused solely by CONTRACTOR or some person or entity directly or indirectly performing under CONTRACTOR or its Subcontractors, OWNER shall pay for all costs of testing and remediation, if any. In addition, OWNER shall defend, indemnify and hold harmless CONTRACTOR and its agents, officers, directors and employees from and against any and all claims, damages, losses, costs and expenses incurred in connection with or arising out of, or relating to, the performance of the Work in the area affected by such materials.

4.7 ***Indemnification by CONTRACTOR for Presence of Materials Caused by CONTRACTOR:***

In the event the presence of the materials as set forth in Articles 4.5.1.1 through 4.5.1.10 are caused by CONTRACTOR, Subcontractors, suppliers, or anyone else who would otherwise be a "claimant" under Civil Code § 9100, CONTRACTOR shall pay for all costs of testing and remediation, if any, and shall satisfy its defense, indemnity and hold harmless obligations pursuant to the provisions of Article 6.53 arising out of or relating to the presence of such materials even if CONTRACTOR itself is without fault. OWNER shall have the right to assess any and all costs against Contract funds and the CONTRACTOR.

4.8 ***Survival of Provisions:***

The terms of these material provisions as set forth in Articles 4.6 and 4.7 shall survive Administrative Closeout, Contract Completion and/or any termination of this Contract.

ARTICLE 5 - INSURANCE AND BONDS

5.1 ***General:***

OWNER has arranged with its insurance company administrator (the "OCIP Administrator") for insurance under an OWNER Controlled Insurance Program ("OCIP"). The OCIP, including its coverages, limits and exclusions, is described in the Insurance Manual that is set forth in Section 00 7316. All entities performing labor or services at the Project Site, including CONTRACTOR and Subcontractors of all tiers, must enroll in the OCIP unless they are an "Excluded Party" as defined below. The OCIP will provide to Enrolled Parties, as defined below, the coverages described in the Insurance Manual ("OCIP Coverages"). CONTRACTOR and all parties enrolling in the OCIP are exclusively responsible for carefully reviewing the Insurance Manual. OWNER assumes no obligation to provide insurance other than that specified in the Insurance Manual. The OCIP shall not be construed to limit OWNER's rights under the Contract Documents or at law including OWNER's indemnity rights. OWNER reserves the right, at its discretion, to discontinue the OCIP coverage or furnish other insurance coverage of various types and limits provided that such coverage is not less than that specified in the Contract Documents.

5.1.1 OCIP Coverages shall apply only to those operations of each Enrolled Party performed at the Project Site in connection with the Work and only to Enrolled Parties that are eligible for the OCIP, even if erroneously enrolled in the OCIP. An enrolled Party's "off-site" operations, including product manufacturing, assembling, or otherwise, shall only be covered if such "offsite" operations are identified and approved by the OCIP Administrator and are dedicated solely to the Work. OCIP Coverage shall not cover such "off-site" operations until receipt by CONTRACTOR and/or its Subcontractor(s) of written acknowledgement of such coverage from the OCIP Administrator.

5.1.2 The OCIP shall provide the following insurance:

5.1.2.1 Workers' Compensation insurance and Employer's Liability.
5.1.2.2 Commercial General Liability.
5.1.2.3 Excess Liability.
5.1.2.4 Builder's Risk.
5.1.2.5 Pollution Liability.

The OCIP Coverages and exclusions are set forth in full in their respective insurance policy forms. Summary descriptions of OCIP Coverages in these General Conditions or the Insurance Manual are not intended to be complete or to alter or amend any provision of the actual OCIP policies. In the event any provision of these General Conditions, the Insurance Manual or the Contract Documents conflict with the OCIP insurance policies, the provisions of the actual OCIP insurance policies shall govern.

5.1.3 OWNER will purchase and maintain Builder's Risk insurance in the amount of the initial Contract Amount (and thereafter adjusted pursuant to any Change Orders issued to CONTRACTOR) for the full replacement value of the Work. The Builder's Risk insurance will cover the interests of OWNER, CONTRACTOR and Subcontractors of every tier covering for all risk of direct physical loss, excluding earthquake and flood, and insuring against fire, extended coverage, theft, vandalism, and malicious mischief at limits and sublimits determined by OWNER. CONTRACTOR will be provided a detailed Certificate of Insurance for the Work. CONTRACTOR shall be responsible for payment of a $10,000 deductible for each occurrence. CONTRACTOR is exclusively responsible, at its sole expense, for obtaining any additional insurance to protect its interests including coverages for CONTRACTOR'S $10,000 deductible per occurrence required by the OCIP Insurance Policies.

5.1.4 OWNER will purchase and maintain Pollution Liability insurance coverage of up to $50,000,000 per occurrence. CONTRACTOR shall be responsible for payment of a $250,000 deductible for each occurrence up to a maximum aggregate deductible of $1,000,000.

5.1.5 CONTRACTOR and each of its Subcontractors, shall be solely responsible for any loss or damage to its, or their, personal property including, without limitation:

5.1.5.1 property created or provided under the Contract Documents for use or execution of the Work but which will not become or remain as part of the completed Work,

5.1.5.2 its, or their, tools and equipment, mobile construction equipment, scaffolding, and temporary structures, whether owned, used leased or rented by CONTRACTOR or any of its Subcontractors.

CONTRACTOR or any of its Subcontractors may, at its or their option, purchase, maintain and pay for insurance or self-insure such equipment and property, and any deductible in relation thereto shall be its, or their, sole responsibility. Any insurance, including self-insurance, shall be CONTRACTOR's or any of its Subcontractor's sole source of recovery in the event of a loss.

5.1.6 OCIP coverage ceases upon completion of Work at the Project Site as documented by a Certificate of Substantial Completion from OWNER. However, a grace period of sixty (60) days of additional coverage will be extended should CONTRACTOR be required to return to perform Work on Site directly and solely related to the completion of the Contract. CONTRACTOR should direct any questions or concerns relating to insurance beyond Substantial Completion to the OCIP Administrator to consult on insurance specifics for the Contract.

5.2 ***Excluded Parties and Their Insurance Obligations:***

OCIP insurance does not cover the following "Excluded Parties":

5.2.1 hazardous materials remediation, removal and/or transport companies and their consultants.

5.2.2 architects, surveyors, engineers, soil testing engineers, and their consultants.

5.2.3 vendors, suppliers, fabricators, material dealers, truckers, haulers, drivers and others who merely transport, pickup, deliver, or carry materials, personnel, parts or equipment or any other items or persons to or from the Project Site.

5.2.4 CONTRACTOR and each of their respective Subcontractors who do not perform any actual labor on the Project Site.

5.2.5 crane operators and crane operations

5.2.6 any parties or entities not specifically identified in these General Conditions or excluded by OWNER in its sole discretion, even if otherwise eligible.

Excluded Parties and parties no longer enrolled or covered by the OCIP shall obtain and maintain, and shall require each of its Subcontractors to obtain and maintain, the insurance coverage specified in Article 5.5 below and in the Insurance Manual.

5.3 ***OWNER Insurance Obligations:***

OWNER will pay OCIP premiums. OWNER will receive or pay, as the case may be, all adjustments to such premiums, whether by way of dividends, retrospective adjustments, additional or return premiums, other moneys due, audits or otherwise. CONTRACTOR and each of its Subcontractors hereby assign to OWNER the right to receive all such adjustments.

5.4 ***CONTRACTOR OCIP Obligations:***

CONTRACTOR shall:

5.4.1 incorporate the terms of Article 5 of these General Conditions in all Subcontractor agreements.

5.4.2 enroll in the OCIP within ten (10) days of receipt of the Notice of Intent to Award and maintain enrollment in the OCIP and ensure that eligible Subcontractors of CONTRACTOR enroll in the OCIP within five (5) days of subcontracting and maintain enrollment in the OCIP. OWNER may prohibit access to the Project Site by any CONTRACTOR and/or Subcontractor not enrolled in the OCIP.

5.4.3 comply with all of the administrative, safety, insurance, and other requirements outlined in these General Conditions, the Insurance Manual, the "LAUSD Facilities School Maintenance and Operations Repair & Construction Safety Standards" (the Safety Standards Manual), the OCIP insurance policies, or elsewhere in the Contract Documents.

5.4.4 provide each of its Subcontractors with a copy of the Insurance Manual and ensure Subcontractor compliance with the provisions of the OCIP insurance policies, the Insurance Manual, the Safety Standards Manual, these General Conditions, and the Contract Documents. Failure of OWNER to include the Insurance Manual in the Bidding Documents or failure of CONTRACTOR to provide each of its eligible Subcontractors with a copy of the Insurance Manual shall not relieve CONTRACTOR or any of its Subcontractors from any of the obligations contained therein.

5.4.5 acknowledge, and require all of its Subcontractors to acknowledge, in writing that OWNER and the OCIP Administrator are not agents, partners or guarantors of the insurance companies providing coverage under the OCIP (each such insurer, an "OCIP Insurer") and OWNER is not responsible for any claims or disputes between or among CONTRACTOR, its Subcontractors, and any OCIP Insurer(s). CONTRACTOR and its Subcontractors of all tiers are responsible for obtaining, at their sole cost and expense, all insurance they require for their own protection or that is required by Applicable Laws or regulations.

5.4.6 cooperate fully with the OCIP Administrator and the OCIP Insurers, as applicable, in its administration of the OCIP.

5.4.7 provide, within ten (10) days of request by OWNER, or the OCIP Administrator, all documents or information necessary to enroll, or continue as enrolled, CONTRACTOR or its Subcontractors of all tiers in the OCIP. Such information may include, but not be limited to, payroll records, certified copies of insurance coverages, declaration pages of coverages, certificates of insurance, underwriting/rating data, prior loss history information, safety records or history, OSHA citations, or such other data or information as OWNER, the OCIP Administrator, or the OCIP Insurers may request in the administration of the OCIP, or as required by the Insurance Manual.

5.4.8 use only mechanical, electrical and plumbing ("MEP") Subcontractors that are licensed pursuant to Section 7058 of the Business and Professions Code, specifically holding C-4, C-7, C-10, C-16, C-20, C-34, C-36, C-38, C-42, C-43, and C-46 licenses, and identified on the OWNER's List of Prequalified Subcontractors at least five (5) business days prior to the date of bid for the Project, if the Project includes MEP components that will be performed by first-tier MEP Subcontractors.

For all other trades, CONTRACTOR shall use only Subcontractors that it has safety pre-qualified in accordance with the procedures outlined in the Safety Standards Manual and verified by CONTRACTOR to have an Experience Modification Rate (EMR) that complies with OWNER's requirement upon the date of bid. CONTRACTOR shall be responsible to provide documentation verifying all Subcontractors of CONTRACTOR have an EMR that complies with OWNER's requirement upon the date of bid. OWNER may prohibit access to the Project Site by CONTRACTOR or any Subcontractor for which CONTRACTOR has not provided documentation of an EMR that complies with OWNER's requirement upon the date of bid or waiver by OWNER of this requirement or has not met the safety pre-qualification requirements outlined in the Safety Standards Manual.

5.4.9 be responsible for paying all deductibles set forth in the OCIP Insurance Policies for losses attributable to the Work of CONTRACTOR, acts or omissions of CONTRACTOR, or the acts or omissions of any Subcontractor of CONTRACTOR, or any other entity or party for whom CONTRACTOR may be responsible.

5.4.10 submit an online payroll report (Alliant Payroll Form) for each completed payroll period and Application for Payment. Instructions for online access are provided in Section 8 of the OCIP Manual. This obligation includes compliance with all existing requirements and all new requirements implemented during the term of the Project. OWNER may decline to process or may apply a Withhold against, until receipt of the Alliant Payroll Form, any Application for Payment submitted without completion of the Alliant Payroll Form that is consistent with CONTRACTOR and Subcontractor (all tier) information submitted for the corresponding Certified Payroll Report periods.

5.5 ***Additional Insurance Required From Enrolled Parties and Excluded Parties:***

In addition to enrolling in OCIP, CONTRACTOR shall at its sole cost and expense obtain and maintain, and shall require each of its Subcontractors to obtain and maintain, the insurance coverages specified below in a form acceptable to OWNER. The insurance limits may be provided through a combination of primary and excess policies, including the umbrella form of policy provided that coverages under such excess or umbrella policies are at least as broad as the coverages under the underlying policies. Each policy required under this Article shall name OWNER, the Board, the OAR, the OCIP Administrator, their respective officers, agents and employees, and any additional entities as OWNER may request as additional insureds. The additional insured endorsement shall state that the coverages provided to the additional insureds are primary and non-contributing with respect to any other insurance available to the additional insured. Each policy shall provide for no less than thirty (30) days prior written notice to OWNER prior to cancellation. The insurance required below shall conform to OWNER requirements outlined in the Insurance Manual.

As to Enrolled Parties, the workers' compensation, employer's liability, and commercial general liability insurance required by this Article shall only be for off-site activities or operations, and automobile liability for both "on-site" and "off-site" operations not insured under the OCIP.

5.5.1 Standard Commercial Automobile Liability Insurance covering all owned, leased/non-owned and hired automobiles, trucks, and trailers with a combined single limit of not less than $1,000,000 per occurrence.

5.5.2 Statutory Workers' Compensation Insurance and Employer's Liability insurance with statutory limits as required by law and Employer's Liability limits of not less than $1,000,000 each accident/$1,000,000 each employee/$1,000,000 policy limit.

5.5.3 Commercial General Liability Insurance, including both bodily injury and property damage, in a form providing coverage not less than the standard ISO Commercial General Liability insurance policy ("Occurrence Form") with limits no less than the following:

	Enrolled Parties / Excluded Parties
Each Occurrence	$1,000,000 / $1,000,000
General Aggregate	$2,000,000 / $2,000,000
Products/ Completed Operations Aggregate	$2,000,000 / $2,000,000
Personal/ Advertising Injury Aggregate	$1,000,000 / $1,000,000

5.5.4 CONTRACTOR shall provide Pollution Liability insurance with limits not less than $5,000,000, in a form and with an insurer acceptable to OWNER, for Work of CONTRACTOR and/or Subcontractors involved in demolition and/or hazardous materials remediation excluded from OCIP coverage. All hazardous materials remediation Work must be performed by a CONTRACTOR or Subcontractor(s) approved by OWNER.

5.5.5 CONTRACTOR shall be reimbursed for all direct costs to provide any additional insurance required by OWNER, but not listed or otherwise specified in Articles 5.5.1 through 5.5.4 but shall not be reimbursed for those incurred to provide Subcontractors of the CONTRACTOR insurance coverages otherwise provided by the OCIP and required by OWNER to Subcontractors of CONTRACTOR enrolled in the OCIP as specified in Article 5.4.2 and Article 5.4.8.

5.5.6 Any failure by CONTRACTOR or its Subcontractors of any tier to procure or maintain the policies of insurance described above shall constitute a material breach of this Contract. In the event of such a breach, OWNER may exercise all remedies provided in the Contract Documents. In addition, OWNER may, at its discretion, procure or renew such insurance to protect OWNER's interests and pay any and all premiums in connection therewith; in that event, CONTRACTOR shall be responsible to OWNER for all such premiums and related costs and expenses and OWNER may withhold said amounts from payments otherwise owed to CONTRACTOR.

5.6 ***Insurer Qualification:***

All required policies shall be issued by insurance companies that are duly licensed and authorized by the State of California to issue insurance policies for the required coverages and limits. Such insurance companies shall have a current A.M. Best's financial strength rating of at least "A-" and a financial size category of VII or higher.

5.7 ***CONTRACTOR Representations and Warranties to OWNER:***

CONTRACTOR represents and warrants to OWNER that:

5.7.1 all information it submits to OWNER, OAR, or the OCIP Administrator shall be accurate and complete;

5.7.2 CONTRACTOR, on behalf of itself and its Subcontractors has had the opportunity to review and analyze copies of the OCIP binders and specimen policies that are on file in office of OWNER's OCIP Administrator. Any reference or summary in the Contract, these General Conditions, the Insurance Manual, or elsewhere in any other Contract Document as to amount, nature, type or extent of OCIP Coverages and/or potential applicability to any potential claim or loss is for reference only. CONTRACTOR and its Subcontractors have not relied upon said reference but solely upon their own independent review of the OCIP Coverages in formulating any understanding and/or belief as to amount, nature, type or extent of any OCIP Coverages and/or its potential applicability to any potential claim or loss;

5.7.3 CONTRACTOR represents on its own behalf, and on behalf of its Subcontractors, that the Costs of OCIP Coverages were deducted in CONTRACTOR bid or proposal for the Work, the Contract Amount, and will not be included in any Change Order Proposals or any Application for Payment relative to the Work. The "Costs of OCIP Coverages" is defined as

the amount of CONTRACTOR and its Subcontractors' reduction in insurance costs due to eligibility for OCIP Coverages as determined by using Alliant Form-B located in the Insurance Manual and information available to OWNER and/or the OCIP Administrator regarding the costs of similar coverages taking into account limits of liability, coverages, and rating of the insurer;

5.7.4 CONTRACTOR acknowledges OWNER shall not pay or compensate CONTRACTOR or any Subcontractor, in any manner, for "Costs of OCIP Coverages" or any other insurance costs of the CONTRACTOR or Subcontractors.

5.8 ***Audits:***

In addition to OWNER rights under Article 6.51, CONTRACTOR agrees OWNER, OAR, OCIP Administrator, and/or any OCIP Insurer may audit CONTRACTOR or any of its Subcontractors payroll records, books and records, insurance coverages, insurance cost information, or any other information CONTRACTOR provides to OWNER, OAR, OCIP Administrator, or the OCIP Insurers to confirm the accuracy and to assure Costs of OCIP Coverages are not included in any payment for the Work.

5.9 ***OWNER Election to Modify or Discontinue OCIP:***

OWNER may, in its sole discretion, modify the OCIP Coverages, discontinue the OCIP, or request that CONTRACTOR or any of its Subcontractors withdraw from the OCIP upon thirty (30) days written notice. Upon such notice, CONTRACTOR and/or one or more of its Subcontractors, as specified by OAR in such notice, shall obtain and thereafter maintain at OWNER expense during the performance of the Work all, or a portion thereof as specified by OWNER, of the OCIP Coverages. The form, content, limits of liability, cost, and the insurer issuing such replacement insurance shall be subject to OWNER approval.

5.10 ***Withhold of Payments:***

OWNER may withhold from any payment otherwise owed to CONTRACTOR the Costs of OCIP Coverages if included in an Application for Payment. In the event an OWNER audit of CONTRACTOR records and information as permitted in the Contract, these General Conditions, or other Contract Documents reveals a discrepancy in the insurance, payroll, safety, or any other information required by the Contract Documents to be provided by CONTRACTOR to OWNER, or to the OCIP Administrator, or reveals the inclusion of Costs of OCIP Coverages in any payment for the Work, OWNER shall have the right to full deduction from the Contract Amount of all such Costs of OCIP Coverages and all audit costs. Audit costs shall include, but not be limited to, the fees of the OCIP Administrator and the fees of attorneys and accountants conducting the audit and review. If the CONTRACTOR or its Subcontractors fail to timely comply with the provisions of these General Conditions, OWNER may withhold any payments due CONTRACTOR and its Subcontractors until such time as they have performed the requirements of these General Conditions. OWNER shall also have the right to initiate procedures to declare CONTRACTOR a non-responsible bidder for a period from two (2) to five (5) years.

5.11 ***Waiver of Subrogation:***

CONTRACTOR hereby waives all rights of recovery under subrogation because of deductible clauses, inadequacy of limits of any insurance policy, limitations or exclusions of coverage, or any

other reason against OWNER, the Board, OAR, the OCIP Administrator, its or their officers, agents, or employees, and any other contractor or Subcontractor performing Work or rendering services on behalf of OWNER in connection with the planning, development and construction of the Work. CONTRACTOR shall also require that all CONTRACTOR maintained insurance coverage related to the Work include clauses providing that each insurer shall waive all of its rights of recovery by subrogation against CONTRACTOR together with the same parties referenced immediately above in this Article. CONTRACTOR shall require similar written express waivers and insurance clauses from each of its Subcontractors.

A waiver of subrogation shall be effective as to any individual or entity even if such individual or entity:

5.11.1 would otherwise have a duty of indemnification, contractual or otherwise;

5.11.2 did not pay the insurance premium directly or indirectly;

5.11.3 whether or not such individual or entity has an insurable interest in the property damaged.

5.12 ***Duty of Care:***

Nothing contained in these General Conditions or the Insurance Manual shall relieve CONTRACTOR or any of its Subcontractors of their respective obligations to exercise due care in the performance of their duties in connection with the Work and to complete the Work in strict compliance with the Contract Documents.

5.13 ***Records Disclosure, Maintenance and Access:***

Prior to the commencement of the Work, CONTRACTOR shall furnish and shall cause each of its Subcontractors to furnish to OWNER in a form satisfactory to OWNER, an estimate of total direct labor cost (listed by Standard Workers' Compensation Insurance classification) to be incurred in connection with the Work at the Project Site, and the total amount due each Subcontractor under its subcontract with CONTRACTOR. CONTRACTOR shall, and shall cause each of its Subcontractors, to keep and maintain an accurate and classified record of its or their payroll data and information in accordance with the requirements of the OCIP Insurer(s) or any other Contract Document and shall keep and maintain evidence of safety pre-qualification and of insurance as required by this Article for each of its Subcontractors. CONTRACTOR shall provide OWNER with payrolls for all Project Site labor performed by CONTRACTOR and its Subcontractors. CONTRACTOR and its Subcontractors shall permit its books and records to be examined and audited periodically by the OCIP Administrator, OCIP Insurer(s), OWNER or their respective representatives.

5.14 ***Conflicts:***

In the event of a conflict between the provisions of these General Conditions and the provisions of the Insurance Manual, the provisions of these General Conditions shall govern.

5.15 ***Safety:***

CONTRACTOR shall be solely responsible for safety of the Work of this Contract. CONTACTOR shall establish a safety program that, at a minimum, complies with all local, state and federal safety standards, and any safety standards established by OWNER for the Project, including, but not limited

to, the Cal/OSHA Construction Safety Standards, and the LAUSD Facilities School Maintenance and Operations Repair & Construction Safety Standards.

5.15.1 Electrical Worker Qualification

5.15.1.1 CONTRACTOR shall implement and enforce an "Enhanced Electrical Safety Policy" on all projects defined in Division 26 of the Contract Documents (Electrical Work) or defined as:

"Placement, installation, erection, or connection, of any electrical wires, fixtures, appliances, apparatus, raceways, conduits, solar photovoltaic cells, or any part thereof, which generates, transmits, transforms, or utilizes electrical energy in any form for any purpose".

The elements of the "Enhanced Electrical Safety Policy" shall require that:

5.15.1.2 All electrical Work to be performed by qualified and certified personnel in accordance with Title 8 of the California Code of Regulations, Section 291.1; Note: Labor Code 108.2 (b), certification is not required for persons performing work for contractors licensed as class C-7 low voltage or Class C-45 electric sign contractors as long as the work performed is within the scope of the class C-7 or class C-45 license, including incidental and supplemental work as defined in Section 7059 of the Business and Professions Code, and regardless of whether the same contractor is also licensed as a class C-10 contractor; and seventy percent (70%) of all "journeyman" wireman will be graduates of a State of California approved electrical apprenticeship program. These provisions are subject to the provisions of Article 6.48.

5.15.1.3 A minimum of 20% of the jobsite electrical workers to be OSHA 10-hour General or Construction Industry Safety and Health Certified.

5.15.1.4 At least one jobsite electrical worker to be OSHA 30-hour General or Construction Industry Safety and Health Certified.

5.15.1.5 Only qualified personnel trained in accordance with NFPA 70E, "Standard for Electrical Safety in the Workplace" may work on electrical equipment containing mixed low and high voltages sharing the same vaults or panels.

5.16 ***Bond Requirements:***

CONTRACTOR shall apply for and furnish to OWNER separate payment and performance bonds for the Work on forms provided by OWNER. The original penal sum of the performance bond shall be in a monetary amount equal to 100% of the original Contract Amount, inclusive of all additive alternates, guaranteeing the prompt, competent and faithful performance of all terms and conditions of the Contract. The payment bond shall be for 100% of the Contract Amount and guarantee, without limitation, the payment in full of all claims for labor, services, materials, supplies, and the like, for the Work as required by Civil Code §§ 9550 and 9554. A corporate surety authorized and admitted to transact business in California shall provide the bonds. CONTRACTOR shall supply OWNER with documentation establishing the necessary requirements of the surety consistent with California law. To the extent, if any, the Contract Amount is increased in accordance with the Contract Documents,

CONTRACTOR shall cause the amount of the bonds to be increased accordingly and shall promptly deliver satisfactory evidence of such increase to OWNER. In the case of an increase of the Contract Amount, the penal sum of the performance bond shall automatically increase with the Contract Amount up to fifteen percent (15%) of the original Contract Amount; provided, however, that OWNER may, in its discretion, require CONTRACTOR to secure an increase in the penal sum from the performance bond surety beyond fifteen percent (15%) of the original Contract Amount. Subject to the preceding sentence, the bonds shall further provide no change or alteration of the Contract Documents (including, without limitation, an increase in the Contract Amount, as referred to above), adjustment to the Milestones and/or Contract Time, or modifications of the time, terms, or conditions of payment to the CONTRACTOR will release the sureties. If CONTRACTOR fails to furnish the required bonds, secure required increases in the penal sum of the performance bond, or fails to keep such bonds in full force and effect up through such times that such bonds are otherwise obligated to be in force and effect under the law, OWNER may terminate CONTRACTOR right to proceed with the Work and/or terminate the Contract for cause. The performance bond shall be in the form and contain the content shown in Document 00 6114. The payment bond shall be in the form and contain the content shown in Document 00 6113. The bonds shall also contain all other requirements prescribed by law.

5.17 ***Surety Qualification:***

Only bonds executed by admitted surety insurers as defined in Code of Civil Procedure § 995.120 shall be accepted. Surety must be a California-admitted surety and listed by the U.S. Treasury with a bonding capacity in excess of the Contract Amount.

ARTICLE 6 - CONTRACTOR DUTIES AND RESPONSIBILITIES

***Management and Superintendence of the Work*:**

6.1 CONTRACTOR shall supervise and direct all aspects of the Work using the best skill, attention, and efforts of CONTRACTOR. CONTRACTOR shall be solely responsible for and exercise full control over construction means, methods, techniques, sequences, procedures, quality control and coordinating all portions of the Work, unless the Contract Documents provide other specific instructions concerning these matters. CONTRACTOR shall perform in accordance with Title 24 of the California Code of Regulations, the DSA Procedures for the Construction Oversight Process and the Project Certification Process, and applicable sections of the Education Code.

6.2 CONTRACTOR shall provide a competent full time superintendent fluent in English and assistants as necessary who shall supervise and superintend the Work and be physically present at the Project Site while any aspect of the Work is being performed.

6.3 CONTRACTOR shall provide a competent project manager fluent in English and assistants as necessary who shall administer and manage the Work. The project manager shall represent CONTRACTOR, and communications given to the project manager shall be as binding as if given to CONTRACTOR. In the event the Contract Amount is equal to or exceeds ten million dollars ($10,000,000) the project manager shall be assigned to the Work on a full time basis and shall be present at the Project Site while any aspect of the Work is being performed.

6.4 CONTRACTOR shall furnish and ensure competent adequate staff necessary to properly administer, coordinate, purchase, expedite, and/or organize the procurement of all materials and equipment so the materials and equipment will be procured and delivered at the time they are required to be

incorporated into the Work and to furnish and maintain an adequate force of skilled workers on the Project Site to complete the Work in accordance with all requirements of the Contract Documents.

6.5 CONTRACTOR shall enforce strict discipline and good order among employees and other persons carrying out the Work including, but not limited to, Subcontractors, and/or material and/or equipment suppliers retained for the Work. CONTRACTOR shall not permit employment of unfit persons or persons not skilled in tasks assigned to them. CONTRACTOR shall ensure all employees and other persons carrying out the Work abide by all statutes and all regulations pertaining to, but not limited to, smoking, consumption of alcohol, illegal substances, profanity or inappropriate attire and prohibited verbal and physical contact with students and faculty (see also Section 01 5000 of the General Requirements).

6.6 CONTRACTOR shall be responsible to OWNER for acts and omissions of CONTRACTOR employees, Subcontractors, material and equipment suppliers, and their agents, employees, invitees, and other persons performing portions of the Work under direct or indirect contract with CONTRACTOR or any of its Subcontractors.

Labor, Materials, and Equipment of the Work:

6.7 Unless otherwise specified in the Contract Documents, CONTRACTOR shall provide and furnish qualified personnel to survey, layout, and construct the Work. CONTRACTOR shall furnish, supply, install and maintain all items necessary for proper execution and completion of the Work whether temporary or permanent and whether or not incorporated or to be incorporated in the Work, including without limitation, all labor, material, equipment, apparatus, tools, construction equipment and machinery, appliances, fuel, power, light, heat, ventilation, telephone, sanitary facilities, water, gas, utilities, temporary generators, transportation, and all other incidental facilities and services for the furnishing, performance, testing, start up, and completion of the Work.

6.8 Unless otherwise specified in the Contract Documents, all materials and equipment to be permanently installed in the Work shall be new and shall be of such quality as required by the Contract Documents. All warranties and guarantees required by the Contract Documents shall be expressly issued to the benefit of OWNER. CONTRACTOR shall, if requested by ARCHITECT and/or OAR, furnish satisfactory evidence in the form of reports of required tests as to kind and quality of all materials and equipment. All equipment, appliances, and fixtures shall be installed, erected, connected, tested, started and conditioned in accordance with applicable manufacturer's instructions and the Contract Documents.

6.8.1 The furnishing, use or installation of Lead Containing Paint or Asbestos Containing Construction Materials into the Work, Project or onto OWNER property is not permitted.

6.9 CONTRACTOR shall, upon approval of applicable submittals, promptly place orders for materials and equipment so delivery of materials and equipment can be incorporated into the Work without delay. CONTRACTOR, upon receipt of notice from OAR, shall furnish documentary evidence from CONTRACTOR, Subcontractor, distributor and/or manufacturer verifying placement of orders and/or scheduled delivery dates.

Delivery and Storage of Products, Equipment, Fabrications and Materials:

6.10 Products, equipment, fabrications, and applicable materials shall be delivered with an identification tag or label specifying name of manufacturer, model number, type and other pertinent data described

on such tag or label as required for complete identification. If products, equipment, fabrications, and applicable materials are not so identified then CONTRACTOR, upon notice by OAR or the Project Inspector, shall provide an invoice and/or other supporting identification of products, equipment, fabrications or applicable materials.

6.11 Materials specified to be tested, which are delivered to and are to be tested on the Project Site, shall be stored in separate areas in order to segregate untested materials or materials undergoing testing from materials previously tested and approved. CONTRACTOR shall have on the Project Site at all times a sufficient quantity of tested and approved materials for timely integration into and completion of the Work in accordance with the approved Construction Schedule.

Construction Schedule:

6.12 CONTRACTOR shall expeditiously proceed in accordance with the Construction Schedules established pursuant to Article 2.8, and the related Division 01 General Requirements, and shall furnish and maintain adequate forces in order to achieve all Milestones as set forth in Section 01 1216 (Phasing of the Work). If requested by OAR, CONTRACTOR shall submit for approval, in accordance with applicable Division 01 Requirements, proposed adjustments to the Construction Schedule, which does not change or amend either the Milestones and/or Contract Time. Proposed adjustments to the Construction Schedule which change and/or amend the Contract Amount, Milestones and/or Contract Time shall be submitted for approval by CONTRACTOR in accordance with Section 01 3213 or 01 3216 as applicable to the specific contract, and be in conformance with the applicable requirements of Articles 10 through 12 and 16.

6.13 ***Sufficient Forces:***

Upon the date specified in the Notice to Proceed, CONTRACTOR shall furnish and maintain sufficient forces, facilities and materials, work such hours, including extra shifts and overtime operations to ensure completion of all Base Scope Work in accordance with Section 01 1216 (Phasing of the Work), and every approved Construction Schedule.

"***Or Equal*" *and "Substitutions":***

6.14 When an item of material or equipment is specified by the use of a proprietary name, make, trade name, or catalog number the intent of the Specification is to establish the type, function, and quality required. Unless the provision of the Contract Documents indicate that no substitutions are permitted, for purposes as described in Public Contract Code Section 3400, the provision will be deemed followed by the words "or equal," and other items or material may be accepted by the OAR in accordance with the following provisions and applicable General Requirements.

"Or Equal"

6.14.1 Within thirty-five (35) days after the date established in the Notice of Award, CONTRACTOR may, in accordance with Public Contract Code Section 3400, submit to OAR proposed "or equal" material or equipment CONTRACTOR believes to be functionally equal to and sufficiently similar to those specified in the Contract Documents. CONTRACTOR must provide to OAR substantiating data.

6.14.2 The substantiating data shall include a CONTRACTOR certification stating that the proposed "or equal" will be readily available, perform the functions and achieve the results called for

by the general design, be similar in substance to that specified and be suited to the same use as that specified. All variations of the proposed "or equal" from that specified shall be identified in the proposal and all available maintenance, repair and replacement services shall be submitted. In addition, the following items shall be addressed in the substantiating data as to whether or not:

6.14.2.1 acceptance of the "or equal" for use in the Work will require a change in any of the Contract Documents or in the provisions of any other Separate Work Contract on the Project or to adapt the design to the proposed “or equal”;

6.14.2.2 the proposed "or equal" is subject to payment of any license fee or royalty;

6.14.2.3 the proposed "or equal" is equal to in quality and serviceability to the specified item;

6.14.2.4 is acceptable in consideration of the required design and artistic effect;

6.14.2.5 will require no excessive or more expensive maintenance, including adequacy and availability of replacement parts.

6.14.3 ***CONTRACTOR Expense:*** All data to be provided by CONTRACTOR in support of any proposed "or equal" will be at expense of CONTRACTOR.

6.14.4 ***Evaluation:*** ARCHITECT and OAR shall be allowed a reasonable time as supported by the Construction Schedule to evaluate each submittal made pursuant to Articles 6.14.1 and 6.14.2 with OAR as the final judge of acceptability. No proposed "or equal" will be ordered, installed, or utilized without OAR prior written acceptance as evidenced by a Construction Directive and/or Change Order. ARCHITECT may condition its approval of the "or equal" upon delivery to OWNER of an extended warranty or other assurances of adequate performance of the "or equal." All risks of damage, loss or expense, of any kind, including, without limitation, all costs associated with any Adverse Impact due to CONTRACTOR’s “or equal” submission shall be the sole responsibility of CONTRACTOR.

“Substitutions”

6.14.5 A specified item of material or equipment, which is no longer manufactured and/or cannot be acquired from existing inventories, will be considered a basis for a proposed substitution item. Substitution requests arising due to a new Subcontractor entering into a contractual relationship with CONTRACTOR during the Contract Time may be considered as long as there is sufficient time to review and approve the substitution without altering the previously accepted construction and material submission schedule. Proposed substitutions of materials or equipment must be made by CONTRACTOR and on the substitution request form available from OWNER within thirty (30) days of identifying that the product is no longer available. CONTRACTOR shall certify the proposed substitution will be readily available, perform adequately the functions and achieve the results called for by the design concept, be similar in substance to that specified, and be suited to the same use as that specified. The substitution request shall include all variations of the proposed substitute and an itemized estimate of all costs or credits directly or indirectly resulting from acceptance of such substitute, including costs of redesign and of Subcontractors affected by the resulting change. CONTRACTOR shall bear all the costs associated with the proposed substitution, unless the

substitution is made necessary by OWNER's specification of material or equipment that is not available because it is no longer manufactured or produced, in which case OWNER shall bear such costs. In addition, the following items shall also be considered:

6.14.5.1 the extent, if any, to which the time required to evaluate and consider accepting a proposed substitution will jeopardize timely compliance with any Milestones;

6.14.5.2 whether acceptance of the proposed substitution for use in the Work will require a change in any of the Contract Documents or in the provisions of any other Work by Separate Work Contract on the Project to adapt the design to the proposed substitute;

6.14.5.3 whether the proposed substitute is subject to payment of any license fee or royalty;

6.14.5.4 the proposed substitution is equal in quality, warranties, and serviceability to the specified item;

6.14.5.5 is acceptable in consideration of the required design and artistic effect;

6.14.5.6 will require no excessive or more expensive maintenance, including adequacy and availability of replacement parts.

6.14.6 ***CONTRACTOR Expense:*** All data to be provided by CONTRACTOR in support of any proposed substitute item will be at expense of CONTRACTOR.

6.14.7 ***Evaluation:*** ARCHITECT and OAR shall be allowed a reasonable time as supported by the Construction Schedule within which to evaluate each proposal for or submittal made pursuant to Article 6.14.5. ARCHITECT shall make a written recommendation to OAR regarding the acceptability of the proposed substitution. No substitution will be ordered, installed or utilized without OAR prior written acceptance as evidenced by a Construction Directive and/or Change Order. ARCHITECT may condition its approval of the substitution upon delivery to OWNER of an extended warranty or other assurances of adequate performance of the substitution. All risks of damage, of any kind, including, without limitation, all costs associated with any Adverse Impact due to obtaining approval from the Division of the State Architect, or any other governmental agency having jurisdiction, of a requested substitution shall be the responsibility of CONTRACTOR. ARCHITECT shall record the time of ARCHITECT in evaluating substitutions proposed or submitted by CONTRACTOR pursuant to Article 6.14.5, seeking any approvals required by governing agencies, and in making any changes in the Contract Documents or in the provisions of any other Separate Work Contract on the Project. Whether or not OAR accepts a substitution so proposed or submitted by CONTRACTOR, CONTRACTOR shall reimburse OWNER for ARCHITECT fees in evaluating each such proposed substitution. The OWNER shall have the right to assess any and all costs against Contract funds, the CONTRACTOR, and/or the performance bond.

6.14.8 All submittals made pursuant to 6.14 or 6.14.5 must meet OWNER's requirements for environmental safety and standards.

Additional Professional Services:

6.15 At any time during the Project, if OAR is required to provide or secure additional professional services for any reason by any acts of CONTRACTOR or its Subcontractors, CONTRACTOR may be responsible for the cost and expense thereof. Upon notice to CONTRACTOR, OWNER shall retain and provide additional professional services and may by assessment, recover all incurred costs for any additional professional services. Additional services shall include, but not be limited to:

6.15.1 all services made necessary by termination of CONTRACTOR for cause;

6.15.2 all services made necessary due to defective Work of CONTRACTOR;

6.15.3 all services required by failure of CONTRACTOR to perform Work according to any provision of the Contract Documents;

6.15.4 all services in connection with evaluating CONTRACTOR substitutions of materials or equipment and making subsequent revisions to Drawings, Specifications, and providing other documentation required;

6.15.5 all services required by failure of CONTRACTOR to prosecute the Work in compliance with the Construction Schedule;

6.15.6 all services required by failure of CONTRACTOR to pass or receive approval of any required test, inspection, observation or approval;

6.15.7 all services required in performing excessive reviews of CONTRACTOR Punch List Work;

6.15.8 all services in performing excessive reviews of CONTRACTOR Shop Drawings, material lists, Product Data, and Samples;

6.15.9 all services made necessary by OWNER exercising its options under Article 15.3;

6.15.10 all services required by failure of CONTRACTOR to provide for the safety of the Project.

Relative to Subcontractors, Suppliers and others:

6.16 Pursuant to Public Contract Code §§ 4107 and 4107.5, no CONTRACTOR whose bid is accepted shall, without the written consent of OWNER: substitute any person or entity as a Subcontractor in place of the Subcontractor designated in the original bid; permit any such Subcontractor to be assigned or transferred; or allow it to be performed by any person or entity, including the CONTRACTOR, other than the original Subcontractor listed in the original bid; sublet or subcontract any portion of the Work in excess of one-half of one percent (0.5%) of CONTRACTOR total bid as to which its original bid did not designate a Subcontractor. Any assignment or substitution made without the prior written consent of OWNER shall be void, and the assignees shall acquire no rights in the purported subcontract and/or Contract. Any consent, if given, shall not relieve CONTRACTOR or its Subcontractors from their obligations under the terms of the Contract Documents.

6.17 CONTRACTOR shall be responsible for all unreasonable and unforeseeable delays in the Milestones and/or Contract Time arising from substitutions. Any substitution shall not result in an adjustment to

the Contract Amount. Any substitution of a Subcontractor due to clerical error shall comply with Public Contract Code § 4107.5.

6.18 CONTRACTOR shall be responsible to OWNER for all acts and omissions of Subcontractors, suppliers and all others in furnishing and/or performance of the Work either by direct or indirect contract to CONTRACTOR. No provisions of the Contract Document shall serve to create and/or establish any contractual relationship between OWNER and/or ARCHITECT with any Subcontractor, supplier, or others in the furnishing and performance of the Work.

6.19 CONTRACTOR shall be responsible for the scheduling and coordination of all Work of Subcontractors, suppliers and all others in furnishing and/or performance of the Work by direct and/or indirect contract to CONTRACTOR. CONTRACTOR shall require all Subcontractors, suppliers and all others furnishing and/or performing any of the Work to communicate with ARCHITECT, OAR or OWNER through CONTRACTOR.

6.20 CONTRACTOR shall not be limited by the divisions of the Specifications or the identification of Drawings in apportioning the Work amongst Subcontractors or suppliers unless otherwise required by applicable law, regulation or statute.

6.21 By appropriate subcontract agreement CONTRACTOR shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to CONTRACTOR by terms of the Contract Documents, and to assume toward CONTRACTOR all obligations and responsibilities, which CONTRACTOR, by the Contract Documents, assumes toward OWNER. Each subcontract agreement shall preserve and protect the rights of OWNER under the Contract Documents with respect to the Work to be performed by the Subcontractor so the subcontracting thereof will not prejudice such rights. All subcontracts regarding the Work under the Contract shall contain an assignment clause running in favor of OWNER and/or an entity designated by OWNER. That clause is subject to the option of OWNER to exercise it. CONTRACTOR shall also require each Subcontractor to enter into similar subcontracts with sub-Subcontractors. CONTRACTOR shall make available to each proposed Subcontractor, before the execution of the subcontract agreement, the Contract Documents to which the Subcontractor will be bound. Subcontractors shall similarly make the Contract Documents available to their respective sub-Subcontractors. OWNER shall have the right to copies of all executed subcontracts for the Project.

6.22 Each subcontract agreement for a portion of the Work is assigned by CONTRACTOR to OWNER provided that: (1) the assignment is effective only after termination of the Contract or after CONTRACTOR right to proceed with the Work has been terminated under Article 15.3; (2) and only for those subcontract agreements which OWNER accepts by specifically notifying the Subcontractor in writing; (3) and the assignment is subject to the prior rights of the surety, if any, obligated under any bond relating to the Contract.

6.23 CONTRACTOR shall ensure by subcontract agreement each Subcontractor shall prepare and submit to CONTRACTOR within ten (10) days of execution of each subcontract agreement, comprehensive material lists, as set forth in Article 6.44.3, of the manufacturers and products proposed for the Work including information on materials, equipment, and fixtures required by the Contract Documents, as may be required for CONTRACTOR or ARCHITECT preliminary approval. Approval of such material lists of products shall not be construed as a substitute for the Shop Drawings, Product Data, manufacturer's descriptive data, Samples, or a substitution request, which are required by the Contract Documents, but rather as a base from which more detailed submittals shall be developed for the final review of CONTRACTOR, OAR and ARCHITECT.

6.24 No later than seven (7) days after receipt, pursuant to Business and Professions Code § 7108.5, CONTRACTOR shall pay to each Subcontractor, out of the amount paid to CONTRACTOR on account of such Subcontractors portion of the Work, the amount to which said Subcontractor is entitled, reflecting percentages actually retained from payments to CONTRACTOR on account of such Subcontractors portion of the Work. CONTRACTOR shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to sub-Subcontractors in a similar manner.

6.25 OWNER shall, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by CONTRACTOR, and action taken thereon by OWNER, on account of portions of the Work completed by such Subcontractor.

6.26 OWNER shall have no obligation to pay, or to see to the payment of monies to a Subcontractor except as may otherwise be required by law.

6.27 Payment to material or equipment suppliers shall be treated in a manner similar to that provided for in Articles 6.24, 6.25 and 6.26.

6.28 CONTRACTOR shall not use in any way as part of its bid, and shall not use to perform any portion of the Work, a Subcontractor, contractor or subcontractor who is ineligible to bid and/or work on a work of public improvements as mandated by Public Contract Code Section 6109.

Patent Fees and Royalties:

6.29 CONTRACTOR shall be financially responsible for payment of all royalties and license fees and shall assume all incidental costs in the performance of and/or incorporation into the Work of any invention, process, design, product or device subject to the patent and/or copyrights held by others. CONTRACTOR shall defend all suits or claims of infringement of patent and/or copyrights rights and shall hold OWNER and ARCHITECT harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process, or product of a particular manufacturer is required by the terms and conditions of the Contract Documents. If CONTRACTOR has reason to believe the required invention, process, design, product or device is an infringement of a patent and/or copyright, CONTRACTOR shall be responsible for such loss unless such information is furnished to ARCHITECT prior to the use and/or incorporation into the Work. ARCHITECT and/or OAR review of any method of construction, invention, appliance, process, article, device, or material of any kind shall be for its adequacy for the Work and shall not be an approval for the use by CONTRACTOR in violation of any patent or other rights of any person or entity. CONTRACTOR shall defend all suits or claims of infringement of patent and/or copyrights and shall hold OWNER and ARCHITECT harmless from loss when the terms and conditions of the Contract Documents do not require any particular invention, process, design, or product.

Permits and Fees:

6.30 CONTRACTOR and OWNER shall obtain and be financially responsible for the following governmental fees, permits and licenses necessary for proper execution and completion of the Work which are customarily secured after the Effective Date of the Contract and are required by any authority having legal jurisdiction over the Work and/or Project, except those required by the Division of the State Architect. Unless noted otherwise in the Contract Documents, OWNER shall be responsible for all Project Site testing and inspection as required by DSA and/or within sixty (60) miles of the Project Site, unless a different distance limitation is specified in the Contract Documents.

6.30.1 OWNER will obtain and be financially responsible for the following:

1. DSA application and plan check fees
2. Sewer facility assessment fees
3. Health Department Plan Check and Operating Permit Fees
4. Permanent Water Meter and Street Connection fee
5. Permanent Gas Meter and Street Connection Fee
6. Fire Sprinkler Detector Check Valve Assembly and Street Connection Fee
7. Operating permits for permanent material handling or elevator systems
8. Fire Department or related agency plan check and permits for permanent material handling, storage and or dispensing facilities of gasoline, diesel fuel, waste storage, oil, liquids and or gases.
9. Plan check and permit fees for DSA Deferred Approval Items or systems
10. Utility purveyor plan check and permit fees for electrical service
11. Plan check and meter fees for permanent gas systems
12. Industrial waste plan check and permits for permanent facilities
13. County and or City storm drain plan check and drainage fees
14. Plan Check for off-Site improvements

6.30.2 CONTRACTOR shall obtain and be financially responsible for the following:

1. Fire Department or related agency plan check and permits for temporary material handling, storage and or dispensing facilities of gasoline, diesel fuel, waste storage, oil, liquids and or gases
2. Grading or Site related development permits as required
3. Industrial waste plan check and permits for temporary facilities
4. AQMD permits as required
5. City business license
6. Permits for off-Site improvements
7. Traffic control plan check and permits as required
8. OSHA permits
9. Temporary utility plan check and permits as required
10. Sewer, storm and water connection permits
11. General building, electrical, plumbing and HVAC permits
12. Patent fees, licenses and royalties
13. Signage plan check fees and permits
14. Plan check and permit fees for temporary gas systems
15. Operating permits for temporary material handling or elevator systems

16. Storm Water Pollution Prevention Plan (SWPPP)

17. Other plan check, permits and fees as required.

Laws and Regulations:

6.31 CONTRACTOR at no additional cost to OWNER shall comply with all Applicable Laws and regulations and shall give all notices required by any law, ordinance, rule, regulation, and lawful order of public authorities having jurisdiction relative to the furnishing of or performance of the Work. Where the Contract Documents state that materials, processes, or procedures must be approved by the Division of State Architect or other Governmental Authority, CONTRACTOR shall be responsible for satisfying requirements of such Governmental Authority.

6.32 If CONTRACTOR performs Work contrary to any law, statute, ordinance, building code, rule or regulation, CONTRACTOR shall be responsible for all the direct and indirect costs, fees, expenses, losses and damages in connection with replacement thereof.

6.33 Each and every provision of law required by law to be inserted in the Contract Documents shall be deemed to be inserted. The Contract Documents shall be read and enforced as though such laws were included.

6.34 CONTRACTOR shall provide and maintain at the Project Site one copy of Title 19 and 24 for use and reference by the parties mentioned in the Contract Documents.

Sales, Consumer, Use and Similar Taxes:

6.35 CONTRACTOR is financially responsible for applicable federal, state, and local taxes on all items, including, without limitation, materials, labor, equipment, supplies and services furnished by CONTRACTOR, and all taxes arising from operations of CONTRACTOR pursuant to the Contract Documents. OWNER is exempt from federal excise tax, and a certificate of exemption shall be provided upon request of CONTRACTOR. CONTRACTOR is financially responsible for applicable charges and fees for all insurance and bonds required by the Contract except for OCIP premiums.

Use of Project Site and Premises:

6.36 During progress of the Work, CONTRACTOR shall maintain the Work, Project Site and surrounding areas free from accumulation of debris, waste material or rubbish caused by CONTRACTOR operations. All crates, cartons, paper, and other flammable waste materials shall be removed from all areas of the Work and/or Project Site and shall be properly disposed of at the end of each day. CONTRACTOR shall remove from all areas of the Work and/or Project Site all excess materials, tools, construction equipment, machinery, and temporary facilities no longer required for the Work. Forty-eight (48) hours after a request to remove from the OWNER, if CONTRACTOR fails to remove, OWNER reserves the right to take possession of any materials, tools, construction equipment, and machinery on the Project Site that OAR deems CONTRACTOR has abandoned. OWNER may withhold from payment due to CONTRACTOR any costs incurred by OWNER for the disposal thereof.

6.37 CONTRACTOR shall restrict all construction equipment, material storage and worker operations to the Project Site, lands, and/or areas identified in the Contract Documents and to other lands and areas allowed by permits, right of ways, easements and/or laws and regulations. CONTRACTOR is strictly

liable and assumes full responsibility for any damage to any such land, area, occupant and/or property of OWNER and any adjacent land, area, right of way, property, occupant and/or pedestrian thereof.

6.38 CONTRACTOR shall not cause, permit or allow structural loading in excess of safe limits or where such loading may induce stresses and/or pressures endangering:

6.38.1 any part of the Work under construction, completed Work or existing improvements on the Project Site;

6.38.2 any part of the Work under construction, completed Work or existing improvements adjacent to the Project Site.

Project Record Documents:

6.39 CONTRACTOR shall prepare and maintain on the Project Site, a current, accurate and complete set of all Drawings, Specifications, Addenda, Change Orders, Construction Directives, ARCHITECT written interpretations and clarification, Shop Drawings, Product Data and Samples, Construction Schedules, denoted and annotated to reflect all changes, revisions, and substitutions during construction of the Work, including, without limitation, field changes and the final location of all mechanical equipment, utility lines, ducts, outlets, structural members, walls, partitions, and other significant features. CONTRACTOR will update the record documents on a weekly basis. Project record documents shall be made available for inspection and use by, but not limited to, OAR, ARCHITECT, and the Project Inspector. Upon Substantial Completion of the Work, CONTRACTOR shall submit, in accordance with related provisions of the Contract Documents, one complete set of Project record documents, including the "As-Built" Drawings, to ARCHITECT, certifying them to be a complete and accurate reflection of the actual construction conditions of the Work. OWNER may delay any portion of CONTRACTOR's Application for Payments if the Project record documents are not kept current, accurate and complete.

Safety and Protection:

6.40 CONTRACTOR shall have responsibility for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract. CONTRACTOR shall ensure, by subcontract agreement, each Subcontractor has the responsibility for participating in and enforcing the safety and loss prevention programs established by CONTRACTOR for the Work and/or Project.

CONTRACTOR shall designate a competent person whose duties shall include loss and accident prevention and who shall have the responsibility and full authority to enforce the program. This competent person shall attend meetings with the representatives of the various Subcontractors employed to ensure that all employees understand and comply with the programs.

Each Subcontractor shall designate a competent person whose duties shall include loss and accident prevention and who shall have the responsibility and full authority to enforce the program. This person shall conduct safety meetings with the Subcontractor's employees and attend meetings with the representatives of the various sub-Subcontractors they have employed to ensure that all employees understand and comply with the programs. All Subcontractors and material or equipment suppliers shall cooperate fully with CONTRACTOR, OAR, OWNER, and all insurance carriers and loss prevention engineers.

6.40.1 If CONTRACTOR anticipates at any time that CONTRACTOR and its Subcontractors will have fifty (50) or more combined total employees on-Site throughout the duration of the Contract or the original Contract Amount exceeds $10,000,000, CONTRACTOR shall have a certified safety representative, with minimum qualifications as defined in the Safety Standards Manual, dedicated solely to safety and located on-Site on a full time basis.

6.40.2 If CONTRACTOR and its Subcontractors have fewer than fifty (50) combined total employees on-Site, CONTRACTOR may delegate the safety representative duties to an on-Site safety qualified supervisor with minimum qualifications as defined in the Safety Standards Manual.

6.40.3 CONTRACTOR shall provide and maintain at the Project Site adequate first aid supplies for minor injuries.

6.40.4 CONTRACTOR shall take all reasonable safety precautions related to the Work of this Contract, and shall provide reasonable protection to prevent damage, injury, or loss to:

6.40.4.1 employees or personnel involved in the Work on the Project Site and other persons who may be affected thereby.

6.40.4.2 the Work, material, and equipment to be incorporated therein and whether in storage on or off the Project Site and/or under the care, custody, or control of CONTRACTOR or Subcontractors.

6.40.4.3 other property at the Project Site, or adjacent thereto, such as trees, shrubs, lawns, walkways, pavement, roadways, structures, and utilities not designated for removal, relocation or replacement in the course of the Work. CONTRACTOR shall give notices and comply with Applicable Laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on the safety of persons or property or their protection from damage, injury, or loss.

6.40.4.4 CONTRACTOR shall erect and maintain, as required by existing Project Site conditions and performance of the Work, reasonable safeguards for safety and protection including posting danger signs and other warnings against hazards, promulgating safety regulations, and notifying owners and users of adjacent sites and utilities.

6.40.4.5 CONTRACTOR and Subcontractors shall continuously protect the Work and every portion thereof, OWNER property, and the property of others from damage, injury, or loss arising from weather conditions, vandals, and/or in connection with the Project and/or in connection with any Work.

6.40.4.6 CONTRACTOR and Subcontractors shall make good any such damage, injury, or loss except such as may be solely caused by, or due to, agents or employees of OWNER.

6.40.4.7 CONTRACTOR will remove all mud, water, or other elements required for the proper protection and safe prosecution of the Work.

6.40.4.8 CONTRACTOR shall at all times maintain adequate protection against weather so as to preserve the Work, materials, equipment, apparatus, and fixtures.

6.40.4.9 CONTRACTOR shall promptly provide notice to OAR, and other designated OWNER representatives, of all accidents arising out of or in connection with the Work, causing death, personal injury, or property damage including full details and statements of any witnesses. In addition, if death, serious personal injuries, or serious property damages are caused, the accident shall be reported immediately by telephone or messenger to OAR and other designated OWNER representatives.

6.40.4.10 CONTRACTOR shall ensure by subcontract agreement that each Subcontractor shall promptly report in writing to CONTRACTOR all incidents and/or accidents whatsoever arising out of, or in connection with, the performance of the Work, whether on or off the Project Site and whether or not they caused death, personal injury, or property damage, giving full details and statements of witnesses. In addition, if death or serious injuries or serious damages are caused, the accident shall be reported immediately to CONTRACTOR by telephone or messenger. CONTRACTOR shall immediately report the accident to OAR by telephone and thereafter promptly report the facts in writing to OAR giving full details of the accident.

6.40.5 CONTRACTOR shall perform its Work in a manner so as not to create excessive noise. For purposes of this Article 6.40.5, excessive noise is defined as causing or creating a disruption to an on-going educational or administrative function of OWNER during business hours or noise that violates any applicable federal, state, or local laws or regulations, including the ordinances of the surrounding community.

6.41 ***Hazard Communication Plan / Global Harmonized System:***

CONTRACTOR is responsible for identifying, coordinating, maintaining and any exchange of safety data sheets or other hazard information requiring dissemination or distribution between CONTRACTOR, Subcontractor, and/or others.

6.42 ***Emergencies:***

In an emergency affecting the safety or protection of persons or property of OWNER or adjacent to OWNER, CONTRACTOR, without special instructions or authorization from OAR, is obligated to act to prevent threatened damage, injury or loss due to, but not limited to, occurrences such as fire, flood, earthquake, or other soil and/or geological movements. CONTRACTOR shall provide notice to ARCHITECT and OAR if CONTRACTOR believes any significant changes in the Work or variations from the Contract Documents have been caused thereby. If OAR determines a change in the Contract Documents is required because of the action taken by CONTRACTOR in response to such an emergency, a Construction Directive may be issued to document the consequences of such action. If CONTRACTOR believes a Construction Directive establishes a basis for an adjustment in the Contract Amount, Milestones and/or Contract Time, CONTRACTOR shall, pursuant to Articles 10.7 through 10.17, submit a Change Order Proposal within ten (10) days of the date of issuance of the Construction Directive.

6.43 ***Shop Drawings, Samples, Product Data and Material Lists:***

6.43.1 ***Shop Drawings:*** CONTRACTOR shall prepare and/or cause to be prepared and shall submit all required Shop Drawings to ARCHITECT, with concurrent copy (if requested) to the OAR, for ARCHITECT review in accordance with the OAR accepted schedule of Shop Drawings and Sample submittals. All Shop Drawing submittals shall be identified and shall be submitted in accordance with the applicable requirements of related Division 01 General Requirements. Shop Drawings will be complete in respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show ARCHITECT the materials and equipment CONTRACTOR proposes to provide and to enable ARCHITECT to review the information for the limited purposes as set forth in Article 6.45.

6.43.2 ***Samples:*** CONTRACTOR shall prepare and/or cause to be prepared and shall submit all required Samples to ARCHITECT, with concurrent copy (if requested) to the OAR, for review in accordance with the OAR accepted schedule of Shop Drawings and Sample submittals. All Sample submittals shall be identified and shall be submitted in accordance with the applicable requirements of related Division 01 General Requirements. Each Sample will be clearly identified as to material, supplier, pertinent data such as catalog number, and the use for which intended and otherwise as ARCHITECT may require to enable ARCHITECT to review the submittal for the limited purposes required by Article 6.45.

6.43.3 ***Product Data and Material Lists:*** CONTRACTOR shall prepare and/or cause to be prepared and shall submit all required Product Data and material lists to OWNER for review in accordance with the OAR accepted schedule of Shop Drawings and Sample submittals. All Product Data and material lists shall be identified and shall be submitted in accordance with the applicable requirements of related Division 01 General Requirements. Each Product Data and material list will be complete with respect to manufacture's data, supplier, installation instructions, color charts, compliance with recognized codes and standards, performance characteristics, diagrams and templates, catalog cuts, schedules, illustrations, materials, specified performance and design criteria, and similar data to show ARCHITECT the use for which intended and otherwise as ARCHITECT may require to enable ARCHITECT to review the information for the limited purposes required by Article 6.45.

6.44 ***Submittal Procedures:***

6.44.1 Prior to the submission of each Shop Drawing, Sample, Product Data and/or material list CONTRACTOR shall have determined and verified:

6.44.1.1 all field measurements, quantities, dimensions, coordination, specified performance criteria, installation requirements, materials, catalog numbers and similar information with respect thereto;

6.44.1.2 all materials with respect to intended use, fabrication, shipping, handling, storage, assembly and installation pertaining to the performance of the Work;

6.44.1.3 all information relative to the sole responsibility of CONTRACTOR in respect to means, methods, techniques, sequences, and procedure of construction and safety precautions and programs incident thereto.

6.44.2 Each submittal shall bear a stamp or specific written indication signifying CONTRACTOR has satisfied CONTRACTOR obligations under the Contract Documents with respect to CONTRACTOR review, coordination and approval of that submittal. Each submittal shall bear written identification of all Specification section numbers and/or Drawing title block references the submittal is intended to address.

6.44.3 At the time of each submission, CONTRACTOR shall give ARCHITECT and OAR specific written notice of such variations, if any, that the Shop Drawings, Samples, Product Data and material lists submitted have from the requirements of the Contract Documents. Such notice shall be in a communication separate from, but included with each submittal, and in addition, CONTRACTOR shall cause a specific notation to be made on each Shop Drawing, Sample, Product Data and material list submitted to ARCHITECT and OAR for review and approval of each such variation.

6.45 ARCHITECT will review Shop Drawings, Samples, Product Data and material lists to determine if the items covered by the submittals will, after installation or incorporation into the Work, conform to the Contract Documents. CONTRACTOR shall make corrections required by ARCHITECT, and shall return the required number of corrected copies of Shop Drawings, Product Data and material lists and shall submit as required new Samples for review. CONTRACTOR must indicate in writing revisions other than the corrections called for by ARCHITECT (see Section 01 3300 of the General Requirements).

6.46 CONTRACTOR is not relieved from any responsibility for any variation from the requirements of the Contract Documents unless CONTRACTOR has complied with Article 6.44.3 and the variation has been approved by the OAR and/or ARCHITECT.

6.47 Where a Shop Drawing, Sample, Product Data and material list is required to be submitted by the Contract Documents or the approved schedule of Shop Drawings and Sample submissions accepted by OAR, any related Work performed prior to ARCHITECT review of the pertinent submittal will be at the sole expense, risk, and responsibility of CONTRACTOR.

6.48 ***Prevailing Wages:***

6.48.1 ***Labor Compliance Program***

6.48.1.1 CONTRACTOR and all Subcontractors must comply with OWNER's Labor Compliance Program ("LCP") requirements, including, but not limited to, all applicable statutes and regulations, OWNER's LCP Manual, and OWNER's Contract requirements. In the event that additional or revised information is required pursuant to enforcement of the LCP, such requirement shall not result in an increase to the Contract Time or the Contract Amount. CONTRACTOR will be responsible for all failures by all Subcontractors to comply with OWNER's LCP requirements. CONTRACTOR, consistent with California Public Contract Code section 6109, is prohibited from performing a portion of Work with a Subcontractor who is debarred pursuant to Sections 1777.1 or 1777.7 of the Labor Code.

6.48.1.2 Notice of LCP Approval:

OWNER's LCP was granted final approval/extended authority by the Department of Industrial Relations on December 27, 1996. For questions and assistance, please contact the OWNER LCP Office at (213) 241-4665, lcp@lausd.net, or at www.laschools.org on the web.

6.48.1.3 CONTRACTOR and all Subcontractors must send an authorized representative responsible for LCP compliance to the first available Labor Compliance Certification Training class following contract award. If a CONTRACTOR or Subcontractor has already attended OWNER's Labor Compliance Certification Training class less than one (1) year before contract award on the Project, it does not have to retake the Labor Compliance Certification Training Class. A representative responsible for LCP compliance for CONTRACTOR and each Subcontractor must take the online Labor Compliance Recertification class within one (1) year after taking the Labor Compliance Certification Training class.

6.48.2 ***Prevailing Wages***

6.48.2.1 This Project is a public work, as defined in Labor Code section 1720, and must be performed in accordance with the requirements of Labor Code sections 1720 to 1815 and Title 8 CCR sections 16000 to 17270, which govern the payment of prevailing wage rates on public works projects.

6.48.2.2 Payment of Prevailing Wages

In accordance with Labor Code sections 1720, 1771, 1771.5, 1774, and 1815 and Title 8 CCR section 16433, OWNER requires the payment of prevailing wages for all projects over twenty-five thousand ($25,000) dollars when the project is for construction or installation work, and for all projects over fifteen thousand ($15,000) dollars when the project is for alteration, demolition, repair, warranty or maintenance work.

6.48.2.3 Pursuant to Labor Code sections 1770 et seq., OWNER has obtained from the Department of Industrial Relations determinations of the prevailing wage rates and the prevailing wage rates for holiday and overtime work for Los Angeles County where the Project is to be performed. Copies of these prevailing wage rates are on file and available to any interested party upon request at the OWNER's principal office and the following websites: www.laschools.org/contractor/lc or www.dir.ca.gov/dlsr/pwd.

6.48.2.4 Questions pertaining to prevailing wage rates should be directed to the Labor Compliance Department or to the Division of Labor Statistics and Research at the following respective addresses:

Labor Compliance Department 333 S. Beaudry Ave, 21st Floor Los Angeles, CA 90017 (213) 241-4665 lcp@lausd.net	or	DLSR P.O. Box 420603 San Francisco, CA 94142 (415) 703-4774 Statistics@dir.ca.gov

6.48.2.5 CONTRACTOR shall post at appropriate and conspicuous locations on the Project Site the following:

6.48.2.5.1 A schedule showing all applicable prevailing wage rates in accordance with Labor Code section 1773.2; and

6.48.2.5.2 Notice of LCP approval and prevailing wage monitoring sufficient to satisfy Title 8 CCR sections 16429 and 16451(d), as appropriate.

6.48.2.6 CONTRACTOR and all Subcontractors must provide itemized wage statements to their employees in accordance with Labor Code section 226.

6.48.2.7 CONTRACTOR represents and warrants that the Contract Amount includes sufficient funds to allow CONTRACTOR and all Subcontractors to comply with all Applicable Laws and contractual agreements. CONTRACTOR shall satisfy its defense, indemnity and hold harmless obligations pursuant to the provisions of Article 6.53 arising out of or relating to the failure of CONTRACTOR or any Subcontractor to comply with any applicable law in this regard, including, but not limited to Labor Code section 2810. CONTRACTOR agrees to pay any and all assessments, including wages, penalties and liquidated damages, made against OWNER in relation to such failure.

6.48.2.8 Failure to comply with the payment of prevailing wages shall result in a penalty to the District pursuant to Labor Code section 1775 and applicable regulations, for each day, or portion thereof, for each worker paid less than the prevailing wage rate for the work or craft in which such worker is employed by the CONTRACTOR or Subcontractor. This includes, but is not limited to, the failure to pay applicable shift differential rates. Such penalty amounts may be deducted from the Contract Amount or sought directly from the CONTRACTOR's surety under the performance bond if there are insufficient funds remaining in the Contract Amount.

6.48.2.9 The CONTRACTOR and the bond insurer will be jointly and severally liable for the back wages, penalties, and/or Labor Code Liquidated Damages due as a result of a prevailing wage violation. "Labor Code Liquidated Damages" are equal to the total underpayment of wages remaining unpaid sixty (60) days after service of the Notice of Withholding of Contract Payments pursuant to Labor Code section 1742.1. The underpaid employee will receive both the Labor Code Liquidated Damages and the underpayment amount.

6.48.2.10 Pursuant to Labor Code section 1778, every person, who individually or as a representative of an awarding or public body or officer, or as a contractor or subcontractor doing public work, or agent or officer thereof, who takes, receives or conspires with another to take or receive, for his own use or the use of any other person, any portion of the wages of any workman or working subcontractor, in connection with services rendered upon any public work is guilty of a felony.

6.48.3 ***Apprentices***

6.48.3.1 CONTRACTOR and all Subcontractors shall comply with all requirements in Labor Code section 1777.5 and Title 8 CCR sections 200 et seq. CONTRACTOR is responsible for compliance with Labor Code section 1777.5 for all apprenticeable crafts or trades. CONTRACTOR and any Subcontractor(s) who fail to comply with Labor Code section 1777.5 shall be subject to the penalties specified in Labor Code section 1777.7.

6.48.3.2 CONTRACTOR and all Subcontractors shall submit contract award information using the Division of Apprenticeship Standards (DAS 140) Form to the applicable apprenticeship committee within ten (10) days of the date of execution of contract and no later than the first day of work in accordance with Title 8 CCR section 230. CONTRACTOR shall simultaneously submit a copy of the completed DAS 140 Form to the OWNER's Labor Compliance Department.

6.48.4 ***Working Hours***

6.48.4.1 CONTRACTOR and all Subcontractors shall comply with the following provisions for working hours:

6.48.4.1.1 Pursuant to Labor Code section 1810, eight (8) hours labor shall constitute a legal day's work.

6.48.4.1.2 Pursuant to Labor Code section 1811, the time of service of any worker employed at any time by CONTRACTOR or any Subcontractor is limited and restricted to eight (8) hours during any one day and forty (40) hours during any one week, except as otherwise provided by law.

6.48.4.1.3 Notwithstanding the foregoing provisions, work performed in excess of eight (8) hours per day and forty (40) hours during any one week, shall be permitted upon compensation for all hours worked in excess of eight (8) hours per day and forty (40) hours per week at not less than one and one-half (1 ½) times the basic rate of pay, or as otherwise required by law. All work performed on Saturday, Sunday, and/or holidays shall be paid pursuant to the Prevailing Wage Determination.

6.48.4.1.4 Unless otherwise provided in the Supplementary Conditions or prescribed by law, where a single shift is worked, eight (8) consecutive hours between 7 AM and 5 PM shall constitute a work day at the applicable prevailing wage rate(s).

6.48.4.1.5 Unless otherwise provided in the Supplementary Conditions or prescribed by law, forty (40) hours between Monday 7 AM and Friday 5 PM shall constitute a workweek at the applicable prevailing wage rate(s).

6.48.4.1.6 The OWNER's Labor Compliance Department audit and investigation uses the working hours contained in Articles 6.48.4.1.4 and 6.48.4.1.5 and determines violations and penalties accordingly, unless evidence is found to the contrary, such as in the Supplementary Conditions, or is prescribed by law.

6.48.4.1.7 After the Effective Date of the Contract, the work day and workweek may only be modified as authorized in Article 3.15. Any other Work performed by workers necessary to be performed outside of the work day and workweek shall be performed without adjustment to the Contract Amount or any other additional expense to the District.

6.48.4.2 Failure to comply with the payment of overtime wages shall result in a penalty to the OWNER pursuant to Labor Code section 1813 and applicable regulations, for each day, or portion thereof, during which the worker is required or permitted to work more than 8 hours in any one day and 40 hours in any one week without proper compensation in violation of Labor Code sections 1810 et seq. and/or applicable regulations. Such penalty amounts may be deducted from the Contract Amount or sought directly from the CONTRACTOR's surety under the performance bond if there are insufficient funds remaining in the Contract Amount.

6.48.5 ***Certified Payroll Reporting Forms and Payroll Records***

6.48.5.1 CONTRACTOR shall be responsible for the submission of electronic certified payroll records of CONTRACTOR and all Subcontractors within ten (10) days of the week ending date of each week. CONTRACTOR shall submit weekly electronic certified payroll records, including certified Non-Performance payroll records, in the method provided by the OWNER's Web-based Certified Payroll Reporting System, to the OWNER's Labor Compliance Program. When a Contract has various school projects, Certified Payroll Reporting Forms for each individual school shall be maintained and submitted in the method provided by OWNER.

6.48.5.2 CONTRACTOR must comply with all requirements of OWNER's Web-based Certified Payroll Reporting System, including, but not limited to, electronic signature, electronic submittal of documents and forms, and use of other electronic modules. This obligation includes compliance with all existing requirements and all new requirements developed during the term of the Project.

6.48.5.3 CONTRACTOR shall submit to OWNER's Labor Compliance Department, an estimated start date for all Subcontractors, within five (5) days of the Subcontractor work start date and shall submit a revised estimate, if applicable, within five (5) days of knowledge of any changes to any estimated start date. This document must contain the name and address of each Subcontractor, each Subcontractor's contractor license number and the estimated start date.

6.48.5.4 CONTRACTOR shall provide, and shall cause all Subcontractors to provide, "Payroll Records" to OWNER, within ten (10) days of written request, at no cost to OWNER. "Payroll Records" are all un-redacted certified payroll records, time

cards, sign-in sheets, daily construction reports, check stubs, cancelled checks, cash receipts, trust fund forms, books, documents, schedules, forms, reports, receipts or other evidences which reflect job assignments, work schedules by days and hours, and the disbursement by way of cash, check or in whatever form or manner, of funds to a person(s) by job classification and/or skill pursuant to the Project. All received documents will become property of OWNER.

6.48.5.5 Failure to submit Payroll Records within ten (10) days of such due date shall result in a penalty to OWNER pursuant to Labor Code section 1776 and applicable regulations, until strict compliance is effectuated. Such penalty amounts may be deducted from the Contract Amount or sought directly from the CONTRACTOR's surety under the performance bond if there are insufficient funds remaining in the Contract Amount.

6.48.6 ***Payroll Record Liquidated Damages***

Should CONTRACTOR or any Subcontractor neglect, fail or refuse to submit any Payroll Records pursuant to Article 6.48.5, CONTRACTOR agrees to pay to OWNER the sum of $100.00 per day in contractual liquidated damages, not as a penalty but as liquidated damages, for every day of noncompliance beyond ten (10) days after such documents are due ("Payroll Record Liquidated Damages"). Payroll Record Liquidated Damages shall continue to accrue until strict compliance is effectuated. Upon issuance of a Payroll Record Liquidated Damages Permanent Assessment, the liquidated damages amount will be disbursed to the OWNER. The Payroll Record Liquidated Damages amounts are agreed upon by and between the CONTRACTOR and OWNER because of the difficulty of fixing OWNER's actual damages in the event of failure to submit such documents. CONTRACTOR and OWNER specifically agree that said amounts are reasonable estimates of OWNER's damages in such event, and that such amounts do not constitute a penalty. CONTRACTOR and OWNER acknowledge and agree that these Payroll Record Liquidated Damages are reasonable under the circumstances existing at the time of the CONTRACTOR's execution of the Contract. These Payroll Record Liquidated Damages are distinct from statutory Labor Code Liquidated Damages. This remedy is not exclusive and is cumulative of all other remedies available to OWNER.

6.48.7 ***Withholding of Contract Payments***

6.48.7.1 OWNER will withhold payment from CONTRACTOR in accordance with its rights and obligations under Labor Code section 1720 et seq. and applicable regulations, including for back wages, penalties and Labor Code Liquidated Damages.

6.48.7.2 Notwithstanding any other provision in these General Conditions, OWNER may withhold payment from any portion of the Contract Amount then or thereafter due the CONTRACTOR for violation by CONTRACTOR or any Subcontractor of the requirements of Article 6.48 or any of its subsections and for Payroll Record Liquidated Damages. Without limitation to the foregoing, payment shall not be made to the CONTRACTOR when certified payroll records by CONTRACTOR or any of its Subcontractors are delinquent or inadequate in accordance with Title 8 CCR 16435.

6.48.8 ***Incorporation by Reference***

All statutory Codes and Regulations cited in this contract are understood by the parties to be incorporated in full by the references to those statutes and regulations herein.

6.48.9 ***Project Stabilization Agreement (PSA)***

6.48.9.1 The Project Stabilization Agreement ("PSA") applies to all construction, major rehabilitation work, and capital improvement work, as set forth in Section 00 7349 of this Contract. CONTRACTOR agrees to be bound by the PSA and to require all Subcontractors to do so. For information pertaining to PSA, CONTRACTOR can refer to the following web address:

http://www.laschools.org/new-site/project-stabilization/

6.48.9.2 If the PSA applies to this Work, CONTRACTOR must also comply with all of the following provisions:

6.48.9.2.1 CONTRACTOR shall cause a sign to be posted on the job Site stating, in English and Spanish, in large enough print to read from a reasonable distance, no less than 32 point font size, "Employees: Your employee benefits payments are being paid to a trust fund on your behalf. Your employer must provide you information about your benefits and make documentation about your benefits available to you."

6.48.9.2.2 CONTRACTOR must submit with its final Application for Payment a certification that CONTRACTOR and all Subcontractors have paid all benefit contributions due and owing to the appropriate trust fund(s).

6.48.9.2.3 CONTRACTOR and all Subcontractors must comply with the requirements of OWNER's Web-based Certified Payroll Reporting System for electronic submittal of PSA-related documents, including, but not limited to, Letters of Assent and certification forms.

6.48.9.3 OWNER's Labor Compliance Department may monitor the timely payment of employee benefits to the appropriate trust fund in accordance with the PSA and Labor Code section 1771.5.

6.49 ***Public Works Contractor Registration***

Pursuant to Labor Code section 1771.1, a contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in this chapter, unless currently registered and qualified to perform public work pursuant to Labor Code section 1725.5.
It is not a violation of this Article 6.49 for an unregistered contractor to submit a bid that is authorized by section 7029.1 of the Business and Professions Code, or by section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Labor Code

section 1725.5 at the time the contract is awarded. CONTRACTOR represents that all Subcontractors are registered pursuant to Labor Code section 1725.5.

6.50 ***Continuing the Work; and Measure of Damages:***

The school facilities being built for OWNER under this Contract are critically needed to provide seats, classrooms and other facilities for the children of the Los Angeles Unified School District. If CONTRACTOR stops, delays, postpones and/or otherwise suspends the Work or any portion thereof, except in cases of emergency or encountering those conditions as set forth in Articles 4.2, 4.3, and 4.5, CONTRACTOR will cause irreparable harm; including without limitation the renting and/or leasing of temporary classroom and support facilities, the busing of students to temporary alternative educational facilities, and the providing of temporary nutrition services. Accordingly, at all times, CONTRACTOR shall continue to perform the Work in accordance with the Construction Schedule and/or as otherwise directed in writing by a Construction Directive. CONTRACTOR shall proceed with the Work even if CONTRACTOR contends OWNER, and/or anyone OWNER is legally responsible for, has materially and/or otherwise breached the Contract; and even if there exists a dispute; disagreement, or a proceeding and/or Claim is pending. CONTRACTOR acknowledges that it shall not suffer any irreparable harm by continuing to perform the Work and/or any disputed Work as there is a fair and reasonable method of full compensation provided for under this Contract, as found in, but without limitation, Articles 10, 11, 12, 14, and 16 of these General Conditions. CONTRACTOR and OWNER agree that the measure of damages for breach of Contract shall be the sole measure of damage used in any dispute, proceeding, arbitration, and/or litigation and in every and all disagreements between them, unless expressly stated otherwise in this Contract. The Work, portions thereof, and/or disputed Work shall not be stopped, delayed, postponed and/or otherwise suspended pending the resolution of any dispute, Claim, proceeding and/or disagreement of every kind. This provision constitutes an advance waiver by CONTRACTOR of any right, if any, whenever acquired, to rescind this Contract.

6.51 ***Right to Audit:***

6.51.1 The State Allocation Board ("SAB") and/or OWNER shall have the right to review, obtain, inspect, audit and copy all the written and electronically stored records of CONTRACTOR pertaining to the Contract and/or Work and any claim in connection with any of the foregoing, and regarding all Applicable Laws and/or regulations pertaining to the Contract and/or Work, in any way.

6.51.2 CONTRACTOR, in executing this Contract, agrees without reservation to OWNER's right to audit. Should CONTRACTOR refuse to allow OWNER or its agents access to any records or delay or inhibit OWNER or it agents from performing the audit or any portion of the audit, CONTRACTOR may be subject to an adverse evaluation and/or removal from the list of prequalified contractors.

6.51.3 CONTRACTOR shall include the right to audit provisions, specifically providing the right of OWNER's representatives to examine their records, in the contracts of all Subcontractors, insurance agents, material suppliers, or any other business entity providing goods and services.

6.51.4 If an audit, inspection and/or examination under this Article 6.51 discloses overpricing and/or overcharges of any nature by CONTRACTOR to OWNER, then, in addition to all other OWNER rights and remedies, and in addition to making adjustments for the overcharges

and/or overpricing, CONTRACTOR shall reimburse OWNER for all reasonable actual cost of OWNER audit, legal services, inspection, and/or examination.

6.51.5 Any OWNER assessments shall be made no later than ninety (90) days from the date that OWNER findings are presented to CONTRACTOR. The fact that a dispute, Claim, arbitration, and/or litigation under Article 16 is pending involving OWNER, CONTRACTOR, and/or others, shall not in any way preclude, postpone, or impair, in any way, OWNER rights to proceed under this Article 6.51.

6.51.6 In addition to the remedies available to OWNER under Article 6.51.2 and as provided elsewhere in the Contract Documents, CONTRACTOR's refusal or the refusal of any of CONTRACTOR's Subcontractors to comply with the DISTRICT's request to audit or provide access to any records or delay or inhibit OWNER or its agents from performing the audit may be considered a material breach of the Contract which may result in delay or disruption of payments to CONTRACTOR pursuant to Article 14.9 or termination for cause under Article 15.3.1.

6.52 ***General Warranty and Guarantee:***

6.52.1 CONTRACTOR warrants and guarantees to OWNER all Work shall be in accordance with the Contract Documents and will not be defective. CONTRACTOR warranty and guarantee hereunder excludes defects and/or damages caused by:

6.52.1.1 abuse, modification or improper maintenance or operation by persons other than CONTRACTOR, Subcontractors or suppliers;

6.52.1.2 normal wear and tear under normal usage.

6.52.2 CONTRACTOR obligation to perform and complete the Work in accordance with the Contract Documents and all applicable codes, laws and regulations shall be absolute. None of the following shall constitute acceptance of Work which is not in accordance with the Contract Documents and all applicable codes, laws and regulations or shall serve as a release of CONTRACTOR obligations to perform the Work in accordance with the Contract Documents:

6.52.2.1 observation by ARCHITECT;

6.52.2.2 recommendation of any progress and/or final payment and/or release of retention by OAR;

6.52.2.3 issuance of a certificate of Substantial Completion, Partial Use or Occupancy or any payment by OWNER to CONTRACTOR under the Contract Documents;

6.52.2.4 any direction by OAR or acceptance by OWNER or any failure to do so;

6.52.2.5 any review and approval of a Shop Drawing, Sample, Product Data or material list submittal or the issuance of a notice of acceptability by ARCHITECT and/or OAR pursuant to Article 6.43;

6.52.2.6 any inspection, test and/or approval by others;

6.52.2.7 any correction of defective Work by OWNER.

6.53 ***Indemnification:***

In addition to Article 6.54 and any other part of the Contract Documents, and to the fullest extent permitted by law, CONTRACTOR shall defend, indemnify, and hold harmless OWNER, members of OWNER's Board of Education, OAR, OCIP Administrator, ARCHITECT, OWNER consultants, Project Inspector and State of California, and each of their respective agents, employees, representatives, officers, and directors (collectively, "Indemnified Parties"), from and against claims, actions, damages, losses, penalties, costs and expenses (including, but not limited to attorneys' fees and costs including fees of consultants) arising out of or resulting from, whether in whole or in part, breach of or noncompliance with this Contract, statutory of other violations of law, negligence, gross negligence or willful misconduct, or the acts, omissions, or other conduct of CONTRACTOR, any Subcontractor or any person or entity engaged by them for the Work. CONTRACTOR's obligations under this Article 6.53 include without limitation: (i) injuries to or death of persons; (ii) damage to property; (iii) theft or loss of property; (iv) stop payment notice claims asserted by any person or entity in connection with the Work; and (v) other losses, liabilities, damages or costs resulting from, in whole or in part, any acts, omissions or other conduct of CONTRACTOR or its Subcontractors or their respective agents, employees, material or equipment suppliers, vendors, invitees, or licensees, anyone directly or indirectly employed by any of them, or anyone for whose acts they may be liable, arising out of or related to the Contract, Work and/or Project, including without limitation, performance of the Work; payment of Subcontractors and/or others; use of the Project Site; construction of the Work, or failure to construct the Work, or any portion thereof; and use, misuse, erection, maintenance, operation, or failure of any machinery or equipment including, but not limited to, scaffolds, derricks, ladders, hoists, and rigging supports, whether or not such machinery or equipment was furnished, rented, or loaned by any of the Indemnified Parties. The obligations provided in this Article 6.53 shall be binding on CONTRACTOR regardless of whether the allegations underlying such claims, action, damage, loss, penalty, cost or expense are with or without merit, true or false and whether or not caused in part by any of the Indemnified Parties. The obligations of CONTRACTOR as set forth in (v) above shall include, without limitation, claims, actions, damages, losses, penalties, costs and expenses asserted by any other contractor to the OWNER in connection with the Work or in connection with a work of improvement related to or affected by the Work. If any action or proceeding, whether judicial, administrative, arbitration or otherwise, shall be commenced on account of any claim, demand or liability subject to CONTRACTOR's obligations hereunder, and such action or proceeding names any of the Indemnified Parties as a party thereto, CONTRACTOR shall, at its sole cost and expense, defend the named Indemnified Parties in such action or proceeding with counsel reasonably satisfactory to the named Indemnified Parties. In the event that there shall be any judgment, award, ruling, settlement or other relief arising out of such action or proceeding to which any of the Indemnified Parties are subject to or bound by, CONTRACTOR shall pay, satisfy or otherwise discharge any such judgment, award, ruling, settlement or relief; CONTRACTOR shall indemnify and hold harmless the Indemnified Parties from any and all liability or responsibility arising out of any such judgment, award, ruling, settlement or relief. CONTRACTOR's obligations hereunder are binding upon CONTRACTOR's performance bond surety and these obligations shall survive notwithstanding CONTRACTOR's completion of the Work or the termination of the Contract or CONTRACTOR's performance of the Contract. CONTRACTOR's obligations shall not be construed to negate, abridge or reduce other rights or obligations of defense and/or indemnity which would otherwise exist as to the Indemnified Parties. Nothing set forth in this Article 6.53 is intended to provide indemnification

for those situations precluded by law, including without limitation, the circumstances described in Civil Code §§ 2782(a) and 2782(b).

6.54 ***Indemnification by Subcontractors:***

In addition to Articles 6.53 and 6.54 and any other part of the Contract Documents, and to the fullest extent permitted by law, CONTRACTOR shall ensure by subcontract agreement that each Subcontractor shall defend, indemnify, and hold harmless the Indemnified Parties from and against claims, actions, damages, losses, penalties, costs and expenses (including, but not limited to attorneys' fees and costs including fees of consultants) arising out of or resulting from, whether in whole or in part, breach of or noncompliance with the subcontract agreement, this Contract, statutory or other violations of law, negligence, gross negligence or willful misconduct, or the acts, omissions, or other conduct of such Subcontractor or any person or entity engaged by them for the Work. Subcontractor's obligations under this Article 6.54 include without limitation: (i) injuries to or death of persons; (ii) damage to property; (iii) theft or loss of property; (iv) stop payment notice claims asserted by any person or entity in connection with the Work; and (v) other losses, liabilities, damages or costs resulting from, in whole or in part, any acts, omissions or other conduct of such Subcontractor or its agents, employees, material or equipment suppliers, invitees, or licensees, anyone directly or indirectly employed by any of them, or anyone for whose acts they may be liable, arising out of or related to such subcontract agreement, this Contract, Work and/or Project, including without limitation, performance of the Work; use of the Project Site; payment of suppliers and/or others; construction of the Work, or failure to construct the Work, or any portion thereof; and use, misuse, erection, maintenance, operation, or failure of any machinery or equipment including, but not limited to, scaffolds, derricks, ladders, hoists, and rigging supports, whether or not such machinery or equipment was furnished, rented, or loaned by any of the Indemnified Parties. The obligations provided in this Article 6.54 shall be binding on each Subcontractor regardless of whether the allegations underlying such claims, action, damage, loss, penalty, cost or expense are with or without merit, true or false and whether or not caused in part by any of the Indemnified Parties. The obligations of each Subcontractor as set forth in (v) above shall include, without limitation, claims, actions, damages, losses, penalties, costs and expenses asserted by any other contractor to the OWNER in connection with the Work or in connection with a work of improvement related to or affected by the Work. If any action or proceeding, whether judicial, administrative, arbitration or otherwise, shall be commenced on account of any claim, demand or liability subject to Subcontractor's obligations hereunder, and such action or proceeding names any of the Indemnified Parties as a party thereto, Subcontractor shall, at its sole cost and expense, defend the named Indemnified Parties in such action or proceeding with counsel reasonably satisfactory to the named Indemnified Parties. In the event that there shall be any judgment, award, ruling, settlement or other relief arising out of such action or proceeding to which any of the Indemnified Parties are subject to or bound by, Subcontractor shall pay, satisfy or otherwise discharge any such judgment, award, ruling, settlement or relief; Subcontractor shall indemnify and hold harmless the Indemnified Parties from any and all liability or responsibility arising out of any such judgment, award, ruling, settlement or relief. Subcontractor's obligations hereunder are binding upon Subcontractor's performance bond surety, if any, and these obligations shall survive notwithstanding Subcontractor's completion of the Work or the termination of the subcontract agreement, the Contract or CONTRACTOR's performance of the Contract. Subcontractor's obligations shall not be construed to negate, abridge or reduce other rights or obligations of defense and/or indemnity which would otherwise exist as to the Indemnified Parties. Nothing set forth in this Article 6.54 is intended to provide indemnification for those situations precluded by law, including without limitation, the circumstances described in Civil Code §§ 2782(a) and 2782(b).

6.55 ***Joint and Several Liability:***

In the event that more than one Subcontractor is connected with an event covered by the text of Articles 6.53 and/or 6.54, then all such Subcontractors, together with CONTRACTOR, shall be jointly and severally responsible to each of the Indemnified Parties for the obligations described therein, and the ultimate responsibility among such indemnifying Subcontractors and/or CONTRACTOR for the loss and expense of any such obligations shall be resolved without jeopardy to any of the Indemnified Parties. The text of Articles 6.53 and 6.54 shall not be construed to indemnify any of the Indemnified Parties for its own negligence if not permitted by law or to eliminate or reduce any other right that any of the Indemnified Parties has by law or equity.

6.56 ***No Limitation on Obligations to Indemnify:***

CONTRACTOR's and each Subcontractor's obligation to defend, indemnify, and hold harmless the Indemnified Parties under Articles 6.53 and 6.54 shall also include, without limitation, any and all claims, actions, damages, losses, penalties, costs and expenses for: injury to persons and property and death of any person; breach of any warranty and/or guarantees, express or implied; failure of CONTRACTOR or Subcontractors to comply with any Applicable Laws, rule, regulation, or other requirement; and products installed in or used in connection with the Work, except as may be precluded by statute. These obligations shall survive final payment, Contract Completion, acceptance of the Work, any termination of the Contract and/or any termination of CONTRACTOR's right to proceed with the Work in whole and/or in part.

6.57 ***Indemnification and Performance Bond:***

The performance bond surety shall not be liable under the performance bond where CONTRACTOR's liability to OWNER is based solely upon Articles 6.53, 6.54, 6.56 and/or the indemnity provision of 4.7 of this Agreement; provided that, should OWNER terminate CONTRACTOR for CONTRACTOR's failure to comply with Articles 6.53, 6.54, 6.56 and/or the indemnity provision of 4.7, SURETY shall nevertheless be liable for completion of the Contract and Work.

ARTICLE 7 - CONSTRUCTION BY OWNER OR BY SEPARATE WORK CONTRACT

7.1 ***OWNER Right:***

OWNER reserves the right to perform the Work, portions thereof and other Work related to the Project with OWNER forces and/or to award Separate Work Contract to perform Work relative to utilities, Work and/or the Project.

7.2 ***Work Not Identified in Bidding Documents:***

In the event the Work is not identified in the Bidding Documents and upon the election to perform Work with OWNER forces or by Separate Work Contract, OWNER shall provide notice to CONTRACTOR prior to commencing any such Work. If CONTRACTOR believes the performance of any such work by OWNER forces or Separate Work Contract justifies an adjustment in the Contract Amount, Milestones and/or Contract Time, CONTRACTOR shall provide notice to OWNER who shall promptly investigate.

7.3 ***Work Identified in Contract Documents:***

If the Work or a portion thereof is identified in the Contract Documents and upon OWNER election to perform the Work or a portion thereof with OWNER forces or Separate Work Contract, OWNER may, in addition to the OWNER rights as set forth in Article 10, proceed in accordance with, but not limited to, Articles 15.1 through 15.3.

7.4 ***CONTRACTOR Duties and Responsibilities:***

CONTRACTOR duties and responsibilities are to:

7.4.1 Coordinate, sequence, and schedule Work activities of the Project in conjunction with the Work of CONTRACTOR, OWNER forces and/or Separate Work Contract. CONTRACTOR shall make any revisions to the Construction Schedule in conjunction with or relative to the Work of CONTRACTOR, OWNER forces and/or Separate Work Contract. CONTRACTOR shall, and in accordance with related Division 01 General Requirements, submit and obtain OAR approval of all Construction Schedules. Upon approval and subsequent distribution of the Construction Schedules, CONTRACTOR, OWNER forces and/or Separate Work Contract shall fully comply with the Construction Schedules.

7.4.2 Allow the delivery and storage of materials and/or equipment of OWNER forces and/or Separate Work Contract.

7.4.3 Not hinder or otherwise delay the Work of CONTRACTOR, OWNER forces and/or Separate Work Contract.

7.4.4 Unless provided otherwise in the Contract Documents and in order to fully integrate the Work of OWNER forces and/or Separate Work Contract, CONTRACTOR shall perform all cutting, fitting, patching and connecting of the Work with and to the Work of OWNER forces and/or Separate Work Contract. CONTRACTOR shall seek, and not be subject to unreasonable withholding of, written consent from ARCHITECT and/or Separate Work Contract prior to cutting, excavating, and/or otherwise altering Work of OWNER forces and/or Separate Work Contract.

7.4.5 If the Contract Documents specify cutting, fitting, patching and connecting of the Work performed by OWNER forces and/or Separate Work Contract, CONTRACTOR shall not unreasonably withhold consent to cutting, fitting, patching, or otherwise altering Work of CONTRACTOR.

7.4.6 If any part of the Project depends upon Work of OWNER forces and/or Separate Work Contract, CONTRACTOR shall examine and immediately provide notice to OAR of any defective Work in the Work of OWNER forces and/or Separate Work Contract rendering it unsuitable for the proper execution of subsequent CONTRACTOR Work. CONTRACTOR shall take all reasonable measures necessary to minimize and mitigate the impact of the asserted defective Work on CONTRACTOR's Work or on CONTRACTOR's ability to proceed with completion of the Work per the Contract Documents and Project Schedule. Failure of CONTRACTOR to provide notice shall constitute acceptance of preceding Work as fit and proper for execution of subsequent Work. ARCHITECT and OAR shall promptly investigate and the OAR may, in consideration of, but not limited to, the recommendation of ARCHITECT, issue a Construction Directive to CONTRACTOR, OWNER forces and/or

Separate Work Contract. If CONTRACTOR believes a Construction Directive establishes a basis for an adjustment in the Contract Amount, Milestones and/or Contract Time, CONTRACTOR shall, pursuant to Articles 10.7 through 10.17, submit a Change Order Proposal within ten (10) days of the date of issuance of the Construction Directive.

7.4.7 Assure proper execution of subsequent CONTRACTOR Work. In order to do so, CONTRACTOR shall measure the completed Work of OWNER forces and/or Separate Work Contract and shall immediately provide notice to OAR of any discrepancies between the completed Work of OWNER forces and/or Separate Work Contract rendering it unsuitable for the proper execution of subsequent CONTRACTOR Work. ARCHITECT and OAR shall promptly investigate and the OAR may, in consideration of, but not limited to, the recommendation of ARCHITECT, issue a Construction Directive to CONTRACTOR. Failure of CONTRACTOR to provide notice shall constitute acceptance of preceding Work as fit and proper for execution of subsequent Work. If CONTRACTOR believes a Construction Directive establishes a basis for an adjustment in the Contract Amount, Milestones and/or Contract Time, CONTRACTOR shall, pursuant to Articles 10.7 through 10.17, submit a Change Order Proposal within ten (10) days of the date of issuance of the Construction Directive.

7.4.8 CONTRACTOR shall not damage or otherwise endanger the Work and/or property of OWNER forces and/or Separate Work Contract. In the event CONTRACTOR causes damage or is deemed responsible by the OAR for the cause of damage to Work and/or property of OWNER forces and/or Separate Work Contract, OAR may issue a Construction Directive to immediately remedy such damage. If CONTRACTOR believes a Construction Directive establishes a basis for an adjustment in the Contract Amount, Milestones and/or Contract Time, CONTRACTOR shall, pursuant to Articles 10.7 through 10.17, submit a Change Order Proposal within ten (10) days of the date of issuance of the Construction Directive.

7.4.9 CONTRACTOR shall be completely responsible for, and shall provide all means, methods and materials to fully protect and/or otherwise prevent damage to the Work until Substantial Completion.

7.4.10 If OWNER elects to perform any portion of the Work as per Articles 7.2 and/or 7.3, CONTRACTOR shall perform and/or otherwise continue to perform the remaining portions of the Work and shall fully comply with CONTRACTOR obligations as set forth in Article 6.50.

OWNER Roles:

7.5 ***OWNER will:***

7.5.1 participate in, or cause participation in, the coordination, sequencing and scheduling of CONTRACTOR activities relative to the Work, Work of OWNER forces and/or Separate Work Contract;

7.5.2 not hinder or otherwise delay the Work of CONTRACTOR, OWNER forces and/or Separate Work Contract.

ARTICLE 8 - OWNER DUTIES, RIGHTS AND RESPONSIBILITIES

8.1 OWNER will define the roles and responsibilities of OAR and ARCHITECT. OAR is the OWNER representative during the Work, or any portion thereof, who will be identified at the initial job start meeting as provided in Article 2.6. The duties, responsibilities and authority limits of the OAR are as set forth in the Contract Documents.

8.2 Unless noted otherwise, OWNER shall issue all OWNER communications to CONTRACTOR, ARCHITECT, and/or others, through the OAR or as otherwise designated by OWNER.

8.3 In case of termination and/or replacement of ARCHITECT, OWNER has the right to engage the professional services of another ARCHITECT or may perform ARCHITECT duties and responsibilities with ARCHITECT of direct OWNER employment. The status of the replacement ARCHITECT shall be as of original ARCHITECT as defined within the Contract Documents.

8.4 OWNER shall have the right, but not the obligation, to require the removal from the Work any superintendent, staff member, agent, or employee of CONTRACTOR, Subcontractor, vendor, material, or equipment supplier for cause.

8.5 OWNER has no duty, responsibility or obligation for any and/or all safety precautions and/or programs except which is expressly called out in the Contract Documents.

8.6 OWNER has no contractual relationship of any kind with any Subcontractor, supplier, or anyone other than CONTRACTOR. The Contract is made solely for the benefit of CONTRACTOR and OWNER and no others.

8.7 OWNER has the right to assess and withhold all costs and expenses for CONTRACTOR caused damages against Contract funds or the CONTRACTOR.

8.8 OWNER has no duty, responsibility or obligation to supervise, direct, control or have authority over, CONTRACTOR means, methods, techniques, sequences, and/or procedures of construction unless otherwise specified in the Contract Documents.

8.9 OWNER has no duty, responsibility, or obligation for CONTRACTOR failure to comply with Applicable Laws and regulations in furnishing of or performance of the Work.

8.10 OWNER has no duty, responsibility, or obligation for CONTACTOR failure in furnishing of or performance of the Work in strict accordance with the Contract Documents.

8.11 OWNER has the right to perform and complete a safety evaluation and a CONTRACTOR performance evaluation at the end of the Project and at any time during the course of the Project.

8.12 Other OWNER rights, duties and responsibilities not expressly set forth in this Article.

ARTICLE 9 - ARCHITECT ROLE DURING CONSTRUCTION; AND REQUESTS FOR CLARIFICATION (RFCs)

ARCHITECT - General:

9.1 ARCHITECT's role during construction of the Work is as set forth in the Contract Documents. ARCHITECT has the responsibilities and authority established by law, including but not limited to, California Code of Regulations, Title 24.

9.2 ARCHITECT has no contractual relationship of any kind with CONTRACTOR.

ARCHITECT Project Representative:

9.3 There may be an on-Site ARCHITECT representative or other staff representatives to observe the Work, Project or portions thereof.

9.4 ***Request for Clarification of the Contract Documents*:**

9.4.1 ARCHITECT shall provide the OAR, within a reasonable time, clarifications and/or interpretations of the Contract Documents for the purposes of proceeding with the Work. Clarifications and/or interpretations may be in the form of drawings and/or other written instruments as determined by ARCHITECT, which will be reasonably inferable from and consistent with the intent of the Contract Documents.

9.4.2 CONTRACTOR shall submit a Request for Clarification to OAR with a concurrent copy to ARCHITECT and Project Inspector. A Request for Clarification shall be submitted:

9.4.2.1 a minimum of nine (9) days prior to commencement of any Work for which the Request for Clarification was submitted;

9.4.2.2 immediately upon discovery of minor conflicts or discrepancies in the Work during actual performance of the Work.

9.4.3 A Request for Clarification shall be prepared on an OWNER supplied form and shall reference all the applicable Contract Documents including division and/or Specification section, detail number, Drawing and/or plan designation. OAR shall provide a response to the CONTRACTOR within nine (9) days after receipt of a Request for Clarification.

9.4.4 Responses furnished within the time specified in Article 9.4.3 shall not give rise to or establish the basis for any dispute seeking adjustments to the Contract Amount, Milestones and/or Contract Time, including damages due to any Adverse Impact or similar cause.

9.4.5 A Request for Clarification submitted by CONTRACTOR after the time specified in Article 9.4.2.1 shall not give rise to or establish the basis for any dispute seeking adjustments to the Contract Amount, Milestones and/or Contract Time, including damages due to any Adverse Impact or similar cause.

9.4.6 In the event CONTRACTOR believes the clarifications and/or interpretations as provided in the response to the Request for Clarification establishes a basis for an adjustment in the Contract Amount, Milestones and/or Contract Time, the directives of the OAR shall be final

for the purpose of proceeding with the Work. If CONTRACTOR believes a Construction Directive and/or a response as provided in the Request for Clarification establishes a basis for an adjustment in the Contract Amount, Milestones and/or Contract Time, CONTRACTOR shall, pursuant to Articles 10.7 through 10.17, submit a Change Order Proposal within ten (10) days of the date of receipt of the response to the Request for Clarification.

9.4.7 OWNER and CONTRACTOR agree that Requests for Clarification (RFC) are an anticipated part of the Contract. CONTRACTOR agrees that all costs of CONTRACTOR and that of any persons claiming through CONTRACTOR arising in connection with the preparation of any Request for Clarification, whether or not such Request for Clarification results in a Change Order, are part of CONTRACTOR's overhead and profit on the Project and are included in the Contract Amount. For each response to a Request for Clarification that requires no explanation except reference or references to specific pages, Drawings, sections or articles of the Contract Documents, OAR may withhold from monies otherwise due and payable to CONTRACTOR a reasonable amount to compensate OWNER for the time spent by OAR and/or ARCHITECT to generate the response.

Authorized Minor Variations in the Work:

9.5 ARCHITECT may direct and OAR may authorize minor variations in the technical aspects of the Work from the requirements of the Contract Documents. Any variation in the Work that impacts Structural, Fire/Life Safety, or Accessibility components ("DSA Purview") is subject to DSA review as a CCD-A. Variations in the Work that do not relate to DSA Purview, but modify the scope of the Work shown in the DSA-approved documents, are required to be documented by a CCD-B. For purposes of this Article 9.5, a minor variation is defined as one that does not relate to DSA Purview. Authorized minor variations in the Work shall be consistent with the overall intent of the design concept of providing a complete functioning Project. Minor variations in the Work authorized by OAR may be accomplished by issuance of a Construction Directive. If CONTRACTOR believes a Construction Directive establishes a basis for an adjustment in the Contract Amount, Milestones and/or Contract Time, CONTRACTOR shall, pursuant to Articles 10.7 through 10.17, submit a Change Order Proposal within ten (10) days of the date of issuance of the Construction Directive.

Disputes, Disagreements and other Matters:

9.6 When disputes regarding the Contract Documents arise, OAR shall issue a final, binding Construction Directive to CONTRACTOR for the purpose of proceeding with the Work. If CONTRACTOR believes a Construction Directive establishes a basis for an adjustment in the Contract Amount, Milestones and/or Contract Time, CONTRACTOR shall, pursuant to Articles 10.7 through 10.17, submit a Change Order Proposal within ten (10) days of the date of issuance of the Construction Directive.

Limitations of ARCHITECT Duty and Authority:

9.7 ARCHITECT will not supervise, direct, control, have authority over or in any way be responsible for the means, methods, techniques, sequences and/or procedures of CONTRACTOR, or the safety precautions and programs of CONTRACTOR, or for any failure by CONTRACTOR to comply with laws and regulations applicable to the furnishing of or performance of the Work. ARCHITECT shall not be responsible for failure of CONTRACTOR to furnish and/or perform the Work in accordance with the Contract Documents.

9.8 ARCHITECT shall not be responsible for acts and/or omissions of CONTRACTOR, Subcontractor, supplier, or any other person and/or organizations furnishing and/or performing any of the Work.

9.9 In no event shall any instruction, direction, communication or Request for Clarification response of ARCHITECT to CONTRACTOR result in any change or modification to the Contract Amount or Contract Time unless authorized by an approved Change Order.

ARTICLE 10 - CHANGES IN THE WORK

10.1 Without negating the Contract or providing notice to any surety, and at any time and/or times, OAR has the right to direct additions, deletions, and/or revisions in the Work. A Change Order or Construction Directive shall serve to authorize additions, deletions and/or revisions in the Work. CONTRACTOR, upon receipt of any such document shall immediately proceed with the Work to be performed under the applicable conditions of the Contract Documents. If CONTRACTOR believes it is entitled to an adjustment of the Contract Amount or Contract Time, CONTRACTOR shall submit a Change Order Proposal in strict accordance with Articles 10, 11 and 12.

10.2 CONTRACTOR shall not be entitled to an increase in the Contract Amount, Milestones and/or Contract Time with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in Articles 3.15.1 and 3.15.2, except in case of emergency as set forth in Article 6.42 or in the case of uncovering Work as set forth in Article 13.19.2.

Request for Proposal:

10.3 A Request for Proposal may be issued by OAR to CONTRACTOR. Within ten (10) days of receipt of the Request for Proposal, unless otherwise indicated in the Request for Proposal, CONTRACTOR shall provide a Change Order Proposal which contains proposed adjustments to the Contract Amount, Milestones and/or Contract Time reflective of the Work specified in the Request for Proposal.

Construction Directive:

10.4 A Construction Directive shall not adjust the Contract Amount, Milestones and/or Contract Time but may lead to a Change Order Proposal.

10.5 Upon OAR issuance of a Construction Directive, CONTRACTOR shall comply as set forth in the Construction Directive.

10.6 If CONTRACTOR believes a Construction Directive establishes a basis for an adjustment in the Contract Amount, Milestones and/or Contract Time, CONTRACTOR shall, pursuant to Articles 10.7 through 10.17 submit a Change Order Proposal within ten (10) days of the date of issuance of the Construction Directive, unless otherwise indicated in the Construction Directive.

Change Order Proposal:

10.7 A Change Order Proposal shall include all detailed estimates for quantities of material, quantities of labor hours, hourly labor rates, allowable mark-ups, and detailed quotes/invoices from any applicable third party suppliers/fabricators or subcontracts in order to validate a proposed adjustment in the Contract Amount. If the CONTRACTOR seeks adjustment in Milestones and/or Contract Time, CONTRACTOR shall also adhere to the requirements outlined in Article 12 and all related Sections

of the Division 01 General Requirements. If CONTRACTOR seeks adjustment of the Contract Amount, CONTRACTOR shall also adhere to the requirements outlined in Article 11 and all related Sections of the Division 01 General Requirements.

10.8 Should CONTRACTOR fail to submit a Change Order Proposal within the (10) day time period required under, without limitation, Articles 3.11, 4.2.3, 4.3.2, 4.5.3.3, 6.42, 7.4.6, 7.4.7, 7.4.8, 9.4.6, 9.5, 9.6, 10.6, 13.19.3, and 15.1.2, CONTRACTOR acknowledges that it would be depriving OWNER of an opportunity to timely mitigate the issue, event, condition, circumstance and/or cause, and therefore, CONTRACTOR waives and releases any and all disputes, Claims, rights and remedies in connection therewith.

10.9 CONTRACTOR shall not be entitled to any adjustment in the Contract Amount, Milestones and/or Contract Time in connection with preparing a Change Order Proposal whether ultimately accepted or not.

10.10 If CONTRACTOR and OAR agree to all the proposed adjustments, in an additive and/or deductive Change Order Proposal, OAR shall issue a Change Order for mutual execution by the parties.

10.11 If CONTRACTOR and OAR are able to achieve only partial agreement on the proposed adjustments in the Contract Amount, Milestones and/or Contract Time contained within an additive Change Order Proposal, then OAR shall issue a Change Order for mutual execution by the parties setting forth those undisputed adjustments. If CONTRACTOR still chooses to pursue the disputed items, then the CONTRACTOR shall within ten (10) days of the OAR's written decision serve notice to the OAR of CONTRACTOR's intent to file a Claim and shall submit its Claim within the time period set forth in Article 16.6.

10.12 If OAR rejects a Change Order Proposal in its entirety, CONTRACTOR shall within ten (10) days of the OAR's written decision serve notice to the OAR of CONTRACTOR's intent to file a Claim and shall submit its Claim within the time period set forth in Article 16.6, if CONTRACTOR intends to seek further relief.

10.13 CONTRACTOR shall use the most current version of the OWNER provided forms found at http://www.laschools.org/documents/file?file_id=289569928 and listed in Section 01 3229 of the General Requirements for Change Order Proposal. CONTRACTOR shall submit the Change Order Proposal with all supporting documents and data.

10.14 Prior to submitting any Change Order Proposal, CONTRACTOR shall verify that all tiers of Subcontractor costs and time have been accounted for.

10.15 CONTRACTOR shall not use the Schedule of Values by itself to determine the proposed adjustments to the Contract Amount, Milestones and/or Contract Time.

10.16 The proposed adjustments to the Contract Amount shall cover any and all costs, including those due to Adverse Impacts and damages associated with the changed Work. Where CONTRACTOR requests that a Change Order Proposal include a time extension, CONTRACTOR shall submit a detailed critical path method schedule analysis supporting the requested time extension showing the delay to the critical path to the Approved Construction Schedule.

10.17 The OAR has the right to require CONTRACTOR to revise and resubmit a Change Order Proposal if such Change Order Proposal fails to comply with Articles 10 and 11 requirements. CONTRACTOR

shall correct the incomplete and/or inaccurate Change Order Proposal, supply additional back up and re-submit the proposal within ten (10) days of OAR's required revisions. CONTRACTOR shall be responsible for any costs, delays and/or damages resulting from the submittal or re-submittal of an incomplete and/or inaccurate Change Order Proposal.

Change Order:

10.18 CONTRACTOR shall not place any reservation of rights and/or qualifying language on any Change Order.

10.19 OAR and CONTRACTOR shall execute appropriate Change Orders covering:

10.19.1 changes in the Work ordered pursuant to, but not limited to, Article 10.1;

10.19.2 changes in the Contract Amount, Milestones and/or Contract Time which are agreed to by the parties;

10.19.3 changes in the Contract Amount, Milestones and/or Contract Time which embody the substance of any decision rendered pursuant to Article 16.

10.20 If CONTRACTOR fails or refuses to execute a Change Order within ten (10) days of OAR issuance, OWNER reserves the right to process the Change Order without CONTRACTOR's signature.

10.21 Notwithstanding any note, comment, reservation or other notation appearing on the face of the Change Order or any other document or form, concurrent with the Change Order or not, the signing of a Change Order shall be conclusively deemed to be a full resolution, settlement and accord and satisfaction with respect to all CONTRACTOR's and Subcontractors' (regardless of tier) rights for losses and extensions of time that were asserted, or that could have been asserted, whether known or unknown at the time of execution of the Change Order, related to the subject matter of the Change Order, including without limitation all rights to recovery of costs, expense or damages for Adverse Impacts, extended or extraordinary (direct and indirect) overhead, home office overhead, multiplicity of changes, legal expenses, consultant costs, interest, lost profits or revenue, bond and insurance costs, changes in taxes and other similar and related losses.

ARTICLE 11 - CHANGE OF CONTRACT AMOUNT

This Article sets forth the process for adjusting the Contract Amount. If CONTRACTOR believes it is entitled to an adjustment of the Contract Amount, CONTRACTOR shall submit a Change Order Proposal in strict accordance with this Article 11.

11.1 The costs set forth in Article 11 are limited to those costs incurred in the performance of Change Order Work and include any costs resulting from adjustment to the Contract Time covered by the Change Order. All original duties, responsibilities and obligations assigned to, or undertaken by, CONTRACTOR under the original Contract shall be at expense of CONTRACTOR without change in the Contract Amount.

11.2 The Contract Amount can only be changed by Change Order to the Contract.

11.3 Any adjustment to the Contract Amount due to compensable delay shall be determined pursuant to Articles 11.12 and 12.1.2 and included in the Change Order amount.

11.4 The value of any Work covered by a Change Order Proposal or a Change Order shall be determined as follows:

11.4.1 where the Work involved is covered by unit prices contained within the Contract Documents, the costs of such Work shall be determined by application of such unit prices to the quantities of the items involved, subject to the provisions of Articles 11.5 through 11.7 inclusive;

11.4.2 where the Work involved is not covered by unit prices contained in the Contract Documents, OAR and CONTRACTOR will arrive at a mutually agreed-upon sum based on the estimated Cost of the Work as determined by Articles 11.8 and 11.9 plus a CONTRACTOR fee for overhead and profit as determined in Article 11.10;

11.4.3 where the Work involved is not covered by unit prices contained in the Contract Documents and no agreement is reached under Article 11.4.2, then the basis of Cost of the Work may be as set forth in Article 11.11, plus a CONTRACTOR fee for overhead and profit as determined in Article 11.10.

11.4.4 all allowed and non-allowed costs as set forth in this Article 11 apply to any claims of Subcontractors and suppliers, regardless of tier.

Unit Prices:

11.5 Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, the initial Contract Amount shall be deemed to include for all Unit Price Work an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Bidding Documents. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of bids and determining an initial Contract Amount. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by OAR.

11.6 Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to fully cover all overhead and profit for each separately identified item.

11.7 OAR or CONTRACTOR may request, by appropriate Change Order Proposal, an adjustment in the Contract Amount if:

11.7.1 the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Contract and there is no corresponding adjustment with respect to any other item of Work;

11.7.2 CONTRACTOR believes CONTRACTOR is entitled to an increase in the Contract Amount as a result of having incurred additional expense or OAR believes that OWNER is entitled to a decrease in the Contract Amount.

Cost of the Work:

11.8 The term “Cost of the Work” means the sum of all direct costs necessarily incurred and paid for by CONTRACTOR in connection with the proper furnishing and/or performance of the Work covered by Change Order. Such costs shall be in amounts no greater than those prevailing in the locality of the Work and/or Project and shall only include:

11.8.1 estimated payroll costs for employees in direct employ of CONTRACTOR for the performance of the Work. Payroll costs shall include wages paid and fringe benefits as determined by the California State Director of Industrial Relations at the time the Change Order Proposal is submitted. A table of burdened labor rates acceptable to OWNER, which includes employer paid social security contributions, unemployment insurance, and payroll taxes required by law, can be downloaded from http://www.laschools.org/file-storage/download/forms_log/forms_beginning_with_e/Fully_Burdened_Prevailing_Wage_TABLE.pdf. Any burdened labor rate in excess of the published burdened labor rate table will require submittal of the appropriate supporting documents as set forth in Section 01 3229 of the General Requirements. OWNER's consideration of a rate in excess of the published burdened labor rate will be given only if the supporting documents validate CONTRACTOR's payment of costs at the higher rate and if the employee in connection with those costs was in direct employ of CONTRACTOR at least 90 days prior to the claim for a higher rate. The expenses of performing Work after regular hours, on Saturday, Sunday or legal holidays, shall be included if authorized by OAR;

11.8.2 cost of all materials and equipment furnished and incorporated into the Work, including costs of transportation, loading and unloading, storage and the cost of supplier's field services in connection therewith;

11.8.3 payments made by CONTRACTOR to Subcontractors for Work furnished and/or performed by Subcontractors. If the Work requires a trade subcontractor not listed at the time of the bid because such Work was not within the scope of the Work when bid, CONTRACTOR shall obtain competitive bids from a minimum of three (3) Subcontractors. OAR shall determine the acceptable bid. Subcontractors Cost of the Work and fees shall be determined in the same manner as for CONTRACTOR under Articles 11.8, 11.9, and 11.10. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.

11.8.4 Supplemental costs:

11.8.4.1 transportation, delivery and storage of all materials, supplies, appliances, at the Project Site and hand tools not owned by the workers which are consumed in the performance of the Work;

11.8.4.2 an amount for CONTRACTOR owned equipment and machinery based on the Equipment Rental Rates published by Caltrans or rental rate published by actual rental company. The amount shall be based on actual use of the equipment and machinery;

11.8.4.3 sales, consumer, use and/or similar taxes related to the Work, and for which CONTRACTOR is responsible;

11.8.4.4 royalty payments and fees for permits and licenses;

11.8.4.5 utilities, fuel and sanitary facilities at the Project Site;

11.8.4.6 premiums due to additional bonds required because of changes in the Work, or increases, as appropriate, to the scope of the Work covered by the bonds;

11.8.4.7 consultants such as surveyors, testing agencies and engineers, employed for services specifically related to the Work.

11.8.5 Rental amount for construction equipment and machinery, whether rented by CONTRACTOR or others in accordance with Rental Rate Blue Book for Construction Equipment or Equipment Rental Rates published by Caltrans. The amount shall be based on actual use of the equipment and machinery.

11.9 All costs set forth in Article 11.9.1 through 11.9.11 are deemed to be part of CONTRACTOR's overhead and profit, and are included in the Contract Amount and/or covered by CONTRACTOR fee as set forth in Article 11.10. The following are not allowed in the Cost of the Work:

11.9.1 payroll costs and other compensation of CONTRACTOR's project manager, superintendents, general foreman, project coordinators, schedulers, safety officers, detailers, draftsman, project engineers, officers, executives, principals, owners, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the Project Site or in CONTRACTOR principal or a branch office for general administration of the Work;

11.9.2 costs and expenses of CONTRACTOR's office located at the Project Site, principal office, branch office(s), home office(s) and all home office overhead costs, including without limitation general and administrative costs;

11.9.3 any part of CONTRACTOR capital expenses, including interest on CONTRACTOR capital employed for the Work and charges against CONTRACTOR for delinquent payments;

11.9.4 cost of premiums for all bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain same except for the cost of premiums covered by Article 11.8.4.6;

11.9.5 costs due to negligence, act or failure to act of CONTRACTOR, any Subcontractor, or anyone else directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment furnished in error and the repair and/or replacement of any damage to property;

11.9.6 consumable materials, such as drill bits, abrasive discs, gloves, rags, rope, welding tips, etc.;

11.9.7 tools and equipment with original costs of less than $1,000.00;

11.9.8 other overhead or general expense costs of any kind such as Shop Drawings, guarantees and warranties, and the costs of any item not specifically and expressly set forth in Article 11.8;

11.9.9 consequential expenses including impairment of bonding capacity, lost opportunity, labor, wage or cost escalations, legal expenses or changes in taxes;

11.9.10 expenses related to pickup trucks;

CONTRACTOR Overhead and Profit

11.10 CONTRACTOR fee for overhead and profit shall be based on the following:

11.10.1 for costs incurred under Articles 11.8.1 and 11.8.2, CONTRACTOR fee shall be fifteen (15) percent for Work performed directly by CONTRACTOR;

11.10.2 where Subcontractors are included in the change, the intent of Articles 11.8.1, 11.8.2, 11.8.3 and 11.11 is that the Subcontractor who actually performs or furnishes the Work, regardless of tier, will be paid a fee of fifteen (15) percent of the costs incurred by such Subcontractor under Articles 11.8.1 and 11.8.2, and CONTRACTOR will be paid a fee of five (5) percent, for a maximum total fee of twenty (20) percent;

11.10.3 no fee shall be payable on the basis of costs itemized under Articles 11.8.4 and 11.9;

11.10.4 the amount CONTRACTOR shall credit OWNER for any change that results in a net decrease in cost will be the amount of the actual net decrease in cost and a deduction in the CONTRACTOR fee of five (5) percent of the net decrease;

11.10.5 the amount CONTRACTOR shall credit OWNER for any change of Work by a Subcontractor which results in a net decrease in cost will be the amount of the actual net decrease in costs plus a deduction in the Subcontractor fee by an amount equal to five (5) percent of such net decrease and a deduction in fee for the CONTRACTOR of five (5) percent;

11.10.6 for costs incurred under Article 11.8.5, the CONTRACTOR fee for rented equipment shall be five (5) percent. No fee shall be allowed for CONTRACTOR owned equipment as set forth in Article 11.8.4.2;

11.10.7 when both additions and credits are involved in any one change of Work, the adjustment in CONTRACTOR fee shall be calculated on the basis of the net change in accordance with Articles 11.10.1 through 11.10.6 inclusive.

Time and Material:

11.11 Whenever the Cost of the Work is to be determined in accordance with Article 11.4.3, CONTRACTOR shall maintain records thereof in accordance with generally accepted accounting practices and shall submit the itemized cost breakdown to OAR in the following form:

At the close of each work day, CONTRACTOR shall submit a daily time and material record, on a form prescribed by OWNER, to OAR, together with applicable delivery tickets, listing all labor, employees names, hours worked, wage classifications, materials, quantities, equipment size, type and identification number, and supplies involved for said work day, the location of the affected portion of the Work, for services and expenditures as authorized under Articles 11.8, 11.9, and 11.10. An attempt shall be made to reconcile the daily time and material record, and OAR and CONTRACTOR shall sign it. In the event of disagreement, each party, to explain points which cannot be resolved immediately, shall enter pertinent notes. Each party shall retain a signed copy of the daily time and material record. Daily time and material records of Subcontractors or others shall only be submitted through CONTRACTOR. The submittal shall include invoices depicting cost of material and rental equipment.

Cost of Compensable Delay:

11.12 When the Contract Time is extended, the allowable cost for the time extension shall include only the following items:

11.12.1 Payroll costs of CONTRACTOR's employees at the Project Site.

11.12.2 CONTRACTOR Project Site and Site office expenses.

11.12.3 CONTRACTOR fee for all profit and overhead, including costs and expenses of CONTRACTOR's principal office, branch office(s), home office(s) and all home office overhead costs, including without limitation general and administrative costs, and all other off Site expenses, shall be five (5) percent of costs incurred under Articles 11.12.1 and 11.12.2.

11.12.4 Additional cost of bond premiums, if any, due to extended Contract Time.

Change Order Exceeding $500,000:

11.13 Any individual Change Order in an amount that exceeds $500,000 and which has been approved by the Deputy Chief Procurement Officer (Facilities), or designee, shall be subject to audit by OWNER as set forth in Article 14.8.

ARTICLE 12 - CHANGE OF CONTRACT TIME

12.1 ***Adjustment of Contract Time*.** If the Work is delayed for any reason, adjustment, if any, to the Contract Time on account of such delay shall be in accordance with this Article 12 and will be made, if at all, by Change Order in accordance with Articles 10 and 11 or, if the duration of the adjustment cannot be resolved, then in accordance with Article 16. If CONTRACTOR believes it is entitled to an adjustment of the Contract Time, CONTRACTOR shall submit a Change Order Proposal in strict accordance with this Article 12.

12.1.1 ***Excusable Delays*.** If the Work is delayed by unforeseeable and unavoidable casualties or other unforeseen causes beyond the control, and without fault or neglect, of CONTRACTOR, any Subcontractor, Material Supplier or other person directly or indirectly engaged by CONTRACTOR in performance of any portion of the Work the Contract Time shall be subject to adjustment for such reasonable period of time as determined by OWNER. Such delays will be known as "Excusable Delays." Excusable Delays include unanticipated and unavoidable labor disputes, unusual and unanticipated delays in transportation of equipment or materials reasonably necessary for completion and proper execution of the Work, and unanticipated unusually severe weather conditions. Neither the financial resources of CONTRACTOR nor any person or entity directly or indirectly engaged by CONTRACTOR in performance of any portion of the Work shall be deemed conditions beyond the control of CONTRACTOR. If an event of Excusable Delay occurs, the Contract Time shall be subject to adjustment hereunder only if CONTRACTOR establishes: (i) full compliance with all applicable provisions of the Contract Documents relative to the method, manner and time for CONTRACTOR's notice and request for adjustment of the Contract Time; (ii) that the event(s) forming the basis for CONTRACTOR's request to adjust the Contract Time are outside the reasonable control and without any fault or neglect of CONTRACTOR or any person or entity directly or indirectly engaged by CONTRACTOR in performance of any

portion of the Work; and (iii) that the event(s) forming the basis for CONTRACTOR's request to adjust the Contract Time directly and adversely impacted the progress of the Work as indicated in the most recent updated Approved Construction Schedule relative to the date(s) of the claimed event(s) of Excusable Delay. The foregoing provisions notwithstanding, if the Specifications set forth a number of "Rain Days" to be anticipated during performance of the Work, the Contract Time shall not be adjusted for unusually severe weather conditions until and unless the actual number of Rain Days during performance of the Work shall exceed those noted in the Specifications and such additional Rain Days shall have directly and adversely impacted the progress of the Work as depicted in the Approved Construction Schedule or the most recent updated Approved Construction Schedule relative to the date(s) of such additional Rain Days. Excusable Delays shall not result in any increase in the Contract Amount.

12.1.2 ***Compensable Delays*.** If Work is delayed by the acts or omissions of OWNER, ARCHITECT or separate contractor employed by OWNER, upon CONTRACTOR's request and notice, in strict conformity with Articles 10, 12 and 16 of these General Conditions and all related Sections of the Division 01 General Requirements, the Contract Time will be adjusted by Change Order for such reasonable period of time as determined by the OWNER and in accordance with Article 11.12.

12.1.3 ***Unexcusable Delays*.** Unexcusable Delays refer to any delay to the progress of the Work caused by events or factors other than those specifically identified in Articles 12.1.1 and 12.1.2 above. Neither the Contract Amount nor the Contract Time shall be adjusted on account of Unexcusable Delays.

12.2 ***Procedure for Adjustment of Contract Time*.** The Contract Time shall be subject to adjustment only in strict conformity with applicable provisions of the Contract Documents. Failure of CONTRACTOR to request adjustment(s) of the Contract Time in strict conformity with applicable provisions of the Contract Documents shall be deemed CONTRACTOR's waiver and release of the same.

12.2.1 If CONTRACTOR and/or its Subcontractor, encounter any issue, event, condition, circumstance and/or cause of an Adverse Impact, CONTRACTOR shall provide a written notice to OAR, utilizing a notice form provided by OWNER. The notice shall be given to OAR upon the date of discovery or no later than three (3) days after CONTRACTOR first encounters the Adverse Impact. The notice shall supply all the information required by the provided form. CONTRACTOR shall also raise the circumstances of the Adverse Impact at the first Project meeting with OAR following the date of discovery of the Adverse Impact. The matter shall be carried in the meeting minutes until resolved.

12.2.2 Within three (3) days of the ending of the Adverse Impact, CONTRACTOR shall provide written notice to OAR, on an OWNER provided form, notifying OAR of the date on which the Adverse Impact ended. If CONTRACTOR contends the Adverse Impact entitles CONTRACTOR to an adjustment of the Contract Amount, Milestones and/or Contract Time, then CONTRACTOR shall submit a Change Order Proposal in strict conformity with Articles 10 through 12, Article 16 and Division 01 General Requirements within thirty-five (35) days after the written notice to the OAR was given.

12.2.3 CONTRACTOR recognizes and acknowledges that timely submission of notices identified in Articles 12.2.1 and 12.2.2, whether or not the circumstances of an Adverse Impact may be

known to OWNER or available to OWNER through other means, is not a mere formality but is of crucial importance to the ability of OWNER to promptly identify, prioritize, evaluate and mitigate the potential effects of the Adverse Impact. Any form of informal notice, whether verbal or written (including, without limitation, statements at regular job meetings or entries on monthly reports, daily logs or job meeting minutes), that does not strictly comply with the formal notice requirements of Articles 12.2.1 and 12.2.2 above, shall accordingly be deemed insufficient and of no force or effect.

12.3 ***Limitations Upon Adjustment of Contract Time on Account of Delays.*** Any adjustment of the Contract Time on account of an Excusable Delay or a Compensable Delay shall be limited as set forth herein. No adjustment of the Contract Time shall be made on account of any Excusable Delays or Compensable Delays unless such delay(s) actually and directly impact Work or Work activities on the critical path of the then current and updated Approved Construction Schedule as of the date on which such delay first occurs. OWNER shall not be deemed in breach of, or otherwise in default of any obligation hereunder, if OWNER shall deny a request by CONTRACTOR for an adjustment of the Contract Time for any delay which does not actually and directly impact Work on the critical path of the then current and updated Approved Construction Schedule. In submitting a request for an adjustment of Contract Time, and as a condition precedent to OWNER's review of such request, CONTRACTOR shall insert into the then current and updated Approved Construction Schedule a "fragnet" analysis representing the event which CONTRACTOR claims to result in delay to the critical path as depicted in such updated Approved Construction Schedule. If an Excusable Delay and a Compensable Delay occur concurrently, the maximum extension of the Contract Time shall be the number of days, if any, which the Compensable Delay exceeds the period from the Excusable Delay. If an Unexcusable Delay occurs concurrently with either an Excusable Delay or a Compensable Delay, the maximum extension of the Contract Time shall be the number of days, if any, which the Excusable Delay or the Compensable Delay exceeds the period of time of the Unexcusable Delay.

12.4 ***Early Completion***. Nothing stated in these General Conditions or elsewhere in the Contract Documents shall be interpreted as creating any contractual right, express or implied, on the part of CONTRACTOR to complete the Work earlier than the Contract Time. CONTRACTOR has included in its Bid that is the basis for the Contract Amount the costs of all CONTRACTOR's and the Subcontractors' direct and indirect overhead, including but not limited to all Project staff, temporary facilities, temporary utilities and home office overhead for the entire duration of the Contract Time. The above costs have been included in the Bid and Contract Amount notwithstanding CONTRACTOR's possible anticipation of completion in fewer Days than established by the Contract Time. Under no circumstances shall OWNER be liable to CONTRACTOR for any losses, of any kind, due to the inability of CONTRACTOR to complete the Work earlier than the Contract Time, regardless of the cause, including, without limitation, delays due to acts or omissions (intentional or negligent) of OWNER, ARCHITECT or others. No reduction in the Contract Amount shall be made nor will CONTRACTOR be required to remain on the Site if the Work is completed before expiration of the Contract Time.

12.5 ***Acceleration of the Work.***

12.5.1 ***Due to Unexcused Delay.*** If OWNER determines and notifies CONTRACTOR that CONTRACTOR's progress in performance of the Work is such that, in OWNER's good faith judgment, CONTRACTOR will not achieve Substantial Completion of the Work within the Contract Time, then CONTRACTOR shall immediately respond in writing setting forth a detailed plan for accelerating the Work and shall thereafter take, at CONTRACTOR's own expense, all measures necessary, including, if permissible, providing additional equipment,

working overtime, additional shifts, Saturdays, Sundays and holidays, to recover performance to ensure that the Work is performed within the Contract Time. OWNER reserves the right to take all necessary measures to mitigate further delays to the completion of the Work within the Contract Time and CONTRACTOR shall reimburse OWNER, or OWNER may withhold from payment due to CONTRACTOR, any costs incurred by OWNER to perform such measures.

12.5.2 ***Due to Excusable Delay*****.** CONTRACTOR shall have the right, exercised in its sole discretion, to accelerate performance of the Work to overcome time lost due to Excusable Delay. However, such acceleration, if performed, shall be deemed a voluntary acceleration performed at CONTRACTOR's own expense.

12.5.3 ***Due to Compensable Delay*****.** OWNER shall have the right, exercised in its sole discretion, in lieu of granting an adjustment to the Contract Time and/or Contract Amount for Compensable Delay, to direct in writing the acceleration of the Work by CONTRACTOR in order to recapture time lost due to Compensable Delay. OWNER and CONTRACTOR shall endeavor prior to commencement of the acceleration to mutually agree upon an amount of compensation to be paid therefor that is consistent with the provisions of this Article. OWNER shall have the right, in the absence of such an agreement, to direct in writing that CONTRACTOR accelerate, in which case CONTRACTOR's compensation therefor shall be limited, subject to the other provisions of this Article, to only those costs incurred and paid for any premium time portion of overtime wages paid and additional equipment that is required to recapture the number of days of Compensable Delay stated by OWNER in such direction. Except as directed by OWNER in the manner stated in this Article, no statements, conduct or actions by OWNER will be construed as creating an obligation on the part of OWNER to make payment for the cost of any overtime or other costs associated with an acceleration of the Work and any acceleration undertaken without the prior written direction of OWNER as required by this Article shall be deemed to be a voluntary acceleration performed at CONTRACTOR's own expense.

12.6 ***Continuous Performance*****.** No dispute or disagreement with respect to any Changes or delay, including, without limitation, disputes over CONTRACTOR's right to or the amount of any adjustment to the Contract Amount or Contract Time, shall relieve or excuse CONTRACTOR from the obligation to proceed with and maintain continuous, expeditious and uninterrupted performance of the Work, including performance of any disputed Changes.

12.7 ***Liquidated Damages – CONTRACTOR Delays*****.** Should the CONTRACTOR not achieve Completion of the Work within the Contract Time, as adjusted, the CONTRACTOR shall pay to the OWNER the amount of per diem Liquidated Damages set forth in Supplementary Condition Article 12.7.1, for every day beyond the Contract Time, as adjusted, until Completion of the Work is achieved. Any such Liquidated Damages are automatically and without notice of any kind owed by CONTRACTOR upon the accrual of each day of delay. The OWNER may at any time deduct Liquidated Damages from any payments due or to become due to the CONTRACTOR. Neither the OWNER's failure or delay in deducting Liquidated Damages from payments otherwise due the CONTRACTOR, nor the OWNER's failure or delay in notifying CONTRACTOR of the accrual of Liquidated Damages, shall be deemed a waiver of the OWNER's right to Liquidated Damages. The CONTRACTOR and the Surety shall be liable for and pay to the OWNER the entire amount of Liquidated Damages including any portion that exceeds the amount of the Contract Amount then held, retained or controlled by the OWNER. The CONTRACTOR and OWNER acknowledge and agree that the Liquidated Damages and the provisions of this Article 12.7 are reasonable and

necessary under the circumstances existing at the time this Contract is made because of the difficulty of fixing the OWNER's actual damages in the event of delayed completion of the Work. The CONTRACTOR and the OWNER agree that the Liquidated Damages do not constitute a penalty. In the event that the CONTRACTOR shall fail or refuse to correct or complete items of the Work noted upon Substantial Completion and the OWNER elects to exercise its right to cause completion or correction of such items pursuant to Article 15, the OWNER's Liquidated Damages pursuant to the foregoing shall be in addition to, and not in lieu of, the OWNER's right to charge CONTRACTOR with the cost of completing or correcting such items of the Work, as provided for under Article 15.

ARTICLE 13 - TESTING AND INSPECTION; DEFECTIVE WORK

Notice of Defective or Non-Compliant Work:

13.1 Although OAR, ARCHITECT, or the Project Inspector have no obligation to discover or search for non-compliant or defective Work, if OAR, ARCHITECT, or the Project Inspector acquire actual knowledge of any non-compliant and/or defective Work, OWNER shall notify and provide CONTRACTOR with a listing that identifies the observed non-compliant items (NCIL) and/or defective Work requiring correction, including any Punch List items from any applicable governing agency for Class "A" or "B" permit work. OWNER shall post all lists of non-compliant items to OWNER's website at http://mo.laschools.org/fis/construction-support/inspection/fs-inspection-docs-2 for CONTRACTOR access and reference. Any or all defective Work may be rejected, corrected and/or accepted in accordance with the terms set forth in Articles 13 and 15.

Access to the Work:

13.2 CONTRACTOR shall provide access at any time to the Work, products, equipment, materials and/or fabrications of the Work, wherever same are stored, fabricated, erected or installed, when directed to do so by OAR, ARCHITECT, the Project Inspector, other OWNER personnel, representatives of testing and inspection agencies and other governmental entities having jurisdiction over the Work. CONTRACTOR shall provide sufficient, safe, proper access to labor and facilities to prepare for and take samples for testing and/or inspection of products, equipment, and materials or fabrications of the Work.

Project Inspector:

13.3 The person employed by OWNER and approved by the Division of the State Architect will be assigned to the Work in accordance with the requirements of Title 24 of the California Code of Regulations.

13.4 All Work shall be under the observation of or with the knowledge of the Project Inspector. The Project Inspector shall have free access to any and all parts of the Work at any time. CONTRACTOR shall furnish the Project Inspector such information and facilities as may be necessary to keep the Project Inspector fully informed regarding progress, manner of Work and character of materials. Such observations shall not, in any way, relieve CONTRACTOR from responsibility for full compliance with all terms and conditions of the Contract Documents or be construed to lessen to any degree CONTRACTOR responsibility for providing efficient and capable superintendence of the Work. The Project Inspector is not authorized to make changes in the Contract Documents, including, without limitation, the Drawings or Specifications nor shall the Project Inspector's inspection of the Work and methods relieve the CONTRACTOR of responsibility for the correction of subsequently discovered defects, or from its obligation to exactly comply with the Contract Documents. To the extent

CONTRACTOR believes the Project Inspector is requiring any such change, CONTRACTOR shall immediately provide written notice to OAR. The Project Inspector review of percentage of the Work completed for the purpose of progress payments are stated for facilitating cash flow only and shall not constitute acceptance of the Work, in whole or in part, shall not be binding upon OWNER in any way, and shall not be used as evidence of the actual percentage of the Work completed as per the requirements of the Contract Documents. The Project Inspector shall prepare all Project NCIL and Punch Lists relative to Partial Use or Occupancy, Substantial Completion, Administrative Closeout, and/or Contract Completion.

Testing, Inspection and Observation of the Work:

13.5 Tests, inspections, observations, and approvals of any portion of the Work required by the Contract Documents will comply with Title 24, and with all other laws, ordinances, rules, regulations, or orders of public authorities having jurisdiction.

13.6 Tests, inspections, observations, and approvals conducted pursuant to the Contract Documents shall not serve as a basis for any CONTRACTOR dispute based on, but not limited to, Adverse Impacts.

13.7 CONTRACTOR shall provide a minimum of 48 hours advance notice to the Project Inspector by submitting a correctly completed Inspection Request form identifying Work, including Off-Site Work, that is ready to be inspected, tested, observed and/or verified as compliant with the DSA approved construction documents in order for the Project Inspector to observe such test or to perform or arrange performance thereof. When any Off-Site Work is ready to be inspected, tested, observed and/or verified as compliant with the DSA approved construction documents and participation of a public authority having jurisdiction over the Off-Site Work is required, or the Off-Site Work is outside a sixty (60) mile radius of Project Site, CONTRACTOR shall provide a minimum of 96 hours advance notice to the Project Inspector. CONTRACTOR is responsible for providing notice to any public authority having jurisdiction over the Off-Site Work. CONTRACTOR shall fully cooperate with all testing and inspection personnel in the performance of their duties and responsibilities.

13.8 CONTRACTOR shall provide a minimum of 96 hours advance notice to the Project Inspector by submitting a correctly completed Inspection Request form identifying the supply, manufacture and/or fabrication of material to be supplied which must, by terms of the Contract Documents, be tested, observed, and/or inspected at the source of supply, fabrication, or manufacture.

13.9 If the Contract Documents require observation, inspection, testing, or approval of Work to be performed outside normal hours of Work, the costs thereof shall be borne by OWNER. If CONTRACTOR elects to perform Work outside normal hours of Work, the costs of any required observation, inspection, testing, or approvals performed outside normal hours of Work shall be borne by CONTRACTOR with such costs of observation, inspection, testing, and approval being assessed against Contract funds or CONTRACTOR. CONTRACTOR shall provide a minimum of 48 hours advance notice to the Project Inspector if CONTRACTOR elects to perform Work outside normal hours of Work.

13.10 If the Project Inspector, ARCHITECT, or any other public authority having jurisdiction over the Work, require or consider it necessary to perform additional observation, testing, inspection and/or approval, the Project Inspector or ARCHITECT shall, upon receipt of OAR directive, arrange for such additional observation, testing, inspection, or approval with the costs thereof being borne by OWNER, except for costs as set forth in Articles 13.11, 13.14, and 13.16 or as otherwise noted in the Contract Documents.

13.11 If initial observations, tests, inspections or approvals do not pass or receive approvals, CONTRACTOR shall be responsible for all costs including, but not limited to, the costs of additional observations, tests, inspections or approval additional professional services and consultants provided by OWNER with the costs of such observation, tests, inspections and approval being assessed against Contract funds or CONTRACTOR.

13.12 CONTRACTOR shall not incorporate any material, product, assembly, or fabrication requiring observation, testing, inspection and/or approval into the Work until such test results, observation or inspection reports denoting compliance with applicable provisions of the Contract Documents are provided to CONTRACTOR.

13.13 If observations, tests, inspections, or approvals do not pass or receive approval, CONTRACTOR shall be responsible for all delays in the Milestones and/or Contract Time as set forth in Article 12.1.3.

OWNER Consultants:

13.14 If required by the terms and conditions of the Contract Documents, OWNER will furnish at OWNER expense, professional consultants such as, but not limited to, geotechnical engineers or other consultants who shall provide observations, tests, inspections and approvals identified in the Contract Documents as being responsibility of OWNER except:

13.14.1 when such services and expenses thereof are stipulated by the Contract Documents to be provided by CONTRACTOR;

13.14.2 when an observed, tested, inspected or approved material, product, fabrication or assembly fails to meet the requirements of the Contract Documents;

13.14.3 when the source or supplier of material is changed after original observation, test or inspection has been approved or passed;

13.14.4 when, upon examination of ARCHITECT, any material, product, fabrication or assembly appears to be inferior to and/or different from the originally observed, tested, inspected or approved material, product, fabrication or assembly;

13.14.5 for travel and incidental costs related to specified observations, testing, inspection and approval Work associated with CONTRACTOR-provided materials, products, fabrications or assemblies that are outside a sixty (60) mile radius of Project Site.

13.15 OWNER Consultant shall report results of all observations and tests noting if tested and/or observed materials passed or failed such tests and shall furnish copies to the Project Inspector, ARCHITECT, OAR, DSA, CONTRACTOR and others as required. In the case of geotechnical engineers the report shall state such observations and tests were conducted under the responsible charge of a licensed State of California civil engineer and the material was tested in accordance with applicable provisions of the Contract Documents, Title 24, CCR and the DSA. Upon completion of the Work, testing laboratory shall submit electronically a verified report to the DSA as required by Title 24, CCR, and as described in the DSA Procedure for the Construction Oversight Process.

Testing Laboratories and Test Reports:

13.16 If required by the terms and conditions of the Contract Documents, OWNER will furnish at OWNER expense professional services of an independent approved testing laboratory to conduct required tests and inspections identified in the Contract Documents as being responsibility of OWNER except:

13.16.1 when such services and expenses thereof are stipulated by the Contract Documents to be provided by CONTRACTOR;

13.16.2 when a tested and/or inspected material, product, fabrication or assembly fails to meet the requirements of the Contract Documents;

13.16.3 when the source or supplier of material is changed after original observation, test or inspection has been approved or passed;

13.16.4 when, upon examination of ARCHITECT, any material, product, fabrication or assembly appears to be inferior to and/or different from the originally observed, tested, inspected or approved material, product, fabrication or assembly;

13.16.5 for travel and incidental costs related to specified observations, testing, inspection and approval Work associated with CONTRACTOR-provided materials, products, fabrications or assemblies that are outside a sixty (60) mile radius of Project Site.

13.17 Independent testing laboratory shall report results of all tests noting if inspection and/or tested material passed or failed such tests and shall furnish copies to the Project Inspector, ARCHITECT, OAR, DSA, CONTRACTOR and others as required. Report shall state tests were conducted under the responsible charge of a licensed State of California civil engineer and the material was tested in accordance with applicable provisions of the Contract Documents, Title 24, CCR, and the DSA. Upon completion of the Work, testing laboratory shall submit electronically a verified report to the DSA as required by Title 24, CCR, and as described in the DSA Procedure for the Construction Oversight Process.

Uncovering the Work:

13.18 If any portion of the Work is covered prior to any required observation, inspection, testing or approval it shall, upon notice to CONTRACTOR by the Project Inspector or OAR, be uncovered for observation, inspection, testing or approval with the costs of uncovering and replacement thereof being borne by CONTRACTOR. CONTRACTOR shall erect and maintain reasonable safeguards for the safety and protection of the uncovered work.

13.19 If ARCHITECT, OAR, or Project Inspector deems it necessary to uncover any portion of the Work for additional observation, inspection, testing or approval, CONTRACTOR shall, upon receipt of OAR Construction Directive, proceed with furnishing such labor, material and equipment to uncover such portion of the Work and shall proceed as follows:

13.19.1 if uncovered Work is deemed to be defective, CONTRACTOR shall proceed in accordance with, but not limited to, Articles 13.20 through 13.23;

13.19.2 if uncovered Work is deemed to be in complete accordance with the Contract Documents,

CONTRACTOR may be allowed an adjustment in the Contract Amount for those specific costs directly related to the costs of uncovering, repair and replacement of Work, and OAR may adjust the Milestones and/or Contract Time;

13.19.3 however, if CONTRACTOR believes a Construction Directive establishes a basis for an adjustment in the Contract Amount, Milestones and/or Contract Time, CONTRACTOR shall, pursuant to Articles 10.7 through 10.17, submit a Change Order Proposal within ten (10) days of the date of issuance of the Construction Directive.

Remedying Defective Work:

13.20 Any Work, materials, equipment or other items, which do not conform to the requirements, standards or approvals as set forth in the Contract Documents may be deemed defective by OWNER, in which case, they shall be removed and replaced by CONTRACTOR upon notice from OWNER.

13.21 CONTRACTOR shall, upon receipt of OAR notice, promptly correct any portion of the Work deemed defective, whether observed before or after completion and whether or not fabricated, installed, or completed. CONTRACTOR shall be responsible for all delays to the Milestones and/or Contract Time, costs of correcting defective Work, including the Work of others, including, but not limited to, additional professional services and consultants provided by OWNER with the costs of such observations, tests, inspections, and approvals being assessed against Contract funds or CONTRACTOR.

13.22 CONTRACTOR shall remove from the Project Site all portions of defective Work not corrected by CONTRACTOR or not accepted by OAR.

13.23 If CONTRACTOR fails to remedy any defective Work, OAR may proceed as set forth in Article 15.3.

Correction Period for the Work:

13.24 If, within one (1) year after the date of Substantial Completion or such longer periods of time prescribed by any special guarantees or warranties established under the Contract Documents and/or by any specific provisions of the Contract Documents, any Work is found to be defective, CONTRACTOR shall, in accordance with OWNER written notice and directives, correct defective Work; or replace defective Work with Work which is not defective; and correct and/or replace damage to other Work resulting from correction and/or replacement of defective Work. During the prescribed correction period, CONTRACTOR shall remedy any defective Work within forty-five (45) days of receipt of OWNER's written notice unless such notice requests more immediate corrective action due to a potential health or safety issue posed by the defective Work.

13.25 In the event OAR accepts a particular item of equipment and places it into continuous service prior to Substantial Completion of the Work, the correction period and the warranty period for such item may commence from such date of OAR acceptance if such acceptance is provided for in Article 14.13.

13.26 Where such defective Work has been corrected and/or replaced pursuant to Article 13.24, the correction and warranty period for such corrected and/or replaced Work shall be extended an additional term equal to the original correction and warranty period for the Work or such longer period of time prescribed by any special guarantees or warranties.

13.27 Nothing contained in Articles 13.24, 13.25, and 13.26 shall be construed to establish a period of limitation with respect to CONTRACTOR obligations under the Contract Documents. Establishment of the one (1) year time period only relates to the specific obligation of CONTRACTOR to correct defective Work and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, or to the time within which proceedings may be commenced to establish CONTRACTOR liability with respect to CONTRACTOR obligations other than to correct any defective portion of the Work.

OWNER Acceptance of Non-Compliant Work:

13.28 Prior to Contract Completion, OWNER may, in lieu of requiring correction and/or replacement of non-compliant Work and where code, statute, ordinance or law does not require such correction, prefer to accept the non-compliant Work and may do so. CONTRACTOR shall pay all claims, costs, professional services, tests, inspections, losses, and damages incurred by OWNER in the evaluation of and determination of the acceptability of such non-compliant Work. In addition, the OAR may issue a Construction Directive and CONTRACTOR shall provide OWNER with a credit (deductive) Change Order Proposal for accepting such non-compliant Work. When changes in Contract scope (as opposed to quality issues) are being accepted, the provisions of Article 10 shall apply.

ARTICLE 14 - CONTRACTOR PAYMENTS AND COMPLETION

Schedule of Values:

14.1 The Schedule of Values, as established in Article 2.5.2, shall serve as the basis for progress payments and shall be incorporated into a certified Application for Payment form available from OWNER.

Application for Payment:

14.2 On or before the fifth (5th) day of each calendar month following the month for which payment is being requested, but not more than once a month, CONTRACTOR shall submit to OAR an itemized Application for Payment for Work completed during the preceding month in accordance with the Contract Documents. Such application shall be certified by CONTRACTOR under penalty of perjury and shall be supported by the following or such portion thereof as OAR requires:

14.2.1 the amount paid to the date of the application to CONTRACTOR, to all its Subcontractors, and all others furnishing labor, material, or equipment;

14.2.2 certified payroll records submitted in electronic format as specified by OWNER and hard copy directly to Labor Compliance Program, as per Article 6.48, for the prior Application for Payment period in addition to District OCIP forms;

14.2.3 a certification the Project record documents are current;

14.2.4 the approved Change Orders to the Contract Amount, Milestones and/or Contract Time;

14.2.5 in accordance with Article 14.7, a summary of the retention withheld;

14.2.6 material invoices, evidence of equipment purchases, rentals, and other supporting documentation and details of cost as OAR may require from time to time;

14.2.7 the percentage of completion of the Work by line item referenced to the certified Schedule of Values, and construction schedule updates;

14.2.8 a statement showing all payments made by CONTRACTOR for labor and materials on account of the Work covered in the preceding certified Application for Payment;

14.2.9 prior to CONTRACTOR receipt of any payment for monies due, as a result of a percentage of the Work completed, it shall furnish OAR with a summary which must show payments to be made to Subcontractors and all others furnishing labor, material, and equipment covered by the payment application.

14.3 If CONTRACTOR fails to comply with any one of the certified Application for Payment requirements as set forth in Article 14.2, OWNER has no obligation whatsoever to make any payment. Each of the Article 14.2 requirements, as well as performing the Work as per the Contract, shall be conditions precedent to the maturing of OWNER obligation to make payment.

14.4 In accordance with Section 22300 of the Public Contract Code, and at CONTRACTOR sole cost and expense, OWNER will also permit the substitution of securities in lieu of retention withheld by OWNER to ensure performance under the Contract. At the request and expense of CONTRACTOR, securities equivalent to the amount otherwise to be withheld under the Contract shall be deposited with OWNER, or with a state or federally chartered bank as the escrow agent. If the securities are so deposited, then retention on progress payments will not be withheld. In accordance with the provisions of the Contract the securities shall be returned to CONTRACTOR. Securities eligible for investment under Section 22300 shall include those listed in Government Code §16430, bank or savings and loan certificates of deposit, interest-bearing, demand-deposit accounts, standby letters of credit, or any other security mutually agreed to by CONTRACTOR and OWNER. CONTRACTOR shall be the beneficial owner of any securities substituted for monies withheld and shall receive an interest thereon. The escrow agreement used for the purposes of this Article 14.4 shall be substantially similar to the form set forth in Public Contract Code § 22300. The escrow agreement shall provide "in the event OWNER declares a material breach of the Contract and gives notice thereof in writing to CONTRACTOR and the escrow agent, the escrow agent shall immediately release to OWNER funds and/or securities in an amount necessary to permit OWNER to correct defective Work and/or complete the Work."

14.5 CONTRACTOR is required to order, obtain, and store materials and equipment sufficiently in advance of the Work at no additional cost or advance payment from OWNER, and assure there will be no delays to the progress of the Work. OWNER may pay for stored material only when OAR specifically approves the payment in writing. If payments are to be made on account for materials and equipment not incorporated in the Work, but delivered and suitably stored at the Project Site or at some other location agreed to in writing by OAR, the certified Application for Payment shall be accompanied by a bill of sale, invoice or other documentation warranting OWNER has received the materials and equipment free and clear of all liens and encumbrances and the materials and equipment are covered by appropriate insurance and/or other arrangements to protect OWNER interests therein, including, without limitation, transportation to the Project Site. All stored items shall be stored, inventoried, and if applicable, specified by identification numbers, otherwise all risk of loss remains with CONTRACTOR.

CONTRACTOR Warranty of Title:

14.6 CONTRACTOR warrants and guarantees title to all Work, materials, and equipment covered by any certified Application for Payment, whether incorporated into the Work or not, will pass to OWNER no later than the time of payment free and clear of stop payment notices and any and all encumbrances. CONTRACTOR further warrants upon submittal of a certified Application for Payment all Work for which a certified Application for Payment has been previously issued and payments received from OWNER shall, to the best of CONTRACTOR knowledge, information, and belief, be free and clear of stop payment notices and any and all encumbrances in favor of CONTRACTOR, Subcontractors, material and equipment suppliers, or other persons or entities making a claim by reason of having provided labor, materials, and equipment relating to the Work. Nothing set forth in this Article shall be construed to commence any warranty period for materials, equipment, systems, etc. incorporated into the Work. OWNER expressly reserves the right to reject any or all of the Work not in compliance with the Contract Documents at any time before Contract Completion.

Review of Payment Applications:

14.7 If the certified Application for Payment is undisputed and properly submitted as per Articles 14.2 and 14.3, payment, less five percent (5%) retention, any OWNER assessments and withholds will be made within thirty (30) days from receipt.

14.7.1 If the certified Application for Payment is not properly submitted and/or is otherwise disputed the OAR will return it with a written statement setting forth the reason why the payment request is not proper.

14.7.2 If the payment request is properly submitted, and only a portion thereof is disputed, OWNER may pay the undisputed portion thereof and refuse to pay the disputed portion thereof until the dispute is resolved.

14.7.3 If CONTRACTOR disputes any OWNER assessment, then CONTRACTOR shall give written notice as set forth in Article 16.

14.8 Individual Change Orders exceeding $500,000 require an audit by OWNER. Following approval of the Change Order and completion and acceptance of the Change Order Work, OWNER shall pay CONTRACTOR up to 80% of the value of the Change Order pending completion of the audit. Payment of the remaining amount, reflecting any adjustments as required by OWNER's audit, will be made upon completion of the audit.

14.9 OAR may refuse to make payments in whole or part because of:

14.9.1 defective Work not remedied or completed Work has been damaged requiring correction;

14.9.2 Contract Amount having been reduced by Change Order;

14.9.3 OWNER has been required to correct defective Work and/or to complete Work in accordance with Articles 13.23 and/or 15.3;

14.9.4 stop payment notices filed;

14.9.5 Liquidated Damages owed by CONTRACTOR;

14.9.6 reasonable OAR doubt the Work can be completed for the unpaid balance of any Contract Amount and/or within the Milestones and/or Contract Time;

14.9.7 damage to OWNER and/or Separate Contract Work;

14.9.8 failure to store and/or properly secure materials;

14.9.9 failure of CONTRACTOR to submit on a timely basis, proper and sufficient documentation required by the Contract Documents, including, without limitation, Shop Drawings, submittal schedules, construction schedules, Product Data and Samples, proposed material lists, and/or verified reports;

14.9.10 failure of CONTRACTOR to maintain current and accurate Project record documents;

14.9.11 erroneous estimates by CONTRACTOR of the value of the Work performed and/or other erroneous data in a certified Application for Payment;

14.9.12 unauthorized deviations from the Contract Documents including, without limitation, CONTRACTOR failure to correct notices of defective Work, NCILs, and/or safety orders;

14.9.13 failure of CONTRACTOR and/or its eligible Subcontractors to comply and remain in compliance with the OCIP program;

14.9.14 other items entitling OWNER to a partial and/or full withholding of the recommended amounts;

14.9.15 OWNER exercising any of its rights as set forth in Articles 15.3;

14.9.16 OWNER assessed other costs, expenses and/or damages as permitted by the Contract;

14.9.17 OWNER assessed penalties as permitted by law;

14.9.18 failure of CONTRACTOR to comply with Certified Payroll Records, as required per Article 6.48.

14.9.19 failure to defend, indemnify or hold harmless the OWNER, members of OWNER's Board of Education, OAR, OCIP Administrator, ARCHITECT, OWNER consultants, Project Inspector or State of California, and each of their respective agents, employees, representatives, officers and directors, as required by Article 6.53.

No interest or penalties shall be paid on any retention or amounts withheld due to the failure of CONTRACTOR to perform in full accordance with the terms and conditions of the Contract Documents.

Payment Not Constituting Approval or Acceptance:

14.10 An approved certified Application for Payment, a progress payment, or partial or entire use or occupancy of the Work by the OWNER shall not constitute acceptance of Work not in accordance with the Contract Documents.

Interest:

14.11 If payment is not made within thirty (30) days of receipt of an undisputed and properly submitted certified Application for Payment as set forth in Articles 14.2 and 14.3, then interest shall begin to accrue as of the thirty-first (31st) day until paid at the rate set forth in Code of Civil Procedure Section 685.010 as of the date this Contract was entered into.

Substantial Completion:

14.12 When CONTRACTOR considers the progress of the Work to be at Substantial Completion, CONTRACTOR shall request in writing that OAR inspect the Work and issue a Certificate of Substantial Completion.

14.12.1 CONTRACTOR shall submit to OAR the written request using OWNER form "Request for Certificate of Substantial Completion." In the request, CONTRACTOR shall certify that the progress of the Work is at Substantial Completion and CONTRACTOR shall at that time, submit a list of items that CONTRACTOR believes are corrective in nature. CONTRACTOR shall promptly proceed in correcting items that are on CONTRACTOR submitted list.

14.12.2 Within three (3) days after receipt of the Request for Certificate of Substantial Completion, OAR, ARCHITECT, the Project Inspector authorities having jurisdiction, and CONTRACTOR shall inspect the Work.

14.12.2.1 If, after inspection of the Work, OAR considers the progress of the Work to be at Substantial Completion, the Project Inspector shall prepare and issue to OAR, ARCHITECT and CONTRACTOR a comprehensive Punch List of items to be corrected. OAR shall prepare and deliver to CONTRACTOR a Certificate of Substantial Completion thereby establishing the date of Substantial Completion and the date by which CONTRACTOR shall finish all items on the attached Punch List.

14.12.2.2 If, after inspection of the Work, and within seven (7) days after receipt of the Request for Certificate of Substantial Completion, OAR does not consider the progress of the Work to be at Substantial Completion, OAR will notify CONTRACTOR stating the reasons thereof.

14.12.3 At Substantial Completion, OAR and CONTRACTOR will concur on the division of responsibilities between OWNER and CONTRACTOR with respect to security, maintenance, safety, operation, heat, utilities, damage to the Work, warranties and guarantees. Warranties and guarantees shall commence on the date of Substantial Completion, unless otherwise indicated in the Certificate of Substantial Completion.

14.12.4 CONTRACTOR shall correct all items on the Punch List in the time frame established by the Certificate of Substantial Completion issued by the OAR, within the Administrative Closeout period and in accordance with the Contract. Failure to include an item on the Punch List issued by OWNER does not relieve CONTRACTOR from completing all the Work in accordance with the Contract Documents.

14.13 OWNER shall allow reasonable access to CONTRACTOR to correct items on the Punch List, which may not be granted during normal school hours if such activity interferes with school operations.

Partial Use or Occupancy:

14.14 OWNER may occupy or use any completed or partially completed portion of the Work with such Partial Use or Occupancy not constituting acceptance of the Work or a portion thereof. Upon OWNER election to partially use and/or occupy the Work, OAR shall provide notice to CONTRACTOR. OAR, ARCHITECT and the Project Inspector shall jointly inspect the area to be partially used and/or occupied in order to determine and record the status of completion. The Project Inspector shall prepare and distribute a list of Contract deficiencies to CONTRACTOR, OAR, and ARCHITECT. The Contract deficiencies shall be corrected in the time frame as directed by the OAR. OAR and CONTRACTOR shall also agree in writing to the division of responsibilities pending issuance of a certificate of Substantial Completion regarding security, maintenance, operation, heat, utilities, damage to the Work, warranties, and guarantees.

Final Payment Application:

14.15 Upon certification of Substantial Completion by OAR, CONTRACTOR may make a final Application for Payment. This does not preclude CONTRACTOR from subsequently submitting a payment request for Change Order Work completed prior to, but approved after Substantial Completion. Final Application for Payment shall be accompanied by the same details as set forth in Article 14.2 and the following items shall have been submitted as conditions precedent to final payment:

14.15.1 written preliminary warranties and guarantees, operating permits, applications, occupancy and use permits, and bonds required by the Contract Documents for its portion of the Work;

14.15.2 all manuals and extra materials required by the Contract Documents;

14.15.3 all training and OWNER orientations as specified in the Contract Documents;

14.15.4 CONTRACTOR shall have removed, or caused to be removed, all waste materials and rubbish from and about the Project Site, as well as all tools, construction equipment, machinery, surplus material, scaffolding equipment, temporary facilities, and any other similar materials or equipment of CONTRACTOR or any Subcontractor; except as needed to correct items on the Punch List with approval of the OAR.

Release of Retention

14.16 Within sixty (60) days after certification of Substantial Completion by OAR, the retention shall be paid, except for one-hundred fifty percent (150%) of the value of the Punch List items and/or any

amount which OWNER otherwise has a right or obligation to withhold, in accordance with Public Contract Code Section 7107.

14.17 OAR shall make a determination of all outstanding items required by the Contract as a condition precedent to payment of retention and may withhold monies for all outstanding items considered in dispute as listed in Article 14.17 and including the following items:

14.17.1 Outstanding corrections to the Work which are required to remedy any defects therein, to obtain compliance with the Contract Documents or any requirements of applicable codes and/or ordinances including but not limited to the filing of a DSA final verified report, or to fulfill any of the orders or directives of OAR required under the Contract;

14.17.2 CONTRACTOR shall have delivered to OAR legible and reproducible final Project record documents, including the "As-Built" Drawings, with CONTRACTOR certification of the accuracy of the Project record documents, all guarantees and warranties, bonds, operation and maintenance instructions for equipment, products, apparatus.

Contract Completion and Release of Withholds:

14.18 CONTRACTOR is precluded from performing Punch List corrections and/or document submittal after the Contract Time has expired unless OWNER elects to extend the Administrative Closeout duration. This authorization is solely issued as an accommodation and convenience for CONTRACTOR to complete remaining Punch List items and/or document submittals, and shall be non-compensable and shall not be deemed to extend the Contract Time. CONTRACTOR will be assessed actual cost for the items the CONTRACTOR was precluded from completing. Withhold amounts exceeding actual costs to correct or to obtain deliverables will be released.

14.19 OWNER shall have the right, if deemed necessary in its sole discretion, to issue joint checks made payable to CONTRACTOR and any Subcontractor(s), of any tier. The joint check payees shall be solely responsible for the allocation and disbursement of funds included as part of any such joint payment. Endorsement on such check by a payee shall be conclusively presumed to constitute receipt of payment by such payee. In no event shall any joint check payment be construed to create (i) any contract between OWNER and a Subcontractor, of any tier, (ii) any obligation from OWNER to such Subcontractor, or (iii) any third party rights against OWNER.

ARTICLE 15 – WORK SUSPENSION AND TERMINATION

15.1 ***OWNER Right To Suspend Or Stop Work:***

15.1.1 OWNER may, with or without cause and without invalidating or terminating the Contract, at any time and from time to time, order CONTRACTOR, in writing, to suspend, delay or interrupt performance of the Work, in whole or in part, for such period of time as the OWNER may determine or, if no time frame is provided, until OWNER directs resumption of the suspended Work or any part thereof. Upon receipt of such Construction Directive, CONTRACTOR shall comply with its terms and take all reasonable steps to minimize costs allocable to the Work covered or impacted by the Construction Directive during the period of Work stoppage.

15.1.2 If a Construction Directive issued by OWNER is canceled or expired, in whole or in part, CONTRACTOR shall resume and continue with the Work. Within ten (10) days of the

cancellation or expiration of a suspension directive, CONTRACTOR, if it believes it is entitled to an adjustment to the Contract Amount or Contract Time shall pursuant to Articles 10.7 through 10.17, submit a Change Order Proposal. Any adjustment in Contract Amount as a result of an adjustment to the Contract Time shall be limited to the amount set forth in Article 11.12; provided however that no adjustment of the Contract Amount shall be made to the extent (1) performance of the Work is, was or would have been so suspended, delayed or interrupted by another cause for which CONTRACTOR or any Subcontractor is responsible or for which CONTRACTOR would not be entitled to an adjustment of the Contract Amount or Contract Time under the Contract Documents or (2) to the extent that either an adjustment to the Contract Amount or Time is made or denied under another provision of the Contract Documents.

15.1.3 In addition to the OWNER's right to suspend the Work or terminate the Contract pursuant to the Contract Documents, the OWNER may, by written order, direct the CONTRACTOR to stop the Work, or any portion thereof, until the cause for such stop work order has been eliminated, if the CONTRACTOR: (i) fails to correct Work which is not in conformity and in accordance with the requirements of the Contract Documents, or (ii) otherwise fails to carry out the Work in conformity and accordance with the Contract Documents. The right of the OWNER to stop the Work hereunder shall not be deemed a duty on the part of the OWNER to exercise such right for the benefit of the CONTRACTOR or any other person or entity, nor shall the OWNER's exercise of such right waive or limit the exercise of any other right or remedy of the OWNER under the Contract Documents or at law.

15.2 ***OWNER Termination For Convenience:***

The OWNER may at any time, in its sole and exclusive discretion, by written notice to the CONTRACTOR, terminate the Contract in whole or in part for the convenience of the OWNER ("Termination for Convenience"). CONTRACTOR's sole and exclusive compensation in the event of a Termination for Convenience shall be payment for: (i) Work actually performed and in place in accordance with the Contract Documents as of the effective date of such Termination for Convenience with a reasonable allowance for profit and overhead on such Work, (ii) reasonable termination expenses for reasonable protection of Work in place and suitable storage and protection of materials and equipment delivered to the Site of the Work but not yet incorporated into the Work, provided that such payments exclusive of termination expenses shall not exceed the total Contract Price as reduced by payments previously made to the CONTRACTOR and as further reduced by the value of the Work as not yet completed and (iii) other direct costs for material and equipment which CONTRACTOR has already incurred as of the date of termination provided CONTRACTOR incurred such expense as authorized by the Contract Documents. The CONTRACTOR shall not be entitled to profit and overhead on Work which was not performed as of the effective date of the Termination for Convenience by the OWNER or for any other damages, direct or indirect, including loss of revenue, lost opportunity, or other consequential or incidental damages of any kind which CONTRACTOR or anyone claiming through CONTRACTOR alleges (including all Subcontractors of any tier) resulting from the OWNER's election to terminate under this Article or where a termination for cause under Article 15.3 has been converted to a Termination for Convenience under Article 15.3.8. The OWNER may, in its sole discretion, elect to have Subcontracts assigned pursuant to Article 15.3.4 after exercising the right hereunder to Terminate for Convenience. CONTRACTOR shall deliver to OWNER all partial drawings, warranties or other contractual requirements which would be required to be furnished to OWNER upon Contract Completion.

15.3 ***OWNER Termination For Cause:***

15.3.1 OWNER may terminate the Contract and/or the CONTRACTOR's performance of the Contract, upon the occurrence of any one or more of the following events or actions or inactions of CONTRACTOR: (1) fails to correct or remedy any defective Work; (2) refuses, fails or neglects to supply a sufficiency of material, labor or equipment; (3) refuses, fails or neglects to prosecute the Work with diligence as will insure Substantial Completion of the Work within the Contract Time; (4) fails to promptly pay Subcontractors; (5) fails to keep in full force and effect the payment and performance bonds required by law and/or the Contract; (6) fails to comply with a Construction Directive or direction by the OAR to correct noncompliant Work; (7) fails to keep to the Construction Schedule; (8) fails to enroll and remain enrolled in the OCIP; (9) fails to correct and complete Punch List Work including required documents; (10) fails to adhere and comply with any provision of the Contract Documents including safety requirements; (11) if CONTRACTOR's prequalification status has been revoked or cancelled; (12) CONTRACTOR is adjudged a bankrupt or makes a general assignment for the benefit of creditors or a receiver is appointed on account of CONTRACTOR's insolvency; (13) if CONTRACTOR disregards laws, ordinances, rules, codes, regulations, or orders applicable to the Work or similar requirements of any public entity having jurisdiction over the Work; or (14) if the CONTRACTOR otherwise violates in any material way any provisions or requirements of the Contract Documents.

15.3.2 If OWNER determines that any of the events set forth in Article 15.3.1 have occurred, the OWNER may declare a default and shall provide CONTRACTOR and its Surety written notice of the event(s) giving rise to the default and provide CONTRACTOR and its Surety five (5) days from CONTRACTOR or Surety's receipt of such written notice, whichever occurs first, to correct and/or commence correcting the events giving rise to default to OWNER's satisfaction. Should CONTRACTOR or its Surety fail to commence correction within the five (5) days, and/or fail to commence to correct such events of default in a diligent manner to OWNER's satisfaction, OWNER may, without limitation to OWNER's other rights or remedies under the Contract Documents, terminate the Contract and/or CONTRACTOR's performance of the Contract as set forth in Article 15.3.1 and the OWNER may take over the Work and prosecute it to completion, by contract or otherwise, and may exclude the CONTRACTOR from the Site. OWNER may take possession of the Work and of all of the CONTRACTOR's tools, appliances, construction equipment, machinery, materials, and plant which may be on the Site of the Work, and use the same to the full extent they could be used by the CONTRACTOR without liability to the CONTRACTOR. In exercising OWNER's right to prosecute the completion of the Work, OWNER may also take possession of all materials and equipment stored at the Site of the Work or for which OWNER has paid the CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER deems expedient. In exercising OWNER's right to prosecute the completion of the Work, OWNER shall have the right to exercise its sole discretion as to the manner, methods, and reasonableness of the costs of completing the Work and OWNER shall not be required to obtain the lowest figure for completion of the Work. In the event that OWNER takes bids for remedial Work or completion of the Work, the CONTRACTOR shall not be eligible for the award of such contract(s).

15.3.3 In the event that the Contract or the CONTRACTOR's performance of the Contract is terminated pursuant to Article 15.3.1, OWNER may also demand that the Surety take over and complete the Work. OWNER may require that in so doing, the Surety not utilize the CONTRACTOR in performing and completing the Work. Upon the failure or refusal of the

Surety to take over and begin completion of the Work within ten (10) days after demand therefor, OWNER may take over the Work and prosecute it to completion as provided for in Article 15.3.2.

15.3.4 OWNER shall, in its sole and exclusive discretion, have the option of requiring any Subcontractor or Material Supplier to perform in accordance with its subcontract or purchase order with the CONTRACTOR and assign the subcontract or purchase order to OWNER or such other person or entity selected by OWNER to complete the Work.

15.3.5 In the event of termination under Article 15.3.1, the CONTRACTOR shall not be entitled to receive any further payment of the Contract Amount until the Work is completed. If the unpaid balance of the Contract Amount as of the date of termination exceeds OWNER's direct and indirect costs and expenses for completing the Work, including without limitation, attorneys' fees and compensation for additional professional and consultant services, such excess shall be used to pay the CONTRACTOR for the Cost of the Work performed prior to the effective date of termination with a reasonable allowance for overhead and profit. If OWNER's costs and expenses to complete the Work exceed the unpaid Contract Amount, the CONTRACTOR and/or the Surety shall pay the difference to OWNER.

15.3.6 The CONTRACTOR and the Surety shall be liable for all damage sustained by OWNER resulting from, in any manner, the termination of the Contract or CONTRACTOR's performance of the Contract under Article 15.3.1, including without limitation, attorneys' fees, and for all costs necessary for repair and completion of the Work over and beyond the Contract Amount.

15.3.7 If OWNER terminates the Contract or CONTRACTOR's performance of the Contract under Article 15.3.1 because an event of default under Article 15.3.1 has occurred, and OWNER later learns that another event or events of default under Article 15.3.1 existed at the time notice was provided to CONTRACTOR and Surety but that OWNER was unaware of such event(s) but CONTRACTOR was or should have been aware of such event(s), then such event(s) shall have been considered to have been included in the notice provided to CONTRACTOR and Surety under Article 15.3.2 and their opportunity to cure shall be considered to have been waived by CONTRACTOR's and Surety's failure to cure the enumerated event(s) of default contained in the notice.

15.3.8 In the event the Contract or CONTRACTOR's performance of the Contract is terminated under Article 15.3.1, and it is finally determined by an arbitrator, court, jury or other tribunal having jurisdiction, for any reason, that the CONTRACTOR was not in default under the provisions hereof, or that OWNER's exercise of its rights under Article 15.3.1 was defective, deficient, ineffective, invalid or improper for any reason, the termination shall be deemed a Termination for Convenience by OWNER and thereupon, the rights and obligations of OWNER and the CONTRACTOR shall be determined in accordance with Article 15.2 hereof.

15.3.9 In the event the Contract or CONTRACTOR's performance of the Contract is terminated pursuant to Article 15.2 or 15.3, the termination shall not affect or limit any rights or remedies of OWNER against the CONTRACTOR or the Surety. The rights and remedies of OWNER under Article 15.2 or 15.3 are in addition to, and not in lieu of, any other rights and remedies provided by law or otherwise under the Contract Documents. Any retention or

payment of monies to the CONTRACTOR by OWNER shall not be deemed to release the CONTRACTOR or the Surety from any liability hereunder.

ARTICLE 16 – CLAIM RESOLUTION

16.1 ***Public Contract Code section 9204.*** This Article 16 is intended to comply with the provisions of Public Contract Code section 9204 pertaining to claim resolution.

16.2 ***What is a Claim?***

The term "Claim" means a written demand by CONTRACTOR sent by registered mail or certified mail with return receipt requested for one or more of the following:

(1) An extension of the Contract Time, including relief from damages or penalties assessed by OWNER for delay;

(2) Payment by OWNER of money or damages arising from work done by, or on behalf of, CONTRACTOR pursuant to the Contract and payment that is not otherwise expressly provided for in the Contract Documents or to which CONTRACTOR is not otherwise entitled;

(3) Payment of an amount that is disputed by OWNER.

16.3 ***What is not a Claim?***

16.3.1 The term "Claim" does not include, and the Claims procedures provided under this Article 16 do not apply to, the following:

16.3.1.1 Penalties, forfeitures or other remedies prescribed by statute or regulation which a government agency is specifically authorized to administer, settle, or determine, including revocation of pre-qualification status, barring a bidder from OWNER contracts; however, penalties sought against a public agency pursuant to statute, such as Public Contract Code sections 7107 or 20104.50, are considered Claims.

16.3.1.2 Personal injury, death, reimbursement, or other demands for compensation arising out of or resulting from liability for personal injury or death.

16.3.1.3 The OWNER's determination of whether the Work complies with the Contract Documents, or concerning a latent defect, breach of warranty, or guarantee to repair.

16.3.1.4 Stop payment notices.

16.3.1.5 OWNER's rights under the Contract Documents including, but not limited to, Articles 12 and 15.

16.3.1.6 Disputes arising out of or pertaining to the LCP or PSA.

16.3.1.7 An OCIP insurance claim or dispute with an OCIP Insurer.

16.4 ***When does a Claim arise?***

A Claim arises upon the issuance of a written decision by the OAR denying in whole or in part CONTRACTOR's Change Order Proposal.

16.5 ***Where must the Claim be submitted?***

16.5.1 CONTRACTOR must submit the Claim to the OWNER's Construction Claims Unit ("CCU") located at 333 S. Beaudry Avenue, 23rd Floor, Los Angeles, California, 90017. CONTRACTOR must also submit a copy of the Claim to the OAR.

16.6 ***When must the Claim be submitted?***

CONTRACTOR must submit a Claim in writing, together with all supporting data specified in Article 16.7.1, no later than the earlier of either: (1) thirty (30) days after the date the Claim arises under Article 16.4; or (2) sixty (60) days after the date of Substantial Completion. It is the intent of OWNER to evaluate and resolve Claims with CONTRACTOR as close to the events giving rise to such Claims as possible and to avoid stale or late Claims, including late notice and documenting of Claims, and to timely mitigate the issue, event, condition, circumstance and/or cause of the Claim and any Adverse Impacts or damages related thereto. Should CONTRACTOR fail to submit a Claim by the deadline set forth in this Article, CONTRACTOR waives and releases such Claim, including all rights and remedies in connection therewith.

16.7 ***What must the Claim include?***

16.7.1 A Claim must include the following:

16.7.1.1 A statement identifying it as a Claim signed by an authorized agent or officer of CONTRACTOR under penalty of perjury and including the following language immediately above or before CONTRACTOR's signature: "I declare under penalty of perjury under the laws of the State of California that the information provided and statements made in this Claim are true and correct, substantiated and of merit." CONTRACTOR recognizes and acknowledges that this requirement is not a mere formality but is intended to ensure that CONTRACTOR only submits Claims that it believes are true and correct, substantiated and have merit. Should CONTRACTOR fail to submit the foregoing written statement signed under penalty of perjury, CONTRACTOR waives and releases its Claim, including all rights and remedies in connection therewith.

16.7.1.2 A detailed description of the act, error, omission, unforeseen condition, event or other condition giving rise to the Claim.

16.7.1.3 A statement demonstrating that the Claim was timely submitted as required by Article 16.6. If the Claim arises from the issuance by OWNER of a Construction Directive, a statement demonstrating that a Change Order Proposal was timely submitted.

16.7.1.4 A detailed justification for any remedy or relief sought by the Claim, including to the extent applicable, the following:

16.7.1.4.1 If the Claim involves extra work, a detailed cost breakdown of the amounts claimed, including the items specified in Article 11 shall be provided by CONTRACTOR. The breakdown must be provided even if the costs claimed have not been incurred when the Claim is submitted. To the extent costs have been incurred when the Claim is submitted, the Claim must include actual cost records (including without limitation, all payroll records (including Subcontractors), material and rental invoices and the like) demonstrating that costs claimed have actually been incurred. To the extent costs have not yet been incurred at the time the Claim is submitted, actual cost records must be submitted on a current basis not less than once a week during any periods costs are incurred. A cost record will be considered current if received by CCU within ten (10) days of the date the cost reflected in the record is incurred. At the request of OWNER, claimed extra costs may be subject to further verification procedures (such as having an inspector verify the performance of alleged extra work on a daily basis).

16.7.1.4.2 If the Claim involves an alleged error or omission in the Contract Documents: (i) an affirmative representation under penalty of perjury by CONTRACTOR and any affected Subcontractors and suppliers that the error or omission was not discovered prior to submitting a bid for the Contract, and (ii) a detailed statement demonstrating that the error or omission reasonably should not have been discovered, by CONTRACTOR, its Subcontractors and/or suppliers, prior to submitting a bid for the Contract.

16.7.1.4.3 If the Claim involves an extension of the Contract Time, written documentation demonstrating CONTRACTOR's entitlement to a time extension under Article 12.1.

16.7.1.4.4 If the Claim involves an adjustment of the Contract Amount for delay, written documentation demonstrating CONTRACTOR's entitlement to such an adjustment under Articles 11 and 12.1.

16.7.1.4.5 Pursuant to Public Contract Code section 9204(d)(5), a Subcontractor may request in writing, either on its own behalf or on behalf of a lower tier Subcontractor, that CONTRACTOR submit to OWNER a Claim for work which was performed by the Subcontractor or by a lower tier Subcontractor on behalf of the Subcontractor. The Subcontractor requesting that the Claim be submitted to OWNER shall furnish reasonable documentation to support the Claim. Regardless of whether or not CONTRACTOR decides to submit the Subcontractor's Claim to OWNER, CONTRACTOR shall provide a copy of the Subcontractor's written request, including all supporting documentation, to the OAR within ten (10) days of CONTRACTOR's receipt of the request. In the event CONTRACTOR agrees to submit a Subcontractor's Claim to OWNER, CONTRACTOR shall submit such Claim as a Change Order Proposal in accordance with Articles 10, 11 and 12, unless

such Claim was previously submitted to OWNER as a Change Order Proposal. Within forty-five (45) days of receipt of the Subcontractor's written request, CONTRACTOR shall notify the Subcontractor in writing as to whether CONTRACTOR submitted the Claim to OWNER and, if CONTRACTOR did not submit the Claim, CONTRACTOR shall provide the Subcontractor with a written statement of the reasons for not having done so and shall concurrently provide a copy of such written statement to the OAR. In the event CONTRACTOR includes supporting documentation with such written statement, CONTRACTOR shall concurrently provide a copy of such supporting documentation to the OAR.

16.7.1.4.6 If CONTRACTOR submits a Claim on behalf of a Subcontractor as set forth in Article 16.7.1.4.5, in addition to the penalty of perjury language required by Article 16.7.1.1, the Claim shall also include a statement in writing and signed by an authorized agent or officer of CONTRACTOR under penalty of perjury that includes the following language immediately above or before CONTRACTOR's signature: "I declare under penalty of perjury under the laws of the State of California that [insert name of CONTRACTOR] has thoroughly evaluated the claim of [insert name of Subcontractor] and determined that the information provided and statements made in the claim are true and correct, substantiated and of merit."

16.8 ***District Review of Claims:***

Upon receipt of a Claim, OWNER shall conduct a reasonable review of the Claim and, within a period not to exceed forty-five (45) days, shall provide CONTRACTOR a written statement identifying what portion of the Claim is disputed and what portion is undisputed. Upon receipt of a Claim, OWNER and CONTRACTOR may, by mutual written agreement, extend the forty-five (45) day time period. OWNER shall process and make payment of any undisputed portion of a Claim within sixty (60) days after OWNER issues its written statement. Failure by OWNER to provide a written statement in response to a Claim from CONTRACTOR within the forty-five (45) day time period, or within an agreed upon extended time period, shall result in the Claim being deemed rejected in its entirety. A Claim that is rejected by reason of OWNER's failure to respond, or failure to timely respond, to the Claim shall not constitute an adverse finding regarding the merits of the Claim or the claimant's responsibility or qualifications.

16.9 ***Meet and Confer:***

If CONTRACTOR disputes OWNER's written response made pursuant to Article 16.8, or if OWNER fails to respond within the time frame prescribed in Article 16.8, CONTRACTOR, within fifteen (15) days of OWNER's written response or if OWNER fails to respond, within fifteen (15) days after OWNER's response was due, may demand in a writing sent to CCU by registered mail or certified mail, return receipt requested, with a copy to the OAR, an informal conference to meet and confer for settlement of the issues in dispute. OWNER shall schedule a meet and confer conference within thirty (30) days of its receipt of CONTRACTOR's written demand.

16.10 ***Mediation:***

Within ten (10) business days following the conclusion of the meet and confer conference, if the Claim or any portion of the Claim remains in dispute, OWNER shall provide CONTRACTOR a written statement identifying the portion of the Claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the Claim shall be processed and made within sixty (60) days after the OWNER issues its written statement. Any disputed portion of the Claim, as identified by CONTRACTOR in writing, shall be submitted to nonbinding mediation administered by the AAA under its construction industry mediation rules. The expenses and fees of the mediator and the administrative fees shall be divided among the parties equally. Each party shall pay its own counsel fees, witness fees, and other expenses. OWNER and CONTRACTOR shall mutually agree to a mediator within ten (10) business days after the disputed portion of the Claim has been identified in writing. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the Claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. The foregoing notwithstanding, pursuant to Public Contract Code section 9204(f), the parties may mutually agree in writing to waive mediation.

16.11 ***CONTRACTOR's Obligation to File Government Code Claim (All Claims):***

Nothing in this Contract, including Article 16, waives or modifies CONTRACTOR's obligation to present a timely Claim under Government Code section 910, et seq. Therefore, in addition to complying with the contractual Claims procedures, CONTRACTOR is required to present Claims to OWNER pursuant to Government Code section 910, et seq. If after the requirements of Articles 16.8, 16.9 and 16.10 are satisfied, and all or a portion of the Claim remains unresolved, and if the Government Code Claim is rejected by OWNER, CONTRACTOR may proceed under Article 16.12.

16.12 ***Litigation (All Claims):***

The sole forum for resolution of unresolved Claims shall be in the Superior Court of the State of California in the county in which the Project is located. Each party shall pay its own counsel fees, witness fees, and other expenses in such litigation.

16.12.1 Claims of $375,000 or Less: The provisions of Public Contract Code section 20104.4 shall apply. Pursuant to Public Contract Code section 20104.4(a), within sixty (60) days, but no earlier than thirty (30) days, following the filing of responsive pleadings, the court shall submit the matter to nonbinding mediation unless waived by mutual stipulation of both parties. Pursuant to Public Contract Code section 9204(d)(2)(D), a mediation conducted pursuant to Article 16.10 shall excuse the obligation under Public Contract Code section 20104.4(a) to mediate after litigation has been commenced unless otherwise agreed to by the parties in writing.

16.13 ***Waiver:***

A failure by OWNER to enforce any time or other requirement in the Contract Documents, including those in Articles 9, 10, 11, 12 or 16 in connection with any Claim shall not constitute a waiver of, and shall not preclude OWNER from enforcing, such requirements in connection with any Claim.

16.14 ***District Claim Approval:***

CONTRACTOR agrees and understands that any approval, either express or implied, of any Claim shall not be binding upon OWNER unless and until such approval is approved or ratified by execution of a written Change Order approved by the Board of Education or Deputy Chief Procurement Officer under the delegated authority of OWNER's Board of Education or by a Settlement Agreement executed by the Board of Education or Deputy Chief Procurement Officer under the delegated authority of OWNER's Board of Education or a person to whom the OWNER's Board of Education has delegated authority to execute a Settlement Agreement within the dollar amount of the Settlement Agreement which he or she is executing.

16.15 ***No Cessation of Work:***

Notwithstanding the making of any Claim or the existence of any dispute regarding any Claim, unless otherwise directed by OWNER, CONTRACTOR shall not cause any delay, cessation, or termination in or of CONTRACTOR's performance of the Work, but shall diligently proceed with performance of the Work in accordance with the Contract Documents. OWNER will continue to make payments in accordance with the Contract Documents.

16.16 ***Strict Compliance:***

For good and valuable consideration, the receipt and adequacy of which are hereby acknowledged, and as an express, material condition of OWNER accepting CONTRACTOR's bid for this Contract as responsive, CONTRACTOR agrees that strict compliance with the requirements of Articles 9, 10, 11, 12 and 16 is an express condition precedent to CONTRACTOR's right to prosecute an action in any forum.

16.17 ***No Payment for Claim Preparation Costs:***

CONTRACTOR shall bear all costs, fees and expenses of CONTRACTOR, its Subcontractors and suppliers in preparing and presenting any Claim to OWNER.

ARTICLE 17 – ADDITIONAL PROVISIONS

17.1 ***Governing Law:***

This Contract shall be governed by and interpreted in accordance with the laws of the State of California. The Parties agree that the exclusive venue for any action or proceeding arising from or relating to the Contract or Work shall be in the County of Los Angeles, State of California.

17.2 ***Successors and Assigns:***

OWNER and CONTRACTOR respectively bind themselves, their partners, successors, assigns, and legal representatives to the other party hereto and to partners, successors, assigns, and legal representatives of such other party in respect to covenants, agreements, and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract in whole or in part without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

17.3 ***Written Notice:***

In the absence of any other specific notice requirements set forth elsewhere in the Contract Documents, regarding a specific subject matter, notice shall be in writing, dated and personally signed by party giving notice or their duly authorized representative. Mechanical and/or electronically generated signatures are not acceptable under the terms and conditions of this Contract. Notice shall be deemed to be duly served if delivered in person to the individual, member of the firm or entity, or to an officer of the corporation for which it was intended, or if delivered at or sent by registered or certified mail to the last business address known to the party giving notice. Copies of notice or correspondence shall be distributed amongst the various parties of the Work by the party generating such notice or correspondence.

17.4 ***Communications Facilitating Contract Administration:***

Except as otherwise provided in the Contract Documents or when direct communications are warranted by special circumstances, CONTRACTOR shall communicate to OWNER and OWNER Consultants, through the OAR and then only in writing with copies to all affected and/or mentioned parties. Official communications and notice shall be in writing only. Verbal communications are not official or binding under the Contract. Verbal communication, including directions, cannot be, and shall not be, the basis for: any change in the Contract Amount; Milestones; Contract Time; or any dispute, Claim, action, cause of action or other remedy regarding the Work and/or Contract and/or a breach thereof.

17.5 ***Rights, Remedies, Duties and Obligations Cumulative:***

Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder, shall be in addition to any duties, obligations, rights, and remedies otherwise imposed or available by law.

OWNER's rights and remedies under the Contract Documents and at law are non-exclusive and are cumulative to one another.

17.6 ***Time is of the Essence:***

CONTRACTOR acknowledges that all time deadlines under the Contract are of the essence.

17.7 ***No Waiver:***

No action or failure to act by OWNER, OAR, OWNER Consultant, the Project Inspector, or ARCHITECT, shall constitute a waiver of a right afforded them under the Contract Documents, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed to in writing.

17.8 ***Contract Language Controls:***

Custom and practice, industry standards, past (pre-Project) course of dealings, shall not be used to explain, interpret, supply or contradict the express text of this Contract unless a different intent is expressed in this Contract.

17.9 ***Claims Involving Injury or Damage to Person or Property:***

If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, any of the other party's employees or agents, or others for whose acts such party is legally liable, written notice of such injury or damage, whether or not insured, shall be given to the other party with sufficient detail to enable the other party to investigate the matter.

17.10 ***Computation of Time:***

17.10.1 When any period of time is referred to in the Contract Documents by days and/or calendar days, it will be computed to exclude the first and include the last day of such period;

17.10.2 a day of twenty-four hours measured from midnight to the next midnight will constitute a day and/or calendar day.

17.11 ***Oral Agreements or Modifications:***

No oral conversation, representation or agreement with the OAR and/or any representative of OWNER, OWNER Consultant, ARCHITECT, the Project Inspector or any other employee or agent of OWNER shall affect, or modify any of the terms and conditions contained in any of the documents comprising this Contract.

17.12 ***Unfair Business Practice Claims; Assignment to OWNER:***

Pursuant to Public Contract Code Section 7103.5, in entering into a public works Contract or a subcontract to supply goods, services, or materials pursuant to a public works Contract, CONTRACTOR and/or Subcontractor offers and agrees to assign to the awarding body all rights, title, and interest in and to all causes of action it may have under section 4 of the Clayton Act (15 U.S.C. sec. 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to CONTRACTOR without further acknowledgement by the parties.

17.13 ***Discrimination:***

It is the policy of OWNER that there be no discrimination against any prospective or active employee engaged in the Work because of race, color, ancestry, national origin, religion, sex, sexual orientations, age, physical disability, medical condition, or marital status. CONTRACTOR agrees to comply with applicable federal and California laws prohibiting discrimination including, without limitation, the California Fair Employment and Housing Act, beginning with Government Code section 12900 and Labor Code section 1735. In addition, CONTRACTOR shall require like compliance by its employees, and by its Subcontractors and suppliers of all tiers.

END OF ARTICLE

SECTION 00 7300

SUPPLEMENTARY CONDITIONS

WORK OF THE

SYLVAN PARK EARLY EDUCATION CENTER

OUTDOOR CLASSROOM AND CAMPUS UPGRADE

PROJECT BY

THE LOS ANGELES UNIFIED SCHOOL DISTRICT

(OWNER)

May 2026

SUPPLEMENTARY CONDITIONS

The following supplements modify the General Conditions. Where a portion of the General Conditions is modified and or deleted by these Supplementary Conditions, the unaltered portions of the General Conditions shall remain in effect.

Article 5 – GENERAL CONDITIONS

Remove and replace Article 5.1.3 with the following:

5.1.3 Owner will purchase and maintain Builder's Risk insurance in the amount of the initial Contract Amount (and thereafter adjusted pursuant to any Change Orders issued to CONTRACTOR) for the full replacement value of the Work. The Builder's Risk insurance will cover the interests of OWNER, CONTRACTOR and Subcontractors of every tier covering for all risk of direct physical loss, excluding earthquake and flood, and insuring against fire, extended coverage, theft, vandalism, and malicious mischief at limits and sub-limits determined by OWNER. CONTRACTOR will be provided a detailed Certificate of Insurance for the Work. CONTRACTOR shall be responsible for payment of a $50,000 deductible for each occurrence. CONTRACTOR is exclusively responsible, at its sole expense, for obtaining any additional insurance to protect its interests including coverage for CONTRACTOR's $50,000 deductible per occurrence required by the OCIP Insurance Policies.

Remove and replace Article 5.4.8 with the following:

5.4.8 use only mechanical, electrical and plumbing ("MEP") Subcontractors that are licensed pursuant to Sections 7056–7059 of the Business and Professions Code, specifically holding A, B, C-4, C-7, C-10, C-16, C-20, C-34, C-36, C-38, C-42, C-43, and C-46 licenses, and prequalified by the OWNER at least five (5) business days prior to the date of bid for the Project, if the Project includes MEP components that will be performed by first-tier MEP Subcontractors.

For all other trades, CONTRACTOR shall use only Subcontractors that it has safety pre-qualified in accordance with the procedures outlined in the Safety Standards Manual and verified by CONTRACTOR to have an Experience Modification Rate (EMR) that complies with OWNER's requirement upon the date of bid. CONTRACTOR shall be responsible to provide documentation verifying all Subcontractors of CONTRACTOR have an EMR that complies with OWNER's requirement upon the date of bid. OWNER may prohibit access to the Project Site by CONTRACTOR or any Subcontractor for which CONTRACTOR has not provided documentation of an EMR that complies with OWNER's requirement upon the date of bid or waiver by OWNER of this requirement or has not

met the safety pre-qualification requirements outlined in the Safety Standards Manual.

Remove and replace Article 5.4.10 with the following:

5.4.10 submit an online payroll report for each completed payroll period and Application for Payment. Instructions for online access are provided in Section 8 of the OCIP Manual. This obligation includes compliance with all existing requirements and all new requirements implemented during the term of the Project. OWNER may decline to process or may apply a Withhold against, until receipt of the online payroll report, any Application for Payment submitted without completion of the online payroll report that is consistent with CONTRACTOR and Subcontractor (all tier) information submitted for the corresponding Certified Payroll Report periods.

Remove and replace Article 5.7.3 with the following:

5.7.3 CONTRACTOR represents on its own behalf, and on behalf of its Subcontractors, that the costs of OCIP Coverages were deducted in CONTRACTOR bid or proposal for the Work, the Contract Amount, and will not be included in any Change Order Proposals or any Application for Payment relative to the Work;

Remove and replace Article 5.7.4 with the following:

5.7.4 CONTRACTOR acknowledges OWNER shall not pay or compensate CONTRACTOR or any Subcontractor, in any manner, for the costs of OCIP Coverages or any other insurance costs of the CONTRACTOR or Subcontractors.

Article 6 – GENERAL CONDITIONS

Article 6.48.4 Working Hours:

Article 6.48.4.1.4 - delete this Article and replace with the following:

6.48.4.1.4 Where a single shift is worked, eight (8) consecutive hours between **Monday** and **Sunday** shall constitute a work day at the applicable prevailing wage rate(s).

Additional Information:

*(a) A single shift is worked between **3:00 PM and 11:30 PM**, during Instructional School Days and Saturdays from 8:30 AM – 5:00 PM.*

*(b) A single shift is worked between **7:00 AM and 3:30 PM** on Non-Instructional School Days, School Breaks, and Holidays, and only upon approval of the OAR.*

*(c) All heavy demolition, waste removal, and indoor construction must be performed after **5:30 PM on weekdays or on Saturdays**. All work must strictly adhere to the City of Los Angeles noise ordinance to ensure compliance with local decibel limits and allowable work hours.*

(d) The Contractor is obligated to work on Saturdays as needed to achieve milestones specified in Section 01 1219 of the specifications. No demolition or disruptive construction noise is allowed after 8:30 PM.

(e) The Contractor must suspend all noise-generating activities daily between 12:00 PM and 2:30 PM to observe student quiet hours.

Article 6.48.4.1.5 - delete this Article and replace with the following:

6.48.4.1.5 Forty (40) hours between **Monday, 7:00 A.M.** and **Sunday, 12:30 A.M.** shall constitute a work week at the applicable prevailing wage rate(s). *When weekend work is required, a workday shall consist of Saturday and/or Sunday and /or holiday **8:30 AM to 5:00 PM** shall be paid pursuant to the Prevailing Wage Determination. Please contact the Department of Industrial Relations for shift differential, Saturday, Sunday, and/or holiday pay requirements.*

The project site is situated within densely populated residential zones. The Contractor is strictly responsible for identifying and adhering to all applicable local and state laws, including municipal noise ordinances and parking regulations. Any work performed outside of standard allowable hours requires the Contractor to secure all necessary special permits and provide advance notification to the District.

SYLVAN PARK EEC is open five (5) days a week, all year round with no school recess from 7:00AM - 6:00PM.

Article 11 – GENERAL CONDITIONS

Remove and replace Article 11.10.2 with the following:

11.10.2 where Subcontractors are included in the change, the intent of Articles 11.8.1, 11.8.2, 11.8.3 and 11.11 is that the Subcontractor who actually performs or furnishes the Work, regardless of tier, will be paid a fee of fifteen (15) percent of the costs incurred by such Subcontractor under Articles 11.8.1 and 11.8.2, and CONTRACTOR will be paid a fee of ten (10) percent, for a maximum total fee of twenty five (25) percent;

Remove and replace Article 11.13 with the following:

Change Order Exceeding $1,000,000:

11.13 Any individual Change Order in an amount that exceeds $1,000,000 and which has been approved by the Deputy Chief Procurement Officer (Facilities), or designee, shall be subject to audit by OWNER as set forth in Article 14.8.

Article 12 – GENERAL CONDITIONS

Article 12.7 – Add Subarticle 12.7.1

Article **12.7.1** CONTRACTOR will be liable to OWNER for liquidated damages pursuant to Article 12.7 for each calendar day of delay in the amount of **$750/per day.**

Article 14 – GENERAL CONDITIONS

Remove and replace Article 14.7 with the following:

14.7 If the certified Application for Payment is undisputed and properly submitted as per Articles 14.2 and 14.3, payment, less **FIVE** percent (**5**%) retention, any OWNER assessments and withholds will be made within thirty (30) days from receipt.

14.7.1 If the certified Application for Payment is not properly submitted and/or is otherwise disputed, the OAR will return it with a written statement setting forth the reason why the payment request is not proper.

14.7.2 If the payment request is properly submitted, and only a portion thereof is disputed, OWNER may pay the undisputed portion thereof and refuse to pay the disputed portion thereof until the dispute is resolved.

14.7.3 If CONTRACTOR disputes any OWNER assessment, then CONTRACTOR shall give written notice as set forth in Article 16.

14.7a At any time after fifty percent (50%) of the Work value of the Contract Amount is completed, CONTRACTOR may request in writing to the OAR a reduction of retention. OWNER may do one or more of the following, provided that the amount on retention is not reduced to less than 5% of the Contract Amount.

14.7a.1 Make any of the remaining progress payments in full after determining that the Work has progressed satisfactorily.

14.7a.2 Retain up to **FIVE** percent (**5**%) of any of the remaining progress payments as OWNER determines appropriate.

14.7a.3 Pay CONTRACTOR any amount of the retention above that amount legally required to be retained or withheld.

Any reduction of retention is at OWNER's sole and absolute discretion and may be later revoked or modified.

Remove and replace Article 14.8 with the following:

14.8 Individual Change Orders exceeding $1,000,000 require an audit by OWNER. Following approval of the Change Order and completion and acceptance of the Change Order Work, OWNER shall pay CONTRACTOR up to 80% of the value of the Change Order pending completion of the audit. Payment of the remaining amount, reflecting any adjustments as required by OWNER's audit, will be made upon completion of the audit.

END OF SUPPLEMENTARY CONDITIONS

SECTION 00 7316

OWNER CONTROLLED INSURANCE PROGRAM (OCIP)

1.01 RELATED DOCUMENT:

A. LAUSD Owner Controlled Insurance Program - The School Repair and Construction Program Insurance Manual (5/1/2023)

B. LAUSD School Repair and Construction Project Safety Standards

1.02 ELIGIBILITY:

A. Bidder is instructed to fully review the enclosed/following LAUSD OCIP Insurance Manual and Safety Standards, especially Section 3, Pages 5-6, Section 4 and Section 5, as to their eligibility for coverage under the OCIP Program.

B. Bidder is required to determine eligibilities prior to tendering a bid for this Contract. To enroll in OCIP, bidder must be pre-qualified and subcontractors may not have an Experience Modification Rate exceeding 1.00.

1.03 EXCLUDED PARTIES:

A. Excluded Parties must meet the insurance requirements established in Section 5 of the LAUSD OCIP Insurance Manual and Safety Standards, and provide evidence of coverage to the OWNER.

B. Excluded Parties must provide evidence of Worker's Compensation, General Liability, Excess/Umbrella Liability and Automobile Liability insurance for all activities, including both on-site and off-site activities per the insurance requirements of the Contract.

1.04 COST OF INSURANCE IN BID PRICE:

A. Each OCIP eligible bidder is required to exclude from its bid amount, the cost of the OCIP Coverages provided by the OWNER.

B. Each OCIP excluded bidder is required to include in its bid amount, the cost of all insurance coverages required under the Contract.

END OF SECTION

LOS ANGELES UNIFIED SCHOOL DISTRICT

The School Repair and Construction Program

Owner Controlled Insurance Program (OCIP)

OCIP V – OCIP Insurance Manual

Revised 10/16/2024 – Revision 1.2

THIS MANUAL IS A CONTRACT DOCUMENT

May 1, 2023

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Section 1: Introduction

Overview

Welcome to the Los Angeles Unified School District (LAUSD or District) School Repair and Construction Program Owner Controlled Insurance Program.

LAUSD has arranged for its construction projects to be insured under its Owner Controlled Insurance Program (OCIP). An OCIP is a single insurance program that insures the District, the Board, all Enrolled Contractors and Enrolled Subcontractors, and other designated parties for Work performed at the Project Site(s). Certain Contractors and Subcontractors are excluded from this OCIP. These parties are identified in Section 3 of this Manual.

Each contractor enrolled in the OCIP will be provided coverage for: **Workers' Compensation, Employer's Liability, General Liability, Excess Liability, Builders Risk, and Contractor's Pollution Liability Insurance** ("OCIP Coverages") for operations of Enrolled Parties at the Project Site.

The District will pay the insurance premiums for the OCIP coverages described in this Manual. You should notify your insurance broker/insurer(s) of the coverages provided under this OCIP to avoid the duplication of coverage. **Each bidder is required to EXCLUDE from its bid price the cost of the OCIP Coverages provided by the District.**

DISCLAIMER:
The information in this Manual is intended to outline the OCIP. If any conflict exists between this Manual and the OCIP insurance policies, the OCIP insurance policies will govern.

Section 2: OCIP Directory

SPONSOR
Los Angeles Unified School District (LAUSD) Division of Risk Management & Insurance Services 333 South Beaudry Avenue, 28th Floor Los Angeles, CA 90017

LAUSD OCIP Manager	LAUSD OCIP WC Claims Processing Supervisor
Amalia Sanchez amalia.sanchez1@lausd.net	**Juan Chaidez Zaragoza** (213) 241-2210 (office) (213) 241-8956 (fax) j.chaidezzaragoz@lausd.net

OCIP ADMINISTRATOR
Willis Towers Watson Insurance Services West, Inc. (WTW) 300 South Grand Suite 2000 Los Angeles, CA

Position	Contact	Phones	Email
WTW OCIP Client Service Specialist	**Irene Montes**	415-244-9858	LAUSD.OCIP@wtwco.com
WTW OCIP Client Service Specialist Back-Up	**Maria Maravilla**	415-696-4411	
WTW OCIP Client Service Lead	**Nancy Jarmon**	214-535-1887	Nancy.Jarmon@wtwco.com
WTW OCIP Senior Claims Associate	**James Hensley**	720-591-0692	James.Hensley@wtwco.com Non-WC claims: claimwest@willistowerswatson.com
WTW OCIP Claims WC	**Julie Travers**	818-534-7603	Julie.Travers@wtwco.com
WTW Account Executive	**Lakki Talreja**	972-654-0587	Lakki.Talreja@wtwco.com

Section 3: Project Definitions

The following definitions apply to the terms used in this OCIP Manual.

TERM	DEFINITION
Approved Off-Site Locations	A location 100% dedicated to the Project can be considered. A request must be submitted in writing to LAUSD OCIP Manager and OCIP Administrator must be approved in writing by the LAUSD OCIP Manager or OCIP Administrator.
Certificate of Insurance	A document providing evidence of the existence of coverage for a particular insurance policy or policies.
ComPAS **(Enrollment System for Contractors)**	WTW Comprehensive Project Administration System (ComPAS) is the Administration Portal for the online OCIP Administration managed by WTW. The web address is https://cp.wtwcompas.com The recommended browser is Chrome.
Contract	A written agreement between the Sponsor and the Contractor for specific work and includes written agreement between a Subcontractor and any tier of Subcontractor.
Contractor	For purposes of this OCIP Manual, the term Contractor will mean Contractor and Subcontractor of any tier, as appropriate
Eligible Parties	Parties performing labor or services at the Project Site are eligible to enroll in the OCIP, unless they are an Excluded Party.
Enrolled Parties	Those eligible Contractors and Subcontractors that have submitted all necessary enrollment information and have been accepted into the OCIP as evidenced by a LAUSD OCIP Confirmation Letter and LAUSD OCIP Certificate of Insurance provided by the OCIP Administrator
Excluded Parties	The LAUSD OCIP does not cover the following: • Vendors, suppliers, truck carriers or haulers, material dealers, delivery persons, • Structural demolition operations, blasting operations, • Surveyors, any and all professional trades, any security patrol or guard services, • Hazardous waste removal, abatement contractors, • Manufacturers, or fabricators, • Any other organization performing activities outside of the “designated project(s)” that do not have on-site dedicated payroll associated with construction activities, • Independent Crane operators, and physical damage to any crane, • Any parties or entities not specifically identified or excluded by LAUSD in its sole discretion, even if otherwise eligible.

TERM	DEFINITION
OCIP Coverages	LAUSD-provided OCIP Coverages for Eligible and Enrolled Parties that includes Workers' Compensation, Employer's Liability, General Liability, Excess Liability, Builders Risk, and Contractor's Pollution Liability Insurance for operations performed at the Project Site.
OCIP Insurance Manual	For purposes of this Manual and Contracts, OCIP Insurance Manual includes "Los Angeles Unified School District - The School Repair and Construction Program- Insurance Manual", "OCIP Manual" and "Insurance Manual".
OCIP Insurer	The insurance company named on the policy or on the Certificate of Insurance that provides specific coverage for the OCIP.
OCIP Program Administrator	Willis Towers Insurance Services West, Inc. (WTW)
Owner Authorized Representative	Owner Authorized Representative or OAR is assigned to the project shall ensure that the appropriate insurance is maintained by the Contractor
Owner Controlled Insurance Program / OCIP	LAUSD's Owner Controlled Insurance Program – A coordinated insurance program providing certain coverages, as defined herein, for the District, Eligible and Enrolled Contractors, and Eligible and Enrolled Subcontractors performing Work at the Project Site.
Project Site	Project Site shall mean those areas designated in writing by Sponsor in the Contract for performance of the Work and such additional areas as may be designated in writing by Sponsor for Contractors use in performance of the Work
Sponsor	Los Angeles Unified School District, LAUSD or the District, and is the First Named Insured on all OCIP insurance policies
Third Party Administrator	The Third-Party Administrator is responsible for monitoring the claims that occur at the project site and closing them in a timely fashion.
Work	Operations as fully described in the Contract.

Section 4: OCIP Coverages

OCIP Coverages

The OCIP Coverages and exclusions are set forth in full in their respective insurance policy forms. Summary descriptions of OCIP Coverages in these General Conditions or the Insurance Manual are not intended to be complete or to alter or amend any provision of the actual OCIP policies. In the event any provision of these General Conditions, the OCIP Insurance Manual, or the Contract Documents conflict with the OCIP insurance policies, the provisions of the actual OCIP insurance policies shall govern.

Excluded Parties

Excluded Parties must meet the insurance requirements more fully outlined in Contract documents and provide evidence of coverage to the District.

Evidence of Coverage

Each Enrolled Party will be issued an individual Workers' Compensation policy. The OCIP Administrator will also provide a Certificate of Insurance evidencing the OCIP coverages to each Enrolled Party. Other documentation including forms, posting notices, if any, will be furnished to each Enrolled Party. A copy of the General Liability policy and evidence of Builders' Risk will be available for review upon written request to the LAUSD OCIP UNIT or designee; Contact (213) 241-3139.

Assignment of Return Premiums

The District will pay the cost of the OCIP insurance coverage. The District will be the sole recipient of any return premiums or dividends from the OCIP coverages. All Enrolled Parties shall assign to the District all adjustments, refunds, premium discounts, dividends, credits, or any other monies due from the OCIP insurers.

Workers' Compensation and Employers Liability:

Coverage in CA – An individual Workers' Compensation Policy will be issued to each Enrolled Party

Part One:	Workers' Compensation	Statutory Limit
Part Two:	Employer's Liability	Annual Limits Per Insured
	Bodily Injury by Accident, each accident	$1,000,000
	Bodily Injury by Disease, each employee	$1,000,000
	Bodily Injury by Disease, policy limit	$1,000,000

Commercial General Liability

	Limits of Liability Shared by all covered parties for All Projects
Bodily injury and Property Damage - each occurrence	$2,000,000
General Aggregate for all Enrolled Parties	$4,000,000
Personal/Advertising injury – each occurrence	$2,000,000
Products & Completed Operations/Aggregate	$4,000,000

Coverage Form: Equivalent to ISO Occurrence Form CG 001 edition 2001 or later. 10-year Products & Completed Operations Extension beyond final acceptance of the entire Project with a single, non-reinstated aggregate limit.

Excess Liability

	Limits of Liability Shared by All Insureds for All Projects
Each Occurrence Limit	$100,000,000
General Aggregate for all Enrolled Parties	$100,000,000
Products & Completed Operations/Aggregate	$100,000,000

Contractor's Pollution Liability

	Limits of Liability Shared by All Insureds for All Projects
Each Occurrence Limit	$50,000,000
Annual General Aggregate Limit	$50,000,000

Contracting operations performed by or on behalf of the named insured associated with Los Angeles Unified School District OCIP V performed between 05/01/2023-04/30/2028

The LAUSD may assess to each enrolled contractor/subcontractor $250,000 or up to the policy deductible per occurrence for any pollution claim due to the Contractor or its Subcontractor's negligence for any damages. This is subject to a $1,000,000 aggregate.

Builders' Risk

	Limits of Liability Shared by All Insureds for All Projects
Each Occurrence Limit	$50,000,000
Contractor or Subcontractor Deductible	Policy Terms.

All projects in excess of $50 million in construction value must be submitted for individual underwriting prior to binding coverage.

LAUSD has secured Builders' Risk coverage for Work performed under all construction bond funded projects.

Additional Information

Insurance coverage and limits provided under the OCIP are limited in scope and are specific to Work performed after the inception date of enrollment into this OCIP. Contractors and Subcontractors are advised to have their insurance representative review this information. Any additional coverage purchased will be at Contractors and Subcontractors option and expense.

Contractors and Subcontractors are advised to arrange their own insurance for Contractor or Subcontractor owned, used, leased, or rented equipment and materials. The OCIP will not cover Contractor or Subcontractor property.

WARNING:
There are financial repercussions if the reporting requirements are not met. Please read and understand all reporting requirements. Failure to submit any required OCIP forms or supporting documentation as required may result in the withholding of payments until required documentation is received or a Penalty assessed for failure to comply.

Section 5: Contractor and Subcontractor Insurance Requirements

Contractors and all Subcontractors are required to maintain coverage to protect against losses that occur away from the Project Site or that are otherwise not covered under the OCIP.

Contractors and Subcontractors are required to maintain insurance coverage for the duration of the Contract(s) that protects the District from liabilities. These liabilities may arise from the Contractor's and Subcontractor's operations performed away from the Project site, from coverages not provided by the OCIP, or from operations performed by Excluded Parties. The OCIP places Contractors and Subcontractors into one of two main categories: Enrolled Parties and Excluded Parties.

Enrolled Parties

Enrolled Parties must provide evidence of Workers' Compensation, General Liability, and Excess/Umbrella Liability insurance for off-site activities and Automobile Liability insurance for both on-site and off-site activities as specified in the Contract. Contractors must provide their Certificate of Insurance to LAUSD Procurement, (Contract Administrator), and amalia.sanchez1@lausd.net and Irene.Montes@wtwco.com

Excluded Parties

Excluded Parties must provide evidence of Workers' Compensation, General Liability, Excess/Umbrella Liability, Automobile Liability and Pollution Liability insurance for all activities including both on-site and offsite activities as per the insurance specifications in the Contract. See Section 3 for the definition of Excluded Parties. All Excluded Prime Contractors must provide their Certificate of Insurance to LAUSD Procurement, (Contract Administrator), and amalia.sanchez1@lausd.net and Irene.Montes@wtwco.com

Certificate Requirements

Enrolled Parties and Excluded Parties must submit verification of insurance in the form of a Certificate of Insurance (COI) on a standard ACORD form 25. They must provide verification of insurance as outlined in the Contract to LAUSD Procurement, (Contract Administrator), and amalia.sanchez1@lausd.net and Irene.Montes@wtwco.com. All Contractors and Subcontractors are responsible for monitoring their Enrolled Subcontractors Certificates of Insurance whether they are enrolled or not. The District reserves the right to disapprove the use of Subcontractors unable to meet the insurance requirements. Certificates of Insurance evidencing compliance must be made available to the District or the OCIP Administrator upon request.

Section 6: Contractor and Subcontractor Responsibilities

Throughout the course of the Project, Contractors and Subcontractors will be responsible for reporting and maintaining certain records as outlined in this section.

Contractors and Subcontractors are required to cooperate with the District and its OCIP Administrator in all aspects of OCIP implementation and administration.

Responsibilities of the Contractor and Subcontractors of all tiers include all Contract responsibilities, including but not limited to the following:

- Safety Pre-Qualification prior to submitting a bid. Contractors may only contract with Subcontractors that they have safety pre-qualified
- **EXCLUDE the cost of OCIP insurance from their bids, if eligible for the OCIP**
- Provide each Subcontractor with a copy of this Insurance Manual & Safety Standards
- Enrollment in the OCIP, if eligible, within ten (10) working days of Notice of Intent to Award of Contract
- Include OCIP provisions in all contracts with Subcontractors
- Provide timely evidence of other insurance or contractor required insurance within ten (10) working days of notice of intent to award of contract
- Notify the OCIP Administrator of all subcontracts awarded
- Maintain and report monthly payroll records
- Cooperate with the OCIP Administrator's and/or the OCIP Manager's requests for information
- Comply with insurance, claim and safety procedures
- Monitor and maintain its Subcontractors' Certificates of Insurance on-site
- Notify amalia.sanchez1@lausd.netand Irene.Montes@wtwco.com immediately of any insurance cancellation, modification, material change, or non-renewal of Contractor required insurance
- **Ensure that their own eligible and enrolled subcontractors EXCLUDE the cost of OCIP insurance from their bids.**

Contractor Bids

The District provides insurance for all Enrolled Contractors and Enrolled Subcontractors under the OCIP for Work performed at the Project Site(s).

Adjustments for OCIP Insurance Costs

Each Contractor and Subcontractor eligible for Enrollment is required to **EXCLUDE** the Costs of OCIP coverages from your bid price for the proposed scope of work (including subcontracted work whether the Subcontractor is identified at the time of the bid). Change orders must also be priced by Enrolled Parties to **EXCLUDE** the cost of insurance.

Contractors are solely responsible for ensuring that their Subcontractors of all tiers also remove the cost of OCIP-provided insurance from their bid.

Enrollment

Each Enrolled Party shall provide details about themselves and their Subcontractors to the OCIP Administrator to enroll them in the OCIP. The Contractor and Subcontractor must each complete Online Enrollment Application in WTW ComPAS. Instructions for online access and enrollment are included in

this Manual. **A separate enrollment must be completed for every contract, even if they already have another contract enrolled on the same project.** Enrollment must be completed and submitted to the OCIP Administrator via the WTW ComPAS system prior to entering the Project Site(s).

Each Enrolled Party will receive an OCIP Confirmation Letter with an OCIP Certificate of Insurance. An OCIP Confirmation Letter is a letter issued by the OCIP Administrator and confirms acceptance into the LAUSD OCIP. The OCIP Certificate of Insurance evidence the OCIP coverage.

In addition, a separate OCIP Workers' Compensation policy will be issued to each Enrolled Party.

EACH CONTRACT MUST BE ENROLLED INTO THE OCIP:

Enrollment into the OCIP is not automatic. Every contract must be enrolled separately. All Eligible Contractors and all Eligible Subcontractors **must** complete the online enrollment and participate in the enrollment process for OCIP coverage to apply. Access to the Project Site will not be permitted until Enrollment into the OCIP is complete. Contractor Portal: https://cp.wtwcompas.com

Change Order Procedures

Change orders must also be priced by Enrolled Parties to **EXCLUDE** the cost of OCIP insurance.

Contractors are solely responsible for ensuring that their Subcontractors of all tiers also remove the cost of OCIP-provided insurance from their bid.

Warranties

All Enrolled Parties authorize the release of claim and audit information for all policies covered under LAUSD OCIP to the District and the OCIP Administrator. Insurance costs covered by the LAUSD School Repair and Construction Program Owner Controlled Insurance Program have been removed from the Contract, Subcontracts, and any Change Orders. The cost of premiums for non-OCIP coverage specified in the contract are the responsibility of Contractor and Subcontractors of all tiers.

Maintaining Enrollment in the OCIP

If you do not comply with all the terms of this Manual in a timely manner, including the Construction Safety Standards, you may not remain enrolled in the OCIP. Contractors eligible for enrollment in the OCIP who are not enrolled in the OCIP will not be granted access to the Project Site(s).

Safety Standards

Each Contractor and Subcontractor is required to have a written safety program and to provide a designated safety representative who is on Site when any Work is in progress. Safety Representative Requirements are as specified in the contract and LAUSD Safety Program. Minimum standards for Contractor safety programs are outlined in the LAUSD's Safety Standards.

Payroll Reports

Each Enrolled Contractor and Enrolled Subcontractor of every tier must submit monthly payroll reports. The reports will identify worker-hours and payroll by Workers' Compensation classification code for all

Work performed at the Project Site. This information will be used to provide the District's insurers with information required for determining the District's premium.

All Enrolled Contractors and Enrolled Subcontractors must submit payroll reports prior to the 10th of the following month. Payroll must be reported online. Instructions for online access are provided in Section 8. The monthly worker-hour and payroll reports should include all on-site workers. Supervisory and clerical personnel payroll should also be included if it occurred on-site and covered only Work performed directly at each Project Site.

Failure to submit the payroll reports as required may result in a fine, the withholding of contract progress payments or final payment until the reports are received and may also result in being barred from future opportunities with the District.

Insurance Company Payroll Audit

Each Enrolled Contractor and Enrolled Subcontractor is required to maintain payroll records for each Contract. Such records will allocate the payroll by Workers' Compensation classification(s) code and exclude the excess or premium paid for overtime (i.e., only the straight time rate will apply to overtime hours worked).

Furthermore, such records will limit the payroll for Executive Officers and Partners/Sole Proprietors to the limitations as stated in the State of California manual rules.

It is important that you properly classify payrolls, as these are reported to the rating bureau for promulgation of future Experience Modifiers for your firm. All Enrolled Contractors and Enrolled Subcontractors shall make available their payroll records, vouchers, contracts, documents, and records, of any and all kinds, to the auditors of the OCIP insurer(s) or the District's representatives. Availability of records must be for the policy period, any extension, or during a final audit period as required by the insurance policies.

Demolition / Abatement Work

Contractors/ subcontractors performing this type of work must provide and maintain a Pollution Liability Policy covering hazardous materials abatement. The contractor/subcontractor shall complete and submit to OCIP Manager, Amalia Sanchez the **00620 Certificate of Insurance for Hazardous Materials** form as verification of insurance coverage for hazardous materials work. Demolition projects with no hazardous materials abatement or disturbances that may be performed by properly trained personnel according to Specification Sections 13280 and 13282.

No portion of the demolition will be eligible for insurance coverage through the OCIP. Contractors will be required to name LAUSD as an **Additional Insured** and provide a **Certificate of Insurance** of Workers' Compensation, General Liability, Excess/Umbrella Liability, Automobile Liability, and Pollution Liability insurance for all activities including both **on-site** and **off-site** activities as per the insurance specifications in the Contract.

The OAR assigned to the project shall ensure that the appropriate insurance is maintained by the Contractor for the duration of the project **FOR DEMOLITION ABATEMENT**

Crane Work

As respects any operations requiring **CRANES**, contractors are required to notify the LAUSD OCIP Manager prior to use so that an appropriate plan can be developed in advance of the work beginning. Such

notification shall give LAUSD time to participate in the review, preplanning, and monitoring phases of crane operations.

Independent Crane operators and operations are excluded from the OCIP program; therefore, the OAR assigned to the project shall ensure that the appropriate insurance is maintained by the contractor for the duration of the Work. **FOR ALL CRANE OPERATIONS, the Los Angeles Unified School District, the Board, its officials,** employees, and agents must be added as Additional Insureds as respects general liability and automobile liability. The coverage is Primary and Non-Contributory. Certificates must be sent to **Construction_Safety@laschools.org**

Close Out and Audit Procedures

Enrolled Parties must submit the Notice of Work Completion when they have completed their Work at the LAUSD School Repair and Construction Program Project Site(s), and no longer have workers on the Project Site(s) covered by the contract. The Notice of Work Completion will initiate the final payroll report and audit of payroll and worker-hours by the OCIP Insurer. This should be completed online. Coverage ceases upon completion of Work at the Project Site as documented by a Certificate of Substantial Completion from the Owner.

Section 7: Claim Reporting Procedures

This section describes the basic procedures for reporting LAUSD OCIP claims: Workers' Compensation, General Liability, Pollution Liability, and Damage to the Project (Builders Risk).

WARNING:
There are financial repercussions if the reporting requirements are not met. Please read and understand all reporting requirements. Failure to submit any required OCIP forms or supporting documentation as required may result in the withholding of payments until required documentation is received or a Penalty assessed for failure to comply.

Insurance Manual

- Can be found on the LAUSD OCIP website as well **https://www.lausd.org/Page/1008**

Workers' Compensation Claims

The main responsibility for any Contractor and Subcontractor is first to see that the injured worker receives immediate medical care. Immediately contact 911 for any serious, traumatic, and life-threatening injuries. For all minor or non-life-threatening injuries, the injured worker must seek treatment within the Medical Provider Network ("MPN"). MPN Locations provided on page 15.

Once medical care has been arranged, the next step is to notify the OCIP Third Party Administrator ESIS, Inc. of the injury. You can report your WC First Report of Injury 24 hours a day, 365 days per year.

Immediately report any injury to ESIS LAUSD OCIP V Dedicated Claim Reporting Number:

1-844-621-9183

Client VND: 3165563

When calling in you will need to know:

1) **Project/school name,**
2) **Project/school address,**
3) **Employer name,**
4) **Prime contractor's contract number with LAUSD**
5) **Employer's WC policy number.**
6) **Owner Authorized Representative. (Name and Phone Number)**

Note – This process remains the same when an injured worker seeks legal representation or hires an attorney.

When you report the Workers' Compensation injury using the special reporting telephone number, the OCIP Third Party Administrator, ESIS will make the necessary filing with the State of California (form 5020). **It is the employer's responsibility to provide the injured worker with the Employee's Claim Form within 24 hours of employer's knowledge of injury.** The employer must also send a copy of the completed Employee's Claim Form and the Supervisor's Accident Investigation Report to the OCIP Third Party Administrator at the following e-mail: **esisconstructionclaims@tnwinc.com**

The OCIP Administrator provides Claims Kits to all Enrolled Contractors and Enrolled Subcontractors at time of enrollment. These kits include required claim forms and postings. Additional kits or claims forms can be obtained from the OCIP Administrator upon request.

All Contractors are required to comply with California laws regarding notifying their respective Workers' Compensation carrier (for Excluded Parties) and the OCIP carrier (for Enrolled Parties) every time one their respective employees test positive for COVID. Contractors, whether enrolled or excluded in the OCIP, are also required to notify the COVID Captain assigned to the Project Site of a positive test. Instructions on how Enrolled Parties are to report a COVID-positive case to the OCIP carrier are set forth in the "California COVID Reporting Requirements". **https://www.dir.ca.gov/dosh/coronavirus/Reporting-Requirements-COVID-19.html**

No ADR Processes for OCIP Workers' Compensation Claims

Should an Enrolled Party subscribe to or has implemented any Alternative Dispute Resolution (ADR) processes for Workers' Compensation claims outside of the OCIP, the OCIP Insurance Company is unable to recognize or acknowledge these ADR claim processes for any reported OCIP Workers' Compensation claims. Prior to coming onsite, Enrolled Parties shall notify/advise its employees working onsite at the Project that ADR claim processes will not apply.

Medical Provider Network (MPN) Requirements

Once enrollment is complete, the Enrolled Party will receive the Medical Provider Network (MPN) notice. The MPN is a network of authorized medical providers and facilities arranged by the OCIP's Third Party Administrator ESIS, Inc. to treat all minor and non-life-threatening injuries. Information about the MPN is:

- MPN website: www.esis.com/awcmpn
- MPN effective date: 5/1/2023
- MPN identification number: Log ID #2433
- If you need assistance locating an MPN physician, please call your MPN access assistant at: 844.622.3747
- If you have questions about the MPN or want to file a complaint against the MPN, please call our MPN contact at: 503.598.1492

General Liability Claims

Accidents at or around the Project Site(s) resulting in damage to property of others (other than your own work product) or personal injury or death must be reported immediately. Report all GL Claims to **844-621-9183.** Cooperate with the District and the OCIP insurer representatives in the accident investigation. **Do not voluntarily admit liability.**

The LAUSD may assess to each enrolled contractor/subcontractor $5,000 or up to the deductible for any General Liability claim due to the Contractor or its Subcontractor's negligence for any damages or injuries caused by the Work, acts or omissions of the Contractor, or the Work, acts or omissions of its Subcontractors of all tiers, or the Work, acts or omissions of any third party for whom the Contractor, or its Subcontractors are responsible. The General Liability Obligation shall remain uninsured by the Contractor and its Subcontractors of all tiers and shall not be covered by the OCIP Coverages.

Automobile Liability Claims

No insurance coverage is provided for automobile accidents under the OCIP. It is the sole responsibility of each Contractor and Subcontractor to report accidents/claims involving their automobiles to their own insurance carriers.

However, all accidents occurring in or around the job site must be reported to the Owner Authorized Representative. The accident will be investigated to determine any liability arising out of the project construction activities that could result in a future claim against the LAUSD OCIP. Each Contractor and Subcontractor shall fully cooperate in the investigation of all automobile accidents.

Pollution Liability Claims

The District's OCIP policies may provide coverage for certain pollution conditions. Any known or suspected pollution conditions or incidents must be **reported promptly** by telephone to LAUSD, Juan Chaidez Zaragoza at 213-241-2210.

The LAUSD may assess to each enrolled contractor/subcontractor $250,000 or up to the policy deductible per occurrence for any pollution claim due to the Contractor or its Subcontractor's negligence for any damages. This is subject to a $1,000,000 aggregate.

Builders Risk Claims

All risk of direct physical loss or damage excluding earthquake and flood is subject to policy terms, conditions, and exclusions. Alliant is the broker for the Builders Risk program. All Builders Risk claims must be reported promptly by telephone to LAUSD, Juan Chaidez Zaragoza at 213-241-2210.

The LAUSD may assess to each enrolled contractor/subcontractor up to the Builders' Risk policy deductible for the involved project, for any Builders' Risk claim due to the Contractor or its Subcontractor's negligence for any damages to the Work.

Enrolled Contractors Incident / Claims Investigations

LAUSD is the first "Named Insured" and shall act as sole agent for LAUSD enrolled insured(s) with respect to incident / claim investigations, claim payments and claim settlements under LAUSD's OCIP policies and contract General Conditions. LAUSD is entitled to any and all material relating to incidents, reports and claims on District project job sites, including, but not limited to authorized/unauthorized investigation reports, pictures, witness statements, incident reports, medical reports, etc. This information shall not be contingent upon any payment or reimbursement from the District. Any additional investigation cost will only be approved if written authorization has been obtained from the OCIP Insurer prior to the initiation of the requested investigation.

Penalties

If an Enrolled Party does not comply with its obligations under the LAUSD OCIP as set forth in the Contract or this Manual, Contractor and LAUSD agree that LAUSD has the right to assess a Penalty. The schedule of Penalties:

Penalties	COMMENT
$2,500 per event	May be assessed by LAUSD for any claims not reported within 48 hours of occurrence.
$2,500 per form	May be assessed by LAUSD for failure to provide requested OCIP information or documentation within 48 hours.
Additional $2,500	May be assessed by LAUSD for any claims not reported within 45 days of occurrence.
Additional $2,500	May be assessed by LAUSD for failure to provide requested OCIP information or documentation within 45 days.

Section 8: WTW ComPAS Online Portal Instructions

This section contains instructions for WTW ComPAS Contractor Portal that allows your company to enroll in the CCIP, notify WTW of subcontract awards, and run various reports.

WTW ComPAS – WTW Project Administration System

- Online Portal Instructions
- How to Add Notice of Award
- Processing an Enrollment

WTW COMPAS – ONLINE PORTAL INSTRUCTIONS

1. Online Enrollment is recommended
2. If unable to complete the enrollment online paper forms can be provided upon request.
3. Completion of online Notice of Award triggers the system to send the subcontractor's primary contact the request to enroll email. The email will include the following:
    a. Brief description of program
    b. URL
    c. Username
    d. Password
    e. Insurance Manual

Documents users should have available to upload and complete their enrollment are the following

1. Declaration and Rating Pages for
2. Workers Compensation
3. General Liability
4. Excess Liability

Enrollment Information

- **Company Name**
- **Company Address**
- **Company FEIN**
- **Primary Enrollment Contact Information**
    - **Name**
    - **Phone Number**
    - **Email Address**
- **Estimated Contract Value**
- **Estimated Start Date**
- **Scope of Work**
- **WC Class Code**
- **Estimated Payroll by Class Code**
- **Experience Modifier**

Users need to enter data in all fields with red asterisks to submit enrollment request

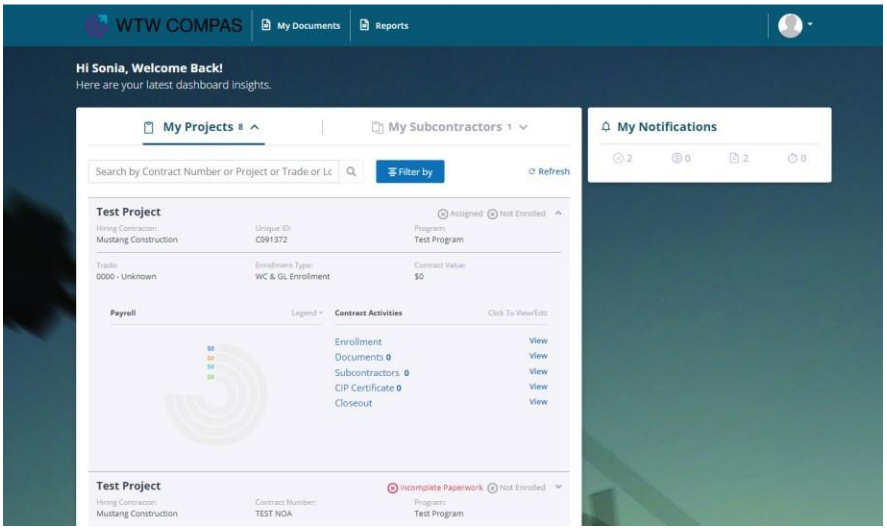
Certificate of Insurance will be issued once the Client Service Specialist confirms compliance.

The OCIP certificate will be issued and available to download from WTW ComPAS. It will also be sent via email to the Subcontractor and Awarding Contractor for their records.

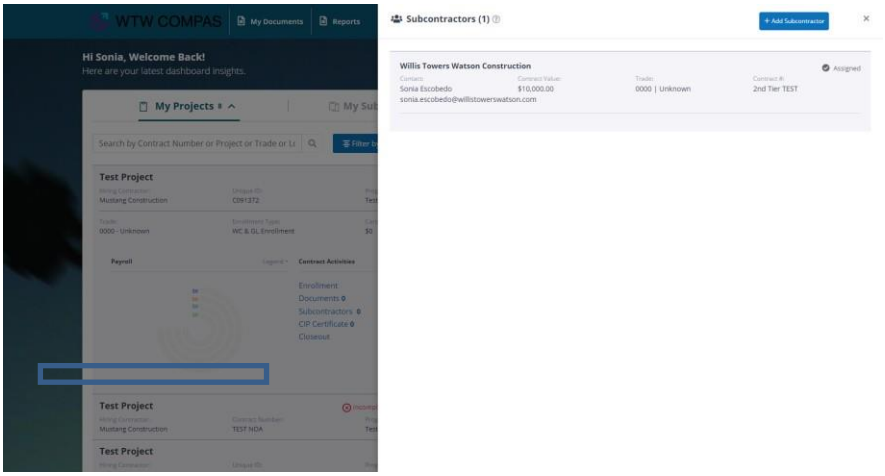
Contractors will receive separate system notifications for Payroll Reporting, Renewal Certificates of Insurance, and contract close-out.

How to add a Notice of Subcontract Award

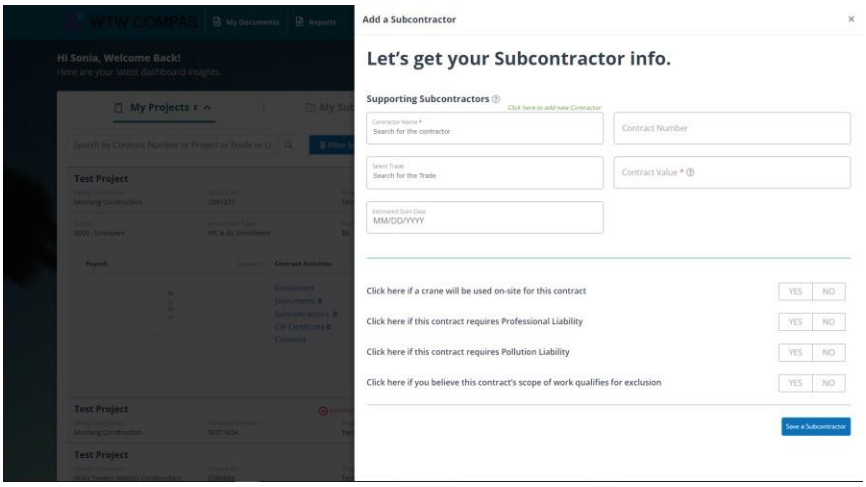
When an Enrolled Contractor awards a subcontract, the awarding Contractor shall begin the enrollment process by completing Notice of Award for each Contract award via Add Subcontractor Icon via the Contractor Portal – Contract Activities to open the Add Sub Contractor screen. Select Subcontractors in the Contract Activities section of the Awarding Contractor Portal.



Select + Add Subcontractor from the upper right hand of the Subcontractors screen.



Enter your subcontractor information. The required fields for Notice of Award are as follows:



1. Contract Value – Enter Estimated Contract Value

2. Select Contractor – User can begin to enter the company name and if the company is already in the system select from the drop-down list. If the company is not included in the list, select “Click here to add a new contractor”.

3. The following fields are optional but if the information is available, please populate.

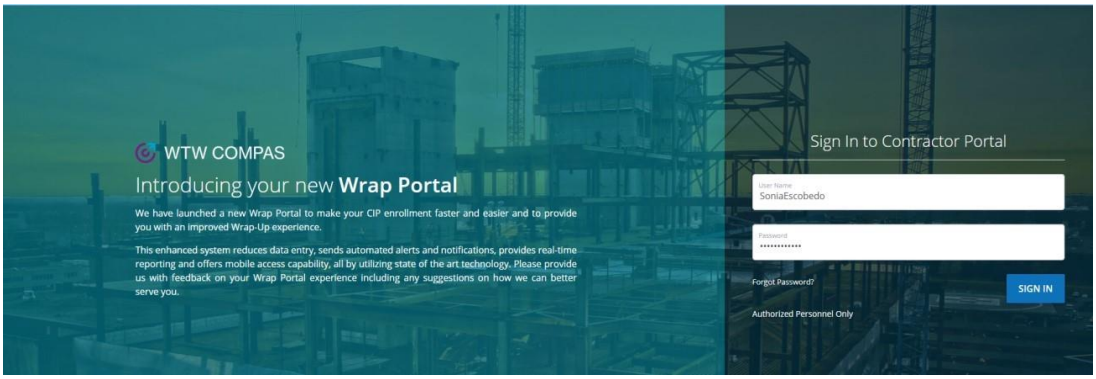
4. Trade – Select SIC Code from drop down list. If SIC code is not available, select “Click here to add a your SIC Code”

5. Contract Number – Provide Contract Number for contract award.

The awarding Contractor shall ensure that their subcontractors complete the remaining sections of the Contractor Package Enrollment and immediately submit.

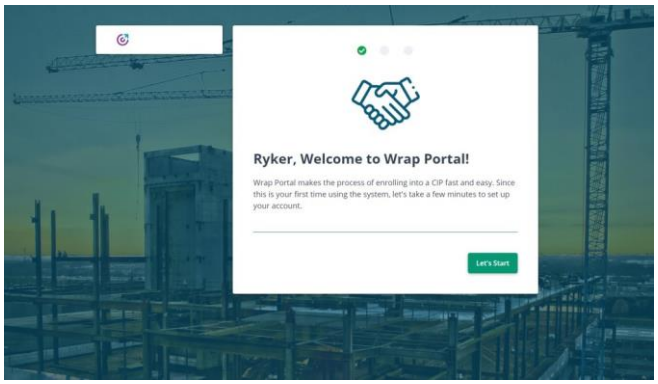
Processing an Enrollment

Once the Notice of Award is completed the Contractor will receive a Request for enrollment e-mail. The email will include a brief description of the Program and the program requirements. They will also receive the URL, username, and password to login to the system. If this is the first-time logging into the system, the user will login in using the system generated password and proceed to Account Setup.

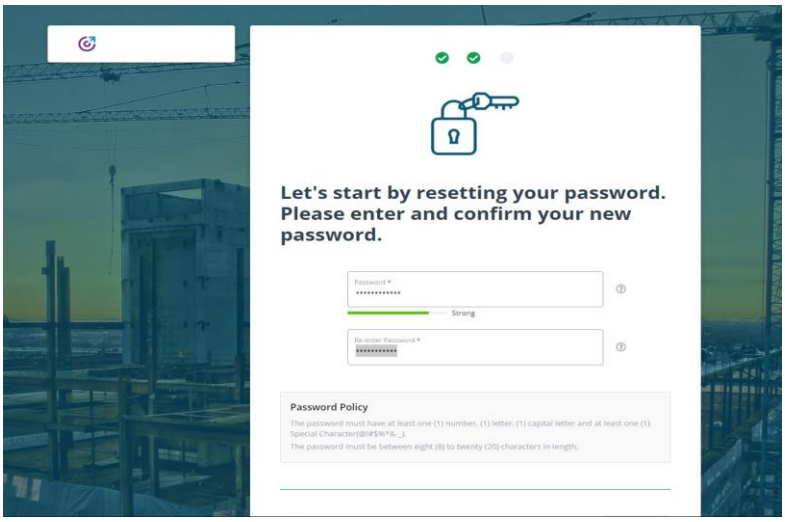


Enter system generated Username and Password select Logon.

Welcome screen will open select Sign In. The Welcome screen will launch, select Let's Start

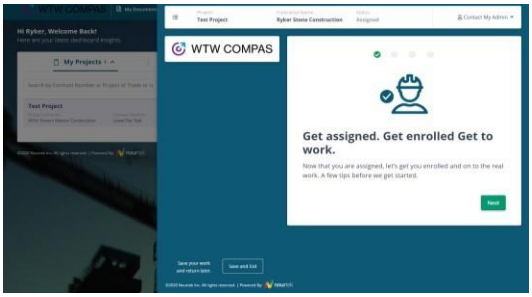


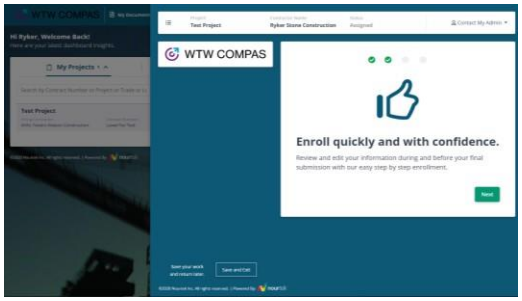
Re-set the system generated password. The password policy for the contractor portal is included at the bottom of the screen. Select Continue.

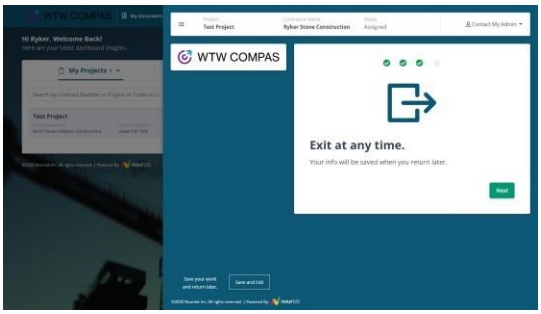


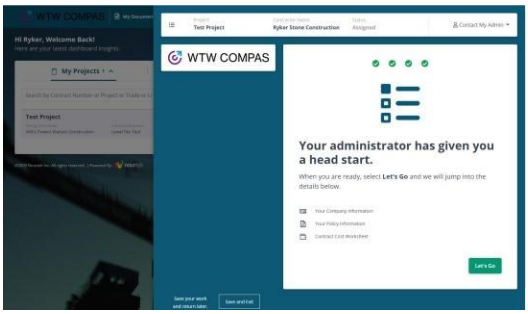
If this is your first-time logging in the wizard will launch to begin the enrollment process. Select Next until you

reach the screen with the Let's Go icon.





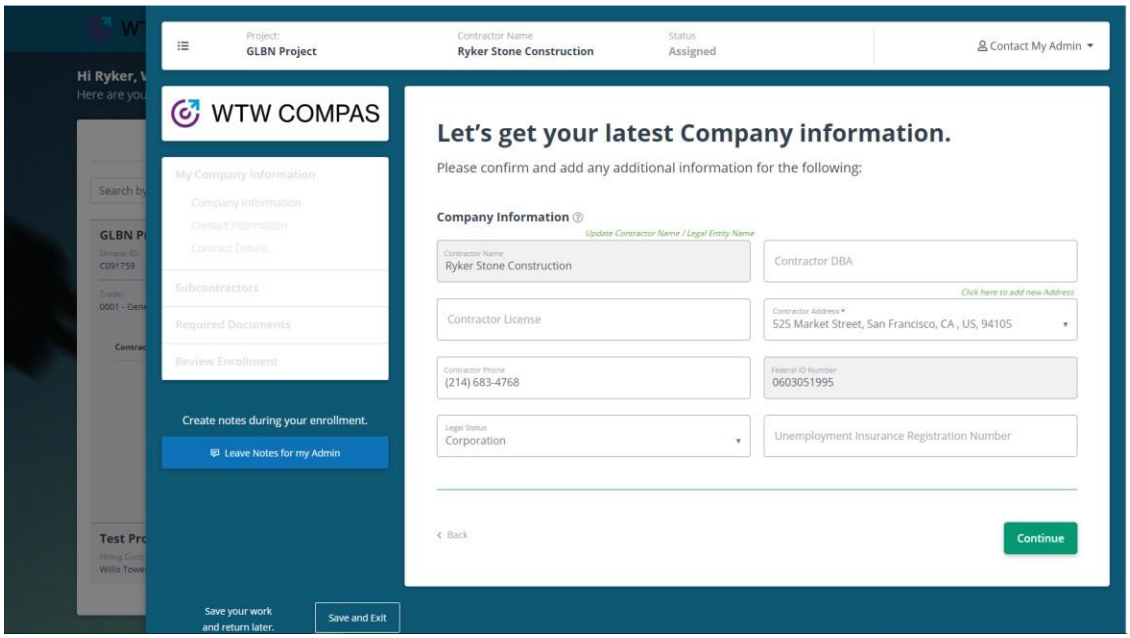




To continue with the enrollment, process the user will need to select the contractor package with Assigned status. Under the Contract Activities select Enrollment. Enter and/or update all sections under Company information select Continue in the lower right-hand side of each section to continue through the enrollment process. Users are required to populate all fields with red asterisks.

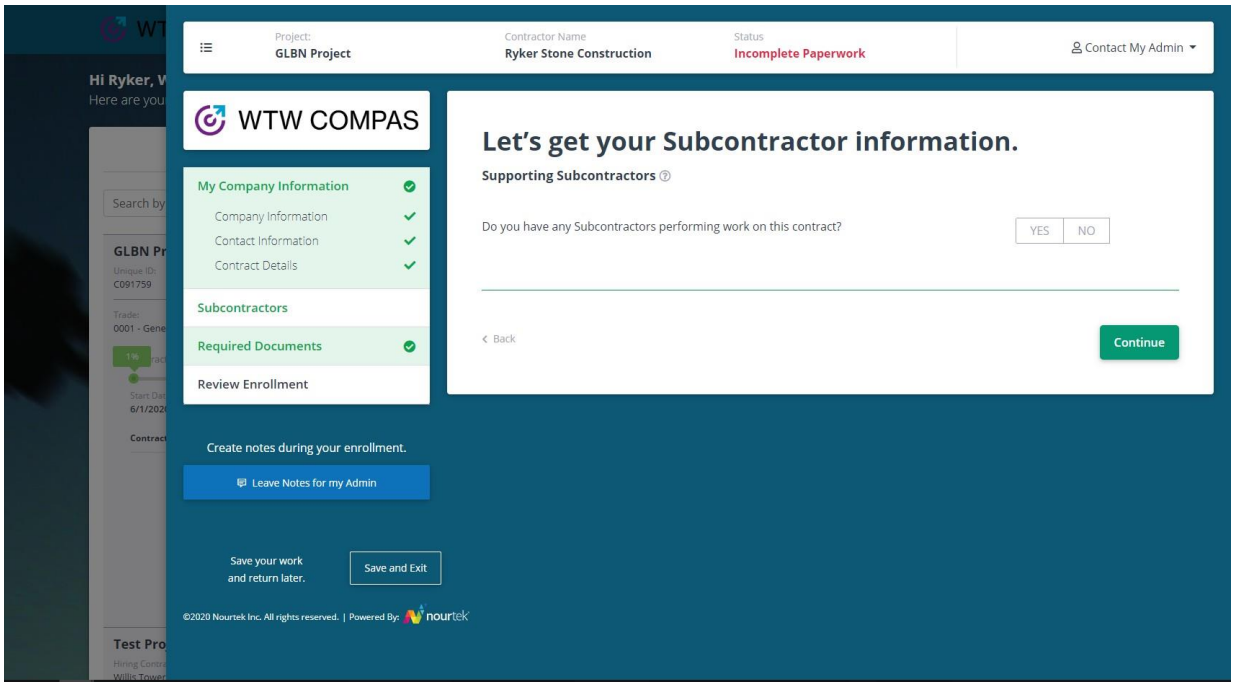
If a user is unable to complete the enrollment, use the Save and Exit icon to save data to return at a later point to complete the enrollment.

If a user has questions regarding the enrollment process, select Leave Notes for my Admin icon to send a question your Client Service Specialist.



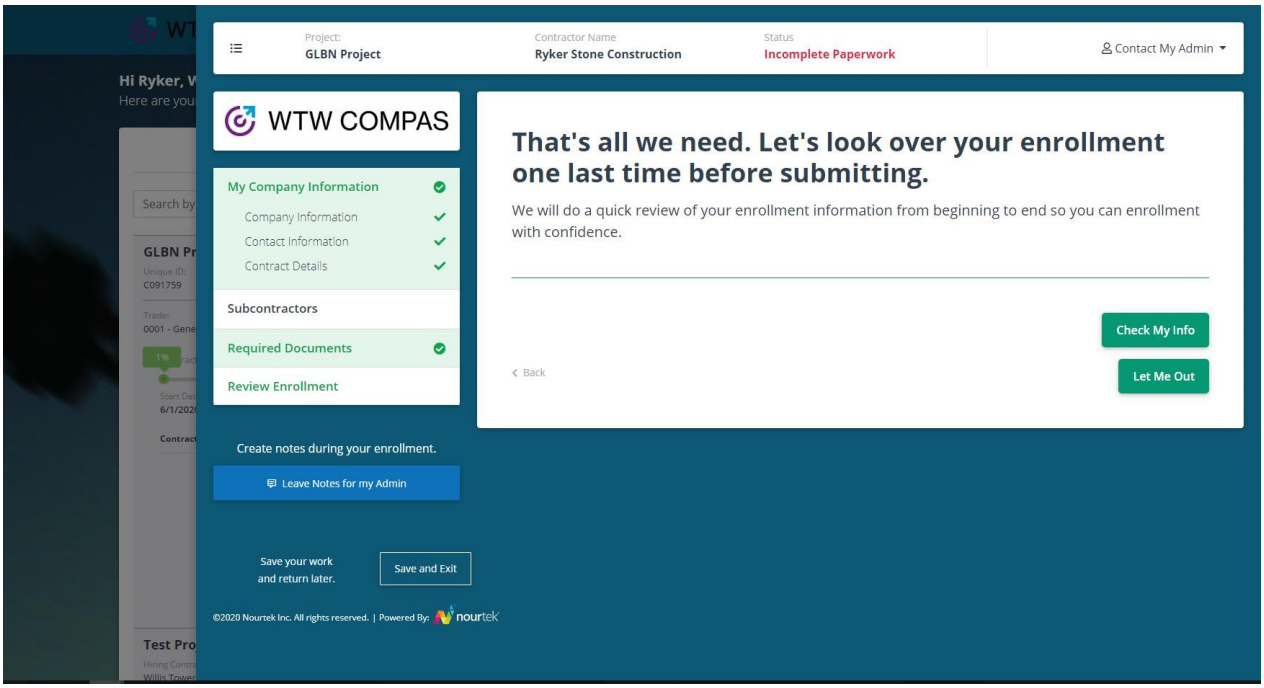
Sections that are complete will have a green checkmark to indicate that the section has been completed. At the completion of the My Company Information users will have the opportunity to review information submitted before moving on to add Subcontractor information. If any changes are required select the Edit icon next to the section that needs updates.

User will be able to enter their subcontractor information if Subcontractors have been identified Select

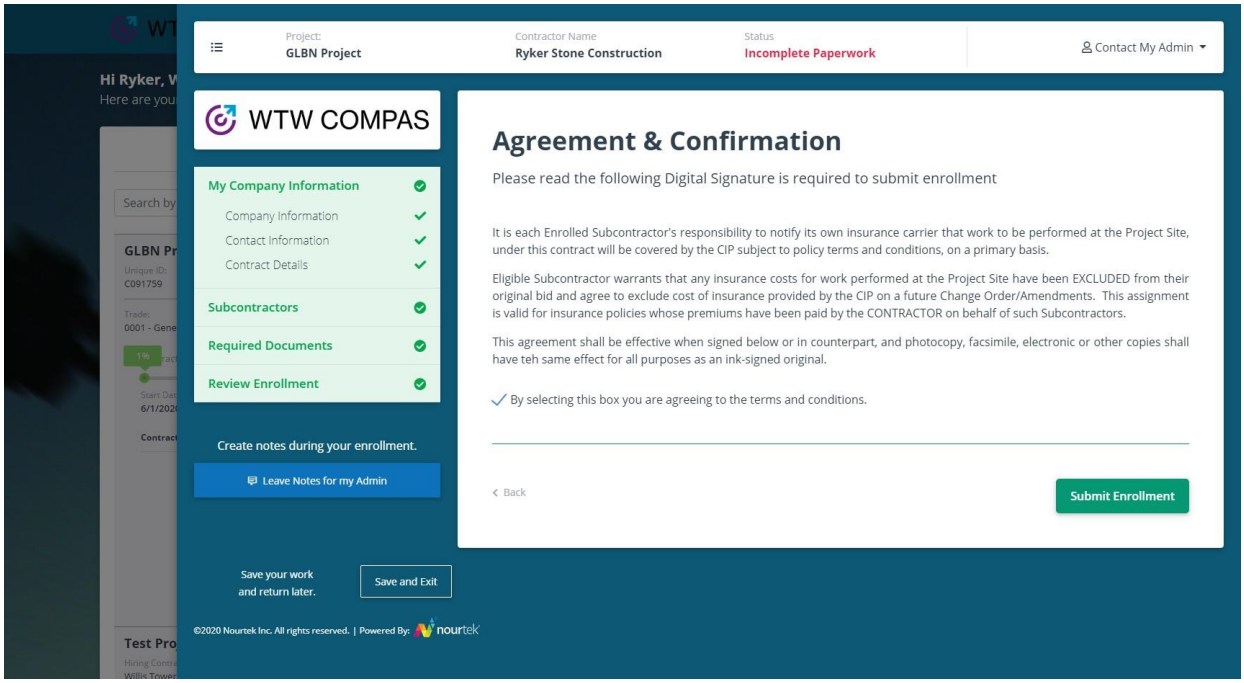


Yes in the subcontractor section and enter subcontractor information. If Subcontractors have not been identified select No and select Continue to continue to the next section.

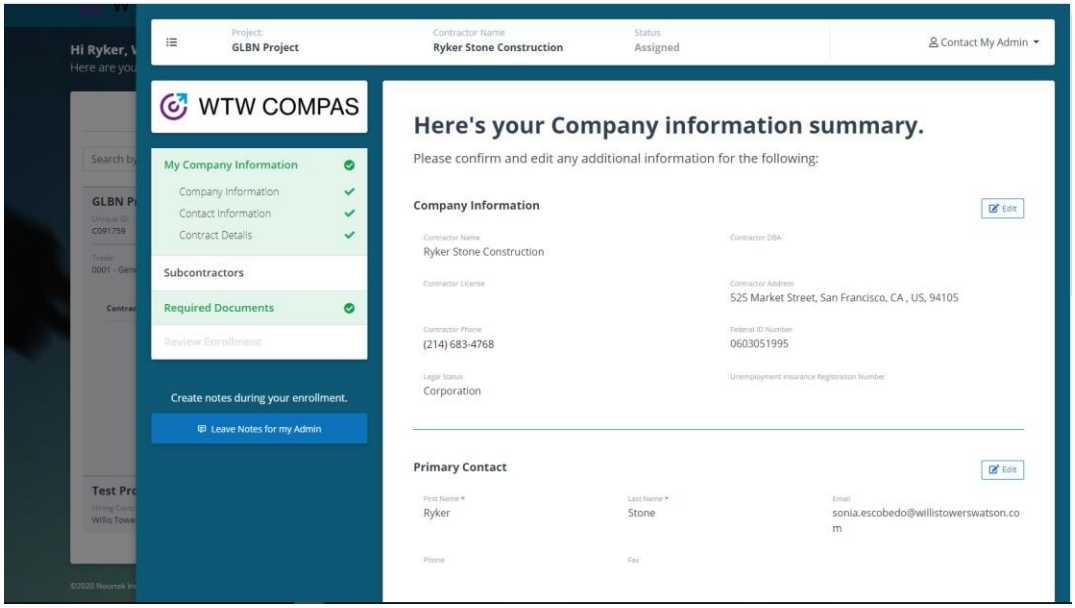
Once all enrollment and subcontractor information has been entered select Review Enrollment. User will have an opportunity to review all information entered and confirm nothing has been missed by selecting Check My Info. When the user selects Let Me Out the terms and conditions screen will display.



Review and agree to the terms and conditions by selecting the box agreeing to the terms and conditions. Then select Submit Enrollment.



User will receive a confirmation screen that the enrollment has been submitted and will be able to download a pdf version of the enrollment submitted for their records. Select Complete to return to the dashboard. Once the enrollment is reviewed and confirmed your Certificate will be available in the Documents Section.



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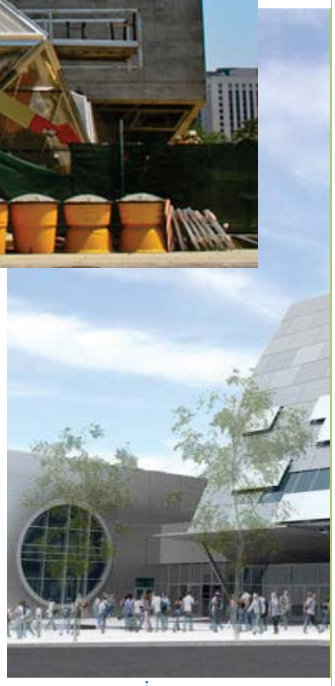
Facilities School Maintenance and Operations Repair & Construction Safety Standards



LAUSD FACILITIES SERVICES DIVISION SAFETY POLICY STATEMENT

Safety is the Los Angeles Unified School District's (LAUSD) first priority for all contractors, vendors, staff, employees and the public when performing construction, maintenance and operations, and related support activities at all LAUSD sites.

Every person is entitled to a safe and healthful place in which to work. Establishment and maintenance of safe environments are the shared responsibility between the District, contractors, staff, and vendors at all levels of the program. Reasonable efforts will be made in achieving the goal of zero incidents preserving the health and welfare of people and the environment.

LAUSD promotes safety and health as an integral part of the District's sustainability initiatives and strives to include all entities with an active interest in the success of education and community services for each city, township and neighborhood that LAUSD serves.

As an employer, educator and business partner, LAUSD provides opportunities for contractors, vendors, and the public to actively participate in the LAUSD safety and health training activities through multiple venues including: the We-Build programs; various forums including conferences, meetings, trainings and presentations. LAUSD encourages all interested parties to participate in safety by supporting the efforts to build modern schools and facilities designed to educate and inspire future generations.

The Los Angeles Unified School District leadership understands that the success of the safety at LAUSD Facilities Services Division, Maintenance and Operations, and Construction Safety is dependent on the partnerships with our contractors, employees, and the local communities. It is the expectation of LAUSD that our partners share our values for providing a safe and healthful working environment which includes: promoting regulatory compliance with regard to Safety, Health and the Environment; (SHE); identifying and prioritizing risks; and implementing proactive controls and Best Management Practices (BMPs) to reduce risk to lowest level reasonably achievable.

LAUSD believes that all incidents and accidents are preventable. Safety is the responsibility of everyone while on LAUSD sites and accountability lies with line management.

Safety is a line management function and line management shall ensure that the tenets of the LAUSD Facilities Services Division Safety and Health program are effectively implemented.

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1. LAUSD SAFETY PHILOSOPHY

'All Incidents and Injuries are Preventable"

LAUSD is dedicated to the principle that all Construction, Maintenance and Operations, and related activities may be performed safely without incidents through proper planning, engineering, education, training, and proper supervision.

Once the need for Construction or Maintenance and Operation (M &O) activities has been identified, LAUSD will plan the nature and scope of the work based on best available information including, the various mechanisms established through Federal, State, Local and regulatory agencies as well as National Consensus Standards and identified and agreed upon Best Management Practices (BMPs). Safety will be integrated into all planning activities including: site conception and design; construction activities; and maintenance and operations.

Safety program integration of all stakeholders including LAUSD employees', contractors, Construction Management firms, Vendors, the public, LAUSD officials and labor unions is imperative to ensure all personnel may have input into the LAUSD-Facilities Service Division (LAUSD-FSD) safety program to ensure the program's sustainability...

In the design process, the main goal should be to turnover a site that is regulatory compliant and can be safely maintained by LAUSD maintenance and operations personnel once the work is completed.

LAUSD has the responsibility for implementing processes to ensure sites are completed in a manner that strives to prevent accidents. These processes include ensuring that only qualified CM firms, Contractors, and Vendors are utilized for work-related activities. Depending upon the size and scope of the site, the oversight for each site may include: a CM firm; General Contractor (GC), subcontractors, vendors, consultants, and staff to implement safety at each site. LAUSD or its contracted representative has responsibility for safety at the site project to include initiating, maintaining, supervising and enforcing all safety precautions and programs in connection with the performance of the contract. In addition, all Contractor employees are expected to work safely and to contribute to the safety of others. This is a critical responsibility for everyone working on LAUSD School Modernization and Repair, New Construction, and M and O Sites.

Accident/incident prevention is viewed as an integral component of the construction process along with productivity and quality, all of which will have a positive impact on reducing site costs. The community also benefits directly from accident prevention efforts when potential damage to the environment, property, or injuries to members of the community is effectively mitigated.

All incidents can be prevented in part by eliminating hazards and unsafe behaviors. But where this is not practical, safety engineering controls, administrative controls, proper training, safe operating procedures and personal protective equipment can be used to safeguard against the hazards,

PROGRAM OBJECTIVES

The Safety Standards contained in this document were developed as minimum guidelines to eliminate or reduce hazards and risk associated with maintenance and construction activities within LAUSD. These

standards shall not conflict with any negotiated governing document such as the General Conditions or PSA agreement provided the agreements do not pose a negative impact to safety or the environment.

However, LAUSD, its authorized representatives, and the OCIP Administrator and Insurer will neither assume nor relieve any entity of their direct responsibility for the safety and health of their employees, the protection of students, faculty, visitors and the public and the protection of equipment, property, and the environment.

LAUSD, their authorized representatives and the construction management teams will monitor these Safety Standards and review the efforts of all contractors', subcontractors', and staff in the performance of the following:

- Ensuring a safe and healthy environment for LAUSD students, faculty and the public during construction and maintenance activities;
- Minimizing conflict, by communication with the Owner Authorized Representative (OAR), LAUSD Safety and Construction Management to coordinate work and keep school administration informed about all construction schedules;
- Implementing and including safety planning/pre-planning protocol in all site management and Contractor progress and/or safety meetings. The Job Safety Analysis/Job Hazard Analysis (JSA/JHA) format shall be utilized to assist with safety pre-planning;
- Provide safety audits/inspections to *identify, prioritize, and correct* non-compliance conditions;
- Protect public and private property adjacent to all construction site work zones;
- Provide a safe work environment for all workers by implementing and enforcing compliance with the following training protocol:
    1) New hire safety orientations
        i. Mandatory LAUSD New Hire Orientation Checklist must be maintained for each employee on site.
        ii. In addition, the OCIP manual requires the MPN letter be signed by the employee upon hire and retained on site;
    2) Toolbox/tailgate safety meetings;
    3) Safety training, i.e., hazard communication, fall protection, equipment operations, trenching, shoring, confined space entry, etc.;
    4) Mandatory personal protective equipment (PPE) uses and enforcement.
    5) Mandatory employee compliance with the Contractors' and LAUSD Safety Standards.
- Injury reporting and record keeping maintaining up-to-date accident experience and trend analysis;
- Using accident investigation and safety inspection information to correct unsafe acts and conditions identified in order to eliminate or reduce the probability of additional losses;

- Informing the OAR and/or the LAUSD Safety staff of any visit from a regulatory agency such as Cal-OSHA, OSHA, EPA, AQMD or other regulatory agency.
- Conflicts shall be brought to the attention of the OAR and/or LAUSD Safety. The OAR and/or LAUSD Safety reserve the right to issue a final determination for conflicts.
- **During the competitive and/or negotiated bid process, Contractors shall incorporate the most protective safety requirements as found in Federal, State, Local regulatory, and National Consensus standards such as ANSI/ASSE, NFPA, NSF, CGA, NIST, ADA or other relevant and applicable standards. It is the bidder's responsibility to be knowledgeable of all EHS regulatory and National Consensus Standards.**
- **No change order for safety purposes shall be approved without the review and recommendation of the construction safety director in conjunction with the site management team.**

2. REGULATORY COMPLIANCE

2.1 CONFLICTS BETWEEN SAFETY CODES AND STANDARDS

Unless otherwise specified in the LAUSD School Repair and Construction Site Safety Standards and/or the Contractors' Safety Standards, Contractors shall comply with all applicable provisions of Federal, State, and local laws, ordinances, codes, regulations and other contract document criteria pertaining to or affecting safety and health, including but not limited to the Cal/OSHA Safety Orders (California Code of Regulations, Title 8 and Title 29 Code of Federal Regulations (29 CFR)) and National Consensus Standards whether or not incorporated by reference in this manual.

In all cases the most protective safety rules, policies, procedures and/or standards will apply regardless of source. LAUSD Safety in conjunction with LAUSD-FSD management reserves the right to impose more stringent requirements as may be necessary depending upon the nature of the hazards and the associated risk to the district, employees, the public and the environment.

2.2 DEFINITIONS

The following titles may not reflect the actual titles in use by all entities on LAUSD sites and therefore do not have any force or effect beyond the LAUSD Safety Standards. Due to such differences in nomenclature between LAUSD and contractors, the following are used throughout the LAUSD Safety Standards to establish the functional framework for compliance with LAUSD job site safety protocol.

Authorized Person: (In reference to an employee's assignment) Selected by the Contractor for that purpose.

Competent Person: One who is qualified to identify existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate them?

Contractor: The entity with which LAUSD enters into this contract.

Contractor/Company Safety Plan (C/CSP): The Contractors/Company Safety Plan prepared in accordance with the requirements of this document and any other applicable LAUSD contract documents. The C/CSP will include the Site-Specific Safety Plan and IIPP.

Contractor's Site Manager (CPM): The senior management person for the Contractor with responsibility for execution of the contract, including compliance with the LAUSD Safety Standards. The CPM is responsible and accountable for the development, implementation and monitoring compliance with the Contractor's Site-Specific Safety Program.

Contractor's Site Superintendent (CPS): The senior on-site Superintendent for the Contractor with responsibility for execution of the contract, including compliance with the LAUSD Safety Standards. In some cases, the actual on-site representative may be an Assistant Superintendent or a Foreman. In such cases, this is the applicable person when the CPS is referenced. The CPS is responsible and accountable for project implementation and enforcement of the Contractor's Site-Specific Safety Program and the LAUSD Safety Standards.

Contractor's Safety Manager (CSM): Qualified Contractor safety management representative assigned responsibility for drafting and monitoring compliance with the Contractor's Site-Specific Safety Program and the LAUSD Safety Standards, including ongoing identification and correction of hazards.

Contractor's Safety Representative (CSR): Qualified on-site Contractor employee assigned the responsibility of implementing and monitoring compliance with the Contractor's Site-Specific Safety Program and the LAUSD Safety Standards, including ongoing identification and correction of hazards.

Employee: Person employed by a Contractor as defined by this section.

Employer: Firm or entity that has employees working on site. The term employer includes the contractor and subcontractors of all tiers. For the purposes of the safety standards, vendors, suppliers, and service providers on the site for the furtherance of the site are covered by this definition and are subject to the provisions of the LAUSD Safety Standards even though they are not covered by the OCIP.

IIPP (Injury Illness Prevention Program): In California every employer has a legal obligation to provide and maintain a safe and healthful workplace for employees, according to the California Occupational Safety and Health Act. An Injury and Illness Prevention Program (IIPP) is required for every California employer, employers with 10 or more employees must have a written IIPP. The Injury and Illness Prevention Program must be a plan that includes procedures and is put into practice. These elements are required:

- Management commitment/assignment of responsibilities;
- Safety communications system with employees;
- System for assuring employee compliance with safe work practices;
- Scheduled inspections/evaluation system;
- Accident investigation;
- Procedures for correcting unsafe/unhealthy conditions;
- Safety and health training and instruction; and
- Recordkeeping and documentation

Insurance Carrier (IC): Principle companies providing the coverage for Workers' Compensation, General Liability, Excess Liability, and any other insurance coverage.

LAUSD Safety Engineer: LAUSD Safety Engineer(s) responsible for monitoring, coordinating and auditing the Contractor's compliance with all applicable safety, health, and environmental standards defined in the contract documents.

Loss Control Consultant (LCC): Insurance Administrator or Insurance Carrier Safety representative(s) providing technical construction safety expertise, conducting loss control safety audits, and performing other pertinent construction safety tasks on behalf of LAUSD.

Los Angeles Unified School District (LAUSD): The Owner.

OCIP Administrator: The party responsible for brokering and administering the OCIP Insurance Program.

OEHS: Office of Environmental Health and Safety – has primary responsibility for the safety and health of all employees, including Facilities Maintenance and Operations, LAUSD structures, property and grounds not covered by the construction Owner Controlled Insurance program (OCIP).

OSHA: OSHA as used in the context of these Safety Standards refers to the State or Federal agency with jurisdiction over workplace occupational safety and health at the site.

Owner: Los Angeles Unified School District (LAUSD).

Owner's Authorized Representative (OAR): The Owner's Employee or agent with overall responsibility for the site.

Owner Controlled Insurance Program (OCIP): Owner's (LAUSD) wrap-up insurance program which provides insurance coverage for eligible and enrolled Contractors, and Subcontractors of any tier, working on LAUSD construction site(s). The Owner identifies OCIP participants.

Qualified Person, Attendant or Operator: A person designated by the Contractor who by possession of a recognized degree, certificate, or professional stands, or who, by extensive knowledge, training and experience, has successfully demonstrated their ability to solve or resolve problems relating to the subject matter, the work, or the site.

Site-Specific Safety Program (SSSP) [IIPP which will apply or be referenced in the Standards]: The Contractor's Site-Specific Safety Program prepared in accordance with the requirements of this document and the Contracts.

Subcontractor: Firm or other entity awarded work by a Contractor on a particular construction site. Subcontractor as used herein shall apply to all tiers of Subcontractors, as well as vendors and service providers performing work for the benefit of the Contractor. For the purposes of the LAUSD Safety Standards, vendors, suppliers, and service providers on the site for the furtherance of the site are covered by this definition and are subject to the provisions of the Safety Standards even though they are not covered or may not be enrolled in the OCIP.

Subcontractor's Site Manager (SPM): The senior management person for the Subcontractor with responsibility for execution of the contract, including compliance with the LAUSD Safety Standards. The SPM is responsible and accountable for development, implementation and monitoring compliance with the Subcontractor's Site-Specific Safety Program and LAUSD Safety Standards.

Subcontractor's Site Superintendent (SPS): The senior on-site management person for the Subcontractor with responsibility for execution of the contract, including compliance with the LAUSD Safety Standards. In some cases, the actual on-site representative may be an Assistant Superintendent or a Foreman. In such cases, this is the applicable person when the SPS is referenced. The SPS is responsible and accountable for site project implementation and enforcement of the Subcontractor's Site-Specific Safety Program and LAUSD Safety Standards.

3. EMERGENCY PROCEDURES

3.1 JOB SITE EMERGENCIES (FIRE, ACCIDENTS/INCIDENTS, & MEDICAL EMERGENCIES)

All job site emergencies must be reported immediately to the *LAUSD OAR,* the Contractor (if applicable) and LAUSD Safety. M and O personnel must use the procedures outlined by the LAUSD Office of Environmental Health and Safety (OEHS) most current reporting system for all emergencies.

Job Site Emergency Telephone Numbers shall be posted on the job site bulletin board and, where applicable, in every Contractor's job site office trailer.

A local street map clearly identifying the site and active entrances/exits shall be maintained and posted on the job site bulletin board next to the Emergency Telephone Numbers.

All first line supervisors and construction management personnel (foremen and above) shall be trained in First Aid, CPR and use of an Auto External Defibrillator (AED). AEDs shall be maintained on site for all construction sites that will exceed 25 personnel at any time during the project with a projected 911 paramedic response time of more than 4 minutes.

In the event that there are no hard-wire ("land line") telephones available at the site, the contractor shall identify and post an alternate phone number (in addition to 911) to be used to contact emergency service providers via cell phone. This policy is necessary since dialing 911 on a cell phone does not always provide a direct connection to local Emergency Services.

3.2 FIRE

Call 911 or the Local Fire Department

- At minimum, provide the street address and location (floor/area) of the fire.

In case of fire in any building:

- Evacuate the immediate area,
- Activate the fire alarm system (if available), and
- Call the Fire Department
- Call/notify the OAR and/or LAUSD Safety

For fire outside of buildings:

- Evacuate the immediate area, and
- Call the Fire Department.
- Call/notify the OAR and/or LAUSD Safety

3.3 MEDICAL EMERGENCY

Render first aid promptly to the injured employee. Call 911 or the local Emergency Medical Services. Call or report the job site medical emergency immediately to the Contractor. A medical emergency includes, but is not limited to: unconsciousness; chest pain; difficulty breathing; excessive bleeding; acute trauma

related to neck and/or spine and any other illness or injury deemed to require paramedic or emergency response medical professionals. WHEN IN DOUBT, CALL 911 OR OTHERWISE INITIATE THE EMERGENCY RESPONSE PROTOCOLS.

The preferred provider for serious traumatic injuries is: Consult the Job Site Postings Notice, also reference the LAUSD Insurance Manual and Accident Reporting and Investigation Procedures in the LAUSD Safety Standards.

The designated provider for non-life threatening or minor injuries requiring medical treatment is: Consult the Job Site Posting Notice, also reference the LAUSD Insurance Manual and Accident Reporting and Investigation Procedures in these Safety Standards. Call/notify the OAR and LAUSD Safety.

3.4 EMERGENCY CONTACT LIST

Each Contractor shall provide LAUSD, OAR and LAUSD Safety with an Emergency Contact List.

- This list shall include 24-hour contact information for key site personnel.
- The Contractor shall maintain this list throughout the duration of the contract and provide a revised copy to all parties when made necessary by changes to personnel or their contact information.

3.5 EMERGENCY ACTION/EVACUATION PROCEDURES

Construction activities which could interfere/compromise LAUSD emergency action/response protocol to include emergency evacuation procedures and routes will require coordination between all Contractors involved, LAUSD representatives, school administration and emergency response personnel to determine if alternate emergency evacuation protocol will be required.

Contractor shall know the location of school evacuation routes, exits, gates and assembly areas utilized by school/personnel, students and the public and shall ensure that during construction work activities all evacuation routes, exits, gates and assembly areas are always accessible, open and clear.

When required or warranted, Contractors will post signage on temporary fencing used during construction to identify evacuation routes to ensure LAUSD Staff, Students and the public know the correct routes.

LAUSD school emergency action/evacuation procedures (when required) will be integrated with the Contractor's emergency action plan.

Contractors will know the location of and will not block access to the school's emergency supplies/equipment (first-aid kits, fire extinguishers, etc.).

In the event of an emergency scenario, Contractors will provide, inspect, and maintain on site first-aid, fire extinguishers, etc. Contractors will, if partial, avoid the use of LAUSD emergency supplies/equipment. If an emergency situation arises which warrants the use of LAUSD emergency supplies, equipment the Contractor will expedite the used supplies/equipment, so it is available if needed by LAUSD representatives.

Contractors will know the location of utility shut offs.

The General/Prime Contractor is responsible for the development of a site-wide Emergency Action Plan that shall consider all potential emergency situations.

- Each Contractor shall develop a written job-specific Emergency Action Plan that will take into consideration all potential emergency situations specific to their scope of work.
- This Emergency Action Plan shall be shared and coordinated with all Contractors and LAUSD representatives on site. Job site personnel will be trained in the emergency procedures incorporated in the Emergency Action Plan.
- The Emergency Action Plan shall be revised throughout the course of the project to reflect changed conditions.

The Emergency Action Plan shall be maintained at the site, and available for review upon request.

At minimum, the Emergency Action Plan shall contain:

- Site map
- Street map of immediate area showing Site location that clearly identifies one-way and dead-end streets.
- Building Plan, including a plan for each floor
- Emergency notification list
- Emergency notification procedures
- Evacuation procedures
- Evacuation route(s)
- Evacuation refuge area
- How Employees will be trained on the contents of this plan
- Intervals for refresher training

4. EMPLOYEE CONDUCT

All employees on the site must maintain professional behavior at all times. Horseplay, fighting, any type of harassment or discrimination, possession or use of alcohol and/or unauthorized drugs, possession of firearms and gambling are not allowed and will result in immediate removal of the Contractor employee(s) from the site.

Schools are not like other job sites! Control noise, eliminate profanity and use proper refuse disposal. TOBACCO USE IS PROHIBITED ON ALL LAUSD PROPERTY! LAUSD PROPERTIES ARE DRUG FREE WORKPLACES!

School restroom facilities are off limits to Contractor personnel.

4.1 NEWS MEDIA AND COMMUNICATION

The Contractor shall refer questions from news media personnel (radio, television, newspaper) to the *LAUSD Public Relations Spokesperson*.

The Contractor and its employees must refer all inquiries from the news media (radio, television, newspaper) pertaining to job site incidents/accidents to the LAUSD *Public Relations Spokesperson* or their designated representative.

4.2 CONSTRUCTION VEHICLE PARKING

Contractors must park in authorized areas only. Do not block or obstruct intersections, traffic or fire lanes, fire hydrants, driveways, or parking lot entrances. Do not park in red, yellow, or green zones marked on curbs. Offending vehicles may be towed without notice at the vehicle owner's expense.

Private vehicles are not permitted on the job site except in authorized/designated areas.

4.3 IDENTIFICATION

All Contractors and Subcontractor employees must have a company photo ID listing their name, company, site identification, ID issue date and tracking number.

All Contractor employees will wear shirts or hard hats which display the Contractor's name and/or logo.

Contractor equipment and vehicles entering and/or working at the site must have the Company name/identification clearly displayed on the vehicle.

4.4 ASSIGNED WORK AREA(S)

Contractors and Subcontractors are confined to their assigned work areas. Wandering throughout the job site is strictly prohibited.

5. LAUSD SCHOOL CONSTRUCTION AND RENOVATION PUBLIC SAFETY REQUIREMENTS

The protection of LAUSD staff, students and the public is a priority and will be an integral and required component of every Contractors Site-Specific Safety Plan. Contractors will implement and enforce "best practices" safety guidelines that are specific to potential public exposure hazards affiliated with their scope of work. In addition to the requirements in this section, ANSI A10.34 (MANDATORY) shall be followed.

Both new school construction and existing school renovation job sites are closely monitored by parents, LAUSD staff and the community therefore Contractor compliance with all applicable safety criteria defined in these Safety Standards, Federal, State and local and National Consensus standards, regulations, ordnances and laws, is mandatory.

LAUSD CONSTRUCTION PUBLIC SAFETY REQUIREMENTS

Be aware of your work environment:

- Determine Lead and Asbestos content of building materials PRIOR to any construction/demolition activities.
- It is the Contractor's responsibility to review both the Asbestos Survey/Inspection Report and the Lead Survey/Inspection Report prior to commencement of work and take the necessary steps to ensure the safety of students, faculty/staff, the public and Contractor employees.
- Contractors are responsible for hazardous waste disposal per contract specifications.
- Schedule dusty, noisy, or odorous activities with School Administration and the OAR/IOR in order to avoid disrupting normal school activities.
- Install barricades when needed to protect students and faculty/staff from construction activities.
- Keep equipment and extension cords away from students. [Equipment and extension cords should not be stored or utilized in areas where students/faculty is present.]
- All exits, emergency exits, must be clear, free, and unobstructed. Panic hardware must remain unobstructed, functional, and intact.
- All alarm systems must remain operable unless approval has been granted by the designated/authorized LAUSD representative and Authority Having Jurisdiction (AHJ).
- Fire watches must be maintained at all times during hot work activities.
- Escort deliveries onto the school site or make deliveries when students and faculty/staff are not present.
- MSDS sheets for all chemicals must be available on the job site. Hazardous materials must be stored in designated/approved secured area(s) a minimum of 50 ft. from school

buildings and 50 feet from adjacent neighboring properties and stored in a locked properly designed hazardous storage facility or containment. For roofing jobs block off air intakes or shut off air conditioners to prevent fumes from entering buildings.

- Any construction activities that impact neighbors' adjacent properties such as fence removal or installation of fencing on neighboring properties, excavation or undermining of sidewalks, or any other activity that may pose a direct impact to the property or occupants of the neighbors shall be reviewed by the construction safety department authorized representative.

In order to ensure that the above safety protocol is implemented and followed, public safety pre-planning will be incorporated into all construction site management meetings.

Additional public safety requirements are summarized in the applicable sections throughout these Safety Standards.

5.1 PEDESTRIAN HAZARDS

At the construction site, areas for public pedestrian traffic will be clearly marked at all times.

Public pedestrian traffic areas will be maintained so that slipping, tripping, and falling hazards are reduced.

Non-level surfaces will be delineated with high-visibility markings, signs, or notices.

Stairs or ramps will have handrails on both sides.

Elevated areas will have standard guardrails.

Building exits, sidewalks, and areas accessible to pedestrian traffic which are adjacent to overhead construction work areas shall be provided with falling object protection and/or barricaded/fenced a minimum of 10 feet from the falling object exposure.

The Contractor will monitor public ingress and egress routes to make sure that construction operations do not block stairways, doors, entrances, and exits, paths of travel, and gates or hallways.

When construction activities may require closing or blocking any stairways, doors, exits, entrances, gates, paths of travel or hallways the Contractor will notify LAUSD school administration and the OAR in advance so alternate access/egress routes which comply with all applicable safety standards, codes, ordinances, and regulations can be identified.

Contractors shall know the location of school evacuation routes, exits and assembly areas utilized by school personnel, students, and the public and shall ensure that before, during and after construction work activities all evacuation routes, exits, gates and assembly areas are accessible, open, and clear.

When required or warranted Contractors will post signage on temporary fencing used during construction to identify evacuation routes to ensure LAUSD staff, students, and the public will know the correct paths of travel.

Special attention will be given to the emergency evacuation of buildings, structures, and jobsites and how the construction may affect this evacuation.

5.2 LIGHTING

Lighting and welding flash on the jobsite that may project or illuminate areas offsite will be directed or shielded so that they do not create a public hazard.

Walking surfaces and other public areas affected by the construction site will be adequately illuminated.

5.3 RADIATION

Operations that may produce public radiation exposure hazards will be controlled and shielded.

The area must be barricaded to prohibit public access.

Signage that designates what type of radiation exposure may cause public harm or injury will be clearly displayed.

Ionizing and non-ionizing radiation hazards, including, x-ray, laser, microwaves, ultraviolet and infrared radiation, welding rays or high-radiant heat sources and exposure, will be considered. If the site is located near a nuclear power facility, additional coordination for the evacuation must be considered.

5.4 EQUIPMENT/MACHINERY/VEHICLES

All equipment or devices, machinery and vehicles shall be inspected, tested, and maintained in accordance with manufacturer's guidelines/criteria and all applicable regulatory standards.

Sufficient barricades, shields, guards, alarms, signs, markings, and safety systems will be provided or installed on all equipment.

If any machinery or vehicles require special licenses, permits or operator training before they are used, the Contractor should secure or provide these before working with that equipment.

Areas with mobile equipment that is accessible to the public will be barricaded/fenced or guarded before and during the operation of the equipment. Warning signs, fencing, barricading or personnel should be placed at a sufficient distance from the areas to prevent the public from entering the areas by mistake.

If loads are hoisted or if other overhead hazards exist, a clear area below, which is sufficient to prevent public hazards, will be barricaded or fenced to prevent inadvertent public access. The area will be monitored during overhead work to ensure that it remains clear.

If noise makes it difficult to hear warnings or signals from mobile equipment, the decibels will be increased so that the warnings or signals can be heard. If this cannot be done, visual signals should be established to protect the public. Visual or radio contact will be maintained between the equipment operators and those who will provide the signals.

5.5 FALLING AND WINDBORNE OBJECTS

To prevent construction objects or debris from creating a public hazard, barriers, fencing, catch platforms, enclosures, perimeter, or vertical debris netting or other required administrative or engineering controls must be employed.

Public areas adjacent to the jobsite will be protected by fencing, sheds, overhangs, perimeter netting systems, platforms, scaffolding or similar structures to protect pedestrians from falling objects or debris.

Construction material, tools, debris, waste, equipment, or other items will be contained, secured, tied-off, removed, braced, enclosed, or restrained so that they do not fall, blow away or enter public areas.

5.6 SECURITY

Measures will be established to restrict public access to the jobsite.

If access control is not possible, items that may create a hazard will be locked, barricaded, or removed.

Security systems or personnel may be employed during or after work hours to ensure that the public cannot gain access to the jobsite.

Authorities and security personnel should receive a list of those individuals who are authorized to access the jobsite during non-work hours.

Local enforcement authorities will be made aware of all security plans, and they will receive a list of personnel who will assist them.

5.7 VIBRATIONS AND SUBSIDENCE

Construction operations that produce ground or air vibration will be analyzed to prevent damage or subsidence of adjacent land or structures.

A pre-construction survey of the surrounding area, structures and accessories will be required and conducted before any construction activity begins. Any weaknesses or deterioration found during the survey should be reported to the presiding authority before construction

The Contractor will provide data that show the maximum limits of expected vibrations or subsidence. These limits must not exceed those specified by the presiding authority. Seismographic recordings will be made if required.

If warranted during the pre-construction survey, structural and geological investigation maybe conducted.

Adjacent roadways, waterways, airways, sidewalks, buildings, and utilities will be monitored periodically during construction operations.

All excavations, cuts and trenches in public areas will be backfilled with approved material and then tamped and compacted as soon as possible.

Any public areas or structures that are disturbed, cracked, or broken during construction operations will be inspected, repaired or replaced.

6. LAUSD CONTRACTOR SAFETY PRE-QUALIFICATION REQUIREMENTS

The **Contractor Safety Prequalification Questionnaire** has been developed to evaluate each contractor's overall past safety performance. Note: Not applicable to LAUSD M and O. The OEHS department shall follow existing LAUSD policy for M and O.

All Contractors seeking to bid on, or receive award of, LAUSD Sites must have an active Safety Prequalification. Verification of prequalification of subcontractors may be performed at the sites during construction safety audits.

The Safety Prequalification Questionnaire is no longer included in the Safety Standards. Current Safety Prequalification Questionnaires must be obtained from the following sources:

To obtain a current Prequalification Questionnaire for both Formal and Informal Contracts contact the:

- Facilities Construction Contracts Prequalification Unit:

To download current forms and information, go to the LAUSD Facilities Contracts Administration website,

http://www.laschools.org/new-site/

A copy of the Safety Prequalification Questionnaire is also included in the addendum.

General/Prime Contractors are contractually required to prequalify all their Subcontractors of all tiers using the LAUSD Contractor Safety Prequalification Questionnaire prior to executing a contract with the Subcontractor. Instructions for evaluating and scoring Subcontractors Safety Prequalification Questionnaires are contained in the Questionnaire.

The General/Prime Contractor shall not permit any Subcontractors to perform work on a LAUSD site without a current approved safety prequalification. Failure to safety prequalify all Subcontractors utilizing the most current revision of the Safety Prequalification Questionnaire may adversely affect the Contractors' prequalification status. Use of Subcontractors that do not meet the minimum LAUSD safety prequalification requirements may also adversely affect the General/Prime Contractors prequalification status. Note: Labor compliance issues will be handled by the Labor Compliance Department.

LAUSD and/or their designated representatives will, at their discretion, audit Subcontractor Safety Prequalification Questionnaires to verify the accuracy of the data.

7. RESPONSIBILITIES

7.1 PRIMARY SAFETY RESPONSIBILITIES

The Prime Contractor or Construction Management (CM) firm shall be responsible for initiating, maintaining, supervising, and enforcing all safety precautions and programs in connection with the performance of the construction contract for the on-site safety of their employees and (if applicable) their subcontractors performing work under their authority. To that end, an Environmental Health and Safety Management System (EHSMS) is required of all contractors. THE EHSMS may be modeled after ISO 14000, 14001 and OHSAS 18001 or equivalent. At the site location, this includes responsibilities for vendors, delivery and transportation services, service providers, LAUSD facility, students, and the public. Note: Not applicable to LAUSD M and O. The OEHS department shall follow existing LAUSD policy for M and O.

The Contractor shall comply with all applicable provisions of Federal, State, and local laws, ordinances, codes, regulations, standards, and practices affecting safety and health of employees, the public and environment.

Each Contractor and Subcontractor shall comply with the most stringent of the following:

- Applicable Cal OSHA Standards and Safety Orders or Federal OSHA Standards (Code of Federal Regulations, Title 29),
- The Contractor's Site-Specific Safety Program,
- Applicable National Consensus Standards (NCS) including ANSI, NFPA, etc.,
- These LAUSD Safety Standards.

Each Contractor shall have available for use and reference on the job site at a minimum; the contractor's Site-Specific Safety Program, one copy of all applicable OSHA regulations and the LAUSD Safety Standards.

7.2 SUBCONTRACTOR SAFETY RESPONSIBILITIES

General/Prime Contractors will be responsible for ensuring their Subcontractors initiate, maintain, supervise and enforce the safety requirements of the LAUSD Safety Standards and the General/Prime Contractor's Site-Specific Safety Program, even though the requirements may be above and beyond the Subcontractor's own safety policies and Federal and Cal OSHA requirements.

8. SITE-SPECIFIC SAFETY PROGRAM (SSSP)

Each Contractor shall have a written "Site-Specific [SSSP] Safety Program" in accordance with the provisions contained in the California Labor Code § 6401.7, 8 CCR § 1509 and § 3203, OSHA and LAUSD Safety Prequalification criteria. The Site-Specific Safety Program shall include, but not be limited to, the following site-specific components as they apply to the Contractor's scope of work. Note: This section is not applicable to LAUSD M and O. The OEHS department shall follow existing LAUSD policy for M and O.

- Safety and Health Policy Statement
- An Environmental Health and Safety Management System (EHSMS) with assignment of accountability and responsibilities for key personnel responsible for implementation and enforcement of the Site-Specific Safety Program
- Identification of Competent Persons and Qualified Persons
- Audit/Inspection Program
- Leading and Lagging safety metrics
- Scope of Work Evaluation
- Job Safety Analysis/Job Hazard Analysis Program (JSA/JHA) Task-specific Hazard Assessment (THA)
- Hazard/Risk/Exposure Assessment
- Control Measures/Activity Hazard Analysis
- Minimum Three Week Look Ahead Safety Pre-planning incorporated into the Job Site Progress Meetings.
- Procedures for effectively communicating safety and health matters to Employees
- Safety Incentive Program/Safety Recognition Program
- Progressive Disciplinary Action Program
- Job Site Hazard Identification Inspection and Corrective Action Program
- Safety Training Program (including provisions for Supervisory and Craft Employee training)
- Site-specific Employee Safety Orientation Program
- Provisions for maintaining orientation, training, inspection, corrective action, and accident/incident investigation records
- Written Hazard Communication Program and Respiratory Protection Program
  - To include Material Safety Data Sheets for all products at the site
- Emergency Response and Evacuation Plan
- Storm Water Pollution Prevention Program (SWPPP)
- Fire Prevention Program

- Hot Work Program
- Drug Free Workplace/Substance Abuse Prevention Program
- Accident/Incident Reporting and Investigation Program
- Disability Management Program (Light Duty/Return to Work Program)
- Near Miss Incident Investigation Program
- Fall Prevention Program
- Scaffold Safety
  - o Scaffold Inspection shall be addressed in the Scaffold Safety Program
  - o Scaffold Erector and User Training shall be addressed in the Scaffold Safety Program
- Confined Space Entry Program
- Lockout/Tagout/Control of Hazardous Energy Program
- Excavation Safety Program
- Site Logistics Plan
- Other written programs required by this and other contract documents or regulatory agencies (i.e., heat stress, respiratory, equipment inspection program, etc.)
- Barricades and fencing protocols
- List of Attachments

The Contractor shall submit to LAUSD Safety within 10 days of contract award an electronic copy of the Corporate/Company Safety Plan and Site-Specific Safety Plan for review and approval.

- The Program(s) will be reviewed for inclusion of the requirements of California Code of Regulations, Section 3203 (T8 CCR 3203) Federal OSHA Standards, the LAUSD Safety Standards and applicable sections of the Site Contract Specifications.
- The approval of the Program(s) will be based solely on the content of the Program relative to compliance with California Code of Regulations, Section 3203 (T8 CCR 3202) Federal OSHA Standards, the LAUSD Safety Standards and Site Contract Specifications. The Contractor retains responsibility for regulatory compliance, and the means and methods employed to implement the contents of the Program(s).
- Failure to attain approval of the Program prior to the scheduled commencement of contract work is not grounds for a time extension.
- Upon approval of the Program(s) for conformance to said requirements, the Contractor shall submit two copies of the Program signed by the Contractor's Owner or CEO to the OAR.

Prior to mobilizing on site or during "Notice to Proceed I" (NTP-I) the General Contractor will submit to the OAR and/or LAUSD Safety copies of their Sub-Contractors Job Hazard Analysis (JHA) for review and recommended improvement suggestions/comments.

Each JHA will summarize specific job task(s) performed, potential hazards associated with each task and the safety protocol required/implemented to reduce the injury /accident potential. Reference the Job Hazard Analysis section of these Standards.

Prior to beginning work each Contractor will ensure and review with their employees the JHA specific to the work to be performed. As evidence of training each employee will sign the applicable JHA. Copies of the JHA will be maintained on site for review by LAUSD Safety.

The General/Prime Contractor shall be responsible for ensuring that their Subcontractors comply with the provisions summarized above.

The Contractor's scope of work shall include compliance with the LAUSD Safety Standards. This shall include all services required for the complete performance of the *LAUSD Site* contract work and all related site work in accordance with the LAUSD Safety Standards and all applicable State and Federal regulatory criteria/standards.

Every Contractor and/or Subcontractor is responsible for planning and executing work in harmony with stated objectives of the LAUSD Safety Standards and all applicable State and Federal regulatory criteria/standards.

Every Contractor and/or Subcontractor shall furnish all information concerning the safety of their LAUSD job site operations upon demand to LAUSD authorized representatives.

Every Contractor and/or Subcontractor will enforce compliance with all job site safety work practices and procedures applicable to their scope of work as defined in the contract.

Drugs and Alcohol - The Contractor must support and encourage a drug-free workplace.

Alcohol, drugs, and weapons shall not be allowed on the job site under any circumstances, and violation of this policy shall be the cause for immediate removal.

All contractor and subcontractor site management/supervisory personnel shall have evidence of completing an OSHA 10/30 Hour Construction Outreach Training Program prior to mobilization.

Specifically, the following is required:

- A minimum of 20% of the jobsite workers to be OSHA 10-hour General or Construction Industry Safety and Health Certified.
- All foreman/first-line supervisors must have OSHA 30-hour training;
- Hazardous Waste Operations and Emergency Response (HAZWOPER) workers must comply with the Federal and State mandated HAZWOPER regulations, including physical exams and training;
- Asbestos Workers must comply with the Asbestos Training requirements of the Asbestos Hazard Emergency Response Act (AHERA) and licensing requirements;

Applicable personnel assigned to the site after mobilization shall complete this training within 30 days of assignment.

Prior to beginning work, all employees shall fill-out new-hire paperwork (MANDATORY) are to receive a site safety orientation which at a minimum review the IIPP, site safety rules, policies, procedures, regulations and applicable emergency and evacuation plans. This shall be done at the jobsite trailer prior to any job-setup, dropping off of tools, or taking part in any work-related activity.

Authorized vendors, suppliers, haulers, visitors, etc. shall either be accompanied by a qualified Contractor employee or be provided with an orientation that is appropriate for their job task exposures during their time on site.

In order to address specific areas of concern LAUSD reserves the right to request additional Site Safety Meetings be conducted.

Every site shall schedule and conduct (at a minimum) monthly site safety meetings with their onsite personnel to properly coordinate the work within the trades and resolve matters related to safety and health associated with site work. The General/Prime Contractor's safety pre-planning shall be incorporated into the job site progress/schedule meetings. Minutes shall be kept of each meeting which will include topics covered and attendees.

The Contractor will ensure that all personnel are properly trained and instructed for all jobs which require specific training and/or competency to meet all applicable Cal OSHA and Federal OSHA regulations, State and Federal laws, and compliance with the LAUSD Safety Standards and the contractor's Site-Specific Safety Program.

The Contractor shall conduct toolbox safety meetings with their Employees at least once a calendar week. Minutes of these toolbox meetings are to be prepared and maintained by the Contractor, and available for review by authorized LAUSD representatives.

- Meeting minutes shall contain the following:
  - o Employee names in a legible format
  - o Signature of each Employee
  - o Contractor name
  - o Date of meeting
  - o Description of meeting topics
  - o Name(s) of person(s) conducting the meeting

Prior to starting work, each Contractor and Subcontractor (via the General/Prime Contractor) shall submit to the OAR a list of (a) Competent Persons and Qualified Persons as applicable to the Contractor's scope of work, and (b) First Aid/CPR trained personnel.

- Each list shall be clearly dated and updated as required throughout the contract period. Each time the list is updated, a copy shall be provided to the OAR.

Each Contractor is responsible for handling, on a daily basis, rubbish and debris generated by its work. The Contractor must keep the workplace clean.

The Contractor is responsible for ensuring that corrective action is taken when *Loss Control Survey* forms are issued to the Contractor.

The *Safety Audit Corrective Action* form must be completed by the Contractor and returned to the OAR as required by these Safety Standards. Copies of these forms are provided in the appendix.

The Contractor will cooperate with inspections conducted by Cal OSHA/Federal OSHA and other regulatory agencies. The Contractor will immediately notify the OAR and LAUSD Safety of these inspections.

The cited Contractor(s) shall immediately upon receipt submit copies of all regulatory agency citation notices (if applicable) to the General/Prime Contractor, LAUSD OAR and LAUSD Safety.

- The General/Prime Contractor shall ensure that the cited Contractor posts copies of all citations as required by OSHA or the applicable regulatory agency.

9. CONTRACTOR SAFETY MANAGER, CONTRACTOR SAFETY REPRESENTATIVE AND SUBCONTRACTOR SAFETY REPRESENTATIVE

In order to ensure/maintain a safe work site, Contractor(s) shall designate a responsible and qualified member of its company who has the authority to assure compliance with the Contractor and LAUSD Safety Standards.

9.1 DEFINITIONS

Contractor Safety Manager (CSM): Projects which at any time throughout the duration of the contract will exceed 50 or more employees or contracts exceeding $10,000,000 or more in contract value will require a professional Contractor Safety Manager (CSM). The Contractor Safety Manager will be assigned to the site full time to carry out the duties as described in this document. The Contractor Safety Manager shall have no other duties other than maintaining the OCIP and Safety Programs.

Alternate Contractor Safety Manager (ACSM): An individual meeting the same requirements of the CSM that assumes the role of the CSM on a temporary basis.

Contractor Safety Representative (CSR) Less than 50 employees: A Contractor employee assigned safety responsibilities for shift work and distinct work locations as required. The CSR reports to the CSM. Additional SSR personnel shall cover shift work and distinct work locations as required. The Contractor can delegate the CSR duties to a qualified on-site Field Supervisor. CSR responsibilities cannot be delegated to an office or staff employee.

Alternate Contractor Safety Representative (ACSR): An individual meeting the same requirements of the CSR that assumes the role of the CSR on a temporary basis.

Subcontractor Safety Representative (SSR): Subcontractor employees assigned safety responsibilities for shift work and distinct work locations as required. Additional SSR personnel may be required to cover shift work and distinct work locations. The Subcontractor can delegate the SSR duties to a qualified on-site Field Supervisor. SSR responsibilities cannot be delegated to an office or staff employee.

Contractor Safety Manager (CSM)/Alternate Contractor Safety Manager (ACSM)

- The CONTRACTOR shall provide at a minimum, one (1) FULL TIME on-site competent and qualified English-speaking Contractor Safety Manager, with a proven record of accomplishment on sites of similar scope and complexity and the appropriate number of years as a Contractor Safety Manager on sites of this scope and complexity as evidenced by submitted background information. This person shall be physically present at the site while any aspect of the Work is being performed and shall have no tasks other than administering the Safety Program and ensuring adherence to the LAUSD Safety Standards. The Contractor Safety Manager shall be retained at this capacity for the duration of the Work. Should there be a need to replace the Contractor Safety Manager, the CONTRACTOR shall submit to LAUSD Safety for approval, within thirty (30) days prior to

the proposed date of replacement, the appropriate background information for the new Contractor Safety Manager prior to such replacement. At a minimum, the Contractor Safety Manager shall be on-site full time from NTP-1 thru Substantial Completion of the project. Any Safety Manager Personnel change requires 30-day notice to LAUSD.

Note: LAUSD construction safety will facilitate the proper transition of safety personnel in the event a Safety Manager leaves without knowledge or notification to their employer.

The Contractor Safety Manager (CSM) or Alternate Contractor Safety Manager (ACSM) must meet one of the following minimum qualifications:

- Degreed Safety Professional– (Bachelor's or higher) plus three (3) years as full-time construction safety professional.
- Certified Safety Professional (CSP) Board of Certified Safety Professionals plus three (3) years as full-time construction safety professional.
- Certified Health and Safety Technician (CHST) Board of Certified Safety Professionals plus three (3) years as full-time construction safety professional.
- Training and certification in the OSHA 30-Hour Construction Safety Program and must have received additional training, when required by OSHA standards, on specific hazards of the site, and has completion of the OSHA 500 Basic Instruction Course in Occupational Safety and Health Standards for the Construction Industry is recommended. This individual must have performed full-time safety responsibilities for a minimum of five (5) years in the construction industry.
- At the discretion of LAUSD, other certifications and qualifications may be considered.

In accordance with the Owner Controlled Insurance Program (OCIP), If at any time a Subcontractor has over 50 workers on the jobsite, the Subcontractor shall also have a DEDICATED, FULL TIME Subcontractor Safety Representative (SSR) on the site. If Subcontractors provide a FULL TIME SSR, it will not absolve the General/Prime Contractor of their responsibilities to provide a FULL TIME, qualified CSM. The Subcontractor(s) Safety Representative(s) shall have no other tasks other than administering the Safety Program and ensuring adherence to the LAUSD Safety Standards. The Subcontractor(s) Safety Representative(s) shall also meet the minimum qualifications identified above.

- If the General/Prime Contractor and/or their Subcontractors daily job site work force will at no time throughout the duration of the site exceed 50 combined total employees, the Contractor and/or Subcontractor can delegate a Contractor Safety Representative (CSR) or Subcontractor Safety Representative (SSR) duties to an on-site supervisor who meets one of the following criteria.
  - The CSR/SSR must be credentialed with a Safety Trained Supervisor (STS) certification.
  - Or have successfully completed the OSHA Construction Outreach 30 Hour Programs within the past 3 years and have a minimum of two (2) years of construction safety experience.

- Prior to or during NTP-1, Contractor will submit to LAUSD Safety the resume of the person(s) who will manage their safety responsibilities on site. Once approved by LAUSD Safety, the safety representatives regardless of their job title designation will not be changed except with the approval of LAUSD Safety. Such approval is not an acceptance of responsibility. The Contractor shall submit for approval, within thirty (30) days prior to the proposed date of replacement, the appropriate background information for the new Contractor Safety Manager.
- All pre-qualified Contractor safety personnel regardless of their job title will have:
  - Construction safety experience relevant the scope/type of work the Contractor performs.
  - Current First Aid training from a provider recognized by OSHA.
  - Current CPR training from a provider recognized by OSHA.
- The CSR and/or SSR must be allocated sufficient time to perform their job site safety duties and responsibilities.
- If necessary, LAUSD Safety reserves the right to direct the removal and replacement of the CSM, CSR or SSR.
  - **A CSM, CSR or SSR shall be present at all times, including overtime and weekends when work is being performed within the scope of their employer's authority or responsibility.**
  - The CSM shall be provided on the job site from NTP-1 through Substantial Completion. The CSR(s) and/or SSR(s) shall be provided on site for the duration of work performed by their employer.
- An Alternate Contractor Safety Manager (ACSM) or Alternate Contractor Safety Representation (ACSR) meeting the same qualifications as the CSM, or CSR shall be present when the CSM or CSR is not present on the job site. The ACSM or ACSR shall have the same responsibilities as the CSM or CSR. ACSM, ACSR or SSR duties may be assumed by a similarly qualified site supervisor.
- The Contractor will notify the OAR when the CSM and CSR will not be present on the job site. This notification will include the name of the ACSM or ACSR.
- The General/Prime Contractor shall maintain a list of all Contractor and Subcontractor safety representatives on the job site. Upon request this list will be made available for review by authorized LAUSD representatives.
- The OCIP Coordinator or Risk Manage may exclude contractors form the OCIP or claims may be denied for failure to follow the OCIP Manual requirements as part of the employer contract including the provision to have a full-time safety representative as stated in this section.

9.2 CONTRACTOR SAFETY MANAGER, CONTRACTOR SAFETY REPRESENTATIVE, AND SUBCONTRACTOR SAFETY REPRESENTATIVE RESPONSIBILITIES

All Contractor Safety Representatives (regardless of their job title designation) responsibilities and authority must include but are not limited to the following:

- Authority to enforce COMPLIANCE WITH the Contractor's Site-Specific Safety Program, IIPP and LAUSD Safety Standards.
- Responsibility to assure compliance with the OSHA Act and any other safety standards relative to their scope of work.

In addition to requirements described elsewhere in the Safety Standard, the Contractor's Safety Manager, Alternate Construction Safety Manager and Contractor's Safety Representative and Subcontractor Safety Representative shall have at minimum:

- Authority to stop work when a serious safety or imminent danger/hazard is identified.
- Authority to implement corrective action(s).
- Authority to remove individuals, supervisors, or subcontractors from the site for refusing to comply with Contractor, LAUSD and OSHA Safety Standards.

Specific responsibilities of the Contractor's Safety Manager/Representative must include, but are not limited to assisting, completing, or overseeing completion of the following by their Employer and Subcontractors:

- Assist Contractor Management with the planning and scheduling of work operations to prevent personal injury and/or property damage hazards.
- The CSM or CSR shall conduct safety orientation sessions for employees new to the site, prior to their beginning work. Documentation of site safety orientation will be maintained, and identification made by the use of a hardhat sticker specific to the site.
- Conduct, participate in, or assist field supervisors with weekly toolbox safety meetings.
- Conduct weekly supervisor/management safety meetings.
- Instruct and inform supervisors/management on safety rules and regulations.
- Assist supervision with correcting unsafe acts by employees through proper job placement, training, and the use of good discipline.
- With the support of Contractor Management, setup/draft, implement, monitor, and enforce, the Job Hazard Analysis (JHA) Program.
- Instruct supervision and employees in the proper use and care of personal protective equipment (PPE).
- Instruct supervision and employees concerning special procedures for imminent hazard exposures (e.g. confined space entry, excavations, lock out/tag out, fall protection, etc.)
- Conduct OSHA required training.

- Complete and maintain on site for review OSHA, State, Federal, Company and site-specific safety reports.
- Complete accident reporting and investigation reports in accordance with the LAUSD Insurance Manual and LAUSD Safety Standards. Take corrective action to prevent recurrence of similar type accidents. Records will be maintained on the site and distributed as described in the Safety Standards.
- Ensure that required first aid supplies are adequate.
- Coordinate transportation of employees with minor injuries to the designated Medical Clinic.
- Maintain training documentation on site for review by authorized LAUSD and/or regulatory representatives.
- Implement site-specific safety policies and procedures.
- Demonstrate, by example, proper safety behavior.
- Keep the Project Manager, OAR, and LAUSD Safety informed of any safety related problems that have or may develop.
- Conduct and document (at a minimum) daily site safety inspections. Documentation shall be created and maintained on site listing action(s) taken to correct deficiencies identified during inspections.
- Forward copies of inspection and corrective action records to the OAR and LAUSD Safety.

Review LAUSD Safety Audit Reports received from LAUSD Safety or the Insurance Carrier Safety Representatives that note safety non-compliance items.

- Disseminate the LAUSD Safety Audit Reports to Subcontractors if necessary.
- Ensure corrective action is taken.
- Return the completed LAUSD Safety Audit Report Corrective Action Plan to the OAR and LAUSD Safety and others as required on the project within three (3) business days. LAUSD Safety Audit Report Corrective Action Plan will be reviewed at the Weekly Progress meeting.

10. LAUSD SAFETY RESPONSIBILITIES

LAUSD Safety is responsible for auditing the Contractor's Company/Corporate Safety Plan (C/CSP), including their Injury Illness Prevention Plan (IIPP) and Site-Specific Safety Program (SSSP). Note: This section is not applicable to LAUSD M and O. The OEHS department shall follow existing LAUSD policy for M and O.

LAUSD Safety reports these findings to LAUSD Construction Management, the OAR, and the Contractor for corrective action and enforcement. Responsibilities and duties of LAUSD Safety may include, but are not limited to the following:

- Compile and maintain safety performance statistics for the site.
  - o Communicate the above information to LAUSD Construction Management, the OAR and other authorized LAUSD representatives to ensure they are informed and/or involved with safety management activities.
- Keep apprised of and communicate to Contractor management new regulations and developments to assist Contractors with keeping safety policies and procedures current and effective.
- Conduct safety program audits and site safety surveys of Contractors and Subcontractors work activities to verify compliance with LAUSD, and Contractor safety protocol, confirm regulatory compliance, identify, and document non-compliance items, and make recommendations for improvements.
- LAUSD Safety will document non-compliance items, recommendations, and or comments on the *Safety Audit Report*. Copies of the completed *Safety Audit Report* will be submitted to the OAR and Contractor(s). The *Corrective Action Plan* form will be submitted to the Contractor when a written response is required.
- Review and communicate safety methods and procedures to the Contractor's Safety Manager/Representative, and authorized LAUSD representative(s) to foster the highest level of accident/incident prevention performance possible.
- Provide special consulting to LAUSD Construction Management, OAR, Contractor and Subcontractors regarding safety issues and challenges that may arise on the site(s).
- If required, conduct, or participate in accident/incident investigations.

LAUSD Accident Investigation Reports shall not relieve Contractor(s) of their obligation to conduct their own investigation, or of any responsibility they have to complete and file notices, reports, and forms in accordance with applicable regulatory requirements and LAUSD accident reporting protocol as defined in the LAUSD Insurance Manual.

Review all Contractor incident investigation reports to ensure thorough investigations were conducted and controls instituted to prevent future accidents or incidents.

11. CONTRACTOR PROGRESS MEETINGS

Following is a suggested agenda for the Safety and Loss Control component of the Progress Meeting. This agenda may be modified to reflect site needs. Note: This section is not applicable to LAUSD M and O. The OEHS department shall follow existing LAUSD policy for M and O.

Contractor:

Report on accidents/incidents involving the Contractor or its' Subcontractors since the last progress meeting.

If the SAF 3 accident/incident form has been completed, it shall be distributed and discussed with the Contractors during this meeting.

Contractor discussion is to include corrective or preventative action taken to prevent a reoccurrence.

Contractor shall report on the work status of each injured Employee until said Employee returns to full duty.

Report on near-miss incidents involving the Contractor or its' Subcontractors since the last meeting.

If the SAF 4 form has not been filed relevant to any incident discussed, it shall be distributed and discussed with the Contractors during this meeting.

Contractor discussion is to include corrective or preventative action taken to prevent a reoccurrence.

Provide a description of work activities until the next meeting, including anticipated Employee and public safety concerns and non-routine tasks/activities.

Contractor is to report on safety pre-planning that has been done to include steps that will be taken to minimize hazards.

Contractor will be prepared to discuss potential public and vehicular exposure hazards and the loss prevention controls to be implanted to reduce the exposure potential.

In order to reduce the probability of schedule delays, provide a brief description of work activities anticipated (utilizing the job schedule) covering the next three weeks to identify in advance potential concerns to facilitate safety pre-planning by all parties.

A Job Safety Analysis (SAF-6) or Activity Hazard Analysis may be requested from the responsible Contractor(s) for future activities.

LAUSD Safety, OCIP Safety:

Report on non-compliance violations/hazards identified on Loss Control Surveys that have not been corrected.

Report on non-compliance violations/hazards identified on Loss Control Surveys that are repeat items (i.e., the same or substantively similar type violations/hazards that has been identified in the past and has reoccurred).

Report on accidents/incidents involving the Contractor or its' Subcontractors since the last progress meeting.

Report on Near-Miss Incidents involving the Contractor or its' Subcontractors since the last progress meeting.

Report on any existing or emerging trends in the Contractor's safety performance

Report on future activities that require safety pre-planning.

Identify Potential Public and vehicular exposure hazards.

Review of Job Safety Analysis issues.

LAUSD OAR:

Reporting or discussion of any item(s) described herein.

Any additional/other topic(s)/item(s) not described herein.

11.1 SITE PRE-PLANNING/PLANNING AND PROGRESS COORDINATION MEETING(S)

Safety and loss control activities are to be integrated into the work plan such that safety is an integral component of the construction management process, rather than a separate activity.

There are five main elements to the preplanning and schedule component of the LAUSD Safety Standards.

- **Site Survey**: Prior to the start of work, the Contractor shall review the plans and specifications and conduct a physical survey of the job site.
- **Construction Process Plan:** From the Site Survey, the Contractor shall develop in conjunction with the job schedule a written Construction Process Plan. The Construction Process Plan shall identify tasks and activities under four main categories:
  - o Construction sequence and procedures
  - o Temporary Structures/Shoring/Reshoring/Bracing/Retention Systems required
  - o Critical Structures or Processes
  - o Description of required tests and approvals
- **Job Hazard Analysis:** Job Hazard Analysis (JHA) needs may be pre-determined in part by reviewing the Construction Process Plan and Construction Schedule. The JHA should be prepared far enough in advance of the task or activity to ensure that changes or revisions will not affect the scheduled execution of the

task or activity. Refer to Job Hazard Analysis Section for specific program criteria.

- **Site Progress Meetings**: These meetings are typically held on a weekly or bi-weekly basis and are typically chaired by the OAR. Safety pre-planning should be incorporated into these meetings.
  - o The Contractor shall prepare a Three-Week Look-Ahead Schedule and submit same for review prior to each Site Progress Meeting.
- **Pre-Planning Meetings:** Pre-planning meeting needs may be identified from the Construction Process Plan and/or job schedule. The Pre-planning agenda should be incorporated into the Site Progress meetings.
  - o The Contractor shall schedule Pre-Planning into the Master Schedule far enough in advance of the start of the relevant phase to ensure that changes or revisions to JHA's and coordination efforts will not affect the scheduled execution of the relevant phase of work.
  - o The pre-planning shall include the OAR, as well as all Contractors and Subcontractors involved in that phase of work. At their discretion, LAUSD Safety may also be involved. This meeting shall identify and address the safety and coordination issues of the relevant phase of work.
  - o Job Hazard Analysis' shall be prepared using the JHA form (or an acceptable equivalent); specific JHA's are to be prepared using the Job Hazard Analysis as a guide.
  - o Subsequent meetings may be required throughout the phase of work to maintain safety and coordination efforts.

12. JOB HAZARD ANALYSIS (JHA)

The Job Hazard Analysis (JHA) is a written work plan that incorporates safety into work procedures to ensure that job task(s) or operations receive proper safety planning prior to beginning work.

Prior to mobilizing on site or during "Notice to Proceed I" (NTP-I) the General Contractor will submit to the OAR and/or LAUSD Safety copies of their Sub-Contractors Job Hazard Analysis (JHA) for review and recommended improvement suggestions/comments.

A Job Hazard Analysis (JHA) is to be developed by the site management or designee for each job task. Each JHA will summarize specific job task(s) performed, potential hazards associated with each task and the safety protocol required/implemented to reduce the exposure potential.

Prior to the start of each shift each employee/crew shall review the JHA(s) applicable to their scope of work. As evidence of training each employee will sign the applicable JHA.

Copies of the JHA will be maintained onsite for review by LAUSD Safety.

JHA's are to be completed by a supervisor familiar with the task(s) to be performed. A particular task is chosen, and employees begin to identify potential hazards associated with performing the task.

- When specific tasks require that a JHA be completed, the CSM/CSR/SSR shall facilitate the JHA process and document review of the JHA with the supervisor(s) in advance of the work shift.

Following is the process which should be used to develop the JHA:

Select the job to be analyzed. Use the following factors as a guide in selecting jobs to be analyzed, remembering that those with the highest incident/accident severity potential shall be evaluated first.

- Frequency of incidents
- Disabling injuries
- Potential for severe injury
- New operations/jobs

Break the job down into successive steps. (Avoid making the breakdown too detailed or too general)

- Select an experienced and cooperative employee/crew to perform the job.
- Explain the purpose of the analysis.
- Observe the employee/crew as the job is performed.

- Record each job step in the breakdown.
- Review with the employee/crew and seek comments.

Identify the hazards and the potential incidents.

- Is there a danger of striking against, being stuck by, or incurring other injurious contact with an object?
- Can the work be caught in, between, or by objects?
- Is there a potential slip, trip, or fall hazard?
- Are there strain exposures from pushing, pulling, reaching, twisting or lifting?
- Are there environmental hazards in the form of gases, vapors, fumes, mists, or dusts?

Develop ways to eliminate hazards and prevent potential incidents.

- Find a new way to do the job.
- Change the physical conditions that create hazards.
- Implement:
    - Engineering Controls
    - Administrative Controls
    - PPE

13. SAFETY MEETINGS

13.1 ACCIENT/INCIDENT REVIEW MEETINGS

The Contractor's Safety Manager (CSM), Contractor Safety Representative (CSR) or immediate supervisor shall adopt a practice of scheduling an Accident/Incident Review Meeting within 72 hours of the occurrence of an accident/incident. Note: This section is not applicable to LAUSD M and O. The OEHS department shall follow existing LAUSD policy for M and O.

For the purposes of this section, "Accident/Incident" may be defined as any or all of the following:

- Near-Miss Incident
- First-Aid Case
- Recordable Injury
- Lost-Time Injury
- Vehicular Incident
- General Liability/Third-Party Incident
- Property Damage

The intent and purpose of this meeting is to interactively and cooperatively identify causal factors that had, or may have had, a role in the accident/incident, and to identify corrective action(s) and practice(s) which, when implemented, will reduce the probability of similar type occurrences in the future. It is NOT a fault-finding or blame-finding event.

Attendees should include:

- OAR (Owner Authorized Representative)
- CPM (Contractor Site Manager)
- CPS (Contractor Site Superintendent)
- CSM/CSR (Contractor Safety Manager/Representative)
- SSR (Subcontractor Safety Representative) [if applicable]
- LAUSD Safety
- Senior Project Management Representative and the Contractor/Subcontractors' Foremen accountable for the incident via the functional structure of the site
- Craftsperson(s) involved with and/or witness to the incident.

13.2 PRE-SHIFT EMPLOYEE/CREW PRODUCTION AND SAFETY COORDINATION MEETINGS

At the start of every shift, each Contractor and Subcontractor crew shall conduct a pre-shift production and safety pre-planning meeting.

These meetings shall:

- Review the scope of work for the shift.
- Review of safety activities that are a component of the job tasks (JHA) to be performed.

Such meetings are to generally be five (5) to ten (10) minutes long, and are, at minimum, to focus on the following:

- Tasks for the shift
  - o Applicable Job Hazard Analysis
- Tools and equipment needed for those tasks
- Materials needed for those job tasks
- Proper material handling techniques
- Safe work procedures to perform those job tasks
- PPE needed to safety perform those tasks
- Questions from the crew

These meetings shall be documented in the same manner as the weekly Safety Meeting.

14. REPORTS AND FORMS COMPLETION

The Contractor will cooperate with and participate in inspections conducted by OSHA inspectors. Copies of all OSHA citation notices will be submitted to LAUSD Safety immediately upon receipt by the Contractor. Note: This section is not applicable to LAUSD M and O. The OEHS department shall follow existing LAUSD policy for M and O.

The Contractor is responsible for ensuring that corrective action is taken when Loss Control Survey forms are issued to the Contractor. The *LAUSD Corrective Action* plan must be completed by the Contractor and returned to the OAR and LAUSD Safety.

Each Contractor shall maintain copies of weekly safety tool box meeting reports, inspection reports and corresponding corrective action records, on site for periodic review by authorized LAUSD representatives and/or LAUSD Safety.

Contractor(s) will furnish LAUSD representatives and/or LAUSD Safety with a copy of completed Incident/Accident reporting and investigation forms, as described in the LAUSD Safety Standards and Insurance Manual, no later than 24 hours after knowledge of the incident/accident.

NOTE: The accident investigation report forms do not constitute notice of injury and do not replace the "Employers First Report of Injury" (Form 5020) form that must be completed by the Contractor and provided to the LAUSD OCIP Insurance Company and/or LAUSD Risk/Claims Management.

Forms summarized throughout the LAUSD Safety Standards are provided in the Appendix.

15. CONTRACTOR SAFETY VIOLATIONS

15.1 CONTRACTOR DISCIPLINARY ACTION – POLICY ENFORCEMENT

It is imperative that all Contractor employees at every level comply with all safety protocol relative to their scope of work at all times while working on LAUSD sites. Note: This section is not applicable to LAUSD M and O. The OEHS department shall follow existing LAUSD policy for M and O.

- All Contractors/Subcontractors will be contractually required to comply with all applicable Federal, State and LAUSD safety polices/procedures and regulations. When a Contractor/Subcontractor fails to correct unsafe conditions and/or unsafe actions of their employees, LAUSD will undertake corrective action(s) and, at their discretion, deduct the cost thereof from the responsible Contractors' progress payment. LAUSD cannot be held responsible for safety or security related work delays associated with violations of LAUSD Safety Standards and Federal or State regulatory requirements.
- Contractors/Subcontractors that are not responsive to safety issues, that have unsatisfactory safety evaluations(s) and/or repeated or willful safety violations by their employees will indicate non-compliance with the safety provisions included in the contract documents which may result in removal from the LAUSD bid lists and/or denial of job-site access for a period of time designated by LAUSD.
- Authorized LAUSD representatives have the right at any time to stop work activity that is dangerous to life or health until safety violations are corrected.
- An initial violation of a non-life threatening safety policy by a Contractor's/Subcontractor's employee(s) will result in a notification to the Contractor(s) supervisory personnel the OAR and/or LAUSD Safety. A second violation may result in the Contractor employee being excluded from the site for a period of time designated by LAUSD.
- Willful or repeat safety violations by Contractor employee(s) will result in permanent denial of LAUSD site access.
- The removal procedure may be accelerated and/or expanded to include removal of a Contractor's or Subcontractor's supervisory personnel and/or their entire workforce where violation(s) of safety regulations is widespread, or where the Contractor does not demonstrate good faith effort.
- Foremen/supervisors who give direct orders in violation of the safety protocol or are found to be present at the time and knowingly allow an employee safety infraction may be denied LAUSD site access for a period of time deemed appropriate by authorized LAUSD representatives.

- Should an imminent danger/hazardous condition be discovered, all work in the area of the danger/hazard must be stopped until corrective action has been taken.
- Contractors shall report legitimate unsafe actions/ conditions of other Contractors to the OAR, IOR or other LAUSD site representative(s) and/or LAUSD Safety.

16. SUBSTANCE ABUSE & ALCOHOL POLICY

16.1 PURPOSE

In order to maintain a safe, healthful and efficient work environment, Contractors and Subcontractors shall implement a Substance Abuse & Alcohol Policy. Note: This section is not applicable to LAUSD M and O. The OEHS department shall follow existing LAUSD policy for M and O.

16.2 FUNDAMENTAL REQUIREMENTS

All Contractors shall implement and enforce a policy which prohibits the possession, distribution, promotion, manufacture, sale, use or abuse of illegal and unauthorized drugs, drug paraphernalia, controlled substances and alcoholic beverages by any Contractor employee, agent or any person otherwise under the control of the Contractor, including employees and agents of Subcontractors and consultants while on any LAUSD construction site, including the work site, or while otherwise working on the project. Further, employees shall be prohibited from reporting to the premises under the influence of drugs or alcohol.

This Policy will apply to all employees, including but not limited to regular, part-time probationary, casual and contract employees of the Contractor, as well as to employees and agents of Subcontractors and consultants. The Contractor shall take whatever legally permissible steps are necessary or appropriate to enforce compliance with this policy.

Employees governed by this policy may possess a prescription medication in its original container and prescribed for current use by an authorized medical practitioner. The Contractor shall ensure that employees taking prescription medication inform their employer about potential side effects of medication which may affect the employees' ability to work safely.

At the discretion of the Contractor and/or LAUSD any Contractor employee working on LAUSD sites may be drug and alcohol screened in accordance with the protocol outlined in the LAUSD Safety Standards to include:

- A post-accident/incident drug screen for those persons involved in any type accident/incident whether or not injury or property damage was in incurred.

Any employee who tests positive for drugs and/or alcohol or refuses to take a drug and alcohol screen shall be removed from the site.

16.3 GENERIC DRUG PROGRAM

16.3.1 Drug Free Work Environment

A. It is the responsibility of the Contractor/supplier/vendor to implement and maintain a drug free work environment and screening program to ensure a drug free workplace.

B. A post-accident drug screen shall be required for those persons involved in accidents/incidents resulting in injury and/or property damage on LAUSD property.

C. Contractor/supplier/vendor employees who are reasonably suspected of being under the influence of narcotics or alcohol shall be drug tested as deemed appropriate by Contractor/supplier/vendor management, their designee and/or LAUSD.

D. Substance Abuse Testing

LAUSD reserves the right to require Contractor employees to undergo medical and/or physical examinations or tests at any time as a condition of being granted access onto LAUSD property, including urine drug tests, breathalyzer tests, hair samples, blood tests or other examinations to determine the use of any illegal or unauthorized drugs or substances prohibited in this policy

LAUSD shall reserve the right to approve the facility utilized for sample collection and/or testing utilized by Contractors/suppliers/vendors. Workplace testing may be altered or changed at the discretion of LAUSD.

These tests may be utilized under the following circumstances:

1. Post-Accident. If a Contractor employee suffers an Occupational on-the-job injury (requiring treatment from a medical practitioner) or following a serious or potentially serious accident or incident in which safety precautions were violated, equipment or property was damaged, unusually careless acts were performed, or where the cause was due to an employee's or other person's failure to wear prescribed personal protective equipment or follow prescribed safety rules while working on LAUSD property, the employee will be tested. Refusal to undergo drug testing will be considered as a violation of the drug policy and the employee will be denied access to Owner's property.

2. Reasonable Suspicion Testing: "REASONABLE SUSPICION" means a suspicion based upon the observation of objective facts or specific behavior (or the report of such facts or behavior by a person believed to be reliable) which would lead a prudent person of ordinary intelligence to conclude that an individual may be using drugs and/or alcohol or in some other way is unfit to safely perform their job tasks.

3. For Cause, Reasonable Suspicion Testing will be used when there is a reasonable suspicion that a Contractor employee shows signs of possible intoxication, or is under the influence of drugs, or other facts that would lead a prudent person to be concerned about the individual's safety, the safety of others due to the person's physical condition or behavior covered under this policy.

4. All Contractor employees must agree to abide by this policy and must consent to drug testing and to the release of test results to their employer and/or LAUSD designated representatives as a condition of continued LAUSD job site access.

E. General Testing Procedures

1. The drug test will be taken from urine specimens or other standard testing methods and analyzed by a certified professional laboratory and may be administered by a Certified Third Party such as ASAP, DISA, LACC or equivalent .

2. The contracted facility will assure proper handling of the specimens so that the sample results can be traced to the proper individual. A chain-of-custody procedure will be developed to show a paper trail of the custody of samples at all times. The facility will also take necessary steps to avoid any dilution or alteration of specimens. This will be facilitated by using tamper resistant seals on all sample bottles.

3. Confirmation of test results will be reported to the employee's employer. The process normally takes 24 to 48 hours to be completed.

4. Testing will check for the following drugs:

Amphetamines	Cocaine
Phencyclidine	Opiates
Marijuana (THC)	

5. Any Contractor employee who is tested will have the right, if requested by that Contractor employee, to see the results of their test.

6. Contractor employees who have a positive test result will have a follow up confirmation drug test supervised by the designed testing facility.

7. Once documentation of a positive drug test is received, the Contractor will be notified. LAUSD will be notified of positive test results by the Contractor.

8. Contractor employees whose tests are confirmed positive by the confirmation drug test will be notified by the Medical Review Officer (MRO). At the earliest reasonable time, an interview with the MRO will be scheduled with the Contractor employee to discuss the impact of the positive test results on continued access to Owner property.

9. LAUSD and the Contractor will:

   - Maintain confidentiality of records associated with the administration of this policy.
   - When required or requested, LAUSD will counsel Contractor management regarding the administration of this policy.

10. Prescription Drugs

    - Contractor employees are required to inform their employer of any use of current prescribed medicine that could affect their performance. They may be required to obtain written statements from their doctor(s) regarding the drug(s) effect on the Contractor employee's performance of job duties and to present this statement to their employer.
    - Contractor employees will not be allowed to operate equipment or perform their assigned job tasks if medication could interfere with safe equipment operations or work performance.
    - Contractor employee failure to notify their employer with a written statement from their doctor regarding the use of medication that could affect performance on the job could lead to denial of job site access.

F. Post-Accident Drug Testing

1. Any Contractor employee involved in an accident/incident resulting in injury/illness or property damage will be required to be tested for chemical substances within two hours of the incident (medical circumstances permitting). Failure or refusal to be tested will be considered as an insubordinate act and the Contractor employee will be denied access to LAUSD property. All accidents/incidents reported after the fact will be subject to drug testing.

2. The designated medical treatment facility will be responsible for the collection of specimens assuring proper handling of samples.

3. Contractor employees may be required to sign a consent form for drug or alcohol screening in the event of an occupational injury/illness.

4. In the case of an accident/incident requiring drug screening, it will be the Contractor supervisor's responsibility to see that the appropriate releases have been signed and that the Contractor employee proceeds with testing per above. This can be completed when the supervisor transports the employee to the designated medical facility.

5. If the test results indicate alcohol concentration at or above (.02%) or other regulatory standards, the Contractor employee is subject to having LAUSD site access denied.

G. Testing for Just Cause

1. Upon reasonable suspicious acts, a Contractor employee may be required to take a drug test. "Just cause" testing must be approved by the employee's supervisor.

2. The individual observing a Contractor employee who, in their objective opinion, shows abnormal behavior, impairment, or incoherent tendencies must confirm such observation through their immediate supervisor.

3. If the immediate supervisor confirms such observations, the Contractor employee shall be tested by the Contractor's designated testing facility. If the employee refuses, disciplinary action to include denial of LAUSD site access will be warranted. It is the Contractor's responsibility to see that a drug test requisition is signed, and that the employee is provided transportation to the collection site for testing.

4. If the test results indicate alcohol concentrations at or above (.02%) or at or above regulatory standards, the employee is subject to LAUSD site access being denied.

H. Collection Procedures

The contracted collection facility shall adhere to procedures assuring the security and Chain of Custody of the testing procedure consistent with regard for individual privacy.

I. Positive Detection Procedure

1. No information on drug types or amounts will be released to anyone other than the employee's employer, and if applicable, the General/Prime Contractor supervising construction activities.

2. In order to ensure the accuracy of the initial test results, all positive test results will have an additional confirmation test. If the confirmation test results are positive the employee will be notified by the MRO. The employee and his supervisor will meet following notification in a confidential setting.

3. If the test results are positive for cocaine, opiates, phencyclidine, barbiturates, amphetamines, marijuana, the Contractor employee will be denied access to LAUSD property until evidence of drug treatment through a State recognized program is obtained.

4. If the test results show an alcohol concentration equal to or above .02%, the Contractor employee will be denied access to LAUSD property.

5. The above provision (3 and 4) also applies to incidents where an employee refuses to submit to a drug screen. Refusal to test will be considered a positive test result.

J. Violations Meriting the Denial of Access to LAUSD Property

Any employee or person will be denied access to property for the following violations, even if such violations are "first offense":

1. The Contractor employee or person refuses to submit to a search, and/or inspection, and/or drug test when requested by their employer, LAUSD and/or (if applicable) the General/Prime Contractor.

2. The Contractor employee or person has submitted to a drug test and, in the judgment of their employer, LAUSD, (if applicable) the General/Prime Contractor and/or the approved drug testing facility, has degraded, diluted, switched, altered or tampered with their sample.

3. While on LAUSD property, the Contractor employee or person was using, manufacturing, distributing, dispensing, selling, or possessing any alcohol or illegal drugs.

K. Reinstatement to Work on LAUSD Following a Failed Drug Screen

1. Applicable Union applicable rules and agreements shall apply.

2. Non-Union workers shall show proof of drug and alcohol rehabilitation;

   a. Minimum Level 1 Outpatient Treatment

   b. Verification documentation of completion is required.

17. DISABILITY MANAGEMENT/RETURN TO WORK PROGRAM

17.1 DISABILITY MANAGEMENT/RETURN TO WORK POLICY

It is the policy of LAUSD, with support from all the Contractors working on LAUSD sites to assist a Contractor employee to return to work from an on-the-job injury at their regular rate of pay, as soon as possible after the Contractor employee has recovered sufficiently from the adverse effects of the injury and in accordance with guidance from the treating physician. Contractors will assist in this endeavor by finding their employee a productive task to accomplish. The employee will draw their regular rate of pay even if the designated task to which the Contractor employee is assigned is outside of their normal work assignments because of temporary physical limitations imposed by the consulting physician.

LAUSD, in conjunction with the Contractor, recognizes that an on-the-job injury can impose financial hardships upon a Contractor employee, in addition to other burdens. Through this return-to-work policy, we will endeavor to assist the Contractor employee in returning to productive employment. Under normal circumstances, restricted duty positions will be provided for as long as recommended by the treating physician. Employee refusal to accept limited or restricted duty, when appropriate and approved by the treating physician, can be considered as a voluntary resignation and Workers Compensation benefits will cease.

17.2 PURPOSE

This policy is implemented to establish basic guidelines for an Early Return to Work (transitional duty) Program which will minimize the time away from the job for injured Contractor employees who are unable to work or perform the normal functions of their jobs due to work-related injuries, but are able to work in a limited capacity assignment.

Each Contractor shall have a written Early Return to Work Program that shall be implemented on LAUSD sites unless specifically prohibited by the terms of a Collective Bargaining Agreement.

17.3 PROCEDURE

The specified steps taken to return an employee to work through modified/light duty must be carefully thought out to avoid aggravating the injury or illness. For this reason, each decision will require input from the attending physician and the Contractor.

- The Worker's Compensation Claims Coordinator and/or the LAUSD Claims Manager and construction safety department will contact and advise the Contractor of the need to develop a modified duty position for the employee involved.
- The attending physician will determine the work restrictions necessary to ensure that the employee does not aggravate the existing injury. The physicians work restrictions will be listed on the Work Status Report form.

- If necessary, after the modified/light duty job description is finalized the Worker's Compensation Claims Coordinator and/or the LAUSD Claims Manager will contact the attending physician to determine if the employee can be released to perform the proposed work assignment.
- If the employee refuses the modified/light duty work assignment the Contractor will notify The Worker's Compensation Claims Coordinator and/or the LAUSD Claims Manager. [In most cases, Workers Compensation indemnity payments will be immediately suspended.
- As soon as it can be determined through effective employee and physician contact that an employee is sufficiently recovered from a disability every effort will be made to quickly bring them back to work.
- If the employee accepts the modified/light duty work assignment, every effort should be made to bring them back to work at their normal pay rate.
- Injured employee considered for light duty work assignment will comply with the attending physician's work restrictions.

18. CONTRACTOR SAFETY STANDARDS

No attempt has been made to restate applicable Cal OSHA, Federal OSHA, ANSI, NFPA, standards in their entirety. Contractors are reminded it is their responsibility to have at least one copy of all applicable OSHA Standards, as well as other Standards incorporated by reference into the LAUSD Safety Standards, available on their sites for reference and review.

In some instances, the LAUSD Safety Standards are more stringent than the applicable Cal OSHA and Federal OSHA standards. In other instances due to variables in the Cal/OSHA program, the applicable Cal/OSHA standards may be more stringent than the LAUSD Safety Standards.

The Contractor is reminded that, in most instances, the most stringent safety requirements, regardless of source, shall apply.

Access for Maintenance and Operations (M and O):

All items requiring maintenance including all those related to Mechanical, Electrical, and Plumbing (MEP) require safe access for M and O personnel.

A safe means of access and egress to all mechanical unions, shutoff valves, pumps, HVAC, Utility Vaults, Interstitial Spaces or similar locations must be evaluated for safe access with regard to:

Electrical safety, Confined Space, Fall Protection or other recognized hazards and safe access are provided as part of the construction project.

This may require locating valves, unions, and associated MEP equipment as to be accessible preferably without the use of Personal Fall Arrest Systems (PFASs)

19. AIR TESTING EQUIPMENT

- Approved air testing equipment shall be used to test utility holes, cable vaults, pits, confined spaces and similar spaces for flammable, toxic, or oxygen deficient atmospheres. The exposing Contractor(s) are responsible for the use, maintenance, calibration, and testing of said equipment.
- Air testing equipment shall be UL classified for use in Class I, Division 1, Groups A, B, C & D hazardous locations as defined by the National Electrical Code.
- Before each use air testing equipment must be tested and calibrated as required by the manufacturer to verify that it is fully functional.
- The use and repair of air testing equipment shall be in accordance with the manufacturer's operating manual and instructions.
- Prior to use, Contractor employees must be trained per manufacturer requirements on the use, limitations and alarm modes of each air-testing device that they use. Verification of training must be maintained on the job site.
- Employees must immediately leave a work area whenever an equipment alarm sounds due to:
  - o Low or high oxygen level (acceptable range is 19.5% to 23% oxygen).
  - o Flammable/combustible gas detected above 10% of the lower explosive limit (LEL).
  - o Set point for a toxic gas level is reached (e.g., 10 ppm hydrogen sulfide)
  - o Sensor failure
  - o Low battery alarm.
- Equipment must be carried with the Contractor employee or placed immediately adjacent to the work area and set to operate in a continuous monitor mode.
- Never enter an enclosed work/confined work space (i.e., utility hole, vault, pit, etc.) without:
  - o Completing required air testing.
  - o Purging the space.
  - o Providing continuous ventilation.
  - o Following all applicable regulatory guidelines specific to **"**Confined Space Entry" and "Utility Hole" work. Also reference "Confined Space Entry" and "Utility Hole" sections in these Safety Standards.

20. ASBESTOS

- Asbestos is to be handled only by qualified and certified Contractors. Asbestos Contractors/Subcontractors must be approved in accordance with applicable State, Federal, and Local regulations and must be approved by LAUSD to perform abatement and disposal of asbestos containing materials (ACM) and asbestos containing construction materials (ACCM), as defined.
- It is the Contractor's responsibility to review the Asbestos Assessment Report (Phase I) and the Abatement Design (Phase 2) prepared for a site prior to the commencement of work and take the necessary steps to ensure the safety of students, faculty, Contractor employees, and the general public through compliance with regulatory and LAUSD specification requirements.
- Contractors must verify the presence or absence of asbestos content in building materials **PRIOR** to impacting these materials during construction remodeling or demolition work.
- Upon discovery of any asbestos containing materials (ACM or ACCM) or presumed asbestos containing materials (PACM) not identified in the Phase I report, the Contractor will stop work in such areas and notify the LAUSD Construction Inspector. The material will be inspected and tested, if necessary, by the District's Asbestos Technical Unit (ATU) or by a LAUSD assigned environmental consultant.
- The Contractor shall ensure employees are trained in asbestos awareness to identify ACM, ACCM and PACM. Training will be in compliance with the requirements of the District's Standard Specification Section 13280 – Asbestos Abatement and Asbestos Related Disturbance – and be documented. Proof of such training is required to be submitted to a LAUSD authorized representative prior to commencement of work.
- All asbestos abatement/removal work must follow all regulations of OSHA, the U.S. Environmental Protection Agency (EPA), and/or the applicable State agency and the South Coast Air Quality Management District (SCAQMD).
- Maintenance and Operations personnel working in areas with ACM or PACM must have appropriate asbestos training which may include minor abatement and compliance with Negative Exposure Assessment Protocols. OEHS is responsible to ensure all asbestos surveys have been completed and information and training disseminated to effected employees and contractors per the applicable asbestos standards and LAUSD protocols.

21. BARRICADES AND FENCING

- Contractors shall provide and erect barricades around unprotected excavations, holes or openings in floor or roof areas, edges of roofs and elevated platforms, around certain types of overhead work, and wherever necessary to warn or protect people against falling in, though, off of, or being struck by falling objects. Barricades may also be used to isolate people (such as employees of other Contractors, LAUSD personnel, faculty, students and the public) from vehicular and pedestrian traffic and/or work activities as required by the activity, potential hazards created by the activity, or the location of the activity.
- The type(s) barricades/barricade tape/fencing/perimeter protection required, its location and duration of use shall be reviewed during pre-construction and/or job progress meetings.
- To ensure the safety of students, faculty, and the general public, the Contractor, as directed by LAUSD, must provide and maintain adequate perimeter protection, such as chain link fences, gates, barricades, etc. to separate work areas from areas outside the perimeter of the job site.
- Void of sufficient illumination, lighting may also be required to sufficiently warn vehicular and/or pedestrian traffic of obstacles, trenches, evaluations, overhead work, etc.
- Barricades must be at least 42 inches high and must be square and level.
- Barricades must be suitable for the area of use (i.e., blinker type barricade for traffic control or protective barricade to provide physical protection from falling). Barricades/fences are to be placed around all construction trenches. However, barricade tape may be utilized to warn construction personnel of trenches/ excavations or overhead work inside construction sites which are provided with perimeter fencing.
- Construction work areas utilizing barricade tape shall be posted and protected using nationally accepted color coding as follows:
  - **RED – IMMEDIATELY DANGEROUS**
  - **YELLOW – CAUTION**
- Red barricade tape shall include placards/signage with work duration dates, responsible Contractor's name and contact person's telephone number.
- Entry into immediately dangerous (red tape barricaded) areas shall be by authorized personnel and only after being advised on the dangerous condition. Unauthorized entry into red tape barricaded areas is prohibited unless prior approval has been granted by a representative of the responsible Contractor.
- All barricade tape must be appropriately removed and discarded upon job completion or when the hazardous condition no longer exists.

- Projects extending over 30 days will require barriers that are not easily removed (must withstand 200 lbs. pressure).
- Portable/temporary fencing shall be installed around construction work areas, Contractor storage areas, and Contractor's heavy equipment if these areas are not otherwise protected within the confines of the sites perimeter fencing. Fencing must be in good repair and installed to ensure stability of the fencing from being knocked over by students, employees, or the general public.
- Chain link fencing shall be free from barbs, icicles (excess galvanizing material that may form sharp projections) or other projections that may cause injury.
- Portable fencing shall be installed/braced to prevent its being blown over during windy conditions. Portable fence braces shall not create a trip and fall exposure.
- Base supports of portable fencing shall be installed/placed to eliminate tripping hazards when fencing is placed adjacent to sidewalks and walkways.
- LAUSD reserves the right to prohibit use of temporary fence panel systems that require the use of a tubular pedestal base support system that presents a potential trip hazard to pedestrians.

22. HOT WORK, WELDING, CUTTING

- For fire prevention all Contractors performing hot work activities shall at a minimum implement and enforce the following Hot Work Program criteria:
- The Contractor's Hot Work Program shall meet or exceed the requirements of NFPA SIB, "Standard for Fire Prevention during Welding, Cutting and Other Hot Work."
- Hot work includes, but is not limited to, the following activities: grinding, cutting, welding, brazing or soldering, heating, hot air welding or other operations that generate heat, flames, arcs, sparks or other sources of ignition.
- Prior to performing hot work the Contractor shall evaluate the following: type of hot work to be performed, site preparation, atmospheric conditions, use of appropriate personal protective equipment, and firefighting equipment.
- Site preparation should include a survey for the following: flammable/combustible materials; hazards posed by heat transfer; flammable, corrosive, or toxic residues; equipment linings; appropriate lock/tagout application; confined space exposure and housekeeping.
- Contractor shall also evaluate the work area for the potential consequences of thermal conduction. Thermal conduction is the transfer of heat that could cause ignition by/through an object heated by the hot work operation.
- Contractor shall furnish their own UL/FM approved pressurized/charged portable fire extinguishers and/or other required fire protection equipment for all "hot work." This equipment shall be located on the same elevations of the work and within 25 feet of the hot work activity.
- The need for a fire watch in New Construction buildings will be contingent on the fire potential and/or at the discretion of LAUSD Safety.
- A fire watch person will be required for "hot work" operations conducted inside all Existing Facility school buildings.
- Fire watch personnel responsibilities/duties:
  - Fire watch personnel shall have fire-extinguishing equipment readily available and be trained in its use.
  - If available, they shall be familiar with alarm systems for sounding an alarm in the event of a fire.
  - They shall watch for fires in all exposed areas, try to extinguish them only when obviously within the capacity of the firefighting equipment available, or otherwise sound the alarm.

- A fire watch shall be maintained for at least a half-hour after completion of welding, cutting or other hot work operations to detect and extinguish possible smoldering fires.
- Fire watch personnel may be required on different floor/surface levels and possibly in other rooms depending on the configuration of the building.

- Oxygen Acetylene Torches: Goggles approved for use when employees are working with oxygen acetylene torches will be worn.
- Arc Welding and Cutting Personnel Protective Equipment.
  - Welders shall wear the required eye protection contingent on the type welding activity performed.
  - They shall wear appropriate welding helmets, long-sleeve shirts, leathers and welders gloves.
  - If grinding or chipping is done, a face shield shall be worn in addition to safety glasses.
  - If respirators are required, they also shall be used according to the employer's written respiratory protection program.
- Arc-welding and cutting equipment shall be industrial rated, in good condition, and meet all governing authority requirements regarding application, installation, and operation. Trained and qualified personnel shall make a complete preventive maintenance inspection in accordance with manufacturer and/or other applicable regulatory criteria. The last inspection date shall be marked on the equipment.
- Before each use, the following items shall be inspected:
  - All leads for broken or cut insulation
  - Electrode holders for broken insulators or worn holders
  - Oil and fuels on gas or diesel-powered units
  - Covers are in place where leads attach to welding machines
  - All connections have no exposed current-carrying parts
- Inspect all leads, grounds, clamps, machines, hoses, gauges, torches, cylinders, etc. before each use.
- Do not run hoses and weld leads through doorways.
- All work must have a separate and adequate ground.
- Do not leave the rod in the electrode holder when not in use.
- Do not exceed 15 PSI on the torch side of the gauge when using acetylene.
- Do not use matches or cigarettes to light a torch.

- Anti-flashback arrestors shall be installed on all fuel gas cylinders or built into the regulators.
- Move all flammable/combustible materials at least 50 feet away from the welding/cutting area.
- Ventilation Requirements:
  - Any welding, cutting and heating in enclosed/confined spaces should follow applicable confined space work protocol.
  - General mechanical or local exhaust ventilation shall be provided whenever welding, cutting, or heating is performed in areas with inadequate ventilation in enclosed spaces or a potential fire or explosion threat from flammable or combustible gasses is present. The ventilation shall be of sufficient capacity and so arranged as to produce the number of air changes necessary to maintain welding fumes and smoke within safe limits. Levels below OSHA PELs and/or TLV's will be considered to be "safe limits" as described above. In some cases OSHA Action Levels, excursion limits and STELs may be substituted as "safe limits". The adequacy of the ventilation shall be determined by air monitoring and/ or ventilation measurements.
  - When sufficient ventilation, as described above, cannot be obtained, the employees shall be protected by appropriate respiratory protection as described in the employer's written respiratory protection program. Confined space procedures will apply.
  - When air monitoring is required, the Lower Explosive Limit must be non-detectable (0% LEL), prior to any type of burning, welding, or hot work being conducted by the Contractor. (For example, air monitoring will be required around or near any areas which may pose a potential fire or explosion threat from flammable or combustible vapors).
- The fire loss and employees injury exposure potential pertinent to hot work activities inside "Existing Facilities" and/or "New Construction" buildings may require the use of welding curtains. Welding curtains screens, barriers, drop cloth, etc. shall be made of flame resistant (cloth, polyethylene, plastic, etc.) materials.

23. CLOTHING/PROFESSIONAL DEMEANOR

Contractors shall require each employee, agent, vendor or Subcontractor to wear appropriate attire acceptable to *LAUSD* in accordance with the provisions in the *LAUSD Projects General Construction Specifications*.

23.1 CLOTHING

- Employee dress should be neat in appearance.
- Clothing contaminated by oily, flammable, toxic or caustic materials should not be worn until properly cleaned.
- Shirts and long pants must be worn at all times on the sites. Sleeveless shirts and tank tops are not permitted.
- Certain tasks may require the wearing of fire-resistant materials, such as Nomex®. In such circumstances, extremely flammable clothing material such as nylon should be discouraged.

24. CELLULAR TELEPHONE USE ON Emergency

- Personal cellular telephone use is prohibited except during lunch and authorized breaks.
- Equipment operators are prohibited from operating their equipment while conducting any (personal or business) cellular telephone conversation. Business cellular telephone use is permitted in those scenarios where visible contact between equipment operations, spotters, flagmen, etc. is limited.

25. COMPRESSED GAS CYLINDERS/BOTTLES

- In order to provide support, protection and stability, gas cylinders shall always be maintained and/or transported in an upright/vertical position and chained or tied to supporting structures, carts, etc. to prevent falling and damage.
- Cylinders must never be taken inside tanks, vessels, or confined spaces.
- Regulator fittings must be kept free of oil or grease.
- Cylinders valves must be turned to the "off" position when left inactive for 30 minutes or longer.
- Cylinders, hoses, valves, fittings and gauge connections shall be properly installed and inspected for leaks and damage before each use.
- Compressed gas cylinders must be secured in wheeled carts. Cylinders must not be stored in buildings.
- Cylinders must be maintained in good repair with appropriate pressure relief, hydrostatic testing and valve assembly
- When in storage, oxygen and fuel gas cylinders must be separated at a minimum of 20 ft., or by a 5 ft. high barrier with a 1/2 hour fire rating and placed away from contact that may rupture the tanks.
- Valve protection caps maintained (at least hand tight) must be on cylinders when not in use, in storage or when being transported.
- Cylinders must be labeled as to the nature of their contents per NFPA standard rules and the OSHA Hazard Communication Standard.
- Cylinder storage areas shall have appropriate warning signage posted.
- At no time will cylinders be accessible to the public.
- Appropriate fire-fighting equipment must be provided for each cylinder storage area.
- Torches and hoses shall not be left connected to cylinders overnight.
- Torches and hoses shall not be stored in unventilated gang boxes or storage containers.
- Flashback arrestors and back flow check valves shall be installed in accordance with manufacturer's instruction on all oxygen-fuel torch sets.

26. CONCRETE AND MASONRY

26.1 CONCRETE CONSTRUCTION

The creating Contractor must guard all protruding reinforcing steel, vertical conduit, anchor bolts, small diameter steel, etc. to eliminate impalement hazards in accordance with 8 CCR § 1712.

26.2 STRUCTURAL CONCRETE

The Contractor must not remove any forms or shoring until a determination has been made by the testing lab and structural engineer that the concrete has gained sufficient strength to support its own weight and superimposed loads.

The Contractor must not place loads on any concrete structure until concrete has reached a compressive strength predetermined by the structural engineer of record.

- The Contractor shall be the point of contact for information regarding load bearing reliability.

Where concrete shoring/reshoring is employed, a shoring/reshoring plan specific to the site shall be available for review at the site.

- Deviations from the shoring/reshoring plan will require the issuance of a new shoring/reshoring plan.
  - The addition of superimposed loads on the floor (such as equipment and/or materials) not considered in the reshoring plan shall be construed as a deviation from the plan and is prohibited.

26.3 POURING AND PUMPING OPERATIONS

- Permanent and temporary power lines shall be identified prior to the start of a concrete pour. Appropriate safeguards shall be implemented for the pumping, pouring and finishing operations.
- A site traffic control plan shall be established for concrete truck traffic. Trained spotters and flaggers shall be used as necessary for worker and public safety.
- Contractors involved in pouring and finishing activities shall have appropriate personal protection equipment, including gloves, mud boots, high visibility vests and eye protection.
- Concrete truck washout areas shall be in an area acceptable to LAUSD, located out of vehicular and pedestrian travel areas and comply with all applicable environmental laws, standards and regulations.
- Diapers or the equivalent shall be provided for the pump and concrete trucks when the truck to pump transfer occurs in a public street or other public area.

- A site logistics plan reviewed and approved during a job progress pre-planning meeting prior to commencing work shall be prepared for each pump location, and shall include provisions for concrete truck traffic routing and control, and (if applicable) pedestrian traffic routing and control.

26.4 MASONRY CONSTRUCTION

- Masonry walls shall be braced at 8-feet and/or supported as required by OSHA and/or local requirements.
- A "Clear Zone" may be required. Unauthorized personnel shall be prohibited from entering the work area. Barricading may be required to limited unauthorized access.
- LAUSD enforces a 6 foot fall protection rule and does not recognize the block-wall side masonry construction exception as listed in the Cal/OSHA Standard. Contractor may use integrated rebar system or equivalent on block side of work to facilitate fall protection methods.

26.5 CUTTING, GRINDING AND PROFILING

- Dry cutting, grinding, and profiling of concrete or masonry shall be prohibited except in instances where it is determined in a manner consistent with applicable safety and health standards that the use of water in the cutting, grinding or profiling is not feasible.
- If it is determined that the use of water is not feasible:
  - The Contractor shall perform the work off site or use engineering and work practice controls on site to control the dust, such as a vacuum with a high efficiency particulate air filter (HEPA), or other dust control system(s);
  - If possible, any dry cutting which occurs shall be done in a designated area away from other employees; and
  - The Contractor shall provide affected employees with appropriate respiratory protection in accordance with applicable Contractor, LAUSD and/or OSHA/NIOSH Standards which includes but not limited to:
    - A written respiratory protection program;
    - Physical Examinations for respirator use;
    - Written cartridge change out schedules; and
    - Care, maintenance and disposal process.

27. CONFINED SPACE ENTRY

- OSHA defines a confined space as a space that:
  - o is large enough and so configured that an employee can physically enter and perform assigned work; and
  - o has limited or restricted means for entry or exit (examples may include tanks, vessels, silos, storage bins, hoppers, vaults, pit, subfloor crawl spaces, manhole systems, etc.); and
  - o Is not designed for continuous employee occupancy.
  - o Has the potential to contain a hazardous atmosphere/ or other hazards.
- Any areas defined as confined space will require special precautions. Before any work begins in a confined space a pre-planning meeting will be held to review the exposures associated with work performed and the required controls/countermeasures necessary to prevent injury.
- Any violations of confined space protocol creating imminent life threatening hazard exposure(s) shall result in immediate cessation of work until the required safety protocol has been implemented.
- The Contractor must abide by the OSHA Standard (8 CCR §5156, 5157 and 5158) for confined space entry and furnish all appropriate personnel, equipment, and support.
- Contractors conducting work in utility holes (manholes and vaults) shall comply with the provisions contained in 8 CCR §5156, 5157, and 5158) and the section of LAUSD Safety Standards titled **Utility Holes.**
- Contractor personnel must be trained in the hazards of confined space work, including operating and rescue procedures, the use of respiratory equipment, and instructions as to the hazards they may encounter. Documentation of all required training and/or certification will be maintained on site for review by authorized LAUSD representatives.
- Contractor employee(s) who by the required training, with the supporting documentation/certification, which complies with the criteria certifying them as a "Confined Space Competent Person" will be on site throughout any confined space work activities.
- The Contractor shall develop a written, understandable confined space operating and rescue procedure which must be made available to all affected employees.
- The Contractor is required to provide all necessary entry/rescue equipment required for all entries into confined spaces (tripod, full body harness and lifeline or equivalent, etc.). With approval from LAUSD Safety, wrist straps may be used in designated areas instead of a full body harness.

- Prior to entry into a confined space, the Contractor shall ensure all pipe lines which may convey flammable, injurious, or incapacitating substances into the space are disconnected, blinded, or blocked off by other positive means in accordance with applicable Lockout/Tagout regulations.
- Prior to entry into confined space, the Contractor shall test the air with an appropriate device or method for: (1) Oxygen content, (2) Flammable gases and vapors, and (3) Potential toxic air contaminants. A written record shall be made and kept at the work site for the duration of the work.
- The Contractor shall conduct air testing with such frequency to ensure that the development of dangerous air contamination and/or oxygen deficiency does not occur during the performance of operations.
- The confined space shall be emptied, flushed, or otherwise purged of flammable or injurious substances to the extent feasible.
- The Contractor is required to provide proper ventilation equipment.
- Whenever an atmosphere free of dangerous air contamination and/or oxygen deficiency cannot be ensured, the Contractor shall provide approved respiratory equipment to affected employees, who have been properly trained and are involved in a comprehensive respiratory protection program in accordance with *8 CCR 5144*.
- The Contractor shall provide a trained standby employee on the outside of the confined space ready to give assistance in case of an emergency. The standby employee shall have appropriate, approved respiratory protective equipment, including an independent source of breathing air conforming with *8 CCR 5144*.
- The standby employee must have a valid certificate in first aid and CPR training from the American Red Cross, or equivalent training verified by documentary evidence.
- Visual contact or two-way radio communication must be available at all times. When required, the Contractor shall provide radios/two way communication.
- In order to provide emergency assistance, the Contractor must establish a means of communication with the local emergency service entities.

27.1 PERMIT REQUIRED CONFINED SPACE

- A confined space that has one or more of the following characteristics will be considered a permit-required confined space and the applicable regulations/standards will apply:
  - Contains or has the potential to contain a hazardous atmosphere which includes dangerous air contamination, flammable materials/atmosphere and/or oxygen deficiency.
  - Contains a material that has the potential for engulfing an entrant.

- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward/upward and tapers to a smaller cross-section.
- Contains any other recognized serious safety or health hazards

- Confined spaces classified as "Permit Required Confined Space" shall be labeled as follows:

DANGER
PERMIT REQUIRED CONFINED SPACE
DO NOT ENTER

27.2 UTILITY HOLES (MANHOLES AND VAULTS)

- Work in utility holes may expose employees to potential injury due to a lack of oxygen, or the presence of toxic or flammable/combustible gas. Therefore all work activities conducted in utility holes will be considered as confined space work and confined space safety protocol will apply to include, but not limited to, the following:
- To remove the utility hole cover:
  - Use appropriate lifting hooks or bars.
  - Place feet clear of the cover.
  - To avoid back injuries, lift using bent knees and keep the back straight.
  - Place utility hole guard over the opening.
- Only trained and qualified employees can test, purge and enter a utility hole. An employee who through training and experience is certified as a Confined Space Competent Person will be on site to supervise and enforce compliance with applicable confined space safety protocol.
- Test the utility holes internal atmosphere with a properly calibrated air testing instrument as follows:
  - Immediately after removing the utility hole cover, lower the air sampling hose to the point where a person's will be when working in the utility hole.
  - After entering the hole, test duct entrances, corners and generally throughout the utility hole.
  - Test when duct plugs are removed.
  - A log must be kept on air monitoring results.
- If continuous air monitoring is not performed, monitoring must be performed:
  - A minimum of every two hours after making initial tests.

  - A minimum of every hour if a utility hole tent is used, or if gas is detected during the initial atmosphere test.
  - At every shift change.
- Utility holes must be purged prior to entry to dissipate stagnant or contaminated air, ensure against oxygen deficiency, and provide a complete air change.
- Position ventilation blower intake away from exhaust or other emission sources.
- Only one 90-degree bend in a ventilation blow hose is permitted while purging.
- Continuously ventilate occupied utility holes. Only two 90 degree bends in blow duct are permitted during continuous ventilation.
- Employees must immediately exit a hole if the blower stops or has abnormal air flow.
- Rescue and emergency equipment must be available in accordance with 8 CCR 5156-58.
- Do not take propane or other compressed gases into a utility hole.
- Do not permit open flames in a utility hole.
- Implement traffic/vehicular control criteria as mandated by the applicable regulatory agency (DOT).
- If possible, park the gang truck or utility truck in such a manner to provide a barrier to vehicle traffic.
- Where applicable, use a ladder to exit/enter utility holes more than 4 feet deep. Secure and test the ladder for slippage.
- Conduct a visual inspection of the utilities for any deterioration that may pose a safety hazard.
- Do not move power conductors. Power conductors can only be moved by an authorized representative of the power company.
- Employees are not permitted to remain in a utility hole during cable placing or removal operations.
- Secure all equipment and replace utility hole cover upon completion of work.

27.3 CONNECTIONS TO UTILITIES

- Neither the Contractor nor any Subcontractors will be permitted to make any temporary service connections to electrical, water, air or steam utilities without approval of the OAR, IOR or other authorized LAUSD representative.
- Temporary connections shall comply with all applicable Federal, State, and local regulations.
- Temporary connections shall be inspected on a regular basis. At the discretion of LAUSD documentation of inspection may be required and maintained on site.

28. CRANES/BOOM TRUCKS AND RIGGING

28.1 LAUSD SAFETY REQUIREMENTS

All crane operations conducted on LAUSD Facilities job sites will be considered critical lifts requiring a written lift plan utilizing the LAUSD "Lift Evaluation Form" which, prior to commencing work, will be provided to, reviewed by LAUSD Facilities Construction Safety. The "Instructions" tab on the "Lift Evaluation Form" lists the information required for a complete lift plan submission. Lift plans must be submitted a minimum of two weeks in advance of the lift.

28.2 GENERAL REQUIREMENTS

The term crane as used in this section shall include boom trucks and similar truck mounted cranes.

- Know the weight of the object to be handled.
- Know the capacity of the handling device (crane, forklift, and chain fall, come-along) that is intended for use.
- Visually inspect hooks, wire, slings, other attachments etc. for irregularities, damage, weaknesses, etc., before use.
- Tag/restraint lines or guide ropes in good condition shall be used to control all loads except where their use presents a greater hazard.
- Never raise or swing a load over people.
- All hooks except shake out hooks must have a safety latch. Shake out hooks will not have a safety latch (mouse).
- Always place a load in the center of a hook and never on the point.
- Cranes, hoists or derricks shall not be left unattended while a load is suspended.
- Swing radius protection (i.e. barricades) shall be provided where rotating crane superstructure is positioned to operate in areas where persons may be caught between rotating parts and fixed objects or non-rotating crane components.
- Crane outriggers must be leveled and fully extended when making a lift.
- When required for crane stability, plates, pads or mats shall be used under the outriggers or crawlers. The plates, pads or mats shall be of suitable material and size to support the crane on the surface that it is set up on.
- No part of the crane, load, hoist, lines, boom, tag-line, shall come within 15 feet of energized electrical lines.
- All slings, chains and rigging equipment must be inspected in accordance with manufacturers' criteria.

- When hand signaling is utilized for communication between the operator and the signalman, only approved hand signals for crane, derrick and boom equipment shall be used. A copy of these hand signals will be posted at the operating position of each piece of equipment.
- The manufacturer's specifications and limitations applicable to the operation of any and all cranes and derricks must be complied with. When manufacturer's specifications are not available, the limitations assigned to the equipment shall be based on the determinations of a qualified engineer competent in this field and such determinations, will be appropriately posted, documented, and recorded. Attachments used with cranes shall not exceed the capacity, rating, or scope recommended by the manufacturer.
- A competent person shall make a thorough annual inspection of the crane. A record of the dates and results of inspections for each crane must be maintained and available for review.
- Wire rope safety factors shall be in accordance with American National Standards Institute B30.5 series.
- Certification of a crane operator's ability to operate safely is required and records of such certifications must be available. The Contractor is responsible for determining the operator's skill, verifying the certification, and maintaining the records. Operator certification will be maintained on site available for review by LAUSD authorized representatives and/or any inspectors representing governing/regulatory entities.

28.3 DETAILED REQUIREMENTS

Cranes are a vital part of any construction operation. To assure that they handle loads properly, safely and with greatest efficiency, the following guidelines are provided**.**

Mobile Cranes - Setup

The operator shall be responsible for:

- Performing a daily inspection of the crane. Written documentation of this inspection will be maintained on the crane.
- The proper placement of the crane in relationship to the load to be handled and the landing area so as to obtain the best rated lift capacity.
- Every time a crane is moved/repositioned the crane will be leveled to within 1 degree of level. Recheck the level, a minimum of three times, during an 8-hour work shift.
- The proper placement and use of outriggers for all lifts.

- The determination of stable or unstable ground and the need for additional floats, cribbing, timbers, and structural members as may be needed.
- The installation and maintenance of crane swing radius protection.

28.4 LOAD RATINGS

Determination

- The weight of all auxiliary handling devices such as hoist blocks, headache balls, hooks and rigging shall be considered as part of the total load.
- Additionally, the weight of all items added to the load at the site must be determined and added to the total weight.
- The operator shall be provided with a copy of the Bill of Lading with the item weight clearly legible. This will be used to determine total load weight.
- All lifts exceeding 75% of the rated capacity of the crane at the boom angle for which the lift is made, lifts involving two or more cranes/lifting devices or lifts involving high value loads will be considered "critical lifts" (see "Critical Lifts). Prior to any crane lifts a written lift plan, utilizing the LAUSD "Lift Evaluation Form submission package (see Appendix) will be submitted, reviewed and accepted by LAUSD Construction Safety and/or their designated representative.

28.5 CRANE INSPECTION

Contractors shall ensure that a qualified person visually inspects the crane, derrick, or hoist's controls, rigging and operating mechanisms prior to the first operation of any work shift.

Cranes shall be inspected:

- After setup and prior to initial lift.
- Before each shift.
- After every malfunction.

Documented daily visual inspections by the operator or other qualified person shall include:

- A check of all functional mechanisms for maladjustment causing unsafe operations.
- Operation of all limit switches without a load on the hook.
- Inspection of lines, tanks, valves, pumps, and other parts of air or hydraulic systems for leaks.
- Inspection of hoist or load attachment chains and end connections for excessive wear, twist, and distorted or stretched links.
- A check for excessive wear, broken wires/strands, fraying, stretch, kinking, or twisting of ropes, chokers, rope slings and their connections.

- Inspection of hooks for deformation and cracks.
- All control mechanisms for excessive wear of components and contamination by lubricants or other foreign matter.
- All safety devices for malfunction.
- Deterioration or leakage in air or hydraulic systems.
- Electrical apparatus for malfunctioning, signs of excessive wear, dirt and moisture accumulation.
- Tires for proper inflation.

Daily inspection documentation shall be maintained by the operator and available for review by LAUSD authorized representatives and/or any inspectors representing governing/ regulatory entities.

Adjustments and repairs shall be made only by a qualified person. Adjustments shall be maintained to assure correct functioning of the following:

- All Functional Operating Equipment.
- Safety Devices
- Control Systems;
- Power Plants.
- Brakes

All adjustments and repairs shall be documented, and the documentation shall be maintained on the job site for review, upon request, by any authorized LAUSD representatives and/or inspectors representing governing/regulatory entities.

Periodic and annual third-party inspections shall be performed in accordance with the manufacturer's recommendations and governing regulatory entities and submitted to LAUSD upon request.

An approved certifying agent shall re-inspect any crane that is involved in any incident or is damaged during set-up or operation, and a new certificate of inspection issued prior to being returned to service.

Record Keeping:

- All records pertaining to crane inspections shall be kept on-site with the crane or in the Contractor's site field office.
- If during any safety inspection, the operator or supervisor cannot produce the required crane inspection records; the crane shall be shut down and inspected.

28.6 OPERATOR QUALIFICATIONS AND OPERATING PROCEDURES

Operator Qualifications

Cranes shall only be operated by the following personnel:

- Only Employees authorized by the contractor or crane leasing company who are trained, or known to be certified and qualified, in the safe operation of specific cranes or hoisting apparatus shall be permitted to operate such equipment.
- Where required, operators shall have valid evidence of current Licensing or Certification in accordance with State and Local requirements. Operators not having such evidence where required shall not be permitted to operate applicable machinery (except under terms and conditions prescribed for Trainees by applicable regulations).
- Inspectors certified for crane operation.
- When necessary qualified testing and maintenance personnel.

No one other than the above personnel shall be in or on the crane during operations.

Operating Procedures

The operator shall:

- Not engage in any practice which may divert his attention while engaged in crane operations;
- Not operate his crane if physically or mentally unfit, or taking prescription drugs which may affect judgment;
- Not respond to any signal that is unclear or is given by anyone other than appointed signalmen. Exception: The operator shall respond to a stop signal given by anyone.
- Have final responsibility and control over the crane operations. Whenever there is any doubt as to safety, the operator shall have the authority to stop and refuse to handle loads until safety has been assured.
- Be familiar with the crane and its care, the operators' manual and load charts. He shall be responsible for notifying his supervisor of any needed adjustments or repairs, and for logging his findings in the crane log.
- Upon request, demonstrate his ability to determine total load weight and its relationship to the crane load charts.
- When loads which are limited to structural competence rather than by stability are to be handled, the operator and supervisor shall concurrently determine that the weight of the load has been determined within plus or minus 5 percent before the load is lifted.

Attaching the load:

- The load shall be attached to the hook by means of slings or other approved devices.
- No open hooks shall be used for lifts. Hooks used for lifts shall have hook safety latches or be safety wired.

Moving the load:

- The operator shall determine that the crane is level to within one (1) degree and, where necessary, is properly cribbed and blocked.
- The operator shall be responsible for determining that the load is properly secured and balanced before making the hoist.
- The operator shall position the hook over the load in a manner to prevent load swing.
- The operator shall determine that the rope is properly seated on the drum and in the sheaves, the load line is not kinked, and multiple part lines are not twisted around each other.

29.7.1 Rigging Requirements

All loads shall be rigged by an authorized and qualified rigger. Qualified Riggers shall at a minimum meet the training requirements as recognized by the National Commission for the Certification of Crane Operations (NCCCO). Riggers shall have a certification that identifies the following:

- Date of Training;
- Name of training and printed name and signature of trainer;
- Number of hours of classroom training; and
- Hours of practical training.

The minimum requirements shall be followed:

- All rigging equipment shall be inspected prior to each shift and as necessary during the shift to ensure safety. Damaged or defective slings shall be immediately removed from service.
- All rigging devices including slings shall have permanently affixed identification stating size, grade, rated capacity, and manufacturer.
- Rigging not in use shall be removed from the immediate work area.
- Rigging, including slings, shall be hung on a rigging frame so that bends and kinks do not set in.

- Slings shall not be left lying on the ground or otherwise exposed to dirt and the elements.
- Wire rope slings shall be lubricated as necessary during use. When in storage, slings shall be lubricated no less than every 4 months.
- "Shop-made" grabs, hooks, clamps, or other lifting devices shall not be used unless proof-tested to 125 percent of their rated load by an approved-testing agency. Approved devices shall have the capacity permanently affixed.
- Eyes in wire rope bridles, slings, or bull wires shall not be formed by wire clips or knots.
- Protruding ends of strands in splices on slings bridles shall be covered or blunted.
- All rigging equipment in use shall have a safety factor of five.

29.7.1 Slings: Safe Operating Practices

- Slings shall not be shortened by knots, bolts, or other make-shift devices.
- All slings shall be padded with softeners to protect them from damage due to sharp corners.
- Slings used in a basket hitch shall have the loads balanced to prevent slippage.
- Loads handled by slings shall be landed on cribbing or dunnage so that slings need not be pulled from under or be crushed by the load.
- Slings subjected to shock loading shall be immediately removed from use and destroyed.
- Slings shall not be made from wire rope and cable clips.

29.7.3 Sling Inspection

A thorough inspection of slings in use shall be made daily or on a regular basis as determined by:

- Severity of service conditions.
- Frequency of sling use.
- Nature of lifts being made.
- Experience gained on the service life of slings used in similar use.
- Formal inspection periods shall not exceed once in twelve months.

29.7.4 RIGGING SLINGS AND HOOKS

Hoisting hooks shall be of the safety latch-type. Crane hooks with cracks or with deformation of throat opening more than 15 percent in excess of normal opening or more than 10 degree twist from plane of unbent hook shall be removed from service.

Ropes shall be inspected for proper lubrication, excessive wear, broken strands, and proper weaving.

In order to determine proper time for replacement, a continuing inspection record shall be maintained for hoisting ropes. Conditions such as the following shall be reason for replacement:

- In running ropes, 6 randomly distributed broken wires in one rope lay, or 3 broken wires in one strand in one lay.
- Wear of 1/3 the diameter of outside individual wires.
- Kinking, crushing, bird caging, or other damage resulting in distortion of the rope structure.
- In standing ropes, more than 2 broken wires in one lay in sections beyond end connections or more than one broken wire at an end connection.
- Reduction of rope diameter below nominal diameter due to loss of core support, internal or external corrosion, or wear of outside wires.
- Inspection documentation shall be available on site for review by authorized LAUSD representatives and/or authorized regulatory agents/inspectors.

Fixtures are usually attached to wire rope by wire rope clips. The clips must be attached with the inside curve of the U-bolt against the live, or long end, and flat clip against the dead, or short end of the wire rope.

Each day before being used, wire rope slings, alloy steel chain slings, metal mesh slings, and natural and synthetic fiber rope slings, and all fastenings and attachments shall be inspected for damage or defects by a qualified person.

Slings shall have permanently affixed durable identification stating the following:

- Manufacturer's name or trademark
- Rated capacity

Cranes and derricks exceeding 3 tons rated capacity shall not be used in lifting service until an approved/qualified certifying agent has certified the equipment. Annual and quadrennial inspection certificates shall be maintained on each crane. Cranes that do not have such verification of inspection will not be permitted to operate on LAUSD sites.

A durable load chart with clearly legible letters and figures, showing rated load capacity, recommended operating speeds, and special hazard warnings (hand signal diagram and instructions) must be clearly visible to the operator.

All mobile cranes having either a maximum rated boom length exceeding 200 feet or a maximum rated capacity exceeding 50 tons shall be equipped with a load indicating device or a load movement device. The indicator shall give a clear visual warning signal before high or low unsafe boom angles are reached.

Cranes having a boom exceeding 60 feet in length or a maximum rated capacity exceeding 15 tons shall be provided with an approved boom angle or radius indicator which clearly shows the boom angle in degrees to the operator at all times.

Each variable radius boom-type crane shall be equipped with a boom angle or a boom radius indicator and clearly legible load rating chart in clear view from the operator's position.

An effective, audible warning and operating signal device shall be provided on the outside of the crane. The controls shall be in easy reach of the operator.

Cranes of such design that the boom could fall over backward shall be equipped with boom stops whenever the main boom is rope supported. The boom-stop shall provide emergency protection against destructive damage and related hazards by opposing any unexpected upward and rearward boom movement beyond the working range.

Crane operators exposed to the hazard of falling material or objects shall be protected by a canopy-type guard or cab. All windows shall be safety glass, or equivalent, that introduces no visible distortion that will interfere with the safe operation of the crane.

When required by the manufacturer certified agent's instructions, outriggers shall be set so that wheels within the boundary of the outriggers shall be relieved of all weight by the outrigger jacks or blocking.

A fire extinguisher of not less than 10-B:C rating shall be kept in serviceable condition and readily accessible to the operator.

Operations shall be conducted and the job controlled in a manner to prevent loads from being passed directly over workers, occupied work spaces, or occupied passageways.

A qualified signal person shall be provided when the entire radius of operation is not in full and direct view of the operator unless a signaling or control device is provided. Only one person shall be permitted to give signals to the operator.

There shall be conspicuously posted in the vicinity of the hoisting operation, a legible chart depicting and explaining the system of signals used.

No employee shall be permitted to ride on loads, hooks, or slings of any derrick, hoist, or crane.

Swing radius protection shall be provided where a rotating crane is positioned to operate in areas where persons may be caught between rotating parts.

For all power lines, regardless of load/power rating, the minimum clearance between the lines and any part of the crane or load shall be 15 feet.

A designated person shall monitor the clearance between crane booms and power lines and alert the operator when necessary.

If working within in close proximity to energized power lines taglines, restraint lines, or guide ropes shall be used on all loads and should be protected or insulated to prevent shock.

Cranes, hoists, or derricks shall not be left unattended while the load is suspended unless the load is in a barricaded area or is blocked up or otherwise supported.

Before leaving the crane unattended, the operator shall:

- Land or properly secure any attached load.
- Disengage the clutch.
- Set travel, swing, boom brakes, and other locking devices unless otherwise specified by the certifying agents.
- Put controls in the "off" position.
- Stop the engine or motor.
- Secure the crane against accidental travel.

The load or the boom shall not be lowered below the point where less than two full wraps of rope remain on grooved drums and three full wraps on un-grooved drums.

In all operations where the weight of the load being handled is unknown and may approach the rated capacity, a qualified person shall determine the magnitude of the load unless the crane is equipped with a load indicating device.

The Contractor shall provide a qualified person to direct the lift. The qualified person shall see that:

- The crane is properly leveled for the work being performed and blocked where necessary.
- The load is well secured and properly balanced in the sling or lifting device before it is lifted more than a few inches.

28.8 CRITICAL LIFTS (CRANES, BOOM TRUCKS, DERRICKS, ETC.)

All crane lifts on LAUSD construction sites shall be considered critical lifts requiring a written lift plan submission to and acceptance from LAUSD Facilities Construction Safety.

A qualified person shall prepare the Critical Lift Plan utilizing the LAUSD "Lift Evaluation Form" package. The qualified person preparing the lift plan may be the crane operator, lift supervisor, or rigger. The crane operator, lift supervisor, and rigger shall participate in the preparation of the plan. The plan shall be documented, and a copy provided to the Contractor and LAUSD Construction Safety. The lift plan shall be reviewed by LAUSD Construction Safety and will be "accepted" or "rejected" contingent on content. No lifts / picks will take place without prior written "acceptance" of the lift plan submission by a LAUSD Construction Safety representative.

- The Lift Plan shall specify the exact size and weight of the load to be lifted and all crane and rigging components that add to the weight. The manufacturer's maximum load limits for the entire range of the lift as listed in the load charts shall also be specified.
- Shall specify the lift geometry and procedures, including the crane position, height of the lift, the load radius, and the boom length and angle, for the entire range of the lift.
- Shall designate the crane operator, lift supervisor, and rigger, and state their qualifications.
- Will include a rigging plan that shows the lift points and describes rigging procedures and hardware requirements.
- Will describe the ground conditions, outrigger, or crawler track requirements, and, if necessary, the design of mats, necessary to achieve a level, stable foundation of sufficient bearing capacity for the lift.
- Will list environmental conditions under which lift operations are to be stopped. Prior to commencing crane operations in bad weather (primarily rain and/or high wind conditions) which could have a negative impact on site crane operations approval from the OAR and/or LAUSD Construction Safety and the General Contractor Site Manager/Superintendent will be required.
- Will specify coordination and communication requirements for the lift operation.
- For tandem or tailing crane lifts specify the make and model of the cranes, the line, boom and swing speeds, and requirements for an equalizer beam.
- Shall include any additional information determined by the LAUSD Construction Safety Department to be pertinent to the lift.

29. DEMOLITION

Demolition activities at both New and Existing LAUSD construction site sites shall be reviewed, and a demolition plan/schedule shall be developed and implemented prior to commencing demolition work.

The pre-planning of demolition activities shall take into consideration the liability exposure potential attributed to demolition work in and/or adjacent to LAUSD facilities when occupied by faculty, students, and the public.

Contractor shall ensure safe passage of persons around areas of demolition. Conduct operations to prevent damage to adjacent buildings, structures, other facilities, and people.

Utility companies shall be notified, and all utility service shut off, capped, or otherwise controlled, at the building or curb line before starting demolition. The Contractor is responsible for ensuring that these actions have been taken.

The Contractor shall develop an Emergency Call List for all known utility owners prior to the start of demolition activities.

A site plan shall be marked up to show the locations of known utilities, and the nearest identified shut-off valves/controls. This plan shall be available in the Contractor's Site Office. The site LAUSD representative (OAR) and LAUSD Safety shall be provided with a copy.

Contractors shall determine if any type of hazardous chemicals, gases, explosives, flammable materials, or similarly dangerous substances have been used in any pipes, tanks, or other equipment on the property.

When the presence of hazardous substances is apparent or suspected, testing and purging shall be formed, and the hazard eliminated prior to demolition.

Adequate dust control measures shall be implemented during demolition stock piling and leading operations.

Pipe-covering insulation, steel beam and column fire protection, heating, ventilation, and air-conditioning duck work shall be surveyed for asbestos.

Painted surfaces shall be analyzed for lead content.

Lead and/or asbestos removal shall be in accordance with all applicable standards.

During demolition, continuing inspections shall be made as the work progresses to detect hazards resulting from weakened or deteriorated floors, walls, or loosened materials.

The Contractor shall ensure that floor load limits are not exceeded during demolition operations.

Disperse demolition equipment throughout structure and remove demolished materials to prevent excessive loads on supporting walls, floors, or framing.

Perimeter protection shall be utilized around all demolition sites in order to protect the public and reduce the probability of unauthorized site access.

Walking across exposed floor joists, steel beams, or girders is prohibited.

Provide interior and exterior shoring, bracing, or supports to prevent movement, settlement or collapse of structures to be demolished, and to adjacent facilities.

Demolish concrete and masonry in sections. Use bracing and shoring to prevent collapse.

30. ELECTRICAL

All electrical installation shall meet the current NFPA 70 and NFPA 70E and building code requirements.

All temporary power panels shall have covers installed at all times. All circuits shall be clearly labeled.

Treat all equipment and parts as if they are energized unless determined and verified by testing to be otherwise.

Only qualified and authorized electricians utilizing safe work procedures and personal protective equipment are allowed to work on or near exposed energized parts.

Safety signs, barricades, and attendants shall be required to prevent accidental contact with live electrical parts and equipment.

Cover or guard live parts operating at 50 volts or more.

All disconnects for motors, branch circuits, service feeders; etc. must be marked to include what it controls.

Extension cords must be a minimum 12 gauge three (3) wire cords.

Do not alter electrical plugs (remove ground pins) and receptacles that prevent grounding.

Metal/conductive ladders will not be permitted/used on site.

Damaged or defective tools and cords shall be removed from service.

Electrical equipment used in hazardous locations must be rated and approved for the hazardous location.

Do not run extension cords through doors, windows, walls, and over metal objects such as conduit, pipes, and racks. To avoid damage and/or a trip hazard, cords will be hung at least 7 feet above the floor when crossing over passageways, isles/walkways.

Per the OSHA "Assured Equipment Grounding" program, all electrical tools and equipment must be inspected quarterly and provided with labels, tags or color coding to indicate an inspection has been conducted.

The Contractor is to supply and utilize ground fault circuit interrupters (GFCI) for all temporary electrical wiring, extension cords, and electrical equipment.

Ground Fault Circuit Interrupters shall be tested in accordance with manufacturer's requirements. Logs shall be maintained of all such testing.

Ground Fault Circuit Interrupters that have an automatic reset feature are not permitted on LAUSD site.

All panel schedules shall remain current identifying the proper disconnects and locations.

Do not block or obstruct electrical panels, breakers, switches, etc.

All electrical installations shall have adequate working space and panels labeled per NFPA70E for Arc-Flash protection. All new installations shall not be considered complete without proper labeling per NFPA 70E.

Absolutely no storage is allowed in electrical vaults.

Temporary lights shall not be suspended by their extension/power cords and must be equipped with guards to prevent contact with the bulb.

All power tools must be double insulated or grounded properly and inspected prior to use.

The Contractor shall use a foreign voltage detector (FVD) to test for the presence of foreign voltage. See the **Foreign Voltage Detectors** section in these Standards.

The Contractor must properly lockout/tagout any machinery/equipment in accordance with protocol summarized in the lockout/tagout section in these Standards.

The General/Prime Contractor shall coordinate instances that require multi-Contractor lockout/tagout activities.

31. ELEVATING WORK PLATFORMS AND AERIAL DEVICES

An elevating work platform is a device designed to elevate a platform in a substantially vertical axis. (Vertical Tower, Scissor-Lift)

An aerial device is any vehicle-mounted or self-propelled device with a telescoping extendable or articulating boom, or both, with personal basket which is primarily designed to position personnel.

Only authorized and trained personnel shall operate an aerial device or elevating work platform.

The manufacturer operating instructions shall be onboarding the lift at all times and the lift shall be operated per the manufacturer operating instructions.

Lifts may not be modified or altered without express written approval of the manufacturer.

Boom, basket, and platform load limits specified by the manufacturer shall not be exceeded.

Elevating work platforms and aerial devices are designed for use as personnel work platforms and will **not** be utilized to lift/elevate construction materials.

Employees shall not sit or climb on the edge of the basket or platform or use planks, ladders or other devices to gain greater height.

Employees shall not work off elevating work platforms or aerial devices when exposed to high winds.

"Belting/tying off" to an adjacent pole, structure, or equipment while working from an aerial device is not permitted.

Lift controls shall be tested in accordance with the manufacturer's recommendations or instructions prior to use to determine that such controls are in safe working condition.

While in an elevated position, aerial baskets or platforms shall not be supported by adjacent structures when workers are on the platform or in the baskets.

For fall protection any employees while in an elevated aerial device regardless of type, shall be secured to the boom basket manufacturer installed anchor points through the use of a full body harness and lanyard. LAUSD requires tie-off while using scissor lifts as positioning devices only to keep workers from overreaching from the lift creating a fall hazard.

Prior to use all elevating work platforms and aerial devices shall be inspected daily. Items/areas of inspection shall be per the manufacturer's recommendation/specifications.

Documentation verifying inspection will be available on site for review by authorized LAUSD representatives and/or any authorized regulatory agency inspection personnel.

The platform guardrails shall be 42 inches high with a mid-rail at the half-height point.

Powered elevating work platforms shall have both upper and lower control devices. Controls shall be plainly marked as to their function and guarded to prevent accidental operation.

An emergency stopping device shall be provided at the upper controls of elevating work platforms.

Ladders or other objects shall not be placed in the buckets of units to gain greater height.

32. ENVIRONMENTAL CONTROLS

Only LAUSD approved chemicals/materials can be brought onto LAUSD construction sites.

All chemical spills (including cutting oil, fuel, solvents, antifreeze, etc.) must be reported immediately to the LAUSD OAR and OEHS

All chemical containers must be stored in or have secondary containment. This policy will include cutting equipment (drip pans, sandboxes, etc.).

Hazardous material storage facilities will be located away from the public and separated from each other in accordance with all applicable regulatory criteria/standards.

All chemical containers must be maintained in good condition and must be appropriate for the materials stored in them.

All chemical containers, including empty containers, must be accurately labeled with their contents and precautions for use.

Containers which contain or contained hazardous waste must be affixed with an appropriate hazardous waste label (see LAUSD Reference Guide 4149.0) in addition to a label listing their contents.

Schedule dusty, noisy, or odorous activities with School Administration and the OAR/IOR in order to avoid disrupting normal school activities and/or alarming the community.

Air Pollution: Open burning shall not be allowed unless approved by an authorized LAUSD representative. Control measures must be taken to minimize airborne/fugitive dust.

Weekly inspections of chemical containers must be performed in all Contractor controlled areas/laydown areas to assure compliance with this section. The inspection records shall be retained on site for a minimum of three (3) years.

Prior to transporting hazardous waste off site, the company/entity transporting the waste must complete the EPA Hazardous Waste Manifest and fax a copy to OEHS at (213) 241-6816 for review and approval.

Hazardous waste will be moved only to facilities that are licensed, certified to accept and process that kind of waste.

All Contractors are responsible for proper disposal of their wastes, both hazardous and non-hazardous. A copy of the completed *Uniform Hazardous Waste Manifest* must be provided to the LAUSD Environmental Compliance Manager.

Contractors may not dump any contaminants/chemicals into floor drains, sinks, clean-outs, sewer drains or sumps without the prior written approval from the LAUSD Environmental Compliance Manager.

Emergency response equipment to include spill kits and fire extinguishers will be provided near storage areas.

Chemical storage areas must be kept neat, orderly, and clean. All stored chemicals/waste must be kept in labeled, sealed containers. Warning signs will be posted at storage areas.

Material Safety Data Sheets (MSDS) must be available on site for review by LAUSD, representatives and all emergency response personnel and the public.

It is Contractor management's responsibility to inform all their employees (to include their Subcontractor employees) of these environmental requirements.

33. EQUIPMENT/TOOLS

Contractor equipment and tools must be in proper working condition and routinely (i.e. daily or prior to use) inspected for defects.

Any defective equipment or tool must be removed from service.

Equipment is not to be used with loads that exceed the recommended rated capacity.

The Contractor will use only their equipment and tools and not of those other Contractors.

Equipment and tools will be used for their designated purpose.

Equipment and tools are to be used only by trained and authorized employees.

Before use all equipment and power tools must be equipped with all required guards or shields. All guards must be manufactured by and/or approved by the manufacturer for that specific power tool or equipment.

The practice of "wedging or pegging" guards on skill saws or other equipment rendering them nonfunctional will not be permitted.

No internal combustion engine vehicles, equipment or machinery is to be operated inside buildings unless approved by authorized LAUSD representative(s) and/or proper engineering controls have been implemented to minimize carbon monoxide levels.

In such cases where LAUSD approved vehicles or machinery are operated inside structures, scrubbers shall be installed on the exhaust system and/or carbon monoxide levels shall be monitored as often as required to ensure a safe work environment.

All motorized material handling equipment must have an audible backup alarm and light(s).

Equipment and tools must be properly stored, secured and located away from unauthorized access.

For pneumatic power tools, all air hoses exceeding ½ inch inside diameter shall have a safety device (commonly known as an "OSHA valve" or "safety check valve) at the source of air supply or branch line origin (such as a manifold) to reduce pressure in case of hose failure.

Pocket knives including Leatherman style tools are prohibited on LAUSD job sites.

Utility knives shall be of the automatic retractable style such as spring retractable.

34. EXCAVATIONS

When excavating and trenching activities are performed, Contractors must follow all regulations as outlined in the *LAUSD Safety Standards* and when required by Cal/OSHA/OSHA regulations and local requirements.

All Contractors performing excavation work shall obtain an activity permit, for excavations five (5) feet or more in depth, from Cal/OSHA in accordance with 8 CCR §341 and §1539.

The Contractor(s) will be responsible for identifying the location of any underground utilities (piping, communication cable, electrical lines, etc.). Before beginning any excavation/trench work, the Contractor will contact "Underground Service Alert California (Dig Alert)" to ensure that the owners of underground utilities are notified to mark their utility locations. Reference "**LOCATING UNDERGROUND UTILITIES BEFORE EXCAVATING"** in these Standards.

The Contractor materials utilized for protection of employees to include bracing, shoring, shielding, and trench boxes must be in good condition and of proper dimensions.

All excavations/trenches deeper than 5 feet will be sloped, benched, braced, shored, shielded, trench boxed, etc. in accordance with all applicable standards.

All Contractors performing trenching/excavation work must have a designated and trained competent person to assure compliance with all applicable regulations and LAUSD requirements. The credentials of the competent person must be available on site for review, upon request, by LAUSD and/or authorized governmental representatives.

Excavations/trenches must be inspected each day by the Contractor's "competent person."

The Contractors "competent person" must determine the soil classification (Type A, B, C, or stable rock) to determine the appropriate type of protective system required for the excavation/trench.

Excavated soils, materials or equipment are to be kept at least two feet from the edge of the excavation.

The Contractor must provide barricades to protect people from falling into the excavation/trench. Lighted barricades must be provided at night.

Ladders extending 3 feet above an excavation 4 ft. or more in depth or other means of egress must be provided by the Contractor for access/egress. Access to a ladder shall not exceed 25 feet in any direction.

Excavation/trench work, whenever possible, will be backfilled while work progresses and/or at the end of each shift.

Walkways are to be provided over any excavation or trench point those employees and/or the public may need to cross. Walkways must have handrails, mid-rails, and toe boards, and be constructed with material capable of withstanding at least twice the maximum intended load.

- The edges of the walkway shall be tapered to minimize trip hazards. The approach to the walkway shall be tampered with a suitable and durable material or the walkway set into the surface to minimize trip hazards.

Any trench or excavation work which creates a potential confined space work environment will be subject to compliance with all applicable LAUSD (reference Confined Space Entry) and/or OSHA confined space safety standards.

Rescue equipment must be provided by the Contractor (full body harness and lifeline, breathing apparatus, basket stretcher, etc.) when hazardous atmospheric conditions are expected to exist.

35. FALL PROTECTION

Where a fall hazard exists, efforts must be made to eliminate the hazard; provide protection against the hazard; or establish alternative methods to control/monitor the hazard in accordance with the provisions contained in 8 CCR, *Subchapter 4, Construction Safety Orders*.

Fall protection plans, controlled access zones, safety monitoring systems and controlled decking zones require the approval of the Contractor, OAR and/or LAUSD Safety before their use.

39.1 TRAINING AND RETRAINING

Contractors are required to provide training for any employee who might be exposed to a fall hazard prior to the exposure.

Training must include an explanation of the Contractor's fall protection policies and safe work practices with general instructions and precautions; specific instruction where required; hazard identification and correction; selection and proper use of protective devices; and maintenance of equipment. Instruction should also include correct procedures for inspecting, erecting, disassembling, and maintaining fall protection systems used; and the employee's role in fall safety monitoring.

Personnel rescue shall be addressed in the Contractor's fall protection policy and fall protection training.

Documentation of fall protection training/instruction shall be maintained by the Contractor on site for review by LAUSD and/or any authorized governing regulatory representatives.

Methods of fall protection include but are not limited to:

- Guardrails and toe-boards *[8 CCR 1620 and 1621]*
- Covers for floor opening, pits, trapdoor, and temporary floor openings. *[8 CCR 1632]*
- Personal Fall Restraint/Arrest. *[8 CCR 1670]*
- Safety Nets. *[8 CCR 1671]*
- Scaffold Platforms. *[8 CCR 1724]*
- Roof Warning Lines. *[8 CCR 1730]*
- Any deviations/variances from controlled Access and Controlled Decking Zones and Safety Monitoring Systems will require prior written approval from the Contractor, OAR and/or LAUSD Safety. *[8 CCR 1671.2]*

39.2 PERSONNEL FALL PROTECTION TRIGGER HEIGHT

For all work activities exceeding **six (6) ft.** in height where methods of fall protection (guardrails, hole covers, etc.) are not provided exposed Contractor employees will wear and

use a personal fall arrest system (full body harness with a lifeline, lanyard or deceleration device) secured to approved anchor point(s).

All deviations/variance from this fall protection policy will require at a minimum 3 weeks advance written notification from the General Contractor to the OAR and LAUSD Safety for their written approval.

When fall protection may create a greater hazard or is otherwise not feasible using conventional fall protection methods, the provisions of Cal-OSHA Title 8, Section 1671.1 may be followed which requires a written plan that includes but not limited to:

- Why conventional fall protection is not feasible;
- Alternate methods to protect from falls;
- Training;
- Identifying personnel authorized to work at heights;
- Personal monitoring system; and
- Trained observers.

At the discretion of LAUSD Safety, the OAR and the site Contractor Safety Manager Personnel erecting or dismantling scaffolds under the supervision of the competent person may be excluded from this policy if no approved anchor point(s) are available/feasible

39.3 PERSONNEL FALL ARREST/RESTRAINT

In situations where it is either impractical or impossible to protect elevated work areas in excess of **6 feet** with standard fall protection, another means of employee fall protection must be utilized. The following are some general requirements concerning the use of safety harness, lanyard(s), lifelines, and safety nets.

- A safety harness and shock absorbing lanyard must be worn in elevated work areas, more than six (6) feet in height when other means of fall protection are not available or feasible.
- Anchorages used for attachment of personal fall arrest equipment:
    - shall be independent of any anchorage being used to support or suspend platforms, and
    - capable of supporting at least 5,000 pounds per employee, or
    - Part of a complete personal fall protection system, used under the supervision of a qualified person that maintains a safety factor of at least two (2).
- The only allowable type of body fall arrest system allowed will be a full body harness with a lifeline, lanyard, or deceleration device. Safety/body belts are not permitted on LAUSD sites for fall arrest or restraint.

- Lanyards shall be secured to an approved anchor point which includes a substantial member of the structure or to securely rigged lines, using a positive descent control device.
- Lifelines and anchorages shall be capable of supporting a minimum dead weight of 5,000 pounds.
- Lanyards and vertical lifelines shall have a minimum breaking strength of 5,000 pounds.
- Where practical, the anchor end of the lanyard shall be secured at a level not lower than the employee's waist thereby limiting the fall distance.
- In areas where there is not an anchorage to secure a safety lanyard, lifelines must be used.
- All personal fall arrest systems shall be labeled as meeting the requirements contained in ANSI A10.14.
- Personal Fall Arrest Systems shall:
  - limit the fall distance to a maximum of 6 feet and
  - Prohibit/prevent the Employee from contacting a lower level or structural element.

- The use of non-locking snap-hooks is prohibited.
- The safety harness and lanyard(s) should be inspected before use each workday by the user. Items to look for when inspecting a safety harness and lanyard include:
  - Broken, cut or burnt fibers in the harness and lanyard.
  - Cracked or deformed hardware.
  - Loose or bent rivets.
  - Any sharp edges.
  - Loose thimbles at the splice.
  - Discoloration from exposure to chemicals.
  - Loss of elasticity in the harness.
- When a safety lanyard is subjected to the stress of a fall, it must be removed from service and discarded. The harness will also be inspected and discarded if any defects are identified.
- Safety harness and lanyards should not be used for lifting materials or any other purpose other than protection against falls.
- Safety harness with one D-ring should be worn with the D-ring in the back so that the stomach, not the back, will absorb the shock in the event of a fall.

- The safety harness and lanyard should not be stored in tool boxes or on the floor where they could be easily damaged.
- Debris nets may be required under certain circumstances and must comply with current applicable laws and regulations.

Additional requirements on fall protection can be found in the OSHA Federal Register, Parts 1926.104, 105.

36. FIRE PROTECTION AND PREVENTION – FIRE EXTINGUISHERS

All fire extinguishers must be provided by the Contractor.

Travel distance from any point of the protected area to the nearest fire extinguisher shall not exceed 75 feet. *[8 CCR 1922(a) (1)]*

In multi-story buildings, at least one fire extinguisher shall be provided on each floor and located adjacent to the stairway. *[8 CCR 1922(a) (1)]*

Portable fire extinguishers shall be fully charged, inspected monthly and serviced annually. *[8 CCR 1922(a) (4)]*.

A fire extinguisher rated not less than 10 B:C shall be:

- Provided for each 3,000 square feet of floor area and fraction thereof. Where the floor area is less than 3, 000 square feet at least one fire extinguisher is required. *[8 CCR 1922(a)(1)]*
- Provided within 50 feet of wherever more than 5 gallons of flammable or combustible liquids are stored. *[8 CCR 1922(a)(3)]*
- Kept near operations where bottled fuel gases are being used. *[8 CCR 1743(j)]*
- Adjacent to any "hot work" to include welding, cutting, and burning work activities.

A fire extinguisher, rated not less than 20-B, shall be located outside of, but not more than 10 feet from the door opening of storage rooms. *[8 CCR 1933(b)]*

All portable fire extinguishers shall be readily available for use where temporary heating devices are used. *[8 CCR 1693(g)]*

For roofing work at least two extinguishers must be provided if flammables are present.

37. FLAMMABLES AND COMBUSTIBLES USE AND STORAGE

All Contractors must develop a fire protection program to be followed throughout all phases of construction. *[8 CCR 1920(a)]*

The program will include the most stringent applicable NFPA and/or local Fire Department fire code requirements.

Firefighting equipment must be conspicuously located or conspicuously marked. *[8 CCR1920(c)]*

The Contractor is required to supply fire extinguishers, fire blankets, and other sufficient fire protection devices for the immediate work areas where flammable and combustible material is stored, used, and/or "hot work" is performed.

All Contractor supplied flammable/combustible liquids must be stored in approved safety containers/cans in accordance with *8 CCR 1930(a) (2)*. Plastic storage containers are not permitted. All safety containers/cans must have a self-closing lid and spout cover that is designed to relieve internal pressure. All containers must be properly labeled as to contents and stored in approved designated areas when not in use.

All flammable liquids such as fuels, paint thinner, solvents, etc. must be stored in an area approved by LAUSD.

Storage of flammable and combustible materials inside existing LAUSD buildings is prohibited unless approved by LAUSD.

All outside storage areas must be at least 35 feet (or if applicable in accordance with NFPA standards) from any building and 50 feet from adjacent properties. Approved flammable enclosures may be used in lieu of distance requirement form adjacent properties. Ensure all flammables/combustibles are a minimum of 35 ft. from "hot work" areas or are covered by a fire blanket.

For roofing work:

- At least two (2) fire extinguishers must be provided if flammables are present.
- No more than a one-day supply of flammables may be placed on the roof during working hours.
- All flammables must be removed from the roof at the end of each workday by the Contractor.

Do not smoke; use open flames, or use spark producing tools/equipment, heaters, or any other heat/ignition source around flammable or combustible materials.

"No Smoking" signs shall be posted as required by work operations or material storage exposures.

LAUSD reserves the right to designate "no smoking" and/or designated "smoking permitted" areas on the job site on a case-by-case basis.

Open fires are not permitted on the job site.

All flammable and combustible liquid containers shall be grounded and bonded when dispensing liquid from the containers.

Do not block or obstruct fire response equipment (extinguishers, hoses, manual pull alarms, sprinklers, control valves, etc.)

Flammable and combustible liquid storage areas must be provided with secondary containment.

Storage of more than 25 gallons of flammable liquids or 60 gallons of combustible liquids shall be in cabinets constructed to the requirements of NFPA 30. Not more than 120 gallons of Class I, II, or IIIA liquids may be stored in a storage cabinet. *[8 CCR 1930(a) (4) (A) and (a) (5)]*

The Contractor shall identify non-compatible (could create a chemical reaction if they come in contact) chemicals/materials in advance and, as required, provide for separate storage.

38. FIRST AID

Regardless of the extent of injury all accidents (even first-aid cases) will at a minimum be verbally reported by Contractor management to the LAUSD job site representative (OAR) and LAUSD Safety. At the discretion of or contingent on the severity potential of the first-aid accident or a "near miss" incident, the LAUSD job site representative (OAR) and LAUSD Safety may request a written accident investigation report from the Contractor.

Every Contractor shall ensure the availability of a suitable number of appropriately trained persons to render First Aid and CPR. Contractor Supervision and safety representatives (CSM, CSR, SSR) must be trained in First Aid and CPR.

Evidence of training must be available on site for review upon request. First aid trained personnel shall also receive Blood Borne Pathogen training.

The list of first aid trained personnel must be dated and updated as required throughout the duration of the contract period. Each time the list is updated, a copy shall be provided to LAUSD.

Every Contractor working on or furnishing personnel on a LAUSD job site shall provide at least one first-aid kit in a weatherproof container.

The first-aid kit shall be inspected regularly to ensure that the expended items are promptly replaced.

Eye wash capabilities shall be provided by the exposing Contractor as required by the Material Safety Data Sheet (MSDS) for products/chemicals used on the job site.

39. FOREIGN VOLTAGE DETECTORS

The Contractor shall use a foreign voltage detector (FVD) to test for the presence of foreign voltage:

- Whenever there is reason to suspect damage to any utility (test closures before accessing).
- Un-insulated vertical grounds, electrical power guys, and conduits.
- Street light fixtures (ungrounded) within 20 inches of communication attachments.
- Metal sided buildings, mobile homes, and trailers.
- Buried metallic closures must always be tested before accessing.

Inspect the FVD and grounding cord before each use for cracks, holes, cuts, unauthorized decals, or markings.

Verify the conductive probe cap is in place.

Inspect the grounding cord for loose connections, broken wires, and defective clamps.

Do not use the FVD if the continuity test fails.

Do not use foreign voltage detectors that are out of date. Verify the calibration date is within twelve (12) months of the present date. If calibration is out of date utilize another FVD.

When not in use, store the FVD in the appropriate canvas bag or case to protect its dielectric strength.

40. FORKLIFTS (INDUSTRIAL TRUCKS AND TRACTORS)

Only employees trained and certified by the Contractor in the safe operation of industrial trucks (forklifts) shall be permitted to operate forklifts. Certification of an equipment operator's ability to operate safely is required. The Contractor is responsible for determining the operator's skill, verifying the certification, and maintaining the records.

Documentation of operator training and certification shall be in accordance with *8 CCR §3668* and must be available for review when requested by LAUSD and/or their authorized representatives.

All forklifts, industrial trucks and tractors shall be equipped with a back-up light and an audible backup alarm which can be clearly heard from a distance of 200 feet. In congested areas or areas with high noise levels which obscures the audible alarm, a signal person in clear view of the operator shall direct the backing operation.

Every forklift, industrial truck and tractor shall be equipped with brakes, a parking brake, and a horn.

The rated capacity of all forklifts, industrial trucks and tractors shall be displayed at all times on the vehicle in such a manner that it is readily visible to the operator.

Forklifts and industrial trucks shall not be loaded in excess of their rated capacity.

Seat belts shall be provided on forklifts, industrial trucks, and tractors where rollover protection is installed and shall be utilized by employees when operating the trucks/equipment.

No riders shall be permitted on forklifts, industrial tracks and tractors unless provided with approved riding seats.

Employees shall not ride on or be elevated on the forks of lift trucks.

When elevating employees using an industrial truck (forklift), the following safety protocol shall be implemented and adhered to:

- A platform shall be used of sufficient size, but not less than 24" x 24" with standard guardrails and toeboards.
- The platform shall be secured to the forks or mast.
- There shall be an operator in the control position on the forklift while employee(s) are elevated.
- Never travel with personnel on the work platform.
- Protect mast components.
- All other applicable standards and manufacturers' instructions pertaining to the use of personnel platforms will be implemented and enforced.

Employees shall not be allowed to stand, pass, or work under the elevated portion of an industrial truck, loaded or empty.

All equipment brought on-site will be inspected and tested by the Contractor at the beginning of each shift and certified on a scheduled basis in accordance with the manufacturer's criteria, to be in a safe operating condition.

Attention shall be given to tires, horn, lights, battery, seat belt(s), controller, brakes, steering mechanism, cooling system, and the lift system (forks, chains, cable, and limit switches). Any deficiencies shall be repaired, or defective parts replaced, before continued use.

Forklifts and industrial trucks shall not exceed the authorized or safe speed, always maintaining a safe distance from other vehicles, and personnel keeping the truck under positive control at all times.

The driver shall slow down and sound the horn at all locations where vision is obstructed. When required a spotter will be provided.

An accessible fire extinguisher of CO2 5 lb. rating or higher shall be available at all operator stations or cabs of equipment.

Feet and arms are not to be outside the envelope of the vehicle.

Floor/ground grades shall be ascended or descended slowly.

The forks shall always be carried as low as possible, consistent with safe operation.

When leaving a forklift unattended, the power shall be shut off, brakes set, the mast brought to the vertical position, and forks left in the down position.

Cords and hoses must be secured seven feet overhead in all areas with industrial truck/forklift traffic. In areas absent of industrial truck/forklift traffic, cords and hoses may be secured at floor level but must be protected from possible damage and not create an employee trip/fall hazard.

Forklifts/industrial trucks shall be locked out and/or secured/garaged to reduce the probability of unauthorized access and/or use.

41. HEAVY EQUIPMENT-MATERIAL HANDLING/EARTHMOVING

Whenever visibility conditions warrant additional light, all heavy equipment in use shall be equipped with at least two headlights and two taillights in operable condition.

If possible, equipment shall not be driven on a roadway at night.

All heavy equipment shall have brake lights in operable condition.

All heavy equipment shall be equipped with an adequate audible warning device (horn) at the operator's station.

All heavy equipment must have a back-up alarm audible for a distance of 200 feet.

In congested areas or areas with high noise levels which obscure the audible alarm a signal person in clear view of the operator shall direct the backing operation.

All heavy equipment with cabs shall be equipped with windshields and powered wipers.

- Windshields and mirrors shall be kept clear such that vision is not obstructed.
- Equipment operating in areas or conditions that causes fogging or frosting of windshields shall be equipped with operable defogging or defrosting devices.
- Cracked or broken windshields shall be promptly replaced.

When mandated by regulatory criteria, heavy equipment shall be equipped with rollover protection.

Seat belts and anchorages shall be installed in all heavy equipment

The Contractor shall ensure employee use of seat belts on vehicles and equipment.

Trucks with dump bodies shall be equipped with positive means of support, permanently attached, to prevent accidental lowering of the body while maintenance or inspection work is being done.

Operating levers controlling hoisting or dumping devices on haulage bodies shall be equipped with a latch or other device which will prevent accidental starting or tripping of the mechanism.

Trip handles for tailgates of dump trucks shall be so arranged that, in dumping, the operator will be in the clear.

All equipment shall be maintained in good working order and shall be inspected at the beginning of each shift for defects. A competent person shall in accordance with the manufacturers criteria, inspect and/or perform all maintenance of heavy equipment to include:

- Bulldozer and scraper blades, end-loader buckets, dump bodies, and similar equipment shall be either fully lowered or blocked when not in use and/or maintenance, repair or inspection work is being performed. All controls shall be

in a neutral position, with the motors stopped and brakes set, unless work being performed requires otherwise.

- Service brakes, trailer brake connections, parking brake system, and emergency stopping system (brakes).
- Tires, horn, steering mechanism, seat belts, operating controls, and safety devices.
- Lights, reflectors, windshield wipers, defrosters, and fire extinguishers.
- All vital parts such as motors, chassis, blades and blade holders, tracks drives, hydraulic and pneumatic mechanisms, and transmissions must be inspected.
- All deficiencies shall be repaired, or defective parts replaced prior to continued use.
- Verification of inspection will be available for review by LAUSD authorized representatives.

Before starting a job, the operator shall be given instructions regarding the work to be done.

Before starting the motor, the operator shall check to make sure that all operating controls are in the neutral position.

Before moving, the operator shall walk entirely around the equipment to make sure no other personnel, equipment or material will be struck.

Spotters/flaggers must be used when equipment enters exits or uses public roads, during backing and/or the equipment operator's view is obstructed whether moving forward or backward.

Contractors when required shall ensure that operators of heavy equipment wear appropriate hearing protection devices.

Operators will wear hard hats in equipment not fully enclosed to include no overhead protection/rollover cages, doors, windows, etc.

At no time shall equipment be left unattended while the motor is running, especially if the machine is on an inclined surface or on loose material.

Machines shall be operated at safe speeds and in a manner consistent with conditions on the job.

No employee other than the operator shall ride on equipment.

During refueling operations equipment motors shall be turned off. Smoking is prohibited during refueling.

In order to reduce the probability of unauthorized use by students or the public, unattended equipment must be locked out at all times and parked in a secure area. Keys shall be removed from unattended equipment.

An accessible functional fire extinguisher of CO2, 5-lb. rating or higher shall be available at all operator stations or cabs of equipment.

42. HAZARD COMMUNICATION

In accordance with the provisions of 29CFR1926.59 and 8 CCR §5194 every Contractor must have a comprehensive written Hazard Communication Program which includes:

- A list of hazardous substances known to be on site.
- Methods the Contractor will use to inform employees of the hazards of non-routine tasks.
- On multi-Contractor job sites, the program shall include the methods Contractors will use to inform other Contractors of any precautionary measures to protect their employees.
- The methods used to provide other Contractor(s) with access to Material Safety Data Sheets (MSDS).
- The methods the Contractor will use to inform the other Contractor (s) of the labeling system in use.

The Contractor must submit a copy of its Hazard Communication Program to the *LAUSD OAR or LAUSD Safety* for their review and comments.

The Hazard Communication Program will be in a binder maintained on the job site and contain the following information:

- A comprehensive written Hazard Communication Policy.
- Material Safety Data Sheets (MSDS's) for all hazardous materials used on the site. General/Prime Contractors are responsible for maintaining on the job site in a central location Material Safety Data Sheets (MSDS) on all chemicals/materials brought on site or used by the General/Prime Contractor and Subcontractors of all tiers.

The Contractor shall ensure that all employees have received training in the safe use of hazardous materials; and those employees are able to read and understand the information on Material Safety Data Sheets. At a minimum training shall include:

- Methods and observations that may be used to detect the presence or release of a hazardous chemical.
- The physical and health hazards of the chemicals used in the work area.
- Measures employees can take to protect themselves from the hazards.
- Details of the hazard communication program, including the labeling systems and use of MSDS.

Documentation of training must be provided, upon request, to LAUSD Safety for their review and comments.

The Contractor shall ensure that all containers used on the construction site are properly labeled as to their contents, including gas and diesel fuel containers.

LAUSD Safety and/or their authorized representative(s), at their discretion, will determine/ approve the storage location(s), quantity and container volume of all chemicals/hazardous substances stored on site.

Note: M and O will follow the OEHS Hazard Communication Program in employed by LAUSD - OEHS.

43. PORTABLE HEATERS

All portable heaters brought on-site must be Factory Mutual and/or Underwriters Laboratory approved.

Prior to use, the General/Prime Contractor will review and approve all liquid/gas fueled portable heaters brought onto the site.

The use of liquid/gas fueled portable heaters inside buildings requires the approval of the General/Prime Contractor, and/or LAUSD authorized representatives.

Tent Heater use requirements:

- Use only in tents made of fire-resistant material.
- Avoid contact with heating elements or other hot parts.
- Keep flammable materials and clothing away from hot equipment.
- Never use heaters in a utility hole or in a tent that covers a utility hole.
- Ensure adequate ventilation is provided when using a tent.
- Secure a fire extinguisher within the tent in an accessible location.

44. HORIZONTAL BORING/JACKING

(Reference "LOCATING UNDERGROUND UTILITIES BEFORE EXCAVATING" in these Safety Standards for additional safety protocol)

- The Contractor shall locate all buried utilities before commencing boring/jacking operations by contacting the "Underground Service Alert California (Dig Alert) to ensure all underground utilities owners in the area of are notified to mark their utility locations.
- Open a guide hole (bore slot) over any existing utility that is in line with the bore slot.
- Excavate bore slot, bell hole and guide holes as necessary.
- If resistance is encountered during the boring/jacking operation, cease the boring operation immediately and excavate at the point of resistance to determine necessary action.
- All operators must be qualified and trained in the use of the boring/jacking machinery.
- At least two crew members must operate the bore motor at all times.
- Stay clear of the rotating bore pipe and rotating head of boring machines. Loose clothing, long hair, or gloves can cause injury if caught in the rotating bore pipe.
- Do not hold rotating bore pipe with hands or feet.
- Only one crew member shall transmit signals to the operator.
- When using to connect or disconnect bore pipe, operate the boring machine only at slow RPM's.

45. HOUSEKEEPING

[Reference 6.39 page 43 of the General Conditions]

- All construction materials must be stored in an orderly manner.
- Work areas shall be inspected at the completion of each shift to ensure that the work area is maintained and clean as possible.
- All scrap, trash and debris shall be cleaned up as work progresses.
- Metal containers with covers must be provided for disposal of rags soaked with flammable/combustible liquids.
- All exits to include emergency exits and/or access ways must be kept unobstructed. Panic hardware, where present, must remain unobstructed.
- Walkways and sidewalks in or around school facilities must be kept free of construction materials, debris, dirt, tools, and extension cords.
- Keep all materials, tools, and equipment in a stable position (tied, stacked, or chocked) to prevent rolling or tolling.
- Puncture hazards (nails, staples, fasteners, etc.) created by stripped form work (scrap lumber, pallets, shipping materials, etc.) shall be eliminated or controlled by the creating Contractor.
- Immediately clean up all chemical or liquid spills.
- Where steel plates are used to bridge excavations or other similar type construction activities to provide pedestrian walkways or sidewalks, the leading edges of the steel plates must be feathered with temporary asphalt or other suitable materials to prevent trip hazards.

49.1 TRASH DISPOSAL

- Trash bins/dumpsters must be provided on site to dispose of construction debris.
- All Contractors are required to provide and maintain their own dumpsters for trash disposal. The Prime/General Contractor will be responsible for coordinating and ensuring that dumpsters are provided for trash disposal. Trash bins/dumpsters shall be replaced/rotated when full to prevent accumulation of trash/debris outside the dumpster or throughout the job site. In compliance with applicable regulatory criteria, trash bins/dumpsters shall be covered while in transport.

46. INCIDENT REPORTING

[Correlate this section with protocol in the General Conditions, Insurance Manual and OAR Manual]

- Contractors/Subcontractors shall report all injury/illness; incidents to include Contractor employee, student, faculty, public; serious near misses; environmental incidents vehicle; and fire/property damage accidents/incidents immediately to the LAUSD Owner Authorized Representative (OAR) and/or LAUSD Safety. The investigation of the incident will determine possible cause and identify corrective action required.
- A written accident investigation report signed by the Contractor senior site supervisor or their designee describing who, what, where, when, and how must be submitted within twenty-four (24) hours to the Authorized Representative (OAR). Corrective action(s) to prevent recurrence must also be documented on this report. When requested by LAUSD Safety, incident recovery meetings shall be organized by the Contractor's Safety Manager/Supervisor and shall include the responsible Contractor(s)' Safety Director, Safety Manager or Safety Representative, and the Contractor's management representative(s).
- At their discretion, LAUSD Safety will participate in the on-site accident/incident investigation process.
- **Immediate notification of major incidents will be made to the Authorized Representative (OAR). Affected areas will be secured until released by the Authorized Representative (OAR), LAUSD Safety or, if required, emergency response personnel. Major incidents include fatalities, injury and near miss incidents having the potential to cause a fatality, fires, explosions and environmental incidents such as spills of hazardous materials or release of toxin's into the air.**

47. LADDERS - EXTENSION AND STEPLADDERS

Type II (commercial) and Type III (household) ladders are prohibited.

Always face the ladder and use both hands when ascending/descending.

Employees must maintain a 3-point contact while ascending/descending ladders.

Do not carry tools, materials, equipment up or down a ladder, use a hand line to raise and lower tools, materials, equipment, etc.

Only one (1) individual shall be on a ladder at any time.

Job-Made ladders shall be constructed in accordance with Cal/OSHA provisions contained in 8 CCR §1676.

All types of ladders must be inspected at least daily for:

- Cracks, splits, splinters, and decay.
- Protruding nails and loose rivets.
- Loose, bent, or broken rungs, braces, tie rods, guide irons, locks, pulleys and strand hooks.
- Broken, worn or defective spurs and pads.

When ladders are found to be lacking in any safety device, or are found to be defective in any way, such ladders shall be removed from use immediately, tagged out and supervision notified. Ladders found to be too defective for repairs are to be destroyed.

All straight and extension ladders will be equipped with nonskid safety feet/bases.

Portable ladder feet shall be placed on a substantial base.

The top of straight or extension ladders must extend three (3) feet (36 inches) beyond the supporting object when the ladder is used for access to an elevated work area.

To prevent displacement or movement, straight and extension ladders shall be tied off at the top when in use or when left unattended. If tie-off cannot be made, ladders must be held at the foot while in use and taken down when not in use.

Contractors shall provide documented employee training in the safe use of ladders. Training and/or retraining shall cover all applicable safe use protocol and hazards associated with ladder usage.

Defects in wooden ladders may be concealed by use of paint. For this reason, ladders of this type must not be painted, except for necessary identifying marks.

Metal ladders must not be used near or for electrical service.

Ladders are not to be used for skids, braces, workbenches, or any other purpose other than climbing.

Extension ladders shall have positive stops to ensure safe overlap of the sections. Overlap requirements are:

- Ladders up to 32 feet long use a three-foot overlap.
- Ladders from 32 to 36 feet use a four-foot overlap.
- Ladders from 36 to 48 feet use a five-foot overlap.
- Ladders over 48 feet use a six-foot overlap.

Extension ladders shall not be taken apart in order to use each section separately.

Ladders shall be used at such a pitch that the horizontal distance from the top support to the foot of the ladder is about one-quarter of the working length of the ladder.

Stepladders must be fully open, set level and the spreader set to the open and locked position.

Do not work off the top two rungs. Standing or sitting on the top platform or straddling a stepladder is prohibited.

Do not lean a stepladder against a wall in the unopened position. Stepladders shall not be used as straight ladders.

Do not climb on or use the backside of a stepladder.

Do not exceed the ladders designated weight capacity. Ladders missing “capacity” labels will be removed from service or from the job site.

48. LEAD

Lead abatement, as defined, is to be performed by Contractors or Subcontractors whose workers are certified by the Department of Public Health (DPH). Lead related construction work may be performed by Contractors' or Subcontractors' workers who have been trained in Lead Awareness as described in the District's Standard Specification Section 13282 – Lead Abatement and Lead Related Construction Work. Evidence of certification and/or training is required to be provided to the District's Environmental Representative prior to the commencement of work.

It is the Contractor's responsibility to review the Assessment Report addressing the impact to Lead Based materials, Lead Containing materials or coatings, and materials assumed to contain Lead prior commencement of work and take the necessary steps to ensure the safety of students, faculty, Contractor employees, and the general public.

Contractor must identify any Lead Based Paint (LBP) or coatings and assumed lead containing coatings in or on the materials to be impacted within the proposed scope of work **PRIOR** to any construction, remodeling, maintenance, repair or demolition activities.

No lead abatement will proceed until the LAUSD's Environment Representative has given written approval of the Lead Abatement Contractor's written abatement work plan.

No work by Contractors other than the Lead Abatement Contractor will be permitted to work in regulated areas until clearance is provided by the LAUSD Environmental Representative.

The Lead Abatement Contractor or General Contractor performing monitoring of lead related construction work will be responsible for characterizing the waste stream (e.g., paint chips, components, etc.) and disposing of waste according to the characterization. Hazardous waste will be transported under a Uniform Hazardous Waste Manifest in accordance with District Standard Specification Section 13282.

49. FIRE/LIFE SAFETY

In operating/occupied LAUSD facilities or where applicable, all exits, and emergency exits must be maintained clear of any obstructions at all times and available for use by the public at all times.

LAUSD and the local Fire Department will be notified when any Impairments or work activities are conducted on, or that may affect any school fire alarm/protection system(s), must be approved by LAUSD prior to beginning work.

All impalements to or work activities conducted on LAUSD fire alarm/protection systems must be approved by the local Fire Department prior to beginning work.

Do not block, obstruct, or tamper with fire protection and/or alarm systems/equipment to include fire extinguishers/hoses, sprinklers, standpipe, pumps, control valves, manual pull box alarms, alarm panels, panic hardware, etc. without prior approval from LAUSD and/or the local Fire Department.

Electrical panel disconnects and other associated electrical equipment must remain unobstructed.

Walkways and sidewalks in operating/occupied LAUSD facilities must be kept free of construction materials, debris, dirt, tools, equipment, extension cords, barricades, etc.

In the event that any life safety protocol which includes any exit and/or path of travel to any exit in all occupied LAUSD buildings must be compromised for any reason(s) due to construction related activities, LAUSD and/or the local Fire Department will be notified prior to commencing work. Under no circumstances will construction activities take place until alternate life safety measures approved by LAUSD and/or the local Fire Department are implemented by the responsible Contractors.

50. LIQUIDS - CORROSIVE ACIDS AND CAUSTICS

Do not store, handle, apply or use acids or caustics until the proper safe procedure has been established and implemented.

Never add water to acid - if dilution is needed, add acid to water.

An emergency eyewash station or shower provided and maintained by the responsible Contractor must be immediately available to personnel working with acids or caustics.

Proper personal protection must include a face shield, apron, gloves, and sleeve lets as well as any other safety equipment, procedures, work processes, etc. deemed necessary in order to provide maximum protection to all exposed personnel. Contractors will be responsible for reviewing the Material Safety Data Sheets (MSDS) for specific chemical handling and personnel protective equipment requirements.

51. LOCK-OUT/TAG-OUT/BLOCK-OUT

The Contractor must have a written Lock-out/Tag-out/Block-out program that meets or exceeds the OSHA standards contained in 8 CCR §1595, §2320.4, and §3314.

During servicing, cleaning, adjusting and maintenance activities all movable parts shall be mechanically blocked or locked out/tagged out as required to ensure equipment/machinery cannot be operated. Locks and tags must be used by all personnel working on or around all equipment/machinery. Basic lockout/tag out steps are as follows:

- Locate and identify all energy sources and isolating devices.
- Alert the people in the area of the lockout.
- Shut down equipment by the normal stopping procedures.
- De-energize all energy sources (electrical, hydraulic, pneumatic, steam, gravity, thermal, gravitational)
- Physically place locks and tags on energy isolating devices.
- Verify a zero-energy state. In no case shall work begin before circuits and equipment and/or machinery is tested to ensure that they are, in fact, de-energized.
- Perform the work.
- Clean area of tools, parts, and personnel.
- Remove locks and tags.
- Alert the necessary personnel that the equipment will be online.
- Restore energy and resume normal operations.

When locks and tags are required, the craft personnel working on that circuit shall notify their appropriate supervisor. The supervisor, or his designee, shall see that appropriate locks and tags are provided. When work is completed, the appropriate supervisor is also to be notified when the lock(s) and tag(s) are removed.

Lockout locks, and tags shall not be used for purposes other than lockout activities.

Each Contractor employee must affix their own lock(s)/tag(s).

The Contractor Safety Manager and OAR must be notified if a contractor lock and tag must be removed by someone other than the employee who placed the lock/tag.

When a lock has been left on a piece of equipment and the employee has left the site, the Contractor will then contact the Construction Manager, his designated representative or the Contractor Safety Manager and OAR. The area will be walked down by Contractor supervision to ensure the area is safe prior to removing the lock/tag.

Any employee who removes a tag or lock belonging to another employee or person, or overrides a tag or lock in any way, shall be removed from site.

52. LOCATING UNDERGROUND UTILITIES BEFORE EXCAVATING

The nearest shut off valve or control point for known utilities shall be identified on a site plan to be maintained on site by the responsible Contractor.

The performing Contractor will be responsible for locating buried utilities before digging/excavation.

No excavation work will take place before verification of the existence and location of or lack of underground utilities.

Within a minimum of two days (48 hours) prior to excavation all known owners of underground facilities in the area will be notified by calling the Underground Service Alert California (also known as DigAlert) – phone number: (see below) All underground utility line location(s) identification and marking should be done by a third party via the "Underground Service Alert California (DigAlert) or contracted third-party entity or the utility company. A third-party must be contracted to locate lines on LAUSD private property as DigAlert will only locate up to the property line. Typically a minimum of two (2) days notification is required prior to beginning planned excavation work. This reduces the Contractor's liability should damage occur due to improper marking of utility line location.

The Underground Service Alert California (DigAlert) one call notification system will apply to underground utilities located on both public and private land. Contractor shall check the entire job site for visual signs of substructures. This includes such items as manhole covers, water meter boxes, ditch lines, pavement patches, previous location marks, pole risers, and the obvious absence of overhead utilities.

Contractor must expose substructure **by hand** after locations are determined.

Contractor shall be careful not to damage the utility substructure by scraping, hammering or other forms of excavation or locating efforts.

Contractors shall be aware of the possibility of joint use by other Contractors of an excavation/trench for power, telephone, gas, fiber optics, cable, etc.

UNDERGROUND SERVICE ALERT CALIFORNIA

Phone Number: 811.

Web Address: http://www.digalert.org/index.asp

53. MOTOR VEHICLES

Contractors will be responsible for claims arising from the operation of Company owned motor vehicles on the construction site.

Only vehicles meeting or exceeding LAUSD automobile insurance specifications/coverage limits (refer to the LAUSD Insurance Manual) will be permitted on LAUSD property/construction sites.

Every Contractor will be responsible for ensuring their drivers and vehicles meet or exceed any regulatory criteria whether Federal, State, or local pertaining to the operation of a motor vehicle.

All Contractor employees operating motor vehicles shall have a valid driver's license for the class vehicle driven.

Drivers of vehicles over 26,000 pounds GVW or hauling EPA regulated materials are required by Federal and State Departments of Transportation regulations to possess a Commercial Driver's License (CDL).

Drivers of motor vehicles on the site shall obey all street and highway speed, traffic laws and traffic signs.

All drivers of Contractor vehicles shall check the mechanical condition of their vehicles at least daily.

Drivers are required to observe the "right of way" rule. Yield to other drivers whose driving actions demand the right-of-way.

Drive defensively. Anticipate what other driver(s) may do.

The job site speed limit is 5 mph.

Employees driving and riding in Contractor vehicles must wear seat belts.

All passengers on motor vehicles must be seated and within the confines of the vehicle.

Contractor's employees are not allowed to ride in the open bed of a pickup truck.

Pedestrians will always have the right of way.

Parking shall be in specified and authorized areas only. Do not block entrances and do not park in reserved spaces.

Block, chock, or angle vehicle wheels when parking on inclines.

All vehicles must be shut off when unoccupied.

The Contractor is responsible for the stability of any material being hauled.

54. OVERHEAD UTILITIES

The Contractor will identify all overhead utilities prior to the start of any work.

The Contractor shall identify the voltage carried by each power line and identify the minimum required clearances prior to commencing work in the vicinity of the line.

- Identifications of all power lines and minimum clearances shall be documented on a site plan that is made available to all Employees, Subcontractors, vendors, and suppliers.
- This site plan shall include identification of all power lines that are within 45 feet of the perimeter of the site.
- Temporary utilities shall be added to the site plan as required.

Proper distances must be maintained from all overhead power lines, such as by the use of a signal person.

- A minimum clearance distance of 15 feet shall be maintained by apparatus or equipment from power lines of 50Kva or less.

If ongoing work around energized overhead power lines will take place thereby increasing the probability of accidental contact, the Power Company should be requested to temporarily insulate the lines.

55. PERMITS

Unless otherwise relieved via contract provisions, each Contractor shall obtain relevant permits pertinent to the safety of employees, the public and operations.

Permits shall be available at the job site for review by LAUSD representatives.

Contractors must obtain and post Cal/OSHA Activity Permits for the following construction activities:

- Construction of trenches or excavations which are 5 feet or deeper and into which a person is required to descend.
- Construction of any building, structure, scaffolding or falsework more than 3 stories high, or the equivalent height (36 feet).
- Demolition of any building structure or dismantling of scaffolding or falsework more than 3 stories high, or the equivalent height (36 feet).
- Erection or dismantling of vertical shoring systems more than 3 stories high, or the equivalent height (36 feet).
- Use of fixed or mobile tower cranes.

56. PERSONAL PROTECTIVE EQUIPMENT

Contractors are required to assess the workplace to determine if hazards that require the use of personal protective equipment (PPE) are present or are likely to be present.

Contractors will be responsible for supplying all necessary personnel protective equipment (PPE) to all relevant employees.

Contractors shall ensure that employees are trained in the proper use, sanitation, maintenance/care, inspection and limitations of each type of personal protective equipment prior to actual use.

Contractors must select and have affected employees use/wear properly fitted personal protective equipment (PPE) suitable for protection from existing hazards.

Contractors are responsible for enforcing employee compliance with all personal protective equipment (PPE) criteria.

Use of Personal Protective Equipment (PPE) will be in accordance with 8 CCR 1514, 1520-22, 3381-82, 5096 and 5144 (Hazard assessment for Personal Protective Equipment).

56.1 HARD HATS

It is required that all employees on the job site shall be protected by NON-METALLIC protective helmets. In order to protect employees against impact and penetration of falling and flying objects, hard hats will be worn 100% of the time while on the job site. The General Contractor, at their discretion, may designate areas on site (break areas, office trailer areas) where hard hat usage is not required. Hard hats shall meet the specifications contained in American National Standards Institute, Z89.1-Safety Requirements for Industrial Head Protection.

57.2 EYE AND FACE PROTECTION

It is required that all employees on the job site shall be protected by proper eye protection. In order to protect employees against impact and flying objects, eye protection will be worn 100% of the time while on the job site (the only exclusion is while inside the jobsite trailer or designated areas outside of the construction zones) The General Contractor, at their discretion, may designate areas on site (break areas, office trailer areas) where eye protection usage is not required. Eye protection shall meet the specifications contained in the American National Standards Institute, ANSI Z87.1 "Practice for Occupational and Educational Eye and Face Protection."

- Employees will be required to wear the proper eye and face protection for all tasks which expose them to recognized eye and face hazards.
- Safety glasses with permanently affixed side shields will be considered the minimum type of eye protection worn.

- Employees involved in welding operations will be furnished with filter lenses of the proper shade number.
- Employees will not wear shaded lens while working indoors unless they are performing task specific work that requires filtered lenses.
- Employees exposed to laser beams shall be furnished suitable laser safety goggles which will protect for the specific wavelength of the laser and be of optical density (O.D.) adequate for the energy involved.
- The eye protection required for various operations as shown in the OSHA Federal Register, Part 1926.102.

57.3 HAND PROTECTION

57.3.1 GLOVES

In order to ensure that all contractor employees working on LAUSD construction sites have suitable hand protection available in the event they are assigned job tasks that create an exposure to hand injuries, all personnel will, at all times, have/carry gloves appropriate for their work activities.

When the scope of work performed creates a potential risk of hand injuries, Contractor employees will wear the appropriate hand protection.

- Hand protection will also be worn when handling or working with chemical substances such as paint, solvents, acids, etc.
- Gloves will not be worn for close work around saws, lathes, drill presses, and similar machinery in which they are likely to become entangled.

57.4 HIGH VISIBILITY SHIRT, VEST, OR JACKET

It is required that all employees on the job site when working outside of buildings, in trenches/excavations, and around mobile equipment and vehicles, wear high visibility shirts, vests, jackets or equivalent. Protection means high visibility materials which are intended to make the user clearly visible by day through the use of high visibility material and in the dark by vehicle or equipment lights through the use of retro-reflective (fluorescent) material.

The high visibility clothing should not be worn in a manner that interferes with the safe use of other PPE items (i.e.; fall arrest systems, leather or other fire retardant garments, etc.).

For daytime work, flagmen shall be provided with and shall wear the flagger's vest, shirt, or jacket which shall be orange, yellow, yellow-green, or a fluorescent version of these colors. For nighttime work, similar outside garments shall be retro-reflective. The retro-reflective material shall be orange, yellow, white, silver, yellow-green, or a fluorescent version of these colors, and shall be visible at a minimum distance of 1,000 feet. The retro-reflective clothing shall be designed to clearly identify the wearer as a person.

56.5 RESPIRATORY PROTECTION

Approved respiratory protection will be provided to and worn by all employees subject to hazardous dust, gases, fumes, mists, or vapors. When respirators are indicated, the employer shall implement a written respiratory protection program which includes:

- A written respiratory protection program and training;
- Physical Examinations for respirator use;
- Written cartridges change out schedules; and
- Care, maintenance, and disposal process.

Lack of air monitoring data does not permit/allow the assumption that hazardous air contamination thresholds are not being exceeded therefore respirators are not required. Only Industrial Hygiene air monitoring data will counteract an order given by LAUSD for the use of respiratory protection.

Contractor employees who are required to wear respiratory protection must receive a medical assessment of their physical ability to wear the equipment, be properly fit tested, and be trained in the use, care, maintenance, and limitations of the respiratory device.

The proper respirator must be selected for the particular type of air contaminant involved.

Respiratory protective devices should be approved by the Department of Health and Human Services (DHHS) or National Institute of Occupational Safety and Health (NIOSH).

57.6 HEARING PROTECTION

Hearing protection must be worn by employees who are exposed to excessive noise levels in situations where administrative or engineering controls cannot be utilized to establish acceptable noise levels.

Lack of noise monitoring data does not permit/allow the assumption that permissible noise levels are not being exceeded therefore hearing protection is not required. Only approved noise monitoring data will counteract an order given by LAUSD for the use of hearing protection.

Hearing protection used to obtain acceptable noise levels will consist of either approved ear plugs, ear muffs, or a combination of both. Plain cotton is not considered an acceptable protective devise and should not be used for hearing protection.

The following Table 2 “Permissible Noise Exposures” should be used to determine the duration of exposure permitted for various sound levels. Additional requirements concerning hearing protection can be found in the OSHA Federal Register, Part 1926.101 or Cal OSHA, Title 8, Section 5095.

When hearing protection is recommended, employees shall be trained on the proper use of the hearing protection. If the Action Level (AL) of 85 dba, 8 hour-Time Weighted Average is reached **based on personal dosimeter monitoring**, a written hearing conservation program shall be implemented for effected employees and shall include but not limited to:

- Baseline audiograms;
- Annual audiograms;
- Posting of the written program;
- Warning signs in high noise areas; and
- Training of employees.

Table 2. CAL-OSHA Permissible Exposure Levels

A-weighted sound level, L (decibel)	Reference Duration T (hour)	A-weighted sound level, L (decibel)	Reference Duration T (hour)
80	32	106	0.87
81	27.9	107	0.76
82	24.3	108	0.66
83	21.1	109	0.57
84	18.4	110	0.5
85	16	111	0.44
86	13.9	112	0.38
87	12.1	113	0.33
88	10.6	114	0.29
89	9.2	115	0.25
90	8	116	0.22
91	7.0	117	0.19
92	6.1	118	0.16
93	5.3	119	0.14
94	4.6	120	0.125
95	4	121	0.11
96	3.5	122	0.095
97	3.0	123	0.082
98	2.6	124	0.072
99	2.3	125	0.063
100	2	126	0.054
101	1.7	127	0.047
102	1.5	128	0.041
103	1.3	129	0.036
104	1.1	130	0.031
105	1		

57.7 FOOT PROTECTION

Contractors will be responsible for insuring that their employees are wearing adequate, sturdy footwear. Footwear worn on the job site should have soles which guard against punctures and slipping and uppers should be such as to protect against expected scraping and scratching from rough building materials. Where there is a frequent possibility of hard objects being

dropped on the foot, proper protection should be provided in the form of safety toed (steel-toed or composite-toed) footwear.

The footwear soles should be made of slip resistant materials and not worn to the point where slip resistance is compromised.

Employees operating paving breakers/jack hammers, jumping jacks, compaction equipment and sand tamps, etc., shall wear metatarsal guards or steel toed safety shoes.

Tennis, running, casual street shoes, sandals or shoes made with thin materials are not permitted on the job site.

57.8 PERSONNEL FALL ARREST/PROTECTION

Reference FALL PROTECTION in these Safety Standards

CONTRACTORS WILL BE RESPONSIBLE FOR PROVIDING ANY OTHER TYPES OF PERSONAL PROTECTIVE EQUIPMENT WHICH MAY BE REQUIRED FOR SPECIFIC JOBS. THE PERSONAL PROTECTIVE EQUIPMENT REQUIRED AND UTILIZED/WORN WILL BE CONTINGENT ON THE EXPOSURE POTENTIAL ASSOCIATED WITH JOB TASK(S) PERFORMED.

57. POSTING REQUIREMENTS

The Contractor shall be required to construct a weatherproof job site bulletin board. Federal and State regulations require Contractors to conspicuously display all required posters at locations where employees report each day.

At a minimum, the following items shall be posted:

- Industrial Welfare Commission's Order Regulating Wages, Hours, and Working Conditions.
- OSHA "Job Safety and Health Protection".
- Contractor's "Code of Safe Practices". (?)
- Discrimination in Employment is prohibited by Law.
- Sexual Harassment Poster (if required).
- Americans with Disabilities Act (ADA).
- Notice of Worker Compensation Carrier.
- Notice to Employees of Unemployment Insurance and Disability Insurance.
- OSHA Operating Rules for Industrial Trucks.
- Emergency Telephone Numbers (yellow/black card).

58. POWDER-ACTUATED TOOLS

Powder-actuated tools must meet or exceed ANSI A10-3 standards.

Only trained workers holding a valid operator's card can use a powder-actuated tool.

Containers for powder-actuated tools must be lockable and bear the label, POWDER-ACTUATED TOOL, on the outside. The container must be kept under lock and key storage.

To prevent/protect against accidental activation all power activated tools shall be equipped with a barrel end to surface contact safety device.

The following must be provided with each tool:

- Operating and service manuals.
- Power load chart.
- Inspection-Service record.
- Repair and servicing tools.

Eye or face protection is required for operators and assistants.

Tools must be inspected prior to use. Defective tools must not be used.

Powder-actuated tools must not be left unattended.

Powder-actuated tools must be unloaded if work is interrupted. Tools must not be loaded until ready for use.

Unfired cartridges must be under the control of the operator at all times.

On misfire, the tool must be held in place for 30 seconds.

Misfires shall be placed in a can of water.

Different power loads must be kept in separate compartments.

Warning signs must be clearly posted within 50 feet of the point of use bearing the words "POWDER-ACTUATED TOOLS IN USE."

59. ROOFING HAZARDS

During roofing operations unless otherwise specified in the LAUSD Safety Standards the Contractor shall comply with the provisions contained in 8 CCR §1730.

Employees shall be protected from falls from roofs by use of one or a combination of the following methods:

- Parapets will be a minimum 39 inches high otherwise other means of fall protection will be required.
- Personnel fall arrest systems.
- Catch platforms.
- Scaffold platforms.
- Eave barriers a minimum of six (6) feet from the roof eave (i.e. Controlled Access Zone).
- Standard railings and toeboards
- Each rooftop hatch shall be equipped with railing, chains and/or swing gates and a grab bar. New construction will not be considered complete unless these requirements are met.

Also reference Fall Protection in these standards.

60. SANITATION

The Contractor must provide in a clean and sanitary condition:

- potable water for drinking,
- adequate toilet facilities (see below),
- hand wash facilities as required by the applicable Federal or State standards
- appropriate containers for disposal of garbage,
- Any necessary insect and rodent control.

A minimum of one separate toilet facility for each sex shall be provided for each 20 employees or fraction thereof.

Toilet facilities shall be kept clean, free of graffiti, maintained in good working order, designed, and maintained in a manner which will assure privacy and provided with an adequate supply of toilet paper.

BREAK AREAS SHALL BE DESIGNATED FOR EATING AND DRINKING PURPOSES.

There have been several incidents of workers stepping on plastic bottles and rolling their ankles sustaining injury; therefore LAUSD has implemented the following policy:

PLASTIC BOTTLES INCLUDING WATER BOTTLES, SODA OR OTHER SOFT DRINK BOTTLES MUST BE PLASTIC AND HAVE THE LIDS REMOVED AND DISCARDED IN PROPER RECEPTACLES UPON OPENING. ABSOLUTELY NO GLASS CONTAINERS MAY BE USED ON SITE.

61. SCAFFOLDS - ERECTION, INSPECTION AND MAINTENANCE

Scaffolds utilized by Contractors, unless otherwise specified in the LAUSD Safety Standards and/or the Contractor/Suppliers Safety Standards, shall at a minimum comply with OSHA 29 CFR 1926.451 and Title 8, Subchapter 4, Article 22, Section 1644.

The following procedures shall govern the erection, dismantling, maintenance, inspection, and use of scaffolds.

Note: LAUSD requires a minimum of one stair tower for structures greater than 24 feet. Straight ladders require the use of fall protection devices at heights over 24 feet such as the use of scaffold davits and self-retracting lifelines.

Note: A frame scaffolds are strictly prohibited for use on LAUSD sites unless specifically exempted in writing by the LAUSD Construction Safety Director or his/her designee.

Pedestrian Canopy Scaffolds & Scaffold Structures

- Pedestrian Canopy Scaffolds shall be designed and stamped by a licensed civil or structural engineer registered with the State of California; and constructed, erected, and loaded in accordance with such design.
- Anchoring Base plates shall be anchored into concrete using a minimum of two anchors for each base plate. (Anchors shall be validated by either a licensed civil or structural engineer registered with the State of California).
- Privacy Screens made of wooden plywood shall not be attached to scaffold frames; rather, they shall be attached to metal fence posts.
- Scaffold Structures greater than 14-feet, or two lifts in height, shall be designed and stamped by a licensed civil or structural engineer registered with the State of California; and constructed, erected, and loaded in accordance with such design.
- Requests for Approval of Scaffold submittal shall be submitted to the designated Safety Specialist for approval.
- Compliance with Fed/OSHA & Cal/OSHA Requirements: all scaffolds shall be designed, constructed, erected, loaded, dismantled, maintained, inspected, and used in accordance with federal guidelines set forth in 29 CFR 1926.451 (Scaffolds General Requirements) Cal/OSHA-Title 8, Sub-chapter 4, Article 22, Section 1644 ((Metal Scaffolds) and LAUSD Safety Standards (Section 61 – Scaffolds – Erection, Inspection and Maintenance)

Erection and Dismantling:

- Scaffolding shall be erected, moved, dismantled, or altered only under the supervision and direction of a Competent Person specifically trained and

qualified to perform these tasks for the type scaffolding utilized. The Contractor will assure that a Competent Person provides employees assigned to erect, dismantle, move, repair, maintain and inspect the scaffold with the required training and/or supervision to ensure they recognize any hazards associated with the work performed.

- All scaffolding must be provided with identification that it has been erected and dismantled by or under the supervision of a Competent Person.
- Documentation of Competent Person's certification shall be available on site for review by authorized LAUSD representatives.
- The training shall include the following topics, as applicable:
    - the nature of scaffold hazards
    - the correct procedures for erecting, disassembling, moving, operating, repairing, inspecting, and maintaining the type of scaffold in question
    - the design criteria, maximum intended load-carrying capacity, and intended use of the scaffold
    - any other pertinent procedures or safety requirements
- When the Contractor has reason to believe that an employee(s) lacks the skill or understanding needed for safe work involving the erection, use or dismantling of scaffolds, the Contractor shall re-train each such employee so that the required proficiency is regained.
- The Contractor shall have a Competent Person determine the feasibility and safety of providing fall protection for employees erecting or dismantling supported scaffolds. Fall protection is required for employees erecting or dismantling supported scaffolds over six (6) feet in height where the installation and use of such protection is feasible and does not create a greater hazard.
- The Contractor shall have each employee who performs work while on a scaffold trained by a person qualified in the subject matter to recognize the hazards associated with the type of scaffold being used and to understand the procedures to control or minimize those hazards. The training shall include the following topics, as applicable:
    - the nature of any electrical hazards, fall hazards, and falling object hazards in the work area,
    - the correct procedures for dealing with electrical hazards
    - the correct procedures for erecting, maintaining, and dismantling the fall protection and falling object protection systems being used
    - the proper use of the scaffold, including the proper handling of materials on the scaffold

  - the maximum intended load and the load-carrying capacities of the scaffold
  - any other pertinent procedures or safety requirements
- The working platform height of a rolling scaffold must not exceed three times the smallest base dimension unless guyed or otherwise stabilized.
- All connections, including casters, on rolling scaffolds shall be pinned.
- The casters used with rolling scaffolding shall have an ultimate/maximum rolling load capacity/pound rating. When casters are used with scaffolding, this capacity shall be the load limiting factor.
- No rolling scaffold is to be moved with anyone on the platform regardless of the height. Care must be exercised in moving these scaffolds to prevent their upsetting. Wheels shall be locked at all times except when scaffolds are being moved.
- Scaffolds must be erected level and placed on a firm base. The scaffold platform shall be horizontal as close as the eye can detect. When the scaffold is resting on the ground, bearing plates shall be placed beneath each leaf to prevent the scaffold from settling into the earth. The bearing plate must be a minimum of two inches (2") by ten inches (10") timber.
- Adjusting screws utilized to level scaffold frame members are to be used with a base plate only. Adjusting screws will not be extended more than 12 inches. Adjusting screws are not to be used in conjunction with casters or on rolling scaffolds.
- All scaffolds shall be designed to carry without failure four (4) times the maximum intended load and at no time will any scaffold be overloaded.
- Complete toprail, midrail, and toeboards shall be provided on all sides of the working platform of scaffolds six (6) feet or higher. If utilized, wood guardrails shall be two inches by four inches (2" x 4") or the equivalent, between 39 inches to 45 inches high with a midrail. Supports shall be at intervals not to exceed eight (8) feet. Toe-boards shall be a minimum of four inches (4") in height.
- If the guardrail system is missing or incomplete personnel fall protection is required.
- Detachable "X" braces must be fastened securely. Where obstructions prevent the use of "X" braces, other means to secure bracing shall be used.
- All scaffolds over two lifts high are to be tied off to an independent structure or guyed securely beginning at the third lift and at every lift thereafter. Such scaffolds which extend horizontally are to be tied into the building every 12 feet. Each lift is to be secured to the lifts above and below it.

- Do not use the scaffold rails or braces for climbing. Use the provided ladder access. Ladders, if not an integral part of the scaffold, shall be attached securely to the scaffold so as to provide safe access to the working platform.
- A stair tower or built-in stair/ladder system shall be provided for access to all scaffolds four frames or more in height.
- Scaffolds will not be placed in front of doors unless the doors are blocked, locked, or guarded.
- Scaffold planks must extend over their end support not less than six inches (6") or more than twelve inches (12").
- Scaffold planks, unless they are cleated, are to be wired down securely so they will not shift or tip when under a load.
- Scaffolds are not to be bridged between with scaffold plank or stages unless the scaffolds are secured to each other by adequate bracing or tied off to an independent structure.

Inspection and Maintenance:

- Handrail, midrail and cross bracing shall be inspected for nicks, especially near the center of the span and for indications where a welding arc has been struck. Such pieces shall be removed from use immediately.
- No scaffolding member will be altered by welding, burning, cutting, drilling or bending.
- Manufactured Frames
    - Checks shall be made around the frame weld zone for crack indications and the tubing checked for splitting or cracking at leg ends.
    - The three main areas of inspection are for rust, straightness of members and welds. When rust appears, wall thickness of tubing shall be checked for thinning. All members or parts of all steel scaffold components shall be straight and free from bends, kinks, or dents. Any pieces of a scaffold found having any of these defects shall be removed from service immediately.
- Daily scaffold inspection is to be a visual examination supervised and/or conducted, by the designated Competent Person.
- All scaffolds must be tagged noting their status whether complete or incomplete. The tag will designate whether the scaffold is safe to use (green tag) or cannot be used (red tag). Prior to scaffold use on each shaft, the Competent Person will sign the inspection tags.

62.1 SUSPENDED SCAFFOLDS

Suspended scaffolds must have adequate anchorage points. Prior to stepping out onto any suspended scaffold, the occupants must be provided with a full body harness, lifeline and deceleration device that must be attached to a separate anchorage point.

The setup, maintenance, inspection and use of suspended scaffold will be under the supervision of a Competent Person and will be in compliance with all applicable Federal and State regulatory standards.

62. STEEL ERECTION

Steel erection activities shall comply with all facets of 29CFR1926 Subpart R, except where superseded below:

- Steel erection Contractors shall implement a Site-Specific Steel Erection Plan in accordance with the OSHA Steel Erection Standards "Guidelines for Establishing the Components of a Site-Specific Erection Plan.
- All site preparation shall comply with Subpart R. LAUSD has extended the site preparation requirement to treat rebar the same as structural steel regarding site preparation, loading and off-loading.
- When connecting beams at the periphery or interior of a building or structure where the fall distance is greater than six (6) feet, the Connector shall be provided with and use appropriate personal fall protection equipment in accordance with OSHA requirements and these Standards.
- Connector means an employee who, working with hoisting equipment, is placing, and connecting beams or other structural members.
- When performing work other than connecting, Employees shall be provided and use personal fall protection equipment in accordance with these Standards and Federal OSHA requirements where the fall distance is greater than six (6) feet.
- Where applicable erection Contractor employees working in excess of six (6) feet in height shall utilize personnel fall protection equipment tied off to beam clamps, approved anchorage, or other approved anchoring device(s) or work in Mobile Elevated Work Platforms (MEWPs) (i.e., man lifts).
- Any deviations from this steel erection fall protection policy will require a minimum three weeks advance written approval from authorized LAUSD Safety representatives prior to commencing work.
- Before the commencement of steel erection, the steel erection Contractor must receive written notification that the concrete in the footings, piers, and walls, as well as the mortar in the masonry piers and walls has attained, on the basis of an appropriate ASTM standard test method of field-cured samples, either 75 percent of the intended minimum compressive design strength or sufficient strength to support the loads imposed during steel erection.
- No building, structure, or part thereof, or any temporary support shall be loaded in excess of its designed capacity.
- The Contractor shall provide an erection plan and procedure prepared by a registered civil engineer for the erection of trusses and beams over 25 feet long.
- Trusses and beams shall be braced laterally and progressively during construction to prevent buckling or overturning.

- Open web steel joists shall not be placed on any structural steel framework unless such framework is safely bolted or welded.
- Permanent Flooring
    - Permanent floors shall be installed as soon as practical following the erection of structural members.
    - At no time shall there be more than four floors or 48 feet of unfinished bolting or welding above the foundation or upper most secured floor.
- Temporary Flooring
    - Where skeleton steel is being erected, a tightly planked and substantial floor shall be maintained with two stories or 30 feet, whichever is less, below, and directly under that portion of each tier of beams on which any work is being performed.
    - The erection floor shall be solidly planked over its entire surface except for access openings. Planking shall not be less than 2 inches thick, full size undressed, and shall be laid tight and secured against movement.
    - On structures not adaptable to temporary floors or static lines, safety nets shall be installed and maintained whenever the potential fall distance exceeds two stories or 25 feet.
    - Employees working above grade or any surface and exposed to protruding reinforcing steel or other similar situations shall be protected against the hazard of impalement by the use of guardrails, or approved fall protection systems, and protective cover SHALL BE PLACED ON ALL IMPALEMENT HAZARDS as specified in 8 CCR §1712.
    - Exposed edges of all temporary planked or temporary metal decked floors at the periphery of the building, or at interior openings, such as stairways and elevator shafts shall be protected by a single 3/8-inch minimum diameter wire rope located between 39 and 45 inches above design finish floor height. The erection Contractor shall install turnbuckles no less that every 100 feet to allow for re-tightening of cables. A midrail and toeboard shall be installed at the completion of the installation of decking.
    - Covers for roof or floor openings shall be capable of supporting, without failure, twice the weight of employees, equipment and materials that may be imposed on the cover at any one time.
    - All covers shall be secured when installed to prevent accidental displacement by wind, equipment, or employees.
    - All covers shall be painted with high visibility paint or shall be marked with the word “HOLE” or “COVER” to provide warning of the hazard.

- Decking gaps around columns shall be protected with wire mesh, exterior plywood, or equivalent to provide protection from objects falling through.
- Metal decking shall be laid tightly and immediately secured upon placement to prevent accidental movement or displacement.
- Bundles of decking shall be placed on a minimum of three steel joists.
- Bundle packaging and strapping shall not be used for hoisting unless designed for that purpose.
- Loose items such as dunnage, flashing, or other materials, which are placed on the top of metal decking bundles to be hoisted, shall be secured to the bundles.
- Containers shall be provided for storing or carrying rivets, bolts, and drift pins, and secured against accidental displacement when aloft.
- When bolts or drift pins are being knocked out, means shall be provided to keep them from falling.
- Impact wrenches shall be provided with a locking device for retaining the socket.
- Connections of equipment used in plumbing-up shall be properly secured.
- Turnbuckles shall be secured to prevent unwinding while under stress.
- Plumbing-up guys shall be removed only under the supervision of a Competent Person.
- Openings in metal decking shall not be cut until equipment installation is ready to commence.

63.1 GENERAL REQUIREMENTS

The crane headache ball, hook, or load shall not be used to transport personnel.

During placing of structural members, the load shall not be released from the hoisting line until the members are secured with not less than two bolts drawn up wrench tight.

All columns shall be anchored by a minimum of 4 anchor rods (anchor bolts).

- Anchor rods (anchor bolts) shall not be repaired, replaced or field modified without the approval of the site Structural Engineer of record and/or in accordance with CDR 1926.755(b).
- Prior to the erection of a column, the Prime Contractor or steel fabricators shall provide written notification to the steel erector if there has been any repair, replacement or modification of the anchor rods (anchor bolts) of that column.

When loads are being hoisted, avoid walking under the load or permitting an employee to be exposed to the swing of the lift/load. Where applicable, tag line(s) shall be used to control all loads.

Secure loose items aloft. All materials, equipment, and tools, which are not in use while aloft, shall be secured against accidental displacement.

The steel erecting Contractor shall pre-plan all overhead hoisting operations to ensure that no individual is required to work directly below a suspended load.

For protection from falling objects the steel erecting Contractor shall bar other construction activities below steel erection unless overhead protection for the employees below is provided.

For additional protection of other crafts on the site, barricades shall be installed around overhead work and signs shall be posted in the erection area, "Danger Men Working Overhead".

Material should not be hoisted to a structure unless it is ready to be put into place and secured.

63. TAR AND MELTING POTS

Any melting chamber must be vented and must have a working thermometer.

No melting pots or tar kettles may be located on roof surfaces. All melting pots must be on the ground, and a minimum 25 feet from any building.

Barricades must be provided when hot liquids are present overhead on a roof or upper floor.

Buckets containing hot asphalt or pitch shall not be carried on ladders. Whenever possible, pumps shall be utilized to pump asphalt to the roof.

A fire extinguisher shall be kept near each kettle in use. Extinguisher capacity shall be at least:

- Less than 150 gallon kettle – 8:B.C.
- 150 to 350 gallon kettle – 16:B.C.
- Larger than 350 gallon kettle – 20:B.C.

For emergency purposes, kettle and tanker pumps shall be provided with a means of stopping the flow of hot asphalt or pitch manually from the rooftop.

Pumper pipelines shall be securely fastened at roof top and shall not be supported by ladders used for access.

Pipelines shall be adequately braced or supported to prevent collapse.

64. UTILITY HOLES - PUMPING WATER

Contractors shall ensure employee awareness of potential contaminants in utility holes, and water and remediation procedures.

Contaminants can enter a utility hole from numerous sources:

- Leaking underground storage tanks and pipelines.
- Storm water run-off.
- Spills, dumping, or migration from the water table.

All utility holes must be tested for the presence of gases prior to pumping.

Prior to entry, contaminated water or sewage must be removed by an authorized environmental consultant for proper disposal.

All utility hole or access points' work will be subject to compliance with applicable Confined Space safety protocol.

All confined spaces shall have permanent marking identifying them as confined spaces. New construction will not be considered complete if confined spaces do not contain appropriate signage or marking,

65. WARNING SIGNS

Signage/traffic control devices shall be maintained in legible condition and cleared, repaired or replaced as necessary to maintain legibility.

In accordance with applicable codes and regulations, Contractor(s) shall post site access and warning signage including emergency contact information.

Contractor employees will obey all warning signs.

In order to protect Contractor employees and the public, traffic warning signs, barricades, cones, lights, etc. will be utilized in accordance with all applicable Federal and State standards and criteria outlined in the "Work Zone Traffic Control" section in these Safety Standards.

All Contractor employees will wear high visibility traffic vests when work activities are located adjacent to or on roads.

If necessary and/or required, a flagman will be utilized to direct vehicle traffic.

All Contractors installed warning signs, signals and barricades must be removed when the hazard no longer exists. The responsible Contractor shall monitor conditions to ensure timely removal of these devices.

66. WORK ZONE TRAFFIC CONTROL

Contractors shall establish work area protection zones necessary to protect employees and the public when work is performed in areas where pedestrians or vehicles have access.

Traffic control shall be established in compliance with the U.S. Department of Transportation, Part VI, Manual on Uniform Traffic Control Devices (MUTCD), State and local traffic control regulations, the WATCH Handbook (where referenced by contract) and/or other contract referenced documents/standards.

The responsible Contractor shall establish Work Area Protection in consideration of the location of the worksite, pedestrian and traffic conditions, and the time of day (daylight or dark).

All Contractor employees working in areas subject to being struck by vehicular traffic and/or heavy equipment will wear a high visibility reflective garment/vest in accordance with the requirement of the MUTCD and those Safety Standards.

When placing or removing Work Area Protection the Contractor shall:

- Be consistently alert to traffic conditions.
- Face oncoming traffic.
- Wear the required personal protection (e.g. traffic warning vest, hard hat, eye protection).

Place the initial warning sign (e.g., Construction Ahead) first and remove last.

Work sites must be made safe for pedestrians by using:

- Rope or vinyl warning tape.
- Fencing or other barricades.
- Cones and signs.
- Pedestrian crossing (designated and painted).
- Other appropriate means, methods and devices.

All night work requires adequate illumination to light the work area and warn public vehicular traffic.

For night work the illumination used to light the work zone shall be aimed such that it does not create glare, or blind, the public driving through the work zone.

Flagging operations shall be conducted in accordance with the following unless a more specific standard applies.

- The responsible Contractor shall ensure adequate protection to passing vehicles on a roadway by providing a flagger(s) when barricades, signs and signals may be insufficient.
- The flagger shall be trained in the proper fundamentals of flagging (signaling) traffic before being assigned as flagger.
- The flagger must be protected and the motorist forewarned by use of advance warning signs and cones.
- Use cones before the flaggers position to mark the traffic lane.
- All flaggers shall be required to wear a high visibility orange/yellow traffic vest.
- During the hours of darkness the flaggers shall be outfitted with a reflective garment, and the flagger's position shall be illuminated.
- To Stop Traffic - The flagger shall face traffic and hold the "Stop" paddle in a vertical position at arm's length.
- When It Is Safe For Traffic To Proceed - The flagger shall stand parallel to the traffic movement, and with the "Slow" paddle held in a vertical position at arm's length.
- Flags shall be a minimum of 18" x 18" in size, and orange in color.

67. PLATE BRIDGING

Trenches, excavations, or other surface openings or significant depressions must be covered with a bridge plate to permit safe and unobstructed flow of traffic.

Bridging plates must be secured from movement by a holding device(s) such as cleats, angles, bolts, tack welding, etc.

Bridging plates should be installed to produce a minimum amount of noise.

Bridging plates must extend a minimum of one foot beyond the edges, with pavement materials feathering the edges for a reasonably smooth transition.

Advance warning signs shall be posted when steel plates are used in a travel path.

- Refer to the WATCH Manual (where applicable) for specific requirements.

68. JOB SITE ORIENTATION FOR CONTRACTOR EMPLOYEES

Contractors/Subcontractors shall ensure employees new to the site receive a safety orientation that will address the exposure potential associated with all job tasks(s) performed and the safety procedures required to eliminate or at a minimum reduce the accident/loss potential.

The orientation will, at a minimum, review the LAUSD Safety Standards and all other safety standards applicable to their scope of work.

All orientations shall be documented. Records shall be maintained on the job site available for review upon request by LAUSD representatives and/or any regulatory entities.

Topics may include, but are not limited to:

- Explanation of LAUSD's Safety Philosophy
- Contractors' Safety Rules, Policies and Procedures
- LAUSD Safety Standards and any site specific safety rules, policies and procedures.
- Site map, including entrances, exits, and parking areas
- Emergency procedures
- Evacuation procedures
- Fire protection and prevention procedures and practices – initial site-specific training
- Accident/incident reporting procedures
- Near-miss Incident reporting procedures
- Procedures to report unsafe acts and/or conditions
- Location of First-Aid kits, medical treatment clinic(s) and hospital
- Drug and alcohol policy
- Location of site Bulletin Board
- Day, time and location of Safety Meetings
- Personal Protective Equipment requirements, including how, when and where to obtain/replace PPE
- Site dress code, site access identification, code of conduct
- Hazard Communication training (site-specific)
- Fall Protection – initial site-specific training
- Confined Spaces – initial site-specific training
- Electrical Safety – initial site-specific training

- Ladder safety – initial site-specific training
- Scaffold safety – initial site-specific training
- Hot work safety – initial site-specific training
- Control of hazardous energy (including Lockout-Tagout) – initial site-specific training
- Site vehicle safety requirements
- Housekeeping requirements
- Site-Specific Public Safety requirements
- MPN Form B Letter

69. PUBLIC PROTECTION PLAN

The protection of students, LAUSD employees, visitors and the public from potential hazards created by construction activities on or adjacent to all LAUSD construction sites is a critical component of the LAUSD Safety Standards. Minimum Public protection shall comply with ANSI/ASSE A10-34-2001 (R2005).

The Contractor shall develop a Public Protection Plan prior to the commencement of work. The Public Protection Plan shall be reviewed and revised as necessary throughout the site.

- The Plan shall be in writing and available at the job site for review upon request.
- For the purposes of this section, "Public" refers to parties not involved in the execution of work related to the construction site.

69.1 CONSIDERATIONS

The Public Protection Plan shall consider and include at a minimum the following items as they apply to the site: (NOTE: this is neither intended nor represented to be a complete list.)

- Noise
- Dust, Fumes, Mists, Smoke, Vapors
- Traffic hazards
- Pedestrian hazards
- Radiation (including lasers, x-rays, and welding rays)
- Machinery and vehicles
- Falling objects
- Wind-borne objects
- Security
- Utilities
- Hazardous Materials and Hazardous Substances (including use and storage)
- Response to accidents/incidents involving the public
- Accident/Incident reporting and investigation protocol
- Public demonstrations or protests
- Job site perimeter protection (fencing, barricades, etc.)

69.2 COMPONENTS

The Public Protection Plan shall at minimum include the following components:

- Policy statement

- Assignment of responsibilities
- All LAUSD public safety standards/criteria outlined in these Safety Standards and other LAUSD contract documents.
- Identification of existing and predictable public concerns
- Provisions to monitor and inspect the implementation of the provisions of the Public Protection Plan
- Provisions for incident investigation
- Hazard abatement procedures

70. APPENDIX

70.1 LAUSD FSD Construction Safety Project Site Safety Assessment Form

70.1.1 Safety Assessment/Audit Score Sheet

LAUSD FSD Construction Safety
Project Site Safety Assessment

Date: **Time:** **Score: Not Scored**

Project Name:		**LAUSD Sr_PM / Phone #:**		**Email:**	
School Address:		**LAUSD OAR / Phone #:**		**Email:**	
General Contractor:		**GC Safety Officer / Phone #:**		**Email:**	
Colin No.:		**GC Superintendent / Phone #:**		**Email:**	
Contract No.:		**GC Project Manager / Phone #:**		**Email:**	

☐ *Observed no workers on-site at the time of audit.*

Questions	Total Points 265	Applicable Points 0	Awarded Points 0	Comments	Yes	No	N/A
Site Control: Is the site secure from public and children?	15						x
Are fences properly erected and secure? Are dumpsters properly secured?	3						x
Are gates monitored or kept locked? Proper signs and barricades?	3						x
Are all tools, equipment and machinery properly stowed ?	3						x
Documentation: Are IIPP, EHSMS, JHAs, MSDSs, Incident Investigations, and Regulatory Postings available? HazCom Program? Other?	10						x
Are Self Audits available for review? Do audits cover all activities?	10						x
Fall Protection: Work performed at heights over 6 feet protected?	10						x
Has Fall Protection Plan been employed? Rails, Toeboards where required?	5						x
Are Anchorages 5000lbs or greater for each tie-off person?	5						x
Are Horizontal lifelines used with engineered anchorages?	5						x
Are Scaffolds and Ladders properly setup and used?	5						x
Excavation: Are depths over 5 feet properly benched sloped, or shored? Barriers?	10						x
Is competent person on-site? Documented Soils classifications and methods?	10						x
Is benching or shoring properly employed, when required?	5						x
Access/Egress/Air Monitoring adequate, rescue plan when required?	5						x
Electrical Safety: Is temporary electrical service adequately installed?	10						x
Are extension cords, spider boxes, lighting adequate and properly used?	5						x
Is GFCI employed near wet locations? Assured Grounding Program?	5						x
Are power tools grounded or double insulated & used per manufacturer specs?	5						x
Is LOTO properly employed? Arc-Flash Labeling where needed?	10						x
Machine Guarding: Are all guards properly installed and maintained?	5						x
Confined Spaces: Are confined spaces identified and labeled?	10						x
Is there a written PRCS program?	5						x
Are documented permits available for review and accurate?	5						x
Is rescue team trained and available for entry?	5						x
Is ventilation properly setup and employed?	5						x
PPE: Have hazard assessments been performed and TASK JSA's prepared?	3						x
Is PPE worn per JSA and IIPP/SSHP requirements?	3						x
Are welding activities shielded and respirators employed, when required?	3						x
Is a written respiratory protection plan available, when needed?	3						x
Is hearing protection used based on noise surveys or manufacture requirements?	5						x
General Housekeeping: Is housekeeping adequate? Open holes covered?	3						x
Is all rebar protected from personnel impalement or slips, trips and falls?	3						x
Are all walking surfaces and emergency access and egress ways adequate?	5						x
Is all refuse and construction debris disposed of properly?	3						x
Fire Safety: Are fire extinguishers adequate in number and maintained properly?	5						x
Are flammables and combustibles properly stored, dispensed?	3						x
Are fire lanes properly maintained? Smoking prohibited on site?	6						x
Hot Work: Is a hot work permit program **adequate and enforced?**	3						x
Heavy Equipment & Machinery: Daily equipment inspections? Are operators qualified?	3						x
Spotters used? Approved by the AHJ Traffic Control Plan in place?	5						x
Are certified flag personnel used at site control gates to public roads?	3						x
Industrial Hygiene: Are all dusts fumes and mists controlled?	5						x
Are Heat Stress Program, Drinking Water, & Sanitation in place?	6						x
Are all spaces adequately ventilated, lighted, and noise controlled?	5						x
Cranes, Hoists, and Lifts? Operator certifications available for review?	3						x
Have crane lift plans been prepared and reviewed?	5						x
Are tag lines employed, where appropriate?	3						x
Compressed Gases: Are cylinders properly stored? Flash Arrestors?	5						x

Contractor Site Rep: _____ **Auditor:** **Name, Safety Specialist, LAUSD FSD Construction Safety**

Revision_2_9/27/2019 firstname.lastname@lausd.net / Phone Number

70.1.2 Audit Findings

LAUSD FSD Construction Safety
Project Site Safety Assessment & Corrective Action Plan

Project Name: **Date of Audit:** _____
LAUSD Contact:
General Contractor: **Safety Officer:**
Audit Conducted by: Name, Safety Specialist, LAUSD FSD Construction Safety **Superintendent:**

SAFETY ASSESSMENT FINDINGS

Item #	Description of Deficiency	Responsible Contractor(s)	Location on Site	Priority
#1				
#2				
#3				
#4				
#5				
#6				
#7				
#8				
#9				
#10				
#11				
#12				
#13				
#14				
#15				
#16				

Positive Observations:
1
2
3
4
5
6
7
8

LAUSD Safety Requests & Recommendations:
1
2
3
4
5

PLEASE SUBMIT CORRECTIVE ACTION PLANS WITHIN 72 HOURS (3 BUSINESS DAYS) TO:
Name, Safety Specialist, LAUSD FSD Construction Safety
firstname.lastname@lausd.net / 999-999-9999

70.1.3 Deficiency Photos

LAUSD FSD Construction Safety
Safety Audit Photos (Deficiencies)
Page 1

Project:

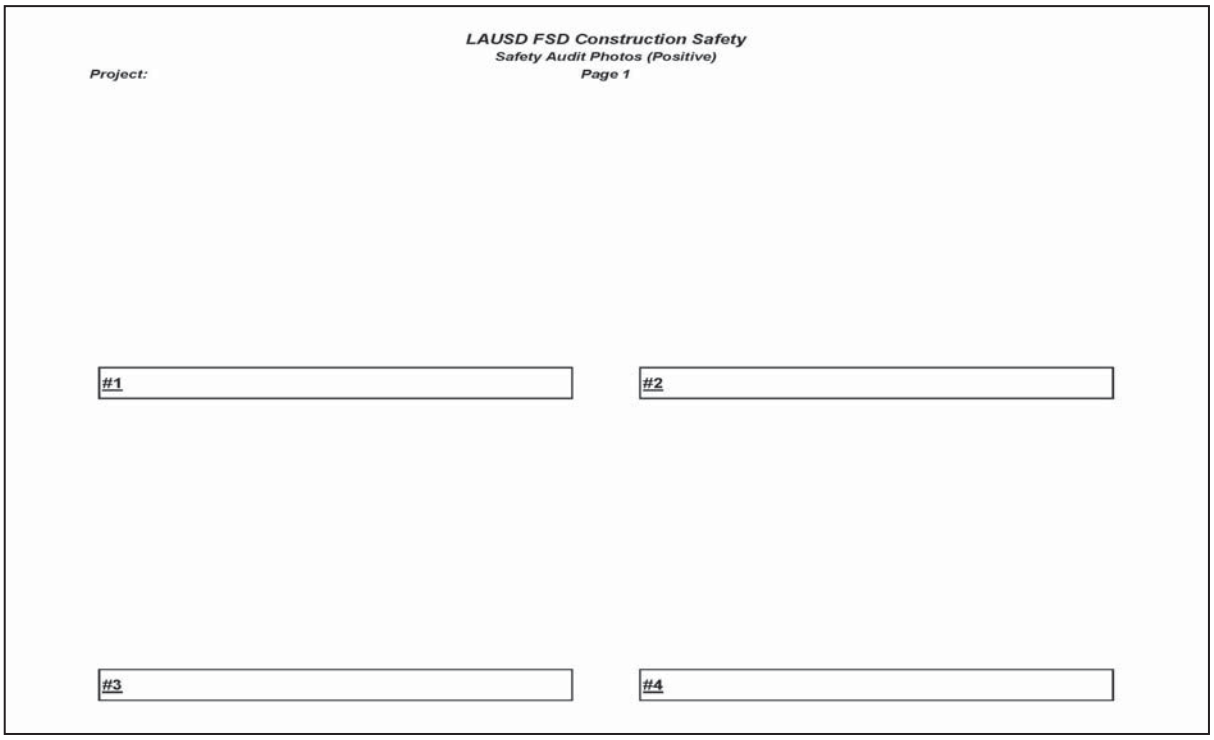
#1

#2

#3

#4

70.1.4 Positive Photos



LAUSD FSD Construction Safety
Safety Audit Photos (Positive)
Page 1

Project:

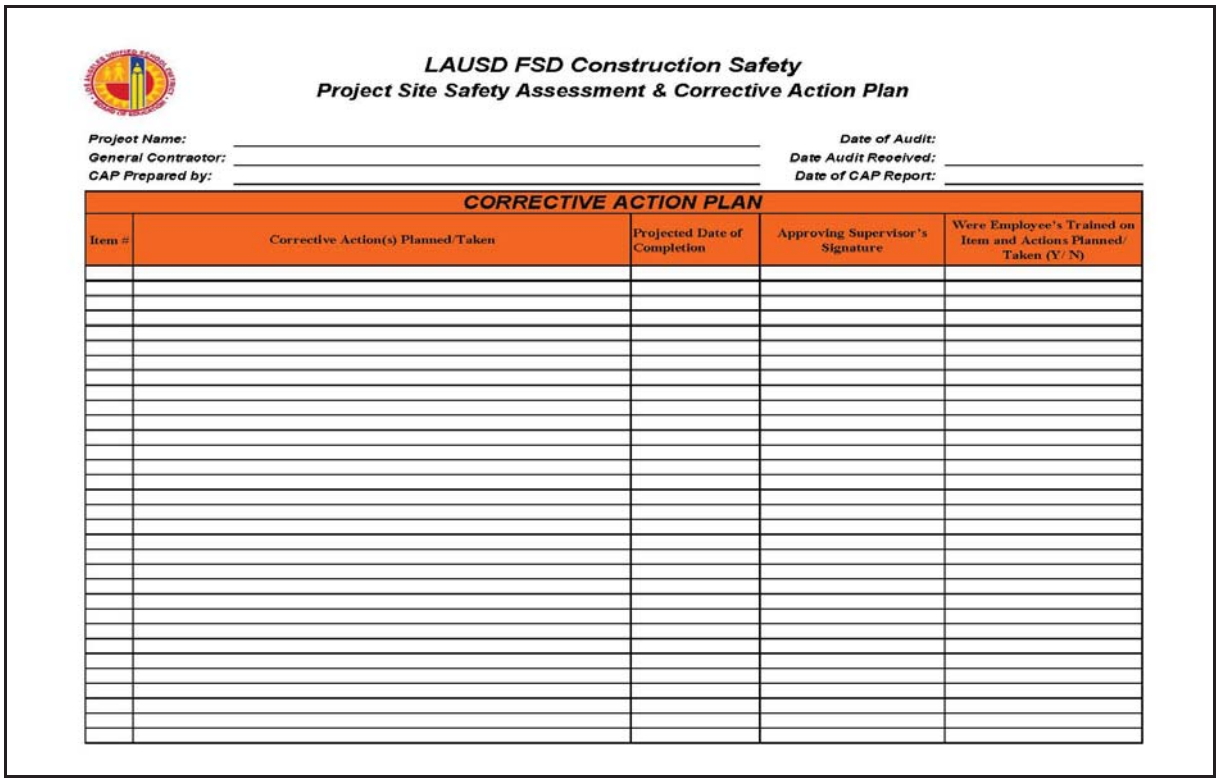
#1

#2

#3

#4

70.1.5 Corrective Action Plan



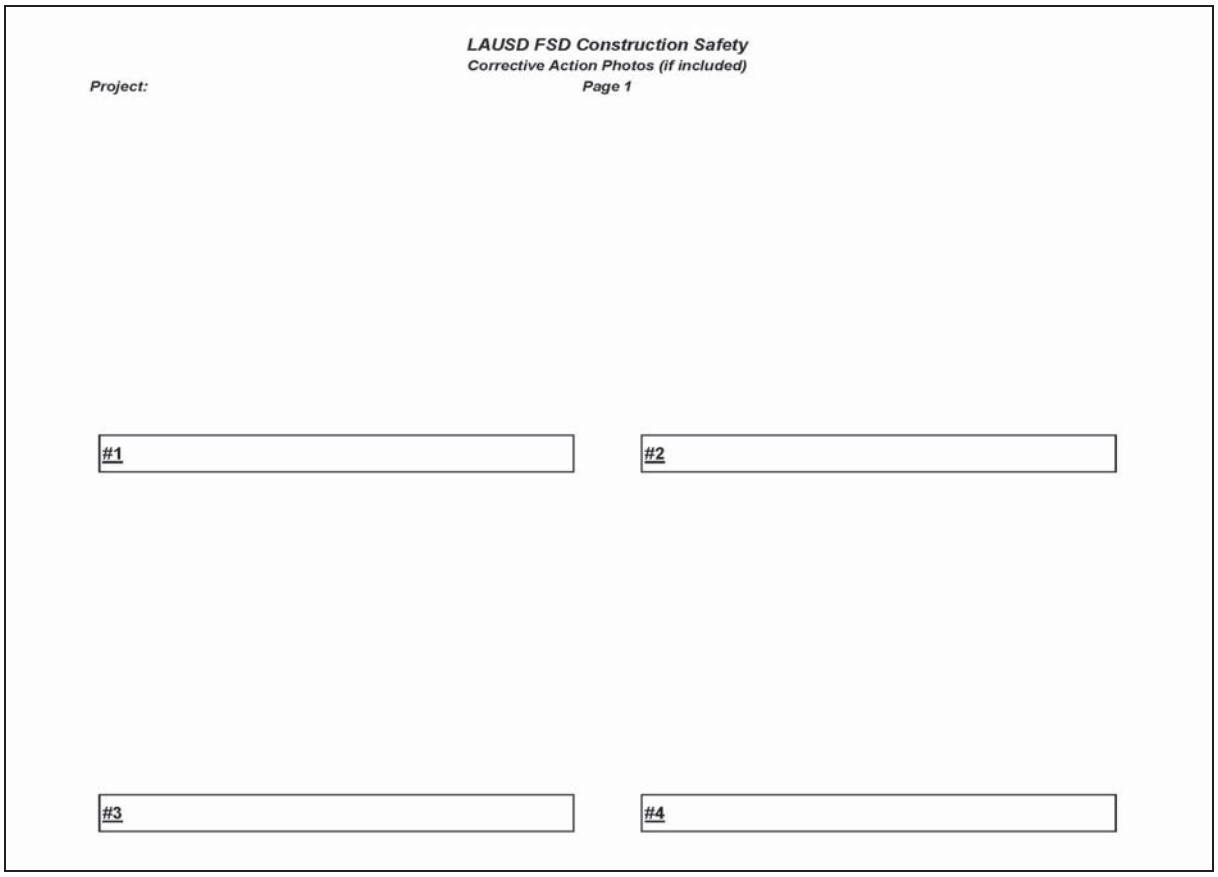
LAUSD FSD Construction Safety
Project Site Safety Assessment & Corrective Action Plan

Project Name: _____ Date of Audit:
General Contractor: _____ Date Audit Received: _____
CAP Prepared by: _____ Date of CAP Report: _____

CORRECTIVE ACTION PLAN

Item #	Corrective Action(s) Planned/Taken	Projected Date of Completion	Approving Supervisor's Signature	Were Employee's Trained on Item and Actions Planned/ Taken (Y/N)

70.1.6 Corrective Action Photos



LAUSD FSD Construction Safety
Corrective Action Photos (if included)
Project: *Page 1*

#1 #2

#3 #4

70.2 LAUSD Crane Lift Evaluation Form

70.2.1 Instructions

INSTRUCTIONS

Please provide the following information **at least two (2) weeks before the anticipated lift**. Use this checklist to make sure that all required documents are submitted. Incomplete submitta will not be accepted for review.

Required Documentation:

1. ☐ The Lift Evaluation Form (Page 2) must be completed in its entirety.
   Note: The **Lift Evaluation Form** must be submitted in **Microsoft Excel Format.** Please attach only the applicable load chart and range diagram used for this lift and indicate data used.
2. ☐ Current **Annual Crane Inspection** must be attached.
3. ☐ Current **Quadrennial Crane Inspection** must be attached.
4. ☐ **Operator Certifications** must be attached.
5. ☐ A **Plan View Drawing** showing location of crane in relationship to buildings, utility poles, overhead lines, etc. must be attached. (Click here for sample`
6. ☐ A **Side View Drawing** showing location of crane in relationship to buildings, utility poles, overhead lines, etc. must be attached. (Click here for sample`
7. ☐ **Drawing** showing rigging configuration and rigging calculations must be attached.
8. ☐ **Insurance Certifications** naming **LAUSD** as Additional Insureds must be attached. (Click here for sample)
9. ☐ The **Job Hazard Analysis** for the Lift must be attached. Be sure the JHA includes Emergency Contact Name(s) & Number(s). Use link below for your reference. (LAUSD Safety Standards -- CRANES/BOOM TRUCKS AND RIGGING)
10. ☐ Multiple picks require additional forms

70.2.2 Lift Evaluation Form

Lift Evaluation Form

Submit to: construction_safety@laschools.org

Submitted by:	Date:
Company	
Address	
Phone	
Fax	
E-mail	

School Name		Address	
Project Name		Date of Lift	
Lift Location		Contractor	
Description of Load, Dimensions, and Weight			

1	**CRANE**		
A	Type of Crane		
B	Manufacturer		
C	Model No.		
D	Serial No.		
E	Crane Capacity		tons
F	Is crane equipped with a Load Moment Indicator?	☐ Yes ☐ No	
G	Is crane equipped with an Anti-Two Block device?	☐ Yes ☐ No	
H	Is the Load Chart in the crane?	☐ Yes ☐ No	
I	Is the Operator's Handbook in the crane?	☐ Yes ☐ No	
J	**Lifting Arrangement (Check One)** ☑ ON BOOM ☐ ON JIB		
	On Boom (From Load Chart)		
1	Maximum Distance (Operating Radius)* On Boom		ft.
2	Loaded Boom Length (Feet)		ft.
3	Loaded Boom Angle at Pick-Up (Degrees)		deg.
4	Loaded Boom Angle at Set (Degrees)		deg.
5	Rated Capacity of Crane under most severe lifting conditions **(From Load Chart)**		
a	Over Rear (On Boom)		lbs.
b	Over Front (On Boom)		lbs.
c	Over side (On Boom)		lbs.
d	Crane's Rated Capacity for this lift (On Boom)		lbs.
e	Jib Length (Not Applicable for this lift)		ft.
f	Jib Angle (Not Applicable for this lift)		deg.
g	Percentage of Crane's Rated Capacity (On Boom)		

*** (Operating Radius) Center of Load to Center Pin of Crane in Feet**

2	**RIGGING COMPONENTS**		
	A. Sling Selection		
1	Type of Rigging		
2	Size of Rigging		in.
3	Length of Rigging		ft.
4	Number of Legs of Rigging		
5	Weight of Rigging per foot		lbs.
6	Weight of Rigging		lbs.
7	Angle of Rigging		deg.
8	Capacity of Rigging		lbs.
9	Are Qualified Riggers be used to attach Rigging?	☐ Yes ☐ No	
10	How is Rigging attached to the Load?		
	B. Shackle Selection		
1	Pin Diameter		in.
2	Capacity		tons
3	Number of Shackles		
4	Weight per Shackle		lbs.
5	Weight of Shackles		lbs.
6	Shackle attached to load by (factory eye, field welded eye, etc.)		

3	**LOAD LINE**		
A	Size of Cable		in.
B	Weight per foot of Cable		lbs.
C	Number of Parts for Load Line		
D	Distance from boom or jib head to attachment point of load		ft.
E	Weight of Cable (Load Fall)		lbs.
4	**WEIGHT**		
A	Weight of Headache Ball		lbs.
B	Weight of Block		lbs.
C	Weight of Lifting Bar/Spreader Bar		lbs.
D	Jib Weight if attached or wt. deduction from load chart if stowed		lbs.
E	Allowance for Other Weight		lbs.
F	Weight of Load to be Lifted		lbs.
G	Total Weight		lbs.
H	Source of Load Weight Information (Name Plate, Drawings, Scaled, Calculated)		
I	Weights Verified by: (Name)		
	(Qualifications)		
5	**CRANE PLACEMENT**		
A	If outriggers will be used, are they going to be fully extend	☐ N/A ☐ Yes ☐ No	
	Please check one above.		
B	Surface crane is to be placed on (e.g. Pavement, Concrete, Soil)		
C	Will surface bearing capacity support crane and load?	☐ Yes ☐ No	
D	How was bearing capacity determined?		
E	Are trench plates, mats, or cribbing required and will be used?	☐ Yes ☐ No	
	Please check one above.		
F	Are there any obstructions to lift or swing?	☐ Yes ☐ No	
G	Swing direction		
H	Degree of swing		deg.
I	Distance of swing		ft.
J	Will the entire Counterweight Swing Radius of crane be barricaded?	☐ Yes ☐ No	
K	**Please check one above.**		
6	**LIFT PLANNING**		
A	Will Qualified Signalman be used?	☐ Yes ☐ No	
B	Who is the responsible person for the Lift?		
C	Are there occupied school facilities within the crane's swing radius?	☐ Yes ☐ No	
	Please check one above.		
D	Are tag lines going to be used during the lift?	☐ Yes ☐ No	
	Please check one above.		
E	What time will the lift take place?		
F	When & where will the Lift Tailgate meeting be held?		
G	Wind speed at which crane work is stopped		mph
H	Are radios necessary to maintain communication?	☐ Yes ☐ No	
I	Have Emergency Procedures been developed and be implemented?	☐ Yes ☐ No	
J	Has a Traffic Control Plan been developed and be implemented?	☐ Yes ☐ No	
K	Will Qualified Traffic Flaggers be used?	☐ Yes ☐ No	
L	List any known hazards (electrical, overhead, underground, etc.). Include crane path of travel for underground utilities if tracking crane.		

70.3 LAUSD OCIP Environmental Health and Safety Incident Investigation Report (SAF-3)

LAUSD OCIP ENVIRONMENTAL HEALTH AND SAFETY INCIDENT INVESTIGATION REPORT

Identifying Information

Contractor		Owner Authorized Representative (OAR)	
School / Location of Incident		Date of Incident	Time AM PM / Date of Report

☐ Injury or Illness ☐ Property Damage ☐ Environmental Incident

Injured's Name		Property Damaged	Type of Incident ☐ Haz Mat Spill ☐ Transportation ☐ Water Quality ☐ Tank Leak ☐ Waste Handling Disposal ☐ IAQ ☐ Fire/Smoke ☐ Other
Job Title	Time in Position	Nature of Damage/Loss	
Nature of Injury/Illness	Part of Body	Cost Estimated Actual	Cost Estimated Actual
Activity Being Performed		Object, Equipment, Substance Inflicting Damage	Nature of Damage/Loss
Object, Equipment, Substance Inflicting Harm		Person In Control of Activity at Time of Occurrence	Task/Activity Being Performed at Time of Occurrence

Severity of the Injury (check all that apply)
☐ Fatality ☐ Lost Workdays ☐ Restricted Duty ☐ Other
☐ Medical Treatment ☐ First Aid ☐ In-house First Aid

Description

Describe How the Incident Occurred

Cause Analysis

Describe the Events and Conditions That Contributed to the Accident

Action Plan

What Corrective Actions Have Been or Will be Taken to Prevent Similar Occurrences? (include estimated time lines for completion)

Regulatory

Has There Been Contact With a Government Agency Regarding This Incident? (if yes, describe)

Documentation Attached (list):	Prepared By: Date:
	Title:
	Department:
	Phone Number: ( )

SAF-3 REV 9/5/19 JM/RS

70.4 LAUSD Near-Miss Injury Accident/Incident Report (SAF-4)

LAUSD NEAR-MISS INJURY ACCIDENT/INCIDENT REPORT

Please use this form to report near-miss accidents/incidents which could have, but did not, cause injuries or property loss on the jobsite. It may also be used to track potentially hazardous conditions which could cause an accident. Please submit a copy to the Owner Authorized Representative and the LAUSD Construction Safety Specialist.

Date of Near-Miss Accident/Incident:				
Date of Near-Miss Accident/Incident:		**AM**		**PM**
Location of the near-miss accident/incident (Include address of the facility and location within the facility):				
Description of near-miss accident or condition that exists:				
Recommendation for eliminating or reducing the potential hazard:				
Actions taken to correct the potential problem:				
Reported by:				
Contractor's Name and Job Number:				
Telephone Number:				

SAF-4 REV 1/09

70.5 LAUSD Facilities Division Construction Site Accident / Incident Statement (SAF-5)

LAUSD Facilities Division
Construction Site Accident / Incident Statement

NAME of person making this statement:	
PHONE #:	**DATE:**
COMPANY:	**LOCATION:**
POSITION:	**TASK at time of incident:**
SUPERVISOR:	**TIME:**

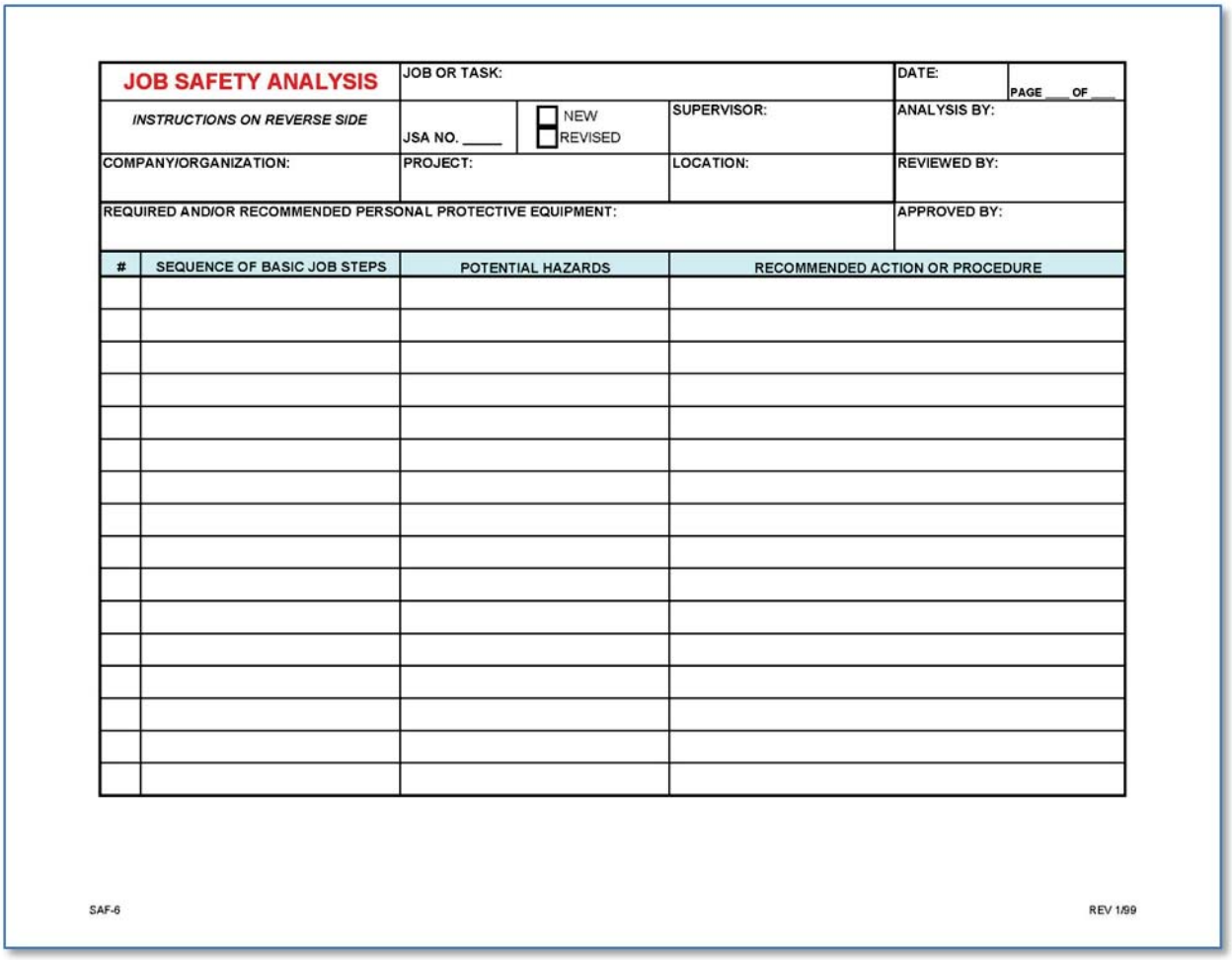
Your statement is important to the successful resolution of the Accident/Incident under investigation. It should be limited to the facts of the issue and should not set forth your opinions. Your opinions may be provided to the investigating official. Your statement will be used within LAUSD to support corrective actions, further safety and security investigations/reviews, sharing of lessons learned, and other administrative reasons. Your statement may be provided to LAUSD & the LAUSD OCIP Insurance Broker & Carrier in the furtherance of contractual obligations.

SIGNATURE of person making this statement:

STATEMENT by witness OR person involved in the accident/incident (gather several statements at accident/incident scene) – what happened; where exactly did it happen – N,S,E,W of (draw a diagram on the back of what happened if it helps describe the incident); what did you see and hear; what did you do immediately after the accident; what did people say and who said it;
If this statement is taken by another person, print name, title & phone # here:
PAGE OF PAGES

This document contains business and technical information and data, trade secrets, and know-how that are highly confidential and proprietary to LAUSD Facilities Division. Any unauthorized publication or disclosure of such information to any person, or any unauthorized use of such information, without the express written consent of LAUSD Facilities Division is strictly prohibited.

70.6 Job Safety Analysis/Job Hazard Analysis Form



JOB SAFETY ANALYSIS	JOB OR TASK:		DATE:	PAGE ___ OF ___
INSTRUCTIONS ON REVERSE SIDE	JSA NO. ____	☐ NEW ☐ REVISED	SUPERVISOR:	ANALYSIS BY:
COMPANY/ORGANIZATION:	PROJECT:		LOCATION:	REVIEWED BY:
REQUIRED AND/OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT:				APPROVED BY:

#	SEQUENCE OF BASIC JOB STEPS	POTENTIAL HAZARDS	RECOMMENDED ACTION OR PROCEDURE

SAF-6 REV 1/99

71. LINKS

The following links include, but are not limited to, a Summary of Federal, State, Local and National Consensus Standards. National Consensus Standards subscriptions or documents are available for purchase through several sources.

Federal OSHA Standards

General Industry:

http://www.osha.gov/pls/oshaweb/owasrch.search_form?p_doc_type=STANDARDS&p_toc_level=1&p_keyvalue=1910

Construction:

http://www.osha.gov/pls/oshaweb/owasrch.search_form?p_doc_type=STANDARDS&p_toc_level=1&p_keyvalue=Construction

Environmental:

http://www.epa.gov/regulations/

State Standards

Cal-OSHA

http://www.dir.ca.gov/samples/search/query.htm

Cal-EPA

http://www.calepa.ca.gov/LawsRegs/

Local Standards

LA County: http://portal.lacounty.gov/wps/portal/lac/directory

National Consensus Standards

Includes but not limited to those found at the following links:

http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10125

http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10919

The following national Consensus Standards sites maybe useful for obtaining standards:

Techstreet: http://www.techstreet.com/

IHS: http://aec.ihs.com/products/standards/safety-standards-collection.htm

ANSI/ASSE:
http://www.webstore.ansi.org/RecordDetail.aspx?sku=ANSI%2FASSE+A10+Construction+Package

SECTION 00 7339

SMALL BUSINESS ENTERPRISES

1.01 REQUIREMENTS

A. In accordance with the Board of Education of the City of Los Angeles (Board) adoption of a participation goal of twenty-five percent (25%) for Small Business Enterprises (SBE) and five percent (5%) for all Veteran Business Enterprises (VBE), per contract, of the overall dollar amount of funds allocated to the school construction and modernization program, the OWNER requires bidders to submit SBE and VBE information as set forth in this section. The twenty-five percent SBE participation goal and five percent VBE participation goal will be included in each construction contract entered into related to school construction or modernization.

B. Prior to award, listing of SBE and VBE contractors/suppliers that will be used as part of the project shall be submitted within five (5) days from the date of OWNER request. SBE and VBE certifications must be submitted for all listed contractors/suppliers used as part of the project. If the aforementioned participation goals are not attained, bidder must provide documentation of good faith efforts of outreach to SBE and VBE firms.

The SBE/VBE listing form will be provided by the OWNER after bid opening. Failure to submit the form and certifications within five (5) days from OWNER request may render the bid non-responsive.

It is the responsibility of the Prime contractor to ensure that its subcontractors/suppliers register to become LAUSD certified prior to award. Please have all subcontractors/suppliers utilize the following link to access the online registration: http://www.laschools.org/new-site/small-business/sbe-certification.

C. To identify or become a certified participant, you may consult the Office of Small Business and Disabled Veteran Business Enterprise Services (OSDS) website at https://caleprocure.ca.gov/pages/sbdvbe-index.aspx or by visiting the Los Angeles Unified School District Small Business Outreach Program website at http://www.laschools.org/new-site/small-business/sbe-certification.

D. Owner advises bidders that the SBE and VBE participation percentages submitted by the bidder become the goal of record. The SBE and VBE participation submitted by the bidder is an enforceable goal and OWNER reserves the right to terminate a contract for failure to adhere to the Board-mandated SBE and VBE requirements or failure to demonstrate good faith efforts to comply with such requirements.

E. Only certification from LAUSD or as indicated for the agencies below will be accepted at the time of bid. However, if bidder's certification from one of the agencies below is provided, bidder must also submit an LAUSD certificate prior to issuance of the Notice of Intent to Award.

- State of California – Department of General Services (SBE, Micro-business, DVBE)
- Metropolitan Water District of Southern California (SBE)
- City of Los Angeles (SBE)
- Los Angeles Metro (SBE)
- Los Angeles County (SBE)

END OF SECTION

SECTION 00 7349

PROJECT STABILIZATION AGREEMENT (PSA)

1.01 RELATED DOCUMENTS:

A. Project Stabilization Agreement (Effective Date: January 1, 2024)

END OF SECTION

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LOS ANGELES UNIFIED SCHOOL DISTRICT
PROJECT STABILIZATION AGREEMENT --
NEW CONSTRUCTION, MAJOR MODERNIZATION AND SCHOOL UPGRADE
FUNDED BY MEASURES K, R, Y, Q AND RR

Effective Date: January 1, 2024

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LOS ANGELES UNIFIED SCHOOL DISTRICT
PROJECT STABILIZATION AGREEMENT -
NEW CONSTRUCTION, MAJOR MODERNIZATION AND SCHOOL UPGRADE
FUNDED BY MEASURES K, R, Y, Q AND RR

This Project Stabilization Agreement (hereinafter, "Agreement") is entered into this ___ day of _____, 2023, by and between the Board of Education of the Los Angeles Unified School District, its successors or assigns, (hereinafter, "District") and The Los Angeles/Orange Counties Building and Construction Trades Council (hereinafter, "Council"), and the signatory Craft Unions (hereinafter, together with the Council, collectively, the "Union" or "Unions"). This Agreement, understood by the Parties to be a modification of the prior Project Stabilization Agreement, establishes the labor relations Policies and Procedures for the District and for the craft employees represented by the Unions engaged in the District's new construction, major modernization, and school upgrade program funded, in whole or in part, by Measures K, R, Y, Q and RR as well as any future construction bond measures (hereinafter, "Project" or "Project Work", and more specifically defined in Article II, Section 2.2).

It is understood by the Parties to this Agreement that if this Agreement is acceptable to the District, it will become the policy of the District for the Project Work to be contracted exclusively to contractors who agree to execute and be bound by the terms of this Agreement, directly or through the Letter of Assent (Attachment A), and to require each of its subcontractors, of whatever tier, to become bound. The District shall include, directly or by incorporation by reference, the requirements of this Agreement in the advertisement of and/or specifications for each and every contract for Project Work to be awarded by the District.

It is further understood that the District shall actively administer and enforce the obligations of this Agreement to ensure that the benefits envisioned from it flow to all signatory parties, the contractors and craftspersons working under it, and the ratepayers, residents and students of the District. The District shall, therefore, designate a "Project Labor Coordinator," either from its own staff or an independent contractor acting on behalf of the District, to monitor compliance with this Agreement; assist, as the authorized representative of the District, in developing and implementing the programs referenced herein, all of which or critical to fulfilling

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the intent and purposes of the Parties and this Agreement; and to otherwise implement and administer the Agreement. For such purposes, each contractor recognizes and appoints the Project Labor Coordinator, its successors or assigns, as its agent; and together with District and the Unions, the Project Labor Coordinator shall be considered a "negotiating party" of this Agreement.

The term "Apprentice" means those individuals indentured and participating in a Joint Labor/Management Apprenticeship Program approved by the State of California, Department of Industrial Relations, Division of Apprenticeship Standards.

The term "Contractor" as used in this Agreement includes any contractor to whom the District awards a construction contract through its public bidding process for Project Work, and also to subcontractors of whatever tier utilized by such contractors for Project Work. The term "Contractor" includes any individual, firm, partnership, or corporation, or combination thereof, including joint ventures, which as an independent contractor has entered into a contract with the District with respect to the Project Work, or with another contractor as a subcontractor for Project Work.

The term "Labor/Management Apprenticeship Program" as used in this Agreement shall be defined as a jointly administered apprenticeship program approved by the State of California, Department of Industrial Relations, Division of Apprenticeship Standards.

The term "Master Labor Agreements" or "MLA" as used in this Agreement means the local collective bargaining agreements of the signatory Unions having jurisdiction over the Project Work and which have signed this Agreement.

The Union and all Contractors agree to abide by the terms and conditions of this Agreement and that this Agreement represents the complete understanding of the Parties. No contractor is or will be required to sign or otherwise become a party to any other collective bargaining agreement with a signatory union as a condition of performing work within the scope of this Agreement. No practice, understanding or agreement between a contractor and a Union party which is not specifically set forth in this Agreement shall be binding on any third party contractor or union on Project Work unless endorsed in writing by the Project Labor Coordinator.

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The Parties agree that this Agreement will be made available to, and will fully apply to, any successful bidder for Project Work, without regard to whether that successful bidder performs work at other sites on either a union or non-union basis. This Agreement shall not apply to any work of any contractor other than that on Project Work specifically covered by this Agreement.

The use of masculine or feminine gender or titles in this Agreement should be construed as including both genders and not as gender limitations unless the Agreement clearly requires a different construction. Further, the use of Article titles and/or Section headings are for information only, and carry no legal significance.

ARTICLE 1

INTENT AND PURPOSE

Section 1.1 Background. The District's new construction, major modernization, and school upgrade projects funded by Measures K, R, Y, Q and RR will affect over a thousand school buildings and offices that are owned, leased or controlled by the District. The Project is the largest overall educational construction program developed and undertaken by a school district in the history of the State of California. The goal of this Project is to provide new construction, major modernization, and upgrades of the District's facilities so as to provide sufficient facilities and technologies to improve the health, safety, and quality of education for the children within the District's boundaries. The District, therefore, wishing to utilize the most modern, efficient and effective procedures for construction, including assurances of a sufficient supply of skilled craftpersons, and the elimination of disruptions or interference with Project Work, adopts this Agreement in the best interests of the students, parents, District staff, and the tax payers of the District to meet the District's goal that the Project work be completed on time and within budget.

Section 1.2 Identification and Retention of Skilled Labor and Employment District Residents. The vast amount of new construction, major modernization, and school upgrade scheduled to be performed pursuant to Measures K, R, Y, Q and RR and any future bond measures will require large numbers of craft personnel and other supporting workers. It is therefore the explicit understanding and intention of the Parties to this Agreement to use the

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opportunities provided by the extensive amount of work to be covered by this Agreement to identify and promote, through cooperative efforts, programs and procedures (which may include, for example, programs to prepare persons for entrance into formal apprenticeship programs, or outreach programs to the community describing opportunities available as a result of the Project), the interest and involvement of District residents in the construction industry; assist them in entering the construction trades, and through utilization of the joint labor/management sponsored apprenticeship programs, provide training opportunities for those residents and other individuals wishing to pursue a career in construction. Further, with assistance of the Project Labor Coordinator, the District, the Contractors, the Unions and their affiliated regional and national organizations, will work jointly to promptly develop and implement procedures for the identification of craft needs, the scheduling of work to facilitate the utilization of available craft workers, and the securing of services of craft workers in sufficient numbers to meet the high demands of the Project Work to be undertaken.

Section 1.3 Encouragement of Small Local Business. The Project will provide many opportunities for local small business enterprises to participate as contractors or suppliers, and the Parties therefore agree that they will cooperate with all efforts of the District, the Project Labor Coordinator, and other organizations retained by the District for the purpose, to encourage and assist the participation of local small businesses in Project Work. Specifically, all Parties understand that the District has established and quantified goals which place a strong emphasis on the utilization of small, local business on the Project. Each party agrees that it shall employ demonstrable efforts to encourage utilization in an effort to achieve such goals. This may include, for example, participation in outreach programs, education and assistance to businesses not familiar with working on a project of this scope, and the encouragement of local residents to participate in Project Work through programs and procedures jointly developed to prepare and encourage such local residents for apprenticeship programs and formal employment on the Project through the referral programs sponsored and/or supported by the Parties to this Agreement. Further, the Parties shall ensure that the provisions of this Agreement do not inadvertently establish impediments to participation of such small local businesses and residents of the District.

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Section 1.4 Project Cooperation. The Parties recognize that the construction to take place under this Agreement involves unique and special circumstances which dictate the need for the Parties to develop specific procedures to promote high quality, rapid and uninterrupted construction methods and practices. The smooth operation and successful and timely completion of the work is vitally important to the people of Los Angeles and the students of the District. The Parties therefore agree that maximum cooperation among all parties involved is required; and that with construction work of this magnitude, with multiple contractors and crafts performing work on multiple sites of over an extended period of time, it is essential that all parties work in a spirit of harmony and cooperation, and with an overriding commitment to maintain the continuity of Project Work.

Further, the Parties recognize that an Act of God or an Act of War could require the District to partially or fully suspend Project Work. The Parties shall fully cooperate with any request by the District to redirect their equipment, skills and expertise to support the District's efforts necessitated by such events.

Section 1.5 Workers' Compensation Carve-out. Further, the Parties recognize the potential which the Project may provide for the implementation of a cost effective workers' compensation system as permitted by revised California Labor Code Section 3201.5, and it is understood that the District is in an ongoing review of the value of such a program. Should the District request, the Union parties agree to meet and negotiate in good faith with representatives of the District for the development, and subsequent implementation, of an effective program involving improved and revised dispute resolution and medical care procedures for the delivery of workers compensation benefits and medical coverage as permitted by the Code.

Section 1.6 Peaceful Resolution of All Disputes. In recognition of the special needs of the Project and to maintain a spirit of harmony, labor-management peace and stability during the term of this Agreement, the Parties agree to establish effective and binding methods for the settlement of all misunderstandings, disputes and grievances; and in recognition of such methods and procedures, the unions agree not to engage in any strike, slowdowns or interruptions or disruption of Project Work, and the Contractors agree not to engage in any lock-out.

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Section 1.7 Binding Agreement on Parties and Inclusion of District Residents and Business. By executing this Agreement, the District, Council, Unions and Contractors agree to be bound by each and all of the provisions of this Agreement, and pledge that they will work together to adopt, develop and implement processes and procedures which are inclusive of the residents and businesses of the District.

ARTICLE 2

SCOPE OF THE AGREEMENT

Section 2.1 General. This Agreement shall apply and is limited to all new construction, rehabilitation and capital improvement work as described in Section 2.2 of this Article, performed by those contractor(s) of whatever tier that have contracts awarded for such work, for the development of the District's facilities which, jointly, constitute the Project, and have been designated by the District for new construction or major rehabilitation, where such work is funded in whole or in part by Measures K, R ,Y, Q and RR or future bond measures, the prime contract for which is awarded on or after the effective date of this Agreement, all of which are hereinafter referred to as the "Project" or "Project Work". Contracts awarded prior to the effective date of this agreement will be subject and bound to the previous Project Stabilization Agreement.

Section 2.2 Specific. The Project is defined and limited to:

(a) All construction and major rehabilitation work pursuant to prime multi-trade construction contracts that exceed $375,000.00, and are funded in whole or in part by monies from Measures K, R, Y, Q and RR, as described above, and all subcontracts flowing from these prime contracts; and

(b) All prime specialty contracts that exceed $45,000.00, and are funded in whole or in part by monies from Measures K, R, Y, Q and RR, as described above, and all subcontracts flowing from these prime contracts; and

(c) All contracts for similar work, subject to the same threshold limitations, funded by future propositions or measures and awarded prior to the expiration date of this Agreement; and

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(d) Notwithstanding Section 2.1, all construction work pursuant to prime multi-trade construction contracts in which the Districts funding from non-bond measure sources exceeds $25,000,000, and all subcontracts flowing from these prime contracts.

(e) It is understood by the Parties that the District may at any time, and at its sole discretion, determine to build segments of the Project under this Agreement which were not currently proposed, or to modify or not to build any one or more particular segments proposed to be covered.

Section 2.3 Bundling of Contracts. The Parties understand that, to the maximum extent feasible, and consistent with goals of the District to (i) utilize this Agreement as the labor relations Policy for its new construction and major rehabilitation program and (ii) fully utilize the services of local small business enterprises for such construction and rehabilitation work,

(a) the District, in its sole discretion, with the advice of the Project Labor Coordinator, will seek to group (or "bundle") for bidding, contracts not meeting the thresholds of Section 2.2(a) or (b) above. (Small contracts for like types of work, scheduled to be undertaken at the same school, in the same district or on the same Project site, and within the same timeframe, will be considered for such bundling, consistent with economies of scale, and the purposes of this Agreement); and

(b) project work will not be split, divided or otherwise separated for contract award purposes to avoid application of this Agreement.

Section 2.4 Exclusions. Items specifically excluded from the Scope of this Agreement include the following:

(a) Work of non-manual employees, including but not limited to: superintendents; supervisors; staff engineers; quality control and quality assurance personnel not covered by an MLA; time keepers, mail carriers, clerks, office workers, messengers; guards, safety personnel, emergency medical and first aid technicians; and other professional, engineering, administrative, supervisory and management employees;

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(b) Equipment and machinery owned or controlled and operated by the District;

(c) All off-site manufacture and handling of materials, equipment or machinery; provided, however, that lay down or storage areas for equipment or material and manufacturing (prefabrication) sites, dedicated solely to the Project or Project Work, and the movement of materials or goods between locations on a Project site are within the scope of this Agreement;

(d) All employees of the District, Project Labor Coordinator, design teams (including, but not limited to architects, engineers and master planners), or any other consultants for the District (including, but not limited to, project managers and construction managers and their employees where not engaged in Project Work) and their sub-consultants, and other employees of professional service organizations, not performing manual labor within the scope of this Agreement, provided, however, that it is understood and agreed that Surveyors and Building/Construction Inspector and Field Soils and Materials Testers ("Inspectors") are a covered craft under the Agreement. (This inclusion applies to the scope of work defined in the State of California Wage Determination for said Craft. Every Inspector performing under the Wage classification of Building/Construction Inspector and Field Soils and Material Testers under a professional services agreement of a construction contract shall be bound to all applicable requirements of the Agreement.) Notwithstanding the foregoing, on-site surveying, inspection services, and quality control/assurance for such work shall be within the scope of this Agreement if they are within the State of California's general prevailing wage determination for Surveyor or Building/Construction Inspector and Field Soils and Material Tester, when such work is performed on a Project by either employees of a Contractor, pursuant to a construction contract, or by consultants working under a professional services agreement with the District. Nothing in this section will be construed to include the Department of State Architects-certified inspector [Inspector of Record (IOR)] who is required by state law as included under the scope of this Agreement;

(e) Any work performed on or near or leading to or into a site of work covered by this Agreement and undertaken by state, county, city or other governmental bodies,

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or their contractors; or by public utilities, or their contractors; and/or by the District or its contractors (for work for which is not within the scope of this Agreement);

(f) Off-site maintenance of leased equipment and on-site supervision of such maintenance work;

(g) Work by employees of a manufacturer or vendor necessary to maintain such manufacturer's or vendor's warranties or guaranty as set forth in Section 9.4;

(h) Non-construction support services contracted by the District, Project Labor Coordinator, or contractor in connection with this Project;

(i) Laboratory work for testing.

Section 2.5 Awarding of Contracts. (a) The District and/or the Contractors, as appropriate, have the absolute right to award contracts or subcontracts on this Project to any contractor notwithstanding the existence or non-existence of any agreements between such contractor and any union parties, provided only that such contractor is willing, ready and able to execute and comply with this Agreement should such contractor be awarded work covered by this Agreement.

(b) It is agreed that all contractors and subcontractors of whatever tier, who have been awarded contracts for work covered by this Agreement, shall be required to accept and be bound the terms and conditions of this Agreement, and shall evidence their acceptance by the execution of the Agreement or of the Letter of Assent as set forth in Attachment A hereto, prior to the commencement of work. No Contractor or subcontractor shall commence Project Work without having first provided a copy of the Agreement or Letter of Assent as executed by it to the Project Labor Coordinator and to the Council 48 hours before the commencement of project Work, or within 48 hours after the award of Project Work to that Contractor (or subcontractor), whichever occurs later.

(c) The District agrees that to the extent permitted by law and consistent with the economy and efficiency of construction and operation, it will use its best efforts to purchase materials, equipment and supplies which will not create labor strife. Under all circumstances,

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however, the District shall retain the absolute right to select the lowest reliable and responsible bidder for the award of contracts on all Measures K, R, Y, Q and RR -funded projects or other Project Work.

Section 2.6 Coverage Exception. The Parties agree and understand that this Agreement shall not apply to any work that would otherwise be covered Project Work except when a governmental agency or granting authority partially or fully funding such Project Work determines that it will not fund if such Project Work is covered by this Agreement; or a law regulation, proposition or measure prohibits such coverage or the use by the District, or for its benefit, of particular funds if such coverage exists. The District agrees that it will make every effort to establish the enforcement of this Agreement with any governmental agency or granting authority.

Section 2.7 Master Labor Agreements. (a) The provisions of this Agreement, including the Master Labor Agreements, (which are the local collective bargaining agreements of the signatory unions having jurisdiction over the work on the Project, as such may be changed from time-to-time consistent with Article XX, Section 20.3, and which are incorporated herein by reference) shall apply to the work covered by this Agreement, notwithstanding the provisions of any other local, area and/or national agreement which may conflict with or differ from the terms of this Agreement. Where a subject covered by the provisions of this Agreement is also covered by an MLA, the provisions of this Agreement shall apply. Where a subject is covered by a provision of an MLA and not covered by this Agreement, the provisions of the MLA shall prevail. Any dispute as to the applicable source between this Agreement and any MLA for determining the wages, hours of working conditions of employees on this Project shall be resolved under the procedures established in Article X.

(b) Only Articles VII, VIII, and X of this Agreement (dealing with Work Stoppages and Lock-Outs, Work Assignments and Jurisdictional Disputes, and Settlement of Grievances and Disputes) are applicable to work performed under the National Cooling Tower Agreement, the National Stack Agreement, the National Transit Division Agreement (NTD), or within the jurisdiction of the International Union of Elevator Constructors, or all instrument calibration and loop checking work performed under the terms of the UA/IBEW Joint National Agreement for Instrument and Control Systems Technician.

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(c) It is understood that this Agreement, together with the referenced MLAs, constitutes a self-contained, stand-alone agreement and by virtue of having become bound to this Agreement, the Contractor will not be obligated to sign any other local, area or national collective bargaining agreement as a condition of performing work within the scope of this Agreement (provided, however, that the Contractor may be required to sign an uniformly applied, non-discriminatory Participation Agreement at the request of the trustees or administrator of a trust fund established pursuant to Section 302 of the Labor Management Relations Act, and to which such Contractor is bound to make contributions under this Agreement, provided that such Participation Agreement does not purport to bind the Contractor beyond the terms and conditions of this Agreement and/or expand its obligation to make contributions pursuant thereto). It shall be the responsibility of the prime Contractor to have each of its subcontractors sign the Participation Agreement with the appropriate Craft Union prior to the subcontractor beginning Project Work. The Participation Agreement may be provided electronically by the appropriate Craft Union to each applicable Contractor, or upon request with advance notice at the job site.

Section 2.8 Binding Signatories Only. This Agreement shall only be binding on the signatory parties hereto, and shall not apply to the parents, affiliates, subsidiaries, or other ventures of any such party.

Section 2.9 Other District Work. This Agreement shall be limited to the construction work within the Scope of this Agreement including, specifically, site preparation and related demolition work, and new construction and major rehabilitation work for new or existing facilities referenced in Section 2.2 above. Nothing contained herein shall be interpreted to prohibit, restrict, or interfere with the performance of any other operation, work or function not covered by this Agreement, which may be performed by district Employees or contracted for by the District for its own account, on its property or in and around a Project site.

Section 2.10 Separate Liability. It is understood that the liability of the Contractor(s) and the liability of the separate unions under this Agreement shall be several and not joint. The Unions agree that this Agreement does not have the effect of creating any joint employment status between or among the District or Project Labor Coordinator and/or any contractor.

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Section 2.11 Completed Project Work. As areas of covered work are accepted by the District, this Agreement shall have no further force or effect on such items or areas except where the Contractor is directed by the District or its representatives to engage in repairs, modification, check-out and/or warranties functions required by its contract(s) with the District.

ARTICLE 3

UNION RECOGNITION AND EMPLOYMENT

Section 3.1 Recognition. The Contractor recognizes the Council and the signatory local Unions as the exclusive bargaining representative for the employees engaged in Project Work. Such recognition does not extend beyond the period when the employee is engaged in Project Work.

Section 3.2 Contractor Selection of Employees. The Contractor shall have the right to determine the competency of all employees, the number of employees required, the duties of such employees within their craft jurisdiction, and shall have the sole responsibility for selecting employees to be laid off, consistent with Section 3.10 and with Article IV, Section 4.3, below. The Contractor shall also have the right to reject any applicant referred by a Union for any reason, subject to any reporting pay required by Article VI, Section 6.6; provided, however, that such right is exercised in good faith and not for the purpose of avoiding the Contractor's commitment to employ qualified workers through the procedures endorsed in this Agreement.

Section 3.3 Referral Procedures. (a) For signatory unions now having a job referral system contained in an MLA, the Contractor agrees to comply with such system and it shall be used exclusively by such Contractor, except as modified by this Agreement. Such job referral system will be operated in a nondiscriminatory manner and in full compliance with federal, state, and local laws and regulations which require equal employment opportunities and non-discrimination. All of the foregoing hiring procedures, including related practices affecting apprenticeship, shall be operated so as to consider the goals of the District to encourage employment of District residents and utilization of small local businesses on the Project, and to facilitate the ability of all contractors to meet their employment needs.

(b) The local unions will exert their best efforts to recruit and refer sufficient numbers of skilled craft workers to fulfill the labor requirements of the Contractor, including

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specific employment obligations to which the Contractor may be legally and/or contractually obligated; and to refer Apprentices as requested to develop a larger, skilled workforce. The local Unions will work with their affiliated regional and national unions, and jointly with the Project Labor Coordinator and others designated by the District, to identify and refer competent craftpersons as needed for Project Work, and to identify individuals, particularly residents of the District, for entrance into Joint Labor/Management Apprenticeship Programs, or participation in other identified programs and procedures to assist individuals in qualifying and becoming eligible for such apprenticeship programs, all maintained to increase the available supply of skilled craft personnel for Project Work and future construction of maintenance work to be undertaken by the District.

(c) The Union shall not knowingly refer an employee currently employed by a Contractor on Project Work to any other contractor.

(d) The Parties are aware of the District's policy that contractors and other employers shall not employ, on Project Work when minors may be present on or around the site of such Project Work during working hours, a person who would not be eligible for employment by the District under California Educational Code Sec. 45123. The Parties shall endeavor to employ persons under this Article in compliance with this policy, and the Contractors agree to remove such an individual in their employ from the particular Project site at the request of the District or the Project Labor Coordinator.

Section 3.4 Non-Discrimination in Referral, Employment, and Contracting. The Unions and Contractors agree that they will not discriminate against any employee or applicant for employment on the basis of race, color, religion, gender, national origin, age, union status, sexual orientation, marital status or disability. Further, it is recognized that the District has certain policies, programs, and goals for the utilization of local small business enterprises. The Parties shall jointly endeavor to assure that these commitments are fully met, and that any provisions of this Agreement which may appear to interfere within a local small business enterprises successfully bidding for work within the scope of this Agreement shall be carefully reviewed, and adjustments made as may be appropriate and agreed upon among the Parties, to ensure full compliance with the spirit and letter of the District's policies and commitment to its

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goals for the significant utilization of local small businesses as direct contractors or suppliers on Measures K, R, Y, Q and RR financed work.

Section 3.5 Employment of District Residents. (a) In recognition of the District's mission to serve the District and its residents, the Unions and Contractors agree that, to the extent allowed by law, and as long as they possess the requisite skills and qualifications, Local Residents shall be first referred for Project Work, including journeyperson, apprentice, or other positions which may be established under an MLA and covered by the applicable prevailing wage for utilization on Project Work, in a manner to ensure that at least 50 percent of the total construction labor hours worked on the Project Work be performed by "Local Residents". For the purpose of this Section, "Local Residents" are:

(i) Individuals currently residing in those zip codes which overlap the area covered by the District as reflected on the U.S. Postal Service zip codes; and

(ii) Regardless of where they reside, (1) graduates of the Los Angeles Unified School District, (2) Eligible Veterans, or (3) individuals who have successfully completed the Building Trades Multi-Craft Core Curriculum Apprenticeship Readiness("MC3") Program.

(b) To facilitate the dispatch of Local Residents, all Contractors will be required to utilize the Craft Employee Request Form in effect at the time whenever they request the referral of any employee from a Union referral list for any Project, a sample of which is attached as Attachment B. When Local Residents are requested by the Contractors, the Unions shall refer them regardless of their place in the Unions' hiring halls' list and normal referral procedures.

(c) The Project Labor Coordinator shall work with the Unions and Contractors in the administration of this Local Resident preference; and the Contractors and Unions shall cooperate by maintaining adequate records to demonstrate to the Project Labor Coordinator that such preferences have been pursued. As part of this process, and in order to facilitate the contract administration procedures, as well as appropriate benefit fund coverage, all Contractors shall require their "core work force" and any other persons employed other than through the referral process, to register with the appropriate hiring hall, if any.

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Section 3.6 Core Employees. Except as otherwise provided in separate collective bargaining agreement(s) to which the Contractor is signatory,

(a) Contractors that are not independently signatory to an MLA may employ, as needed, first, a core employee, then an employee through a referral from the appropriate union hiring hall, then a second core employee, then a second employee through the referral system, and so on until a maximum of five core employees are employed per craft, and thereafter all additional employees in the affected craft shall be requested from the appropriate union hiring hall in accordance with Section 3.3. In laying off, an employer with 10 or less employees, the number of core employees shall not exceed one-half plus one of the workforce per craft, assuming the remaining employees are qualified to undertake the work available. The ratio of core employees to hiring hall-referred employees is applicable on a per-job site basis.

(b) The core employee work force is comprised of those employees:

(i) whose names appeared on the Contractor's active payroll for fifty (50) of the one hundred (100) working days before the Contractor's start of Project Work to the Contractor;

(ii) who possess any license required by state or federal law for the Project Work to be performed;

(iii) who have the ability to safely perform the basic functions of the applicable trade; and

(iv) who have worked at least two thousand (2,000) hours in the construction craft in which they are employed, during the prior two (2) years.

(c) Prior to each Contractor performing any work on the Project, each Contractor shall provide a list of its core employees to the Council. Failure to do so will prohibit the Contractor from using any core employees for forty-five (45) calendar days after the list is provided. If there are any questions with regarding a core employee's eligibility under this provision, the Project Labor Coordinator, at the Council's request, shall obtain appropriate proof of such from the Contractor. For proof of employment eligibility, quarterly tax records or

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payroll records normally maintained by the Contractor (or officially recognized substitutes) shall be utilized.

(d) In addition to the core employee provisions set forth herein, all Contractors may avail themselves of any opportunity provided in the applicable MLA to call for specific employees by name.

Section 3.7 Time for Referral. If any Union's registration and referral system does not fulfill the requirements for specific classifications of covered employees (including residency standards) requested by any Contractor within forty-eight (48) hours (excluding Saturdays, Sundays and holidays), that Contractor may use employment sources other than the union registration and referral services, and may employ applicants meeting such standards from any other available source. The Contractor should promptly inform the Union of any applicants hired from other sources, and such applicants shall register with the appropriate hiring hall, if any.

Section 3.8 Lack of Referral Procedure. If a signatory local Union does not have a job referral system as set forth in Section 3.3 above, the Contractors shall give the union equal opportunity to refer applicants. The Contractors shall notify the union of employees so hired, as set forth in Section 3.5.

Section 3.9 Union Membership. Employees are not required to become or remain union members or pay dues or fees as a condition of performing Project Work under this Agreement. Contractors shall make and transmit all deductions for union dues, fees, and assessments that have been authorized by employees in writing in accordance with the applicable MLAs. Nothing in this Section 3.9 is intended to supersede the requirements of the applicable MLAs as to those Contractors otherwise signatory to such MLAs and as to the employees of those Contractors who are performing Project Work.

Section 3.10 Individual Seniority. Except as provided in Article IV, Section 4.3, individual seniority shall not be recognized or applied to employees working on the Project; provided, however, that group and/or classification seniority in a Union's MLA as of the effective date of this Agreement shall be recognized for purposes of layoffs.

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Section 3.11 Foremen. The selection and number of craft foreman and/or general foreman shall be the responsibility of the Contractor. All foremen shall take orders exclusively from the designated Contractor representatives. Craft foreman shall be designated as working foreman at the request of the Contractors.

Section 3.12 Helmets to Hardhats The Contractors and the Unions recognize a desire to facilitate the entry into the building and construction trades of veterans who are interested in careers in the building and construction industry. The Contractors and Unions agree to utilize the services of the Center for Military Recruitment, Assessment and Veterans Employment (hereinafter "Center") and the Center's "Helmets to Hardhats" program to serve as a resource for preliminary orientation, assessment of construction aptitude, referral to apprenticeship programs or hiring halls, counseling and mentoring, support network, employment opportunities and other needs as identified by the Parties. For purposes of this Agreement the term "Eligible Veteran" shall have the same meaning as the term "veteran" as defined under Title 5, Section 2108(1) of the United States Code as the same may be amended or re-codified from time to time. It shall be the responsibility of each interested individual to provide the Unions and Project Labor Coordinator with proof of his/her status as an Eligible Veteran. The Unions and Contractors agree to coordinate with the Center to create and maintain an integrated database of Eligible Veterans interested in working on this Project and of apprenticeship and employment opportunities for this Project. To the extent permitted by law, the Unions will give credit to such Eligible Veterans for bona fide, provable past experience.

ARTICLE 4

UNION ACCESS AND STEWARDS

Section 4.1 Access to Project Sites. Authorized representatives of the Union shall have access to Project Work, provided that they do not interfere with the work of employees and further provided that such representatives fully comply with posted visitor, security and safety rules.

Section 4.2 Stewards. (a) Each signatory local Union shall have the right to dispatch a working journeyperson as a steward for each shift and shall notify the Contractor in the writing of the identity of the designated steward or stewards prior to the assumption of such person's

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duties as steward. Such designated steward or stewards shall not exercise any supervisory functions. There will be no non-working stewards. Stewards will receive the regular rate of pay for their respective crafts.

(b) In addition to his/her work as an employee, the steward should have the right to receive, but not to solicit, complaints or grievances and to discuss and assist in the adjustment of the same with the employee's appropriate supervisor. Each steward should be concerned only with the employees of the steward's Contractor and, if applicable, subcontractor(s), and not with the employees of any other contractor. The Contractor will not discriminate against the steward in the proper performance of his/her union duties.

(c) When a Contractor has multiple, non-contiguous work locations at one site, the Contractor may request, and the union shall appoint such additional working stewards as the Contractor requests to provide independent coverage of one or more such locations. In such cases, a steward may not service more than one work location without the approval of the Contractor.

(d) The stewards shall not have the right to determine when overtime shall be worked or who shall work overtime.

Section 4.3 Steward Layoff/Discharge. The relevant Contractor agrees to notify the appropriate Union twenty-four (24) hours before the layoff of a steward, except in the case of disciplinary discharge for just cause. If the steward is protected against such layoff by the provisions of the applicable MLA, such provisions shall be recognized when the steward possesses the necessary qualifications to perform the remaining work. In any case in which the steward is discharged or disciplined for just cause, the appropriate Union will be notified immediately by the Contractor, and such discharge or discipline shall not become final (subject to any later filed grievance) until twenty-four (24) hours after such notice have been given.

Section 4.4 Employees on Non-Project Work. On work where the personnel of the District may be working in close proximity to the construction activities covered by this Agreement, the Union agrees that the Union representatives, stewards, and individual workers will not interfere with the District personnel, or with personnel employed by the any other employer not a party to this Agreement.

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ARTICLE 5

WAGES AND BENEFITS

Section 5.1 Wages. All employees covered by this Agreement shall be classified in accordance with work performed and paid the hourly wage rates for those classifications in compliance with the applicable prevailing wage rate determination established pursuant to the California Labor Code by the Department of Industrial Relations. If a prevailing rate increases under state law, the Contractor shall pay that rate as of its effective date under the law. If the prevailing wage laws are repealed during the term of this Agreement, the Contractor shall pay the wage rates established under the MLAs, except as otherwise provided in this Agreement. Notwithstanding any other provision in this Agreement, Contractors directly signatory to one or more of the MLAs are required to pay all of the wages set forth in those MLAs without reference to the foregoing.

Section 5.2 Benefits. (a) Contractors shall pay contributions to the established employee benefit funds in the amounts designated in the appropriate MLA and make all employee – authorized deductions in the amounts designated in the appropriate MLA; provided, however, that such contributions shall not exceed the contribution amounts set forth in the applicable prevailing wage determination. Contractors directly signatory to one or more of the MLAs are required to make all contributions set forth in those MLAs without reference to the foregoing. Bona fide jointly-trusteed benefit plans or authorized employee deduction programs established or negotiated under the applicable MLA or by the Parties to this Agreement during the life of this Agreement may be added, subject to the limitations upon such negotiated changes contained in Article XX, Section 20.3, and provided that the contributions do not exceed the amounts set forth in the applicable prevailing wage determination.

(b) The Contractor adopts and agrees to be bound by the written terms of the applicable, legally established, trust agreement(s) specifying the detailed basis on which payments are to be made into, and benefits paid out of, such trust funds for its employees. The Contractor authorizes the parties to such trust funds to appoint trustees and successors trustees to administer the trust funds and hereby ratifies and accepts the trustees so appointed as if made by the Contractor.

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(c) Each Contractor and subcontractor is required to certify to the Project Labor Coordinator that it has paid all benefit contributions due and owing to the appropriate Trust(s) prior to the receipt of its final payment and/or retention. Further, upon timely notification by a Union to the Project Labor Coordinator, the Project Labor Coordinator shall work with any prime Contractor or subcontractor who is delinquent in payments to assure that proper benefit contributions are made, to the extent of requesting the District or the prime Contractor to withhold payments otherwise due such Contractor, until such contributions have been made or otherwise guaranteed.

Section 5.3 Wage Premiums. Wage premiums, including but not limited to pay based on height of work, hazard pay, scaffold pay and special skills shall not be applicable to work under this Agreement, except to the extent provided for in any applicable prevailing wage determination.

Section 5.4 Compliance with Prevailing Wage Laws. The Parties agree that the Project Labor Coordinator shall monitor the compliance by all contractors and subcontractors with all applicable federal and state prevailing wage laws and regulations, and that such monitoring shall include Contractors engaged in what would otherwise be Project Work but for the exceptions to Agreement coverage in Article II, Section 2.2. All complaints regarding possible prevailing wage violations shall be referred to the Project Labor Coordinator for processing, investigation and resolution, and if not resolved within thirty calendar days, may be referred by any party to the state labor commissioner.

ARTICLE 6

HOURS OF WORK, OVERTIME, SHIFTS, HOLIDAYS AND WORKING CONDITIONS

Section 6.1 Hours of Work. Eight (8) hours per day between the hours of 6:00 a.m. and 5:30 p.m., plus one-half (1/2) hour unpaid lunch approximately mid-way through the shift, shall constitute the standard workday. Forty (40) hours per week shall constitute a regular week's work. The work week will start on Sunday and conclude on Saturday. The foregoing provisions of this Article are applicable unless otherwise provided in the applicable prevailing wage determination, or unless changes are permitted by law and such are agreed upon by the

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Parties. Nothing herein shall be construed as guaranteeing any employee eight (8) hours per day or forty (40) hours per week, or a Monday through Friday standard work schedule.

Section 6.2 Place of Work. Employees shall be at their place of work (as designated by the Contractor), at the starting time and shall remain at their place of work, performing their assigned functions, until quitting time. The place of work is defined as the gang or toolbox or equipment at the employee's assigned work location or the place where the foreman gives instructions. The Parties reaffirm their policy of a fair day's work for a fair day's wage. There shall be no pay for time not worked unless the employee is otherwise engaged at the direction of the Contractor, except as provided for in Section 6.6(a).

Section 6.3 Overtime. Overtime shall be paid in accordance with the requirements of the applicable prevailing wage determination. There shall be no restriction on the Contractor's scheduling of overtime or the nondiscriminatory designation of employees who will work overtime. There shall be no pyramiding of overtime (payment of more than one form of overtime compensation for the same hour) under any circumstances.

Section 6.4 Shifts and Alternate Work Schedules. (a) Alternate starting and quitting time and/or shift work may be performed at the option of the Contractor upon three (3) days' prior notice to the affected union(s), unless a shorter notice period is provided for in the applicable MLA and shall continue for a period of not less than five (5) working days. Saturdays and Sundays, if worked, may be used for establishing the five (5) day minimum work shift. If two shifts are worked, each shall consist of eight (8) hours of continuous work exclusive of a one-half (1/2) hour non-paid lunch period, for 8 hours pay. The last shift shall start on or before 6:00 p.m. The first shift starting at or after 6:00 a.m. is designated as the first shift, with the second shift following.

(b) The Contractors, the Council and the Union recognize the economic impact upon the District and District rate payers of the massive project being undertaken by the District and agree that all parties to this Agreement desire and intend Project Work to be undertaken in a cost efficient and effective manner to the highest standard of quality and craftsmanship. Recognizing the economic conditions, the Parties agree that, to the extent permitted by law, employees performing Project Work shall not be entitled to any differentials or

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additional pay based upon the shift or work schedule of the employees. Instead, all employees working on Project Work shall be paid at the same base rate regardless of shift or work schedule worked.

(c) To the extent permitted by state and federal law, the Contractor may, upon five (5) days' notice to appropriate union(s), establish a work week of four (4) consecutive ten (10) work hour days (exclusive of the one half hour unpaid lunch approximately halfway through the shift). Such work week should consist of the same four days each week, with the fifth day available as a make-up day if needed. Pay compensation for such shift shall be at the applicable rates established for first shift worked in this Agreement.

(d) Because of operational necessities, the second shift may, at the District's direction, be scheduled without the preceding shift having been worked. It is recognized that the District's operations and/or mitigation obligations may require restructuring of normal work schedules. Except in an emergency or when specified in the District's bid specification, the Contractor shall give affected Union(s) at least three (3) days' notice of such schedule changes.

Section 6.5 Holidays. Recognized holidays on this Project shall be those set forth and governed by the prevailing wage determination(s) applicable to this Project.

Section 6.6 Show-up Pay. (a) Employees reporting for work and for whom no work is provided, except when given prior notification not to report to work, shall receive two (2) hours pay at the regular straight time hourly rate. Employees who are directed to start work shall receive four (4) hours of pay at the regular straight time hourly rate. Employees who work beyond four (4) hours shall be paid for actual hours worked. Whenever reporting pay is provided for employees, they will be required to remain at the Project Site and available for work for such time as they receive pay, unless released earlier by the principal supervisor of the Contractor(s) or his/her designated representative. Each employee shall furnish his/her Contractor with his/her current address and telephone number, and shall promptly report any changes to the Contractor.

(b) An employee called out to work outside of his/her shift shall receive a minimum of two (2) hours pay at the appropriate rate. This does not apply to time worked as an extension of (before or after) the employee's normal shift.

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(c) When an employee leaves the job or work location of his/her own volition, or is discharged for cause or is not working as a result of the Contractor's invocation of Article XII, Section 12.3, the employee shall only be paid for actual time worked.

Section 6.7 "Brassing". The Contractor may utilize "brassing" (or similar system) to check employees in and out. Each employee must check himself/herself in and out. The Contractor will provide adequate facilities for checking in and out in an expeditious manner.

Section 6.8 Meal Periods. The Contractor will schedule a meal period of no more than one – half hour duration at the work location at approximately mid-point of the schedule shift; provided, however, that the Contractor may, for efficiency of the operation, establish a schedule which coordinates the meal periods of two or more crafts. An employee may be required to work through his/her meal period because of an emergency or a threat to life or property, or for such other reasons as are in the applicable MLA, and if he/she is so required, he/she shall be compensated in the manner established in the applicable MLA.

Section 6.9 Make-up Days. To the extent permitted by the applicable general wage determination, when an employee has been prevented from working for reasons beyond the control of the employer, including, but not limited to inclement weather or other natural causes, during the regularly scheduled work week, a make-up day may be worked on a non-regularly scheduled work day for which an employee shall receive eight (8) hours pay at the straight time rate of pay or any premium rate required for such hours under the prevailing wage law.

Section 6.10 Rest Periods. Rest periods as provided in IWC Order No. 16 (currently ten (10) minutes in each four hours worked) shall apply to all Project Work, consistent with its terms as then in effect.

Section 6.11 Work Rules. The District, the Project Labor Coordinator, and/or relevant Contractor shall establish such reasonable work rules as they deem appropriate and not inconsistent with this Agreement. These rules will be posted at the work sites by the Contractor and may be amended thereafter as necessary. Failure to observe these rules and regulations by employees may be grounds for discipline up to and including discharge.

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Section 6.12 Emergency Use of Tools and Equipment. There should be no restrictions on the emergency use of any tools by any qualified employee or supervisor, or on the use of any tools or equipment for the performance of work within the jurisdiction, provided the employee can safely use the tools and/or equipment involved and is compliant with applicable governmental rules and regulations.

Section 6.13 Access Restrictions for Cars and Parking. Recognizing the nature of the work being conducted on the site, employee access by a private automobile may be limited to certain roads and/or parking areas.

ARTICLE 7

WORK STOPPAGES AND LOCK-OUTS

Section 7.1 No Work Stoppages or Disruptive Activity. The Council and the Unions signatory hereto agree that neither they, and each of them, nor their respective officers or agents or representatives, shall incite or encourage, condone or participate in any strike, walk-out, slow-down, picketing, observing picket lines or other activity of any nature or kind whatsoever, for any cause or dispute whatsoever with respect to or any way related to Project Work, or which interferes with or otherwise disrupts, Project Work, or with respect to or related to the District or contractors or subcontractors, including, but not limited to, economic strikes, unfair labor practice strikes, safety strikes, sympathy strikes and jurisdictional strikes whether or not the underlying dispute is arbitrable. The Council and the Unions also agree that there will be no strikes, work stoppages, sympathy strikes, picketing, slowdowns or any other disruptive activity affecting the Project by any Union involved in the negotiation or renegotiations of the Local Collective Bargaining Agreement and the resulting MLA's, nor shall it be any lock-out on this Project of the involved Union(s) during the course of such negotiations. Any such actions by the Council, or Unions, or their members, agents, representatives or the employees they represent shall constitute a violation of this Agreement. The Council and the Union(s) shall take all steps necessary to obtain compliance with this Article and neither should be held liable for conduct for which it is not responsible.

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Section 7.2 Employee Violations. The Contractor may discharge any employee violating Section 7.1 above and any such employee will not be eligible for rehire under this Agreement.

Section 7.3 Standing to Enforce. The District, the Contractor Administrator, or any contractor affected by an alleged violation of Section 7.1 shall have standing and the right to enforce the obligations established therein.

Section 7.4 Expiration of Master Labor Agreements. All employees shall continue to work and to perform all their obligations with respect to Project Work despite the expiration of any MLA. Should a contractor engaged in Project Work enter into an interim agreement with the Union for work being performed elsewhere after the expiration, and before the renewal, of a local collective bargaining agreement forming the basis for MLA, such interim agreement shall be utilized by that contractor for Project Work (subject to the provisions of Article XX, Section 20.3).

Section 7.5 No Lockouts. Contractors shall not cause, incite, encourage, condone or participate in any lock-out of employees with respect to Project Work during the term of this Agreement. The term "lock-out" refers only to a contractor's exclusion of employees in order to secure collective bargaining advantage, and does not refer to the discharge, termination or layoff of employees by the Contractor for any reason in the exercise of rights pursuant to any provision of this Agreement, or any other agreement, nor does "lock-out" include the District's decision to stop, suspend or discontinue any Project Work or any portion thereof for any reason.

Section 7.6 Best Efforts To End Violations. (a) If a Contractor contends that there is any violation of this Article, Section 8.3 of Article VIII, or the provisions of Article XX, Section 20.4, it shall notify, in writing, the Executive Secretary of the Council, the Senior Executive of the involved Union(s) and the Project Labor Coordinator. The Executive Secretary and the leadership of the involved Union(s) will immediately instruct, order and use their best efforts to cause the cessation of any violation of the relevant Article.

(b) If the Union contends that any Contractor has violated this Article, it will notify that the Contractor and the Project Labor Coordinator, setting forth the facts which the Union contends violate the Agreement, at least twenty-four (24) hours prior to invoking the

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procedures of Section 7.7. The Project Labor Coordinator shall promptly order the involved contractor(s) to cease any violation of the Article.

Section 7.7 Expedited Enforcement Procedure. Any party, including the District, which the Parties agree is a party to the Agreement for purposes of this Article and an intended beneficiary of this Article, or the Project Labor Coordinator, may institute the following procedures, in lieu of or in addition to any other action at law or equity, when a breach of Section 7.1 or 7.5, above, or Section 8.3 of Article VIII, or Section 20.4 of Article XX, is alleged.

(a) The party invoking this procedure shall notify Chris Cameron, who has been selected by the negotiating parties, and whom the Parties agree shall be the permanent arbitrator under this procedure. If the permanent arbitrator is unavailable or unwilling to serve, the party invoking this procedure shall notify one of the alternate arbitrators selected by the negotiating parties, Sara Adler or Mark Burstein, in that order on an alternating basis. Notice to the arbitrator shall be by the most expeditious means available, with notices to the parties alleged to be in violation, and to the Council if it is a union alleged to be in violation. For purposes of this Article, written notice may be given by email, facsimile, hand delivery or overnight mail and will be deemed effective upon receipt. The District and the Council (by and through the Project Labor Coordinator and a Council-designated representative, respectively) may add, modify or delete the permanent arbitrator and/or either or both of the alternate arbitrators upon mutual agreement during the term of this Agreement.

(b) Upon receipt of said notice, the arbitrator named above or his/her alternate shall sit and hold a hearing within twenty-four (24) hours if it is contended that the violation still exists, but not sooner than twenty-four (24) hours after notice has been dispatched to the Executive Secretary and the Senior Official(s) as required by Section 7.6, as above.

(c) The arbitrator shall notify the parties of the place and time chosen for this hearing. Said hearing shall be completed in one session, which, with appropriate recesses at the arbitrator's discretion, shall not exceed 24 hours unless otherwise agreed upon by all parties. A failure of any party or parties to attend said hearings shall not delay the hearing of evidence or the issuance of any award by the arbitrator.

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(d) The sole issue at the hearing shall be whether or not a violation of Sections 7.1 or 7.5, above, of Section 8.3 of Article VIII, or Section 20.4 of Article XX, has in fact occurred. The arbitrator shall have no authority to consider any matter in justification, explanation or mitigation of such violation or to award damages, (except for damages as set forth in Section 7.8 below) which issue is reserved for court proceedings, if any. The award shall be issued in writing within three (3) hours after the close of the hearing, and may be issued without an opinion. If any party desires a written opinion, one shall be issued within fifteen (15) days, but its issuance shall not delay compliance with, or enforcement of, the Award. The arbitrator may order cessation of the violation of the Article and other appropriate relief, and such Award shall be served on all parties by hand or registered mail upon issuance.

(e) Such award shall be final and binding on all parties and may be enforced by any court of competent jurisdiction upon the filing of this Agreement and all other relevant documents referred to herein above in the following manner. Written notice of the filing of such enforcement proceedings shall be given to the other party. In any judicial proceeding to obtain a temporary order enforcing the arbitrator's Award as issued under Section 7.7(d) of this Article, all parties waive the right to a hearing and agree that such proceedings may be ex parte. Such agreement does not waive any party's right to participate in a hearing for a final order of enforcement. The court's order or orders enforcing the arbitrator's award shall be served on all parties by hand or by delivery to their address as shown on this Agreement (for a Union), as shown on their business contract for work under this Agreement (for a contractor) and to the representing Union (for an employee), by certified mail by the party or parties first alleging the violation.

(f) Any rights created by statute or law governing arbitration proceedings inconsistent with the above procedure or which interfere with compliance hereto are hereby waived by the parties to whom they accrue.

(g) The fees and expenses of the arbitrator shall be equally divided between the party or parties initiating this procedure and the respondent party or parties.

Section 7.8 Liquidated Damages. (a) If the Arbitrator determines in accordance with Section 7.7 above that a work stoppage has occurred, the respondent Union(s) shall, within

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eight (8) hours of receipt of the award, direct all the employees they represent on the Project to immediately return to work. If the craft(s) involved do not return the work by the beginning of the next regularly scheduled shift following such eight (8) hour period after receipt of the arbitrator's award, and the respondent Union(s) have not complied with their obligations to immediately instruct, order and use their best efforts to cause a cessation of the violation and return the employees they represent to work, then the non-complying respondent Union(s) shall each pay a sum as liquidated damages to the District, and each will pay an additional sum per shift, as set forth in (c), below, for each shift thereafter on which the craft(s) has not returned to work.

(b) If the arbitrator determines in accordance with Section 7.7 above that a lock-out has occurred, the respondent contractor(s) shall, within eight (8) hours after receipt of the award, return all the affected employees to work on the Project, or otherwise correct the violations found by the arbitrator. If the respondent contractor(s) do not take such action by the beginning of the next regular scheduled shift following the eight (8) hour period, each non-complying respondent contractor shall pay or give as liquidated damages, to the affected Union(s) (to be apportioned among the affected employees and the benefit funds to which contributions are made on their behalf, as designated by the arbitrator) and each shall pay an additional sum per shift, as set forth in (c), below, for each shift thereafter in which compliance by the respondent contractor(s) has not been completed.

(c) The arbitrator shall retain jurisdiction to determine compliance with this Section and to establish the appropriate sum of liquidated damages, which shall not be less than $1,000 (one thousand dollars) and no more than $15,000.00 (fifteen thousand dollars) per shift for each non-complying entity.

ARTICLE 8

WORK ASSIGNMENTS AND JURISDICTIONAL DISPUTES

Section 8.1 Assignment of Work. The assignment of work will be solely the responsibility of the Contractor performing the work involved; and such work assignments will

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be in accordance with the Plan for the Settlement of Jurisdictional Disputes in the Construction Industry (the "Plan") currently in effect, or any successor plan.

Section 8.2 The Plan. All jurisdictional disputes between or among Building and Construction Trades Unions party to this Agreement, shall be settled and adjusted according to the Plan, or any other plan or method of procedures that may be adopted in the future by the Building and Construction Trades Department. Decisions rendered shall be final, binding and conclusive on the Contractors and Union parties to this Agreement.

(a) Notwithstanding the above, if a jurisdictional dispute arising under this Article involves the Southwest Mountain States Regional Council of Carpenters or any of its subordinate bodies, an arbitrator shall be chosen by the procedures specified in Article V, Section 5, of the Plan from a list composed of John Kagel, Robert Hirsch, and Thomas Pagan, and the arbitrator's hearing on the dispute shall be held at the offices of the Council within 14 calendar days of the selection of the Arbitrator. All other procedures shall be as specified in the Plan. The District and the Council (by and through the Project Labor Coordinator and a Council-designated representative, respectively) may add, modify or delete the list of arbitrators upon mutual agreement during the term of this Agreement.

Section 8.3 No Work Disruption Over Jurisdiction. All jurisdictional disputes shall be resolved without the occurrence of any strike, work stoppage, disruption, or slow down of any nature, and the Contractor's assignments shall be adhered to until the dispute is resolved. Individuals violating this section shall be subject to immediate discharge.

Section 8.4 Pre-Job Conferences. As provided in Article XV, each Contractor will conduct a pre-job conference with the appropriate affected Union(s) prior to commencing work. The Council and the Project Labor Coordinator shall be advised in advance of all such conferences and may participate if they wish.

Section 8.5 Resolution of Jurisdictional Disputes. If any actual or threatened strike, sympathy strike, work stoppage, slow down, picketing, hand-billing or otherwise advising the public that a labor dispute exists, or interference with the progress of Project Work by reason of a jurisdictional dispute or disputes occurs, the Parties shall exhaust the expedited procedures set

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forth in the Plan, if such procedures are in the plan then currently in affect, or otherwise as in Article VII above.

ARTICLE 9

MANAGEMENT RIGHTS

Section 9.1 Contractor and District Rights. Notwithstanding any other provision in this Article, the Contractors and the District have the sole and exclusive right and authority to oversee and manage construction operations on Project Work without any limitations unless expressly limited or required by a specific provision of this Agreement or a specific safety provision of the applicable MLA. In addition to the following and other rights of the Contractors enumerated in this Agreement, the Contractors expressly reserve their management rights and all the rights conferred upon them by law. The Contractor's rights include, but are not limited to, the right to:

(a) Plan, direct and control operations of all work;

(b) Hire, promote, transfer and layoff their own employees, respectively, as deemed appropriate to satisfy work and/or skill requirements;

(c) Promulgate and require all employees to observe reasonable job rules and security and safety regulations;

(d) Discharge, suspend or discipline their own employees for just cause;

(e) Utilize, in accordance with District approval, any work methods, procedures or techniques, and select, use and install any types or kinds of materials, apparatus or equipment, regardless of source of manufacture or construction; assign and schedule work at their discretion; and

(f) assign overtime, determine when it will be worked and the number and identity of employees engaged in such work, subject to such provisions in the applicable MLAs requiring such assignments be equalized or otherwise made in a non-discriminatory manner.

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Section 9.2 Specific District Rights. In addition to the following and other rights of the District enumerated in this Agreement, the District expressly reserves its management rights and all the rights conferred on it by law. The District's rights (and those of the Contractor Administrator on its behalf) include but are not limited to the right to:

(a) Inspect any construction site or facility to ensure that the contractor follows the applicable safety and other work requirements;

(b) Require contractors to establish a different work week or shift schedule for particular employees as required to meet the operational needs of the Project Work at a particular locations or in order to accommodate the instructional programs and pupil control problems at various project sites where school may be in session during periods of construction activity;

(c) At its sole option, terminate, delay and/or suspend any and all portions of the covered work at any time; prohibit some or all work on certain days or during certain hours of the day to accommodate the ongoing operations of the District's educational facilities and/or to mitigate the effect of ongoing Project Work on businesses and residents in the neighborhood of the Project site; and/or require such other operational or schedule changes it deems necessary, in its sole judgment, to effectively maintain its primary mission and remain a good neighbor to those in the area of its facilities. (In order to permit the contractors and unions to make appropriate scheduling plans, the District will provide the Project Labor Coordinator, and the affected contractor(s) and union(s) with reasonable notice of any changes it requires pursuant to this section; provided, however, that if notice is not provided in time to advise employees not to report for work, show-up pay shall be due pursuant to the provision of Article VI, Section 6.6);

(d) Approve any work methods, procedures and techniques used by contractors whether or not these methods, procedures or techniques are part of industry practices or customs; and

(e) Investigate and process complaints, through its Project Labor Coordinator, in the matter set forth in Articles VII and X.

Section 9.3 Use of Materials. There should be no limitations or restriction by Union upon a contractor's choice of materials or design, nor, regardless of source or location, upon the

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full use and utilization, of equipment, machinery, packaging, precast, prefabricated, prefinished, or preassembled materials, tools or other labor saving devices, subject to the application of the State Public Contracts and Labor Codes as required by law in reference to offsite construction. Generally, the onsite installation or application of such items shall be performed by the craft having jurisdiction over such work. The District and its Project Labor Coordinator shall advise all contractors of, and enforce as appropriate, the off-site application of the prevailing wage law as it affects Project Work.

Section 9.4 Special Equipment, Warranties and Guaranties. (a) It is recognized that certain equipment of a highly technical and specialized nature may be installed at Project Work sites. The nature of the equipment and systems, together with requirements of the manufacturer's warranty, may dictate that it be installed under the supervision and direction of the manufacturer's personnel. The Unions agree to allow such installation to be performed by the manufacturer's employees or the employees of a contractor certified by the manufacturer, when the Unions are unable to perform such work or the warranty requires the work to be performed by the manufacturer's employees or the employees a contractor certified by the manufacturer. If a warranty on the manufacturer's specialty or technical equipment or systems purchased by the District requires that the installation of such specialty or technical equipment or system be performed by the manufacturer's employees or the employees of a contractor certified by the manufacturer, then such installation may be performed by the manufacturer's own employee or the employees of a contractor certified by the manufacturer, and it shall be excluded from this Agreement. To qualify under this exclusion, the warranty must be the standard warranty for the equipment or product, as opposed to an ad hoc change, and contain a provision that the warranty will be void unless the work is performed by the manufacturer's or a certified contractor's own employees. Any work to be excluded pursuant to this subsection shall be identified and discussed at the relevant pre-job conference. Upon request from a Union to the Project Labor Coordinator, copies of the applicable written warranty and any related contract language shall be provided and reviewed by a Review Panel consisting of a District-designated and Council-designated representative to verify that the work meets all conditions under this exclusion. This subsection (a) does not apply to materials, supplies, catalogue components, parts, and equipment which are installed and maintained by contractors and their craft employees regularly engaged in the building and construction industry. When the warranty does not require

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installation by the manufacturer's own personnel or a contractor certified by the manufacturer, the Unions agree to perform and install such work under the supervision and direction of the manufacturer's representative without incident.

(b) The Parties recognized that the Contractor will initiate from time to time the use of new technology, equipment, machinery, tools, and other labor-savings devices and methods of performing Project Work. The Union agrees that they will not restrict the implementation of such devices or work methods. The Unions will accept and will not refuse to handle, install or work with any standardized and/or catalogue parts, assemblies, accessories, prefabricated items, preassembled items, partially assembled items, or materials whatever their source of manufacture or construction.

(c) If any disagreement between the Contractor and the Unions concerning the methods of implementation or installation of any equipment, or device or item, or method of work, arises, or whether a particular part or pre-assembled item is a standardized or catalog part or item, the work will proceed as directed by the Contractor and the parties shall immediately consult over the matter. If the disagreement is not resolved, the affected Union(s) shall have the right to proceed through the procedures set forth in Article X.

ARTICLE 10

SETTLEMENT OF GRIEVANCES AND DISPUTES

Section 10.1 Cooperation and Harmony on Site. (a) This Agreement is intended to establish and foster continued close cooperation between management and labor. The Council shall assign a representative to this Project for the purpose of assisting the local Unions, and working with the Project Labor Coordinator, together with the Contractors, to complete the construction of the Project economically, efficiently, continuously and without any interruption, delays or work stoppages.

(b) The Project Labor Coordinator, the Contractors, Unions, and employees collectively and individually, realize the importance to all Parties of maintaining continuous and uninterrupted performance Project Work, and agree to resolve disputes in accordance with the grievance provisions set forth in this Article or, as appropriate, those of Article VII or VIII.

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(c) The Project Labor Coordinator shall oversee the processing of grievances under this Article and Articles VII and VIII, including the scheduling and arrangements of facilities for meetings, selection of the arbitrator from the agreed-upon panel to hear the case, and any other administrative matters necessary to facilitate the timely resolution of any dispute; provided, however, it is the responsibility of the principal parties to any pending grievance to ensure the time limits and deadlines are met.

Section 10.2 Processing Grievances. Any questions arising out of and during the term of this Agreement involving its interpretation and application, which includes applicable provisions of the MLAs, but not jurisdictional disputes or alleged violations of Article VII Section 7.1 and 7.4 and similar provisions, shall be considered a grievance and subject to resolution under the following procedures.

Step 1. – Employee Grievances. When any employee subject to the provisions of this Agreement feels aggrieved by an alleged violation of this Agreement, the employee shall, through his local union business representative or job steward, within fourteen (14) calendar days after the occurrence of the violation, give notice to the work site representative of the involved contractor stating the provision(s) alleged to have been violated. A business representative of the local Union or the job steward and the work site representative of the involved contractor shall meet and endeavor to adjust the matter within fourteen (14) calendar days after timely notice has been given. If they fail to resolve the matter within the prescribed period, the grieving party may, within fourteen (14) calendar days thereafter, pursue Step 2 of this grievance procedure provided the grievance is reduced to writing, setting forth the relevant information, including a short description thereof, the date on which the alleged violation occurred, and the provision(s) of the Agreement alleged to have been violated. Grievances and disputes settled at Step 1 shall be non-precedential except as to the parties directly involved.

Union or Contractor Grievances. Should the Union(s) or any Contractor have a dispute with the other party(ies) and, if after conferring within fourteen (14) calendar days after the disputing party knew or should have known of the facts or occurrence giving rise to the dispute, a settlement is not reached within seven (7) calendar days, the dispute shall be reduced to writing and processed to Step 2 in the same manner as outlined in 1(a) above for the adjustment of an employee complaint.

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Step 2. The business manager of the involved local Union or his/her designee, together with the site representative of the involved contractor, and the labor relations representative of the Project Labor Coordinator, shall meet within ten (10) calendar days of the referral of the dispute to this second step to arrive at a satisfactory settlement thereof. If the parties fail to reach an agreement, the dispute may be appealed in writing in accordance with the provisions of Step 3 within ten (10) calendar days after the initial meeting at Step 2.

Step 3. (a) If the grievance has been submitted but not resolved under Step 2, either the Union or contractor party may request in writing to the Project Labor Coordinator (with copy(ies) to the other party(ies)) within ten (10) calendar days after the initial Step 2 meeting, that the grievance be submitted to an arbitrator selected from the agreed upon list below, on a rotational basis in the order listed. Those arbitrators are: (1) Sara Adler; (2) Mark Burstein; (3) Chris Cameron; (4) Najeeb Khoury; (5) Yuval Miller; (6) Kenneth Perea; and (7) David Weinberg. The decision of the arbitrator shall be final and binding on all parties and the fee and expenses of such arbitrations shall be borne equally by the involved contractor(s) and the involved union(s).

The District and the Council (by and through the Project Labor Coordinator and a Council-designated representative, respectively) may add, modify or delete any arbitrator upon mutual agreement during the term of this Agreement.

(b) Failure of the grieving party to adhere to the time limits established herein shall render the grievance null and void. The time limits established herein may be extended only by written consent of the parties involved at the particular step where the extension is agreed upon. The arbitrator shall have the authority to make decisions only on issues presented and shall not have the authority to change, amend, add to or detract from any of the provisions of this Agreement.

Section 10.3 Limit on Use of Procedures. Procedures contained in this Article shall not be applicable to any alleged violation of Article VII or VIII, with a single exception that any employee discharged for violation of Article VII, Section 7.2, or Article VIII, Section 8.3, may resort to the procedures of this Article to determine only if he/she was, in fact, engaged in that violation.

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Section 10.4 Notice. The Project Labor Coordinator (and the District, in the case of any grievance regarding the Scope of this Agreement), shall be notified by the involved contractor of all actions at Steps 2 and 3, and further, the Project Labor Coordinator shall, upon its own request, be permitted to participate fully as a party in all proceedings at such steps.

ARTICLE 11

REGULATORY COMPLIANCE

Section 11.1 Compliance with All Laws. The Council and all Unions, Contractors, subcontractors and their employees shall comply with all applicable federal and state laws, ordinances and regulations including, but not limited to, those relating to safety and health, employment and applications for employment. All employees shall comply with the safety regulations established by the District, the Project Labor Coordinator or the Contractor. Employees must promptly report any injuries or accidents to a supervisor.

Section 11.2 Monitoring Compliance. The Parties agree that the District shall require all contractors and subcontractors to comply with all federal and state laws and regulations that, from time to time may apply to Project Work. The Project Labor Coordinator (on behalf of the District) may investigate or monitor compliance with these various laws and regulations. The Council may monitor, investigate and recommend to the Project Labor Coordinator and/or the District procedures to encourage and enforce compliance with these laws and regulations.

Section 11.3 Prevailing Wage Compliance. The Council or Union shall refer all complaints regarding any potential prevailing wage violation to the Project Labor Coordinator, who on its own, or with the assistance of the District's labor compliance program, shall process, investigate and resolve such complaints, consistent with Article V, Section 5.4. The District intends to maintain a labor compliance program proportionate to the level of active construction on Project Work for the duration of this Agreement. The Council or Union, as appropriate, shall be advised in a timely manner with regard to the facts and resolution, if any, of any complaint. It is understood that this Section does not restrict any individual rights as established under the State Labor Code, including the rights of an individual to file a complaint with the State Labor Commissioner.

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Section 11.4 Violations of Law. Based upon a finding of violation by the District of a federal and state law, and upon notice to the Contractor that it or its subcontractors is in such violation, the District, in the absence of the Contractor or subcontractor remedying such violation, shall take such action as it is permitted by law or contract to encourage that contractor to come into compliance, including, but not limited to, assessing fines and penalties and/or removing the offending contractor from Project Work. Additionally, in accordance with the Agreement between the District and the Contractor, the District may cause the Contractor to remove from Project Work any subcontractor who is in violation of state or federal law.

ARTICLE 12

SAFETY AND PROTECTION OF PERSON AND PROPERTY

Section 12.1 Safety. (a) It shall be the responsibility of each Contractor to ensure safe working conditions and employee compliance with any safety rules contained herein or established by the District, the Project Labor Coordinator or the Contractor. It is understood that employees have an individual obligation to use diligent care to perform their work in a safe manner and to protect themselves and the property of the Contractor and the District.

(b) Employees shall be bound by the safety, security and visitor rules established by the Contractor, the Project Labor Coordinator and/or the District. These rules will be published and posted. An employee's failure to satisfy his/her obligations under this section will subject him/her to discipline, up to and including discharge.

(c) The Project Labor Coordinator may, at the request of the District establish and implement, after negotiation with the Council and the Craft Unions, reasonable substance abuse testing procedures and regulations, which may include pre-hire, reasonable cause, random and post accident testing to the extent permitted by federal and state law. Until there is such a project-wide substance abuse testing procedure negotiated with the Council and the Craft Unions and otherwise adopted by the Project Labor Coordinator, the Parties adopt the Los Angeles/Orange Counties Building and Construction Trades Council Approved Drug and Alcohol Testing Policy, a copy of which is attached hereto as Attachment D.

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Section 12.2 Inspection. The inspection of incoming shipments of equipment, machinery, and construction materials of every kind shall be performed at the discretion of the Contractor by individuals of its choice, unless otherwise limited or required by an MLA.

Section 12.3 Suspension of Work for Safety. A contractor may suspend all or a portion of the job to protect the life and safety of employees. In such cases, employees will be compensated only for the actual time worked; provided, however, that where the Contractor requests employees to remain at the site and be available for work, the employees will be compensated for stand-by time at their basic hourly rate of pay.

Section 12.4 Water and Sanitary Facilities. The Contractor shall provide adequate supplies of drinking water and sanitary facilities for all employees as required by state law or regulation.

ARTICLE 13

TRAVEL AND SUBSISTENCE

Travel expenses, travel time, subsistence allowances and/or zone rates and parking reimbursements shall not be applicable to work under this Agreement, except to the extent provided for in any applicable prevailing wage determination. Parking for employees covered by this Agreement shall be provided by the Contractor(s) according to the provision of the MLAs existing on the effective date of this Agreement, and upon presentation of proof of any expense incurred.

ARTICLE 14

APPRENTICES

Section 14.1 Importance of Training. The Parties recognize the need to maintain continuing support of the programs designed to develop adequate numbers of competent workers in the construction industry, the obligation to capitalize on the availability of the local work force in the area served by the District, and the opportunities to provide continuing work under the construction program funded by Measures K, R, Y, Q and RR. To these ends, the Parties will facilitate, encourage, and assist Local Residents and District students to commence and progress in Apprenticeship Readiness programs that utilize the Building Trades multi-craft core

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curriculum (MC3) and other District vocational programs and the Apprenticeship Training Committees for the crafts and trades they are interested in. The Unions shall assist Local Residents and District students who are seeking Union jobs on the Project and Union membership in assessing their work experience and giving them credit for provable past experience in their relevant craft or trade, including experience gained working for non-union Contractors. The District, the Project Labor Coordinator, other District consultants, and the Council, will work cooperatively to identify, or establish and maintain, effective programs and procedures for persons interested in entering the construction industry and which will help prepare them for the formal Joint Labor/Management Apprenticeship Programs maintained by the signatory unions.

Section 14.2 Use of Apprentices. (a) Apprentices used on Projects under this Agreement shall be registered in Joint Labor Management Apprenticeship Programs approved by the State of California. Apprentices may comprise up to thirty (30) percent of each craft's work force at any time, unless the standards of the applicable joint apprenticeship committee confirmed by the Division of Apprenticeship Standards (DAS) establish a lower or higher maximum percentage. Where the standards permit a higher percentage, such percentage shall apply on Project Work. Where the applicable standards establish a lower percentage, the applicable Union will use its best efforts with the Joint Labor Management apprenticeship committee and, if necessary, the DAS to permit up to thirty percent (30%) Apprentices on the Project. When available and capable of undertaking the tasks involved, forty (40) percent of such Apprentice workforce of each craft shall consist of first (1st) year Apprentices.

(b) The Unions agree to cooperate with the Contractor in furnishing Apprentices as requested up to the maximum percentage. The Apprentice ratio for each craft shall be in compliance, at a minimum, with the applicable provisions of the Labor Code relating to utilization of Apprentices. The District shall encourage such utilization, and, both as to Apprentices and the overall supply of experienced workers, the Project Labor Coordinator will work with the Council to assure appropriate and maximum utilization of Apprentices and the continuing availability of both Apprentices and journey persons.

(c) The Parties agree that Apprentices will not be dispatched to Contractors working under this Agreement unless there is a journeymen or other Contractor employee

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working on the Project where the Apprentice is to be employed who is qualified to assist and oversee the Apprentice's progress through the program in which he is participating.

Section 14.3 Joint Subcommittee on Training and Apprenticeship. To carry out the intent and purposes of this Article, a subcommittee of the Labor Management Committee established pursuant to Article XVI shall be established, jointly chaired by a designee of the District and a designee of the Council, to oversee the identification and/or effective development of procedures and programs leading to the full utilization of apprenticeship programs, and to work with representatives of each signatory craft's joint apprenticeship committee ("JAC") and representatives of the District's technical schools to establish appropriate criteria for recognition by such JAC's of the educational and work experience possessed by District students and graduates toward qualifying for entry or advanced level in the apprenticeship programs under the direction under such JAC's. The Subcommittee will meet as necessary at the call of the joint chairs to promptly to facilitate its purposes in an expeditious manner as soon as this Agreement becomes effective. In addition to the joint chairs, the membership of the committee will consist of at least three representatives of the signatory local Unions and three representatives of contractors signatory to this Agreement and experienced in overseeing and participating in joint labor management apprenticeship programs (or organizations to which the contractors belong).

ARTICLE 15

PRE-JOB CONFERENCES

The prime Contractor shall ensure that each Contractor on their project conducts a pre-job conference in accordance with this Agreement. Each Contractor will conduct a pre-job conference with the Unions not later than seven (7) calendar days prior to commencing work. The Project Labor Coordinator may work with the prime contractor and Council to facilitate the scheduling of the pre-job conference. The prime Contractor shall notify the Project Labor Coordinator and the Council at least seven (7) calendar days (or another mutually agreeable time) in advance of all such conferences. The Council, the Project Labor Coordinator may participate in the pre-job conference. The purpose of the conference will be to, among other things, convey craft manpower needs, and discuss the schedule of work and project work rules/owner rules. All work assignments shall be disclosed by the prime Contractor and all subcontractors at a pre-job conference. Should there be Project Work that was not discussed at

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the pre-job conference, or additional project work be added, the Contractors performing such work will conduct a separate pre-job conference for such work. Should there be any formal jurisdictional dispute raised under Article VIII, the Project Labor Coordinator shall be promptly notified. At the pre-job conference, the Project Labor Coordinator may review the District's employment and contracting programs and goals with the participants.

ARTICLE 16

LABOR/MANAGEMENT AND COOPERATION

Section 16.1 Joint Committee. The Parties to this Agreement may form a joint committee consisting of representatives selected by the Council and the Project Labor Coordinator, to be chaired jointly by a representative of the Project Labor Coordinator and the Council. The purpose of the Committee shall be to promote harmonious and stable labor management relations on this Project, to ensure effective and constructive communication between labor and management parties, to advance the proficiency of work in the industry, and evaluate and ensure an adequate supply of skilled labor for all Project Work. Representatives of the District may participate upon its request.

Section 16.2 Functions of Joint Committee. The Committee shall meet on a schedule to be determined by the Committee or at the call of the joint chairs, to discuss the administration of the Agreement, the progress of the Project, general labor management problems that may arise, and any other matters consistent with this Agreement. Substantive grievances or disputes arising under Articles VII, VIII or X shall not be reviewed or discussed by this Committee, but shall be processed pursuant to the provisions of the appropriate Article.

The Project Labor Coordinator shall be responsible for the scheduling of the meetings, the preparation of the agenda topics for the meetings, with input from the Unions, the Contractors, and the District. Notice of the date, time and place of meetings, shall be given to the Committee members at least three (3) days prior to the meeting. The District should be notified of the meetings and invited to send a representative(s) to participate.

The Project Labor Coordinator shall prepare quarterly reports on Apprentice utilization and the training and employment of District residents, and a schedule of Project work and estimated number of craft workers needed. The Committee, or an appropriate subcommittee,

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may review such reports and make any recommendations for improvement, if necessary, including increasing the availability of skilled trades, and the employment of local residents or other individuals who should be assisted with appropriate training to qualify for apprenticeship programs.

Section 16.3 Subcommittees. The Committee may form subcommittees to consider and advise the full Committee with regard to safety and health issues affecting the Project and other similar issues affecting the overall Project, including any workers compensation program initiated under this Agreement.

ARTICLE 17

SAVINGS AND SEPARABILITY

Section 17.1 Savings Clause. It is not the intention of the District, the Project Labor Coordinator, Contractor, or the Union parties to violate any laws governing the subject manner of this Agreement. The Parties hereto agree that in the event any provision of this Agreement is finally held or determined to be illegal or void as being in contravention of any applicable law or regulation, the remainder of the Agreement shall remain in full force and effect unless the part or parts so found to be void are wholly inseparable from the remaining portions of this Agreement. Further, the Parties agree that if and when any provision(s) of this Agreement is finally held or determined to be illegal or void by a court of competent jurisdiction, the Parties will promptly enter into negotiations concerning the substantive effect of such decision for the purposes of achieving conformity with the requirements of any applicable laws and the intent of the Parties hereto. If the legality of this Agreement is challenged and any form of injunctive relief is granted by any court, suspending temporarily or permanently the implementation of this Agreement, then the Parties agree that all Project Work that would otherwise be covered by this Agreement should be continued to be bid and constructed without application of this Agreement so that there is no delay or interference with the ongoing planning, bidding and construction of any Project Work.

Section 17.2 Effect of Injunctions or Other Court Orders. The Parties recognize the right of the District to withdraw, at its absolute discretion, the utilization of the Agreement as part of any bid specification should a Court of competent jurisdiction issue any order, or any

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applicable statute which could result, temporarily or permanently in delay of the bidding, awarding and/or construction on the Project. Notwithstanding such an action by the District, or such court order or statutory provision, the Parties agree that the Agreement shall remain in full force and effect on covered Project Work to the maximum extent legally possible.

ARTICLE 18

WAIVER

A waiver of or a failure to assert any provisions of this Agreement by any or all of the Parties hereto shall not constitute a waiver of such provision for the future. Any such waiver shall not constitute a modification of the Agreement or change in the terms and conditions of the Agreement and shall not relieve, excuse or release any of the Parties from any of their rights, duties or obligations hereunder.

ARTICLE 19

AMENDMENTS

The provisions of this Agreement can be renegotiated, supplemented, rescinded or otherwise altered only by mutual agreement in writing, hereafter signed by the negotiating parties hereto.

ARTICLE 20

DURATION OF THE AGREEMENT

Section 20.1 Duration. (a) This Agreement shall be effective January 1, 2024 for Project Work awarded on or after such date through December 31, 2033 (provided however, it shall continue in effect for all work awarded prior to such termination date until the completion of such Project Work).

(b) This Agreement may be extended by mutual consent of the Parties for any further construction program(s) initiated pursuant to Measure K, R, Y, Q and RR consistent with the Scope Provisions of Article II of this Agreement. It is agreed that with regard to any new construction or major modification programs undertaken by the District pursuant to further propositions or measures enacted by District voters at any time through December 31, 2033, this

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Agreement shall apply to all construction work awarded through December 31, 2033, for work meeting conditions established in Article II, Section 2.2 above.

Section 20.2 Turnover and Final Acceptance of Completed Work. (a) Construction of any phase, portion, section, or segment of Project Work shall be deemed complete when such phase, portion, section or segment has been turned over to the District by the Contractor and the District has accepted such phase, portion, section, or segment. As areas and systems of the Project are inspected and construction-tested and/or approved and accepted by the District or third parties with the approval of the District, the Agreement shall have no further force or effect on such items or areas, except when the Contractor is directed by the District to engage and repairs or modifications required by its contract(s) with the District.

(b) Notice of each final acceptance received by the Contractor will be provided to the Council with the description of what portion, segment, etc. has been accepted. Final acceptance may be subject to a "punch" list, and in such case, the Agreement will continue to apply to each such item on the list until it is completed to the satisfaction of the District and Notice of Acceptance is given by the District or its representative to the Contractor. At the request of the Union, complete information describing any "punch" list work, as well as any additional work required of a Contractor at the direction of the District pursuant to (a) above, involving otherwise turned-over and completed facilities which have been accepted by the District, will be available from the Project Labor Coordinator.

Section 20.3 Continuation of MLA. MLAs incorporated as part of this Agreement shall continue in full force and effect, as previously stated, until the contractor and union parties to the collective bargaining agreement(s) which are the basis for such MLAs notify the Project Labor Coordinator of the mutually agreed upon changes in such agreements and their effective date(s).

The Parties agree to recognize and implement all applicable changes on their effective dates, except as otherwise provided by this Agreement; provided, however, that any such provisions negotiated in said collective bargaining agreements will not apply to work covered by this Agreement if such provisions are less favorable to the Contractor under the Agreement than those uniformly required of contractors for construction work normally covered by those

agreements; nor shall any provision be recognized or applied if it may be construed to apply exclusively or predominately to work covered by this Agreement. Any disagreement between the Parties over the incorporation into an MLA of any such provision agreed upon in an negotiation of the Local Collective Bargaining Agreement which is the basis for an MLA shall be resolved under the procedures established in Article X.

In witness whereof the Parties have caused this Project Stabilization Agreement for Los Angeles Unified School District New Construction, Major Modernization, and School Upgrade to be executed as of the date and year above stated.

LOS ANGELES
UNIFIED SCHOOL DISTRICT

By: _____
Krisztina Tokes
Chief Facilities Executive

By: _____

LOS ANGELES/ORANGE COUNTIES
BUILDING AND CONSTRUCTION TRADES
CONSTRUCTION COUNCIL

By: _____
Ernesto Medrano
Executive Secretary

Signatory Unions and Districts
(see attached)

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LOS ANGELES UNIFIED SCHOOL DISTRICT
PROJECT STABILIZATION AGREEMENT
UNION SIGNATORY PAGE

Asbestos Heat & Frost Insulators (Local 5)	DocuSigned by: Mike Patterson 11199ACC96CF44A...
Boilermakers (Local 92)	DocuSigned by: Luis Miramontes 83A5B3BEE86F48F...
Bricklayers & Allied Craftworkers (Local 4)	DocuSigned by: Lupe Aldaco EA7AE8519EAE486...
Cement Masons (Local 500)	DocuSigned by: Jack Alvarado 5C661A00E44B47F...
Cement Masons (Local 600)	DocuSigned by: Ricardo Gonzalez 59C2DDBBFF7F442...
Electricians (Local 11)	DocuSigned by: 1A4B5E5AB1C961...
Elevator Constructors (Local 18)	DocuSigned by: Tony Garzaniga 859D43C5C88B417...
Gunite Workers (Local 345)	DocuSigned by: Ed Learn (Gunite #345) 237F9D67A3B5408...
Iron Workers (Reinforced – Local 416)	DocuSigned by: Frankie Jimenez 6E6E642A5F04466...
Iron Workers (Structural – Local 433)	DocuSigned by: 6E172C82FEB4CC...
Southern California District Council of Laborers	DocuSigned by: Jon Preciado 85151D075BAB44A...
Laborers (Local 300)	DocuSigned by: SERGIO RASCON 6D6520D1C3E9449...
Laborers (Local 1309)	DocuSigned by: Nicholas Santos
Laborers (Local 1184)	DocuSigned by: B569A3D2C62940C...
Operating Engineers (Local 12)	
Operating Engineers (Local 12)	
Operating Engineers (Local 12)	
Painters & Allied Trades DC 36	DocuSigned by: Ernesto Toscano 2370C655E467401...
Pipe Trades (Plumbers Local 78)	DocuSigned by: Jeremy Diaz C43D182771ED474...
Pipe Trades (Pipe Fitters Local 250)	DocuSigned by: Ben Clayton B0E3A583E0A494...
Pipe Trades (Local 345)	DocuSigned by: Ricardo Perez 8C146EC36FE5484...
Pipe Trades (Plumbers/Fitters Local 761)	DocuSigned by: Greg Lewis 5498394E0F0C40F...
Pipe Trades (Sprinkler Fitters Local 709)	DocuSigned by: Todd Golden 6D88CFF26138497...
Plasterers (Local 200)	DocuSigned by: 00CA94BF7EC3425...
Plaster Tenders (Local 1414)	DocuSigned by: 9BEB3A0A1B4A7...
Roofers & Waterproofers (Local 36)	DocuSigned by: Cliff Smith E607A88CD0D147F...
Sheet Metal Workers (Local 105)	DocuSigned by: Steve Hinson 925589179AF441F...
Teamsters (Local 986)	DocuSigned by: Caesar Borgas B9F79ED2514D410...
Southwest Mountain States Regional Council of Carpenters	DocuSigned by: Josh Raper 4E0027DAA65B4D0...

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ATTACHMENT A

LETTER OF ASSENT

To be signed by all Contractors awarded work covered by the Project Stabilization Agreement prior to commencing work.

[Contractor's Letterhead]

Project Labor Coordinator
c/o The Los Angeles Unified School District
333 S. Beaudry Avenue
Los Angeles, CA 90017

Re: Project Stabilization Agreement – New Construction, Major Modernization, and School Upgrade Funded by Measures K, R, Y, Q and RR – Letter of Assent

To whom this may concern:

This is to confirm that [Name of Company] agrees to be party to and bound by The Los Angeles Unified School District Project Stabilization Agreement – New Construction, Major Modernization, and School Upgrade Funded by Measures K, R Y, Q and RR or other projects added to this Agreement effective January 1, 2024 as such Agreement, may from time to time be amended by the negotiating parties or interpreted pursuant to its terms. Such obligation to be a party and bound by this Agreement shall extend all work covered by the Agreement undertaken by this Company on the Project pursuant to [Contract No. or identifying description], and this Company shall require all of its subcontractors of whatever tier to be similarly bound for all work within the scope of the Agreement by signing and furnishing to you an identical Letter of Assent prior to their commencement of work.

Sincerely,

[Name of Construction Company]

By: [ ]
Name and Title of Authorized Executive

Contractor's State License No: _____

Project Name: _____

[Copies of this Letter must be submitted to the Project Labor Coordinator and to the Council consist with Article II, Section 2.5(b)].

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ATTACHMENT B

LOS ANGELES UNIFIED SCHOOL DISTRICT
CRAFT REQUEST FORM

TO THE CONTRACTOR: Please complete and submit this form to the applicable union to request craft workers that fulfill the hiring requirements for this project. After submitting your request, please call the Local to verify receipt and substantiate their capacity to furnish workers as specified below. Please keep copies for your records.

The Los Angeles Unified School District Project Stabilization Agreement ("PSA") establishes a goal that 50% of all hours worked on the Project shall be from "Local Residents". As defined in Section 3.5 of the PSA, Local Residents are individuals currently residing in those zip codes which overlap the area covered by the District as reflected on the U.S. Postal Service zip codes and graduates of the Los Angeles Unified School District/Eligible Veterans/individuals who have successfully completed the Building Trades Multi-Craft Core Curriculum Apprenticeship Readiness Program, regardless of where they reside. For dispatch purposes, employees described herein shall be referred to as "Local Residents."

TO THE UNION: Please complete the "Union Use Only" section on the next page and fax this form back to the requesting Contractor. Be sure to retain a copy of this form for your records.

CONTRACTOR USE ONLY

To: Union Local # _____ **Fax/Email** _____**Date:** _____

Cc: Project Labor Coordinator
From: Company: _____ Issued By: _____
Contact Phone: (___)_____ Contact Fax/Email: _____

PLEASE PROVIDE ME WITH THE FOLLOWING UNION CRAFT WORKERS.

Craft Classification (i.e., plumber, painter, etc.)	Journeyman or Apprentice	Local Resident	Number of workers needed	Report Date	Report Time
		☐ YES ☐ NO			
		☐ YES ☐ NO			
		☐ YES ☐ NO			
TOTAL WORKERS REQUESTED = _____					

Please have worker(s) report to the following work address indicated below:

Project Name: _____ Site: _____ Address: _____

Report to: _____ On-site Tel: _____ On-site Fax: _____

Comment or Special Instructions: _____

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UNION USE ONLY

Date dispatch request received:
Dispatch received by:
Classification of worker requested:
Classification of worker dispatched:

WORKER REFERRED

Name:		
Date worker was dispatched:		
The worker referred is a(n): (check all that apply)		
JOURNEYMAN	Yes _____	No _____
APPRENTICE	Yes _____	No _____
LOCAL RESIDENT Zip Code:_____ Other Eligible Criteria: □ LAUSD Graduate □ Eligible Veteran □ Completion of MC3	Yes _____	No _____
GENERAL DISPATCH FROM OUT OF WORK LIST	Yes _____	No _____

[This form is not intended to replace a Local Union's Dispatch or Referral Form normally given to the employee when being dispatched to the jobsite.]

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ATTACHMENT C

LOCAL RESIDENT ZIP CODES

90001 90002 90003 90004 90005 90006 90007 90008 90010 90011 90012 90013 90014 90015 90016 90017
90018 90019 90020 90021 90022 90023 90024 90025 90026 90027 90028 90029 90031 90032 90033 90034
90035 90036 90037 90038 90039 90040 90041 90042 90043 90044 90045 90046 90047 90048 90049 90056
90057 90058 90059 90061 90062 90063 90064 90065 90066 90067 90068 90069 90071 90073 90077 90089
90094 90095 90201 90210 90220 90221 90230 90232 90247 90248 90249 90250 90255 90262 90265 90270
90272 90275 90280 90290 90291 90292 90293 90303 90402 90405 90501 90502 90505 90710 90717 90731
90732 90744 90745 90746 90802 90805 90810 91040 91042 91205 91214 91302 91303 91304 91306 91307
91311 91316 91321 91324 91325 91326 91330 91331 91335 91340 91342 91343 91344 91345 91352 91356
91364 91367 91387 91401 91402 91403 91405 91406 91411 91423 91436 91504 91505 91601 91602 91604
91605 91606 91607 91608 91754

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ATTACHMENT D

DRUG AND ALCOHOL TESTING POLICY

The Parties recognize the problems that drug and alcohol abuse have created in the construction industry and the need to develop drug and alcohol abuse prevention programs. Accordingly, the Parties agree that in order to enhance the safety of the workplace and to maintain a drug and alcohol-free work environment, individual Contractors shall require applicants or employees to undergo drug and alcohol testing in accordance with this PSA and this policy, Attachment D – Drug and Alcohol Testing Policy, hereafter "Policy."

1. It is understood that the use, possession, transfer, or sale of illegal drugs, narcotics, or other unlawful substances, as well as being under the influence of alcohol and the possession of or consuming alcohol is absolutely prohibited while employees are on the Contractor's job premises or while working on any jobsite in connection with work performed under the PSA.

2. No Contractor may implement a drug and alcohol testing program that does not conform in all respects to the provisions of this Policy.

3. No Contractor may implement drug and alcohol testing at any jobsite unless written notice is given to the Union setting forth the location of the jobsite, a description of the project under construction, and the name and telephone number of the Prime Contractor's project manager. Said notice shall be provided at the pre-job conferences for each Covered Project. Failure to give such notice shall make any drug and alcohol testing engaged in by the Contractor a violation of the PSA and subject to the Article 10 grievance procedure.

4. A Contractor who elects to implement drug and alcohol testing pursuant to this Policy shall require all craft employees on the Covered Project to be tested. With respect to individuals who become employed on the Covered Project subsequent to the proper implementation of a valid drug and alcohol testing program, such test shall be administered upon the commencement of employment on the project, whether by referral from a Union Dispatch Office, transfer from another project, or another method. Individuals who were employed on the project prior to proper implementation of a valid drug and alcohol testing program may only be subjected to testing for the reasons set forth in paragraphs 5(g)(l) through 5(g)(3) and paragraphs 6(a) through 6(e) of this Policy. Refusal to undergo such testing shall be considered sufficient grounds to deny employment on the project.

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5. The following procedure shall apply to all drug and alcohol testing:

   a. The Contractor may request urine samples only. The applicant or employee shall not be observed when the urine specimen is given. An applicant or employee, at his or her sole option, shall, upon request, receive a blood test in lieu of a urine test. No employee of the Contractor shall draw blood from a bargaining unit employee, touch or handle urine specimens, or in any way become involved in the chain of custody of urine or blood specimens. A Union Business Representative, subject to the approval of the individual applicant or employee, shall be permitted to accompany the applicant or employee to the collection facility to observe the collection, bottling, and sealing of the specimen.

   b. A Contractor may request an applicant or employee promptly, within four (4) hours of the Contractor's request, perform an alcohol breathalyzer test at a certified laboratory only, and cutoff levels shall be those mandated by applicable state or federal law.

   c. The testing shall be done by a laboratory approved by the Substance Abuse & Mental Health Services Administration (SAMHSA), which is chosen by the Contractor and the Union.

   d. An initial test shall be performed using the Enzyme Multiplied Immunoassay Technique (EMIT). In the event a question or positive result arises from the initial test, a confirmation test must be utilized before action can be taken against the applicant or employee. The confirmation test will be by Gas Chromatography/Mass Spectrometry (GC/MS). Cutoff levels for both the initial test and confirmation test will be those established by SAMHSA and this Policy. Should these SAMHSA levels be changed during the course of the PSA or new testing procedures are approved, then these new regulations will be deemed as part of this existing PSA. Confirmed positive samples will be retained by the testing laboratory in secured long-term frozen storage for a minimum of one (1) year. Handling and transportation of each sample must be documented through strict chain-of-custody procedures.

   e. In the event of a confirmed positive test result, the applicant or employee may request, within forty-eight (48) hours, a sample of his/her specimen from the testing laboratory for purposes of a second test to be performed at a second laboratory, designated by the Union and approved by SAMHSA. The retest must be performed within ten (10) days of the request. Chain of custody for this sample shall be maintained by the Contractor between the original testing laboratory and the Union's designated laboratory. Retesting shall be performed at the applicant's or employee's expense. In the event of conflicting test results, the Contractor may require a third test, at the Contractor's expense.

   f. If, as a result of the above testing procedure, it is determined that an applicant or employee has tested positive, this shall be considered sufficient grounds to deny the applicant or employee his/her employment on the project.

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g. No individual who tests negative for drugs and alcohol pursuant to the above procedure and becomes employed on the project shall again be subjected to drug and alcohol testing with the following exceptions:

1) Employees who are involved in industrial accidents resulting in damage to plant, property, or equipment or injury to him/her or others may be tested for drugs or alcohol pursuant to the procedures stated hereinabove.

2) The Contractor may test employees following thirty (30) days' advance written notice to the employee(s) to be tested and to the applicable Union. Notice to the applicable Union shall be sent by certified mail to the affected Union with a copy to the Project Labor Coordinator. Such testing shall be pursuant to the procedures stated hereinabove.

3) The Contractor may test an employee where the Contractor has reasonable cause to believe that the employee is impaired from performing his/her job. Reasonable cause shall be defined as being aberrant or unusual behavior, the type of which is a recognized and accepted symptom of impairment (e.g., slurred speech, unusual lack of muscular coordination). Such behavior must be actually observed by at least two (2) persons, one (1) of whom shall be a supervisor who has been trained to recognize the symptoms of drug and alcohol abuse or impairment and the other of whom shall be the Job Steward. If the Job Steward is unavailable or there is no Job Steward on the Covered Project, the other person shall be a member of the applicable Union's bargaining unit. Testing shall be pursuant to the procedures stated hereinabove. Employees who are tested pursuant to the exceptions set forth in this paragraph and who test positive will be removed from the Contractor's payroll.

h. Applicants or employees who do not test positive shall be paid for all time lost while undergoing drug and alcohol testing. Payment shall be at the applicable wage and benefit rates set forth in the Applicable Prevailing Wage Laws. Applicants who have been dispatched from the Union and who are not put to work pending the results of a test will be paid waiting time until such time as they are put to work. It is understood that an applicant must pass the test as a condition of employment. Applicants who are put to work pending the results of a test will be considered probationary employees.

6. The Contractors will be allowed to conduct periodic jobsite drug and alcohol testing on the Project under the following conditions:

a. The entire jobsite must be tested, including any employee or subcontractor's employee who worked on that project three (3) working days before or after the date of the test;

b. Jobsite testing cannot commence sooner than fifteen (15) days after start of the work on the project;

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c. Prior to start of periodic testing, a Business Representative will be allowed to conduct an educational period on company time to explain periodic jobsite testing program to affected employees;

d. Testing shall be conducted by an SAMHSA-certified laboratory, pursuant to the provisions set forth in paragraph 5 hereinabove.

e. Only two (2) periodic tests may be performed in a twelve (12)-month period.

7. It is understood that the unsafe use of prescribed medication, or where the use of prescribed medication impairs the employee's ability to perform work, is a basis for the Contractor to remove the employee from the jobsite.

8. Any grievance or dispute that may arise out of the application of this Policy shall be subject to the grievance and arbitration procedures set forth in the PSA.

9. The establishment or operation of this Policy shall not curtail any right of any employee found in any law, rule, or regulation. Should any part of this Policy be found unlawful by a court of competent jurisdiction or a public agency having jurisdiction over the Parties, the remaining portions of the PSA shall be unaffected, and the Parties shall enter negotiations to replace the affected provision.

10. Present employees, if tested positive, shall have the prerogative for rehabilitation program at the employee’s expense. When such program has been successfully completed, the Contractor shall not discriminate in any way against the employee. If work for which the employee is qualified exists, he/she may be reinstated.

11. The Contractor agrees that results of urine and blood tests performed hereunder will be considered medical records held confidential to the extent permitted or required by law. Such records shall not be released to any persons or entities other than designated Contractor representatives and the applicable Union. Such release to the applicable Union shall only be allowed upon the signing of a written release by the employee, and the information contained therein shall not be used to discourage the employment of the individual applicant or employee on any subsequent occasion.

12. Employees who seek voluntary assistance for substance abuse may not be disciplined for seeking such assistance. Requests from employees for such assistance shall remain confidential and shall not be revealed to other employees or management personnel without the employee's consent. Employees enrolled in substance abuse programs will be subject to all Contractor rules, regulations, and job performance standards with the understanding that an employee enrolled in such a program is receiving treatment for an illness.

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13. The Contractor shall indemnify and hold the Union harmless against any and all claims, demands, suits, or liabilities that may arise out of the application of this Policy.

14. This Policy shall constitute the only Policy in effect between the Parties concerning drug and alcohol abuse, prevention, and testing. Any modifications thereto must be accomplished pursuant to collective bargaining negotiations between the Parties.

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SPECIMEN REPORTING CRITERIA

Initial Test Analyte	Initial Test Cutoff [1]	Confirmatory Test Analyte	Confirmatory Test Cutoff Concentration
Marijuana metabolites (THCA)[2]	50 ng/ml [3]	THCA	15 ng/ml
Cocaine metabolite (Benzoylecgonine)	150 ng/ml [3]	Benzoylecgonine	100 ng/ml
Codeine/ Morphine	2000 ng/ml	Codeine Morphine	2000 ng/ml 2000 ng/ml
Hydrocodone/ Hydromorphone	300 ng/ml	Hydrocodone Hydromorphone	100 ng/ml 100 ng/ml
Alcohol	0.02%	Ethanol	0.02%
Oxycodone/ Oxymorphone	100 ng/ml	Oxycodone Oxymorphone	100 ng/ml 100 ng/ml
6-Acetylmorphine	10 ng/ml	6-Acetylmorphine	10 ng/ml
Phencyclidine	25 ng/ml	Phencyclidine	25 ng/ml
Amphetamine/ Methamphetamine	500 ng/ml	Amphetamine Methamphetamine	250 ng/ml 250 ng/ml
MDMA[4]/MDA[5]	500 ng/ml	MDMA MDA	250 ng/ml 250 ng/ml
Initial Test Analyte	Initial Test Cutoff	Confirmatory Test Analyte	Confirmatory Test Cutoff Concentration
Barbiturates	300 ng/ml	Barbiturates	200 ng/ml
Benzodiazepines	300 ng/ml	Benzodiazepines	300 ng/ml
Methadone[6]	300 ng/ml	Methadone	100 ng/ml
Methaqualone	300 ng/ml	Methaqualone	300 ng/ml
Propoxyphene	300 ng/ml	Propoxyphene	100 ng/ml

[1] For grouped analytes (i.e., two or more analytes that are in the same drug class and have the same initial test cutoff):

Immunoassay: The test must be calibrated with one analyte from the group identified as the target analyte. The cross-reactivity of the immunoassay to the other analyte(s) within the group must be 80 percent or greater; if not, separate immunoassays must be used for the analytes within the group.

Alternate technology: Either one analyte or all analytes from the group must be used for calibration, depending on the technology. At least one analyte within the group must have a concentration equal to or greater than the initial test cutoff or, alternatively, the sum of the analytes present (i.e., equal to or greater than the laboratory's validated limit of quantification) must be equal to or greater than the initial test cutoff.

[2] An immunoassay must be calibrated with the target analyte, 9-tetrahydrocannabinoJ-9- carboxylic acid (THCA).

[3] **Alternate technology (THCA and benzoylecgonine):** The confirmatory test cutoff must be used for an alternate technology initial test that is specific for the target analyte (i.e., 15 ng/ml for THCA, 100 ng/ ml for benzoylecgonine).

[4] Methylenedioxymethamphetamine (MDMA)

[5] Methylenedioxyamphetamine (MDA)

[6] Employees with a prescription for methadone who are using the medication as prescribed, and are not impaired and can safely perform their work, will not be considered to have violated this Policy.

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MEMORANDUM OF UNDERSTANDING REGARDING
“QUICK” DRUG SCREENING TESTS PURSUANT TO
ATTACHMENT D – DRUG AND ALCOHOL TESTING POLICY

It is hereby agreed between the Parties hereto that a Contractor who has otherwise properly implemented drug and alcohol testing, as set forth in the Policy, shall have the right to offer an applicant or employee a "quick" drug screening test. This “quick” screen test shall consist either of the “ICUP” urine screen or similar test or an oral screen test. The applicant or employee shall have the absolute right to select either of the two “quick” screen tests, or to reject both and request a full drug test.

An applicant or employee who selects one of the "quick" screen tests, and who passes the test, shall be put to work immediately. An applicant or employee who fails the "quick" screen test, or who rejects the "quick" screen tests, shall be tested pursuant to the procedures set forth in the Policy. The sample used for the "quick" screen test shall be discarded immediately upon conclusion of the test. An applicant or employee shall not be deprived of any rights granted to them by the Policy as a result of any occurrence related to the “quick” screen test.

SECTION 00 9110

PRE-BID CLARIFICATION

1.01 GENERAL

A. This section addresses requests for clarifications of the Bidding Documents.

1.02 SPECIFIC

A. Each request for clarification shall be submitted in writing to only the person and/or firm designated in Section 00 3148 - Project Directory, Item E.

B. Clarifications, interpretations, corrections, and changes to the Bidding Documents will be made by Addendum as provided in Section 00 9113. Clarifications, interpretations, corrections, and changes to the Bidding Documents made in any other manner shall not be binding and bidder shall not rely upon them.

C. Each transmitted request shall contain the name of the person and/or firm filing the request, address, telephone and fax number, Specifications and/or Drawing number. Bidder is responsible for the legibility of hand written requests. Pre-bid clarification requests shall be filed a minimum of seven (7) days prior to the bid due date. Requests received less than seven (7) days before the bid due date shall not be considered or responded to. A written response to timely pre-bid clarifications requests will be made by Addendum issued by Facilities Construction Contracts not less than seventy-two (72) hours prior to the bid due date.

DATE: _____

PROJECT NAME: **SYLVAN PARK EEC, OUTDOOR CLASSROOM AND CAMPUS UPGRADE (BV)(PSA)**

PROJECT NUMBER: **10374546 / 233171** CONTRACT NUMBER: **2610077**

TO: **Maria Lachica (OAR) and HAEBHIN JUNG**

EMAIL ADDRESS: **marialourdes.lachica@lausd.net and haebhin.jung@lausd.net**

(VERY IMPORTANT NOTICE: MAKE SURE TO COPY HAEBHIN JUNG ON ALL PRE-BID CLARIFICATIONS TO ENSURE THAT THE QUESTIONS ARE PROCESSED IN A TIMELY MANNER)

FROM: _____

ADDRESS: _____

TELEPHONE & FAX NUMBER: _____

DOCUMENT/DIVISION NUMBER: _____DRAWING NUMBER: _____

REQUESTED CLARIFICATION:_____

_____

_____

_____

_____

_____

_____

_____

Attach additional numbered sheets as necessary, however, only one (1) request shall be contained on each submitted form.

END OF SECTION

SECTION 01 1100

SUMMARY OF WORK

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. The furnishing of all labor, materials, equipment, services, and incidentals necessary for Work of the **Outdoor Classroom and Campus Upgrade,** at **Sylvan Park Early Education Center** located at **15011 Delano St., Van Nuys, California 91411,** as set forth in the Construction Documents which include, but are not limited to, the Drawings, Addenda and Specifications.

B. Project Scope of Work: Refer to Division 00 1116 “Invitation to Bid”.

C. **Other Inclusions as noted below.**

1. Perform complete scanning of all areas of construction (restrooms, playground structure/matting, asphalt, landings, drinking fountains, path of travel, utilities, etc.) using ground penetrating radar to determine locations of existing rebar, reinforcing steel, electrical and communication conduits, water lines, fiber optic cables, voids in concrete, underground utilities, etc. Request dig alert and perform pot holing prior to any excavation, trenching, digging, etc. Mark the site/areas of work. Include scanning reports of the area of construction in shop drawings for records.

2. Contractor-Led Relocation

a) Relocation of Owner Property: The CONTRACTOR shall relocate any furniture or equipment not moved by the Owner as required to perform the scope of work. This relocation shall be at the CONTRACTOR’s expense and performed at the direction of the OAR. Relocated items include, but are not limited to:

- **Interior: Office, restroom, and classroom furniture; educational materials; musical instruments; and contents of cabinets/drawers.**
- **Exterior/Common: Lunch shelter tables and chairs; playground materials and equipment.**

Upon completion of the work in each area, the CONTRACTOR shall return all items to their original locations and configurations.

Prior to any movement of furnishings or equipment, the CONTRACTOR and the OAR shall conduct a joint inspection to document the existing condition of all items. Any damage to furniture, equipment, educational materials, musical instruments, or building finishes resulting from the CONTRACTOR's operations shall be repaired or replaced to "like-new" condition at the CONTRACTOR's sole expense.

1.02 RELATED REQUIREMENTS:

1. Division 00 1116: Invitation to Bid
2. Section 01 1216: Phasing of the Work.
3. Section 01 2300: Alternates (Bid Items).
4. Section 01 3113: Project Coordination.
5. Section 01 3229: Project Forms.
6. Section 01 3213: Construction Schedule.
7. Section 01 4523: Testing and Inspection
8. Section 01 4525: Testing, Adjusting, and Balancing for HVAC.
9. Section 01 5000: Construction Facilities and Temporary Controls.
10. Section 01 7123: Field Engineering.

1.03 REGULATORY REQUIREMENTS

A. Refer to Regulatory Requirements as defined by Specification Section 01 4523 "Testing and Inspection" and requirements of each Specification Section as noted.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION

3.01 USE OF PREMISES

A. CONTRACTOR shall coordinate Work of all trades, Subcontractors, utility service providers, with OWNER and/or Separate Work Contract. CONTRACTOR shall sequence, coordinate, and perform the Work to impose minimum hardship on the

operation and use of the existing facilities and/or Project site. CONTRACTOR shall install all necessary protection for existing improvements, Project site, property, and new Work against dust, dirt, weather, damage, vandalism, and maintain and relocate all protection to accommodate progression of the Work.

B. CONTRACTOR shall confine entrance and exiting to the Project site and/or facilities to routes designated by the OAR.

C. Within existing facilities, OWNER will remove portable equipment, furniture, and supplies from Work areas prior to the start of Work. CONTRACTOR shall cover and protect remaining items in areas of the Work.

D. CONTRACTOR is advised school may be in session during performance of the Work. CONTRACTOR shall utilize all available means to prevent generation of unnecessary noise and maintain noise levels to a minimum. When required by the OAR, CONTRACTOR shall immediately discontinue noise-generating activities and/or provide alternative methods to minimize noise generation. CONTRACTOR shall install and maintain air compressors, tractors, cranes, hoists, vehicles, and other internal combustion engine equipment with mufflers, including unloading cycle of compressors. CONTRACTOR shall discontinue operation of equipment producing objectionable noise as required by the OAR.

E. CONTRACTOR shall furnish, install, and maintain adequate supports, shoring, and bracing to preserve structural integrity and prevent collapse of existing improvements and/or Work modified and/or altered as part of the Work.

F. CONTRACTOR shall secure building entrances, exits, and Work areas with locking devices as required by the OAR.

G. CONTRACTOR assumes custody and control of OWNER property, both fixed and portable, remaining in existing facilities vacated during the Work.

H CONTRACTOR shall cover and protect surfaces of rooms and spaces in existing facilities turned over for the Work, including OWNER property remaining within as required to prevent soiling or damage from dust, dirt, water, and/or fumes. CONTRACTOR shall protect areas adjacent to the Work in a similar manner. Prior to OWNER occupancy, CONTRACTOR shall clean all surfaces including OWNER property.

I. CONTRACTOR shall not use or allow anyone other than OWNER employees to use facility telephones and/or other equipment, except in an emergency. CONTRACTOR shall reimburse OWNER for telephone toll charges originating from the facility except those arising from emergencies or use by OWNER employees.

J. CONTRACTOR shall protect all surfaces, coverings, materials, and finished Work from damage. Mobile equipment shall be provided with pneumatic tires.

K. CONTRACTOR is advised OWNER will award Separate Work Contracts at this Project site.

L. CONTRACTOR shall not permit the use of portable and/or fixed radios or other types of sound producing devices including walkmans and similar devices.

M. CONTRACTOR shall utilize a licensed Mechanical/HVAC subcontractor for the removal of all existing HVAC equipment.

N. CONTRACTOR shall include in their bid, an estimate for ductwork and labor premiums required to expedite the detailing, fabrication, and procurement of supply and return ductwork for the Multizone unit. Upon anchoring the new AHU roof curb, the CONTRACTOR—at their own expense—shall immediately detail the lined ductwork and flex connections.

The required turnaround is as follows:

Day 1: Set roof curb and schedule inspection for the following day. Detail ductwork and flex connections for the risers up to the finished roof curb height. Submit the details to the fabrication shop.

Day 2: Ductwork will be fabricated and loaded for Day 3 morning delivery at site.

Day 3: Installation and inspection are slated for completion by 2:00 PM on Day 3.

Day 4: Mechanical contractor will set the AHU, anchor it to the roof curb, and seal the supply and return risers to the unit.

O. Curb Inspection & Verification: Within 14 days of NTP, the CONTRACTOR shall perform selective demolition of the roofing and skirting on the (E) curb for structural inspection. Coordination: Contractor to schedule the OAR, Structural Engineer, and Manufacturer Rep to be present for the opening. Structural Review: Engineer to verify anchorage. Restoration: All openings must be made watertight within 24 hours of the investigation. Verification: Contractor to inspect the ceiling plenum to confirm that joists and framing match DSA-approved plans. Any discrepancies must be submitted via RFC.

P. The CONTRACTOR is required to submit all animal print materials, including a representative mockup, within 30 days following the NTP for architect/owner approval.

Q. Install and maintain compliant, removable temporary walkway to maintain emergency egress routes to the Parking Lot for Classrooms 1 through 5. CONTRACTOR to install and maintain removable temporary walkway to access school entrance. See 01 1219 Phasing of Work for additional information.

R. **All heavy demolition, waste removal, and indoor construction must be performed after 5:30 PM on weekdays or on Saturdays. All work must strictly adhere to the City of Los Angeles noise ordinance to ensure compliance with local decibel limits and allowable work hours.**

S. **Soil testing and management: Execute all required import/export material testing at every project phase in strict compliance with Specification 01 4524 for Environmental Import/Export Material Testing. This includes sampling for environmental compliance and managing the hauling/removal of soil from the site.**

T. **Temporary irrigation and maintenance of softscape/planting: Contractor is responsible for temporary irrigation and maintenance of all on-site planting (existing and new) for the duration of the system shutdown. Temporary watering measures must be sufficient to maintain plant health, and the Contractor shall be liable for any landscaping replacement costs resulting from inadequate care.**

U. **CONTRACTOR is required to review the As-built plans and verify them against existing site conditions. They must identify any potential conflicts that may arise from existing conditions affecting new construction. Additionally, the CONTRACTOR is responsible for conducting potholing as needed to ascertain the routing and profile of all existing underground utilities and duct banks. All identified conflicts must be documented and submitted in a plan format, with clear reference identification on the plans. The CONTRACTOR must provide detailed information about these conflicts on the plans, ensuring clarity and specificity.**

V. **The Contractor must assign one (1) staff member who is trained in 16-hour asbestos certification to the project and provide proof of current certification. It is recommended that all demolition workers also possess 16-hour asbestos training. Additionally, the Contractor must assign one (1) staff member who is trained in 8-hour Renovation, Repair, and Paint (RRP) lead certification, and provide proof of current certification. It is recommended that all demolition workers receive 8-hour RRP training as well. Workers involved in Door and Hardware installations must have both 16-hour asbestos and 8-hour lead training. Furthermore, the Contractor must ensure they have properly trained personnel capable of managing asbestos and/or lead abatement in accordance with Section 02 8213 (asbestos) and Section 02 8333 (lead) requirements.**

W. **Contractor to follow all United States Department of Justice (DOJ) requirements. Submit employee list with proof of DOJ clearance for approval.**

X. **CONTRACTOR to repair asphalt/concrete area where construction staging area was located after demobilization. Submit proposed repair/replacement process via submittal for approval.**

Y. The CONTRACTOR shall provide portable air conditioning units (minimum 14,000 BTU) with heating capacity for each classroom and office during the replacement of the rooftop units and in the Classroom Building. To ensure climate stability, the temporary system must be installed and tested for two full weeks prior to decommissioning the existing HVAC system. This temporary service shall remain in place until the new system is fully operational.

3.02 PROPERTY INVENTORY

A. Property, OWNER intends to remove; will be removed by OWNER before a room or space is vacated for the Work. Before performing Work in each room or space, OAR and CONTRACTOR shall prepare a detailed initial written inventory of OWNER property remaining within, including equipment and telephone instruments and the condition thereof. OAR and CONTRACTOR shall retain a signed copy of the inventory dated and signed by both parties. Prior to subsequent OWNER occupancy of each such room or space, OAR and CONTRACTOR shall perform a final inventory of OWNER property and all discrepancies between the initial inventory and final inventory shall be the responsibility of CONTRACTOR.

3.03 FURNITURE, FIXTURES AND EQUIPMENT (MATERIALS) OWNER FURNISHED CONTRACTOR INSTALLED (OFCI)

A. Certain materials identified in the Contract Documents as OWNER Furnished CONTRACTOR Installed, OFCI, will be delivered to the Project site by the OWNER.

B. If designated in the Contract Documents to be OWNER furnished CONTRACTOR installed, (OFCI), CONTRACTOR shall unload, store, uncrate, assemble, install, and connect OWNER supplied materials.

C. One-Hundred and Twenty days before the date the CONTRACTOR needs to have the OFCI materials on site, CONTRACTOR shall notify OWNER of the scheduled date for needed OFCI materials. Upon delivery to Project site, CONTRACTOR shall store OFCI materials inside rooms and/or protected spaces and will be responsible for security of OFCI materials until Substantial Completion. OAR will sign receipt or bill of lading as applicable.

D. CONTRACTOR shall, within ten days after delivery, uncrate and/or unpack OFCI materials in presence of OWNER who shall inspect delivered items. OWNER shall prepare an inspection report listing damaged or missing parts and accessories. OWNER shall transmit one copy of the report to CONTRACTOR. OWNER will procure and/or replace missing and or damaged OFCI materials, as indicated in inspection report.

E. CONTRACTOR shall install OFCI materials in the locations and orientation as indicated in the Contract Documents. CONTRACTOR shall verify exact locations with OAR before final installation of OFCI materials.

F. If required, OAR will furnish setting and or placement drawings for OFCI materials.

G. CONTRACTOR shall install OFCI materials by proper means and methods to ensure an installation as recommended by the manufacturer. CONTRACTOR shall furnish and install all necessary fasteners and required blocking to properly install OFCI materials.

H. CONTRACTOR shall install OFCI materials with manufacturer recommended fasteners for the type of construction to which the OFCI materials are being fastened and/or anchored.

I. CONTRACTOR shall provide final connections of any electrical, signal, gas, water, waste, venting and/or similar items to OFCI materials. CONTRACTOR shall, prior to final connection, verify the operating characteristics of OFCI materials are consistent with the designated supply.

3.04 FURNITURE, FIXTURES AND EQUIPMENT (Materials) - OWNER furnished, OWNER installed (OFOI)

A. Certain materials are identified in the Contract Documents as OWNER Furnished, OWNER Installed (OFOI)

B. On dates and during times designated by OWNER, CONTRACTOR shall provide clear off-loading, receiving, protected storage, and OWNER'S dumpster space areas for the use of OWNER or OWNER'S third party OFOI installation contractors. At such times, CONTRACTOR shall also make clear routes and access available to all rooms and spaces to receive OFOI materials.

C. On dates and during times designated by OWNER, CONTRACTOR shall provide access to the elevators for use of OWNER or OWNER'S third party OFOI installation contractors.

D. CONTRACTOR shall cooperate fully with OWNER or OWNER'S third part OFOI installation contractors.

E. CONTRACTOR may be requested by OWNER to provide supplemental labor and equipment to support OFOI activities. Such requests must be submitted in accordance with the change order clauses of Contract.

F. Immediately prior to mobilization of OWNER or OWNER'S third party OFOI installation contractors, OWNER shall document the condition of the Work in areas to be utilized for OFOI activities.

G. CONTRACTOR shall not be responsible for damage caused by OWNER or OWNER'S forces. OWNER shall document the condition of the Work and report to CONTRACTOR any damage in areas utilized for OFOI activities.

3.05 SOLID CONTAINMENT

A. **Contractor shall provide a temporary solid containment protection partition /barrier at required locations where sink modifications, restroom upgrades, drinking fountains re-work door frame modifications, and any other interior work is performed.**

B. **Environmental Remediation Work Plan shall include plans for the construction and installation of temporary barrier to protect and isolate people from work activities.**

C. **Include the construction and installation work activities of the temporary barrier in the Baseline at each location where protection is needed.**

D. **Prepare and submit a sketch showing the method of construction and anchoring details, for approval by Architect and/or LAUSD. Once sketch is approved, provide a mock -up in unoccupied classroom for the final approval by Architect and/or LAUSD.**

E. **Limit footprint of area to be protected, such that it does not significantly encroach on the existing space. Ensure that the exterior of the solid barrier is smooth and shall not have sharp edges. This shall be maintained daily, as needed. The existing floor, walls and ceiling must be restored after containment is removed.**

3.06 OTHER REQUIREMENTS

A. **The CONTRACTOR is responsible for the restoration of all disturbed finishes. Walls and ceilings shall be patched and painted corner-to-corner and ceiling to floor to ensure a seamless match with existing conditions. Any work impacting existing doors requires full patching and repair, followed by a complete repaint of the entire door surface.**

B. **CONTRACTOR shall submit daily reports to the OAR no later than 12:00 PM the following business day. Reports must include clear progress photos capturing the work performed during that shift. Reports must provide a full inventory of equipment onsite and include copies of the daily sign-in sheets for all personnel. Each report must explicitly identify, and segregate work performed under the Base Contract versus work performed under an approved or pending Change Order.**

C. **CONTRACTOR shall be completely responsible for, and shall provide all means, methods and materials to fully protect and/or otherwise prevent damage to the owner's property and work until Substantial Completion.**

Elevation Adjustments: If the CONTRACTOR's work on the exterior Path of Travel (POT) or landings results in a change to the finished grade or elevation, the CONTRACTOR shall be responsible for all resulting impacts to adjacent vertical surfaces. Where wall surfaces (e.g., stucco, masonry, or siding) are exposed, damaged, or left unfinished due to raising or lowering elevations, the CONTRACTOR shall patch, repair, and refinish the affected areas. All repairs must be feathered into the existing surface to create a seamless transition. The final finish, texture, and paint color must match the existing surrounding conditions.

D. Contractor shall maintain full compliance with all local laws and residential ordinances. Given the site's density, strict adherence to noise control and public right-of-way parking regulations are required. The Contractor is responsible for securing any necessary permits or variances for activities conducted outside standard allowable hours.

CONTRACTOR to utilize soundproof barriers / noise blankets on exterior temporary barricades and/or fencing. Sound Barrier Protection to be installed along the perimeter of the work, including the property boundaries between the school and residential area. Provide submittal for material approval prior to installation.

E. The CONTRACTOR shall provide a Certified Acceptance Test Technician (ATT) service to ensure compliance with Title 24 requirements, including all necessary mechanical support required, as referenced in the sheets Mechanical sheets.

F. Temporary Climate Control: While the Energy Management System (EMS) is offline or non-functional, the CONTRACTOR shall provide and install temporary thermostats to maintain manual temperature control and ensure occupant comfort within the affected rooms.

G. All service shutdowns—including gas, water, and power—must be coordinated with the OAR and school administration 72 hours prior to start of activity. Work must be scheduled to avoid impacting school operations and may only occur after all students and personnel, including those in after-school programs, have vacated the premises.

H. Schedule fire alarm testing after school hours to avoid impacting campus operations. All testing must remain compliant with city noise ordinances regarding after-hours disturbance. This must be coordinated with OAR at least 72 hours prior to the start of activity.

I. CONTRACTOR is responsible for site protection during inclement weather. Contractor to coordinate proactive measures (tenting, coverings, etc.) at project start-up to mitigate potential schedule impacts and damage to the work.

END OF SECTION

SECTION 01 1216

PHASING OF THE WORK

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Requirements for phasing of Work include logistics, phasing, and completion of designated phases prior to commencement of subsequent phases.

1.02 RELATED REQUIREMENTS

A. Section 01 1100: Summary of the Work.

B. Section 01 1219: Phasing of Work – Appendix A - Milestones

C. Section 01 3300: Submittal Procedures.

D. Section 01 3113: Project Coordination.

E. Section 01 3213: Construction Schedule.

F. Section 01 5000: Construction Facilities and Temporary Controls.

G. Section 01 7700: Contract Closeout.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION

3.01 SUBMITTALS

A. CONTRACTOR shall submit a Project site logistics plans in accordance with and as required by this Section.

3.02 LOGISTICS

A. Prior to commencement of Work, CONTRACTOR shall prepare and submit to OAR, a detailed Project site logistic plan, in same size and scale of Drawings, setting forth CONTRACTOR plan of Work relative to following, but not limited to, items:

1 Hauling route shall be in accordance with local ordinances a truck access route to and from Project site.

2. The identification of any overhead wire restrictions for power, street lighting, signal or cable.

3. Local sidewalk access and street closure requirements.

4. Protection of sidewalk pedestrians and vehicular traffic.

5. Project site fencing and access gate locations.

6. Construction parking.

7. Material staging or delivery areas.

8. Material storage areas.

9. Temporary trailer locations.

10. Temporary service location and proposed routing of all temporary utilities.

11. Location of temporary or accessible fire protection.

12. Trash removal and location of dumpsters.

13. Concrete pumping locations.

14. Crane locations.

15. Location of portable sanitary facilities.

16. Mixer truck wash out locations.

17. Traffic control signage.

18. Perimeter and site lighting.

19. Storm Water Pollution Prevention Plan – SWPPP.

20. Stockpile or lay down areas.

21. Security lighting

B. Revised Project site logistic plan may be required by OAR for separately identified phases of Work as set forth in this Section.

C. CONTRACTOR is responsible for securing and/or obtaining all approvals and permits from authorities having jurisdiction relative to any activities set forth in Article 3.02.A.

3.03 PHASING OF THE WORK

A. Project will be constructed in separate Milestone increments, as identified or as described in this Section or Contract Documents. Phasing will also delineate Work to be completed in each designated phase. Unless otherwise approved or directed by OWNER, each phase shall be completed according to approved Baseline Schedule prior to commencement of next subsequent phase. CONTRACTOR shall incorporate and coordinate Work of Separate Work Contracts relative to this Project into the Phasing and Construction Schedule.

B. CONTRACTOR shall install all necessary Work for, but not limited to, power, lighting, signal, HVAC, drainage, and plumbing systems in phased Work before completion of designated phase. All valves, pull boxes, stub outs, temporary capping, and other Work necessary for phased completion and operation of all necessary systems shall be provided whether or not such Work is specifically identified in Contract Documents.

3.04 PHASING OF THE WORK – GENERAL

A. CONTRACTOR shall prepare Construction Schedule in order to complete Work and related activities in accordance with phasing plan as established in Appendix "A". CONTRACTOR shall include all costs to complete all Work within Milestones or Contract Time.

B. OWNER will be seriously damaged by not having all Work completed within Milestones or Contract Time. It is mandatory that the Work be completed within Milestones or Contract Time.

3.05 PHASING OF THE WORK – SPECIFIC

A. CONTRACTOR shall prepare Construction Schedule, and shall complete following, but not limited to Milestones, as shown in Section 01 1219 – Appendix A and within designated phases in accordance with following:

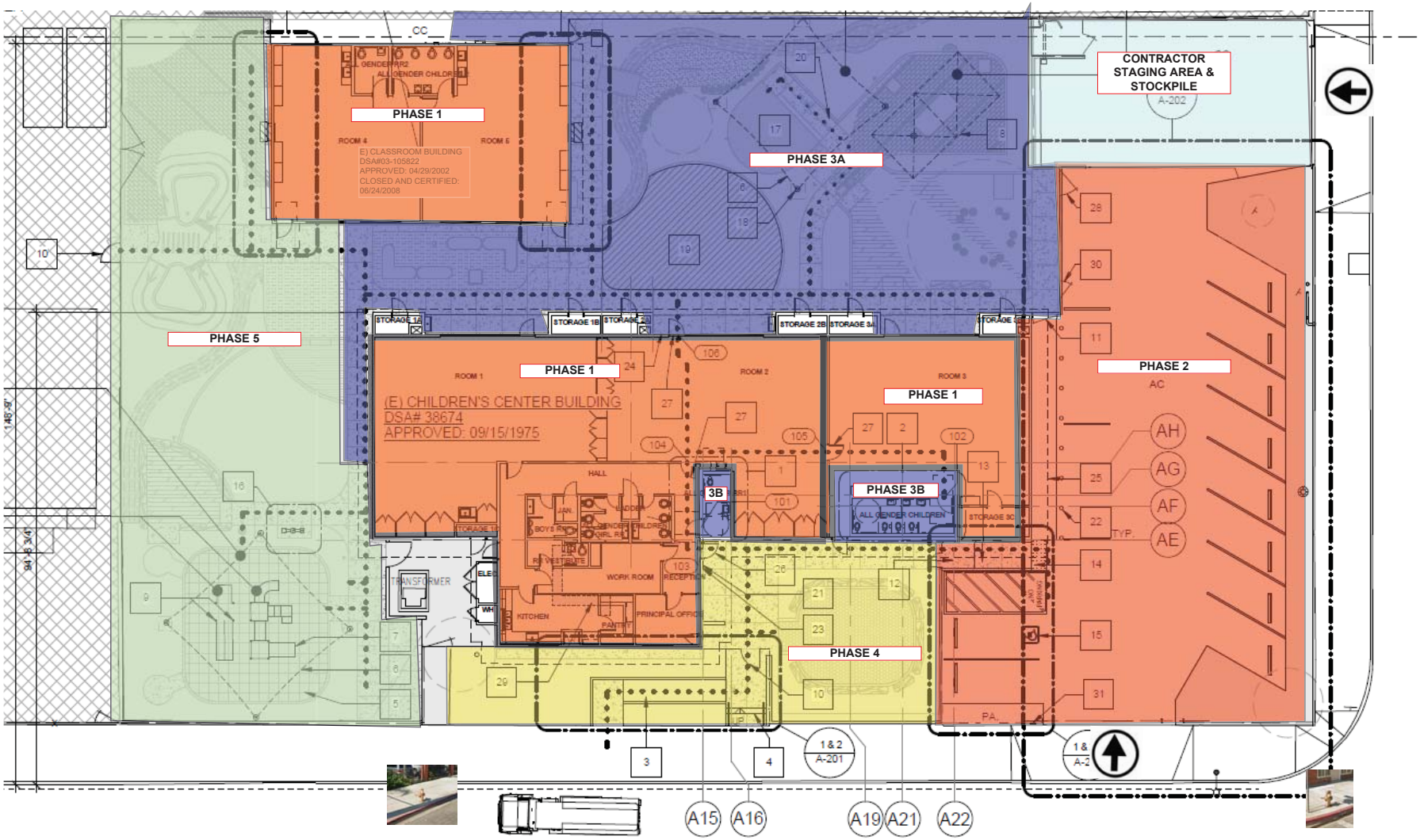
1. Phase 1 Mobilization – **30** calendar days: Milestones 1 & 3.

2. Phase 2 Construction – **500** calendar days: Milestone 2, 4-17.

3. Phase 3 Administrative Closeout – **30** calendar days: Milestone18.

B. The Contract Time shall be a total of **560** calendar days from date of commencement of Contract Time.

END OF SECTION



PHASE 0	30 days	Mobilization
PHASE 1	359 days	HVAC Equipment Submittal, Procurement and Delivery and Installation (including FA instalaltion
PHASE 2	90 days	Parking - Asphalt paving, striping, bollards, accessible parking
PHASE 3A	120 days	New access walk, play mat, planter
PHASE 3B	150 days	New access walk, play mat, planter
PHASE 4	120 days	New access walk and stairs, pavers
PHASE 5	120 days	New access walk, play mat, planter, drinking fountain

This summary is provided for general reference purposes only. The Contractor shall refer to the Project Drawings and Specifications for the definitive scope, technical requirements, and schedule of work. In the event of a conflict between this summary and the Contract Documents, the Drawings and Specifications shall govern.

Vehicular Gate Access

SYLVAN PARK EEC Outdoor Classroom & Campus Upgrade PHASING & LOGISTICS PLAN

01 1219– PHASING OF THE WORK

APPENDIX A – MILESTONES

CONTRACTOR shall commence performance of the Contract upon the date specified in the Notice to Proceed and shall furnish sufficient forces, facilities and materials, work such hours, including extra shifts and overtime operations, so as to fully perform the Work in accordance with the following Milestones.

Milestone	Description	Schedule	Liquidated Damages Amount Per Calendar Day
No. 1	**Notice to Proceed:** Is established in accordance with Articles 1.34 and 2.2 of the General Conditions.	**MS 1** - As determined in the NTP.	
	PHASE 0: Mobilization, Critical Shop Drawings and Submittals, Baseline Schedule		
No. 2	**Critical Shop Drawings & Submittals Complete:** Is defined as CONTRACTOR provided Shop Drawings and Submittals that are either critical or near critical to the Start or overall Substantial Completion of the Project. Milestones may include, but not be limited to, HVAC units and associated appurtenances, fire alarm submittals, play yard and outdoor classroom equipment and materials, Contractor Safety Plan and Hazard Communication Plan as per OCIP, abatement and lead work plans and critical Job Hazard Analysis (JHA), Site Survey or any long lead fabrication/procurement items. Contractor shall provide Submittal Log. Provide mock-ups for the concrete imprints and stencils.	**MS 2** - start after MS 1 with a duration of 30 calendar days	

* Milestone date to be determined by CONTRACTOR during development of the Construction Schedule and submitted to the OAR for approval.

Milestone	Description	Schedule	Liquidated Damages Amount Per Calendar Day
No. 3	**Completion of Mobilization Activities:** *A. Mobilization Phase* Defined as the full activation of site operations, including: (1) Logistics & Site Setup: Submittal and approval of a comprehensive logistics plan (access points, gates, parking, and trailer layouts). Installation of perimeter fencing and project-specific signage. (2) Temporary Facilities: Delivery and setup of fully functional field offices (including furniture, tech, and supplies), storage bins, and dumpsters. (3) Temporary Utilities: Activation of water, electrical, data/comms, sanitation, and fire protection. (4) Permitting & Environmental: Obtaining all required permits and full implementation of SWPPP (Storm Water Pollution Prevention Plan) measures. *B. Site Assessment & Investigative Scope* (1) Subsurface Scanning (GPR): Perform a comprehensive GPR (Ground Penetrating Radar) scan of the construction footprint to locate all underground utilities and subsurface structures. The Contractor must formally report any conflicts or deviations from the contract documents via RFC. (2) Structural X-Ray: Verification of rebar and conduit locations via X-ray at all proposed core drill locations (specifically for upper-floor water closet relocations). The Contractor must formally report any conflicts or deviations from the contract	**MS 3** - start after MS 1 with a duration of 30 calendar days	

* Milestone date to be determined by CONTRACTOR during development of the Construction Schedule and submitted to the OAR for approval.

Milestone	Description	Schedule	Liquidated Damages Amount Per Calendar Day
	documents via RFC. (3) Plumbing, Electrical, Fire Alarm Conflict Survey: Field verification of routing and floor penetrations within crawl spaces and above-ceiling spaces by the Plumbing, Electrical, Fire Alarm and Low Voltage Subcontractors to identify potential design conflicts. The Contractor must formally report any conflicts or deviations from the contract documents via RFC. (Note: Make sure to review Phases 1 and 2 FETU reports, prior to verification of crawl or above-ceiling spaces.) (4) Door/Hardware Audit: Physical site walk to verify existing door/frame conditions and hardware compatibility against the design intent. The Contractor must formally report any conflicts or deviations from the contract documents via RFC. (5) Utility Isolation Walk: Mandatory walkthrough with the GC, Plumbing Sub, Electrical Sub, OAR, and M&O to locate and test all shut-off/isolation valves and electrical panels for each building and site access. (6) Signage Audit: Physical site walk to verify all room names with the Owner's Authorized Representative (OAR). Sign locations shall be field-verified to confirm that the specified sign sizes are appropriate for the actual wall conditions and will fit within the available mounting surfaces without conflict. Any discrepancies identified between the Bid Documents and existing site conditions—including but not limited to room names, wall conditions, available space, or sign placement—shall be promptly documented and submitted as a Request for Clarification (RFC) for review and resolution prior to proceeding with fabrication or installation. Deliverable: GC to provide and post a marked-up utility plan and emergency contact list in all field offices. *C. Administrative Requirements*		

***** Milestone date to be determined by CONTRACTOR during development of the Construction Schedule and submitted to the OAR for approval.

Milestone	Description	Schedule	Liquidated Damages Amount Per Calendar Day
	(1) RFC Reporting: Any discrepancies or deviations from the contract documents during investigative phases must be formally documented and submitted via RFC (Request for Clarification/Change) immediately. (2) Trade Start Meetings: A separate Job Start meeting is required for every trade prior to beginning their specific scope. This shall be scheduled by the CONTRACTOR , with the District management team and AOR included in the invitation. (3) Inspection Coordination: All start-of-work activities must be coordinated with the Project Inspector.		
No. 4	**Baseline Schedule Complete:** Is defined as an OAR approved baseline schedule that meets all the requirements outlined in Division 01 Sections 01 3213 and 01 1216.	**MS 4** - start after MS 1 with a duration of 30 calendar days	
	PHASE 1: HVAC Submittal, Procurement, Delivery, Installation, Commissioning and Training, including Fire Alarm Installation, Cutover, Testing and Acceptance		
No. 5a	**A. Survey, Submittal, Procurement of HVAC Units** *(1) (E) Roof Curb Investigation & Verification at the Children Center Building* Within 14 days of the NTP, the Contractor must remove a portion of the roofing and plywood skirting (from top to bottom) on one long and one short side of all existing multizone unit curbs and exhaust fan curbs. This opening is required to inspect the existing anchorage, leveling platform, and curb gauge meet the same	**MS 5a** - start after MS 1 with a duration of 284 calendar days	

* Milestone date to be determined by CONTRACTOR during development of the Construction Schedule and submitted to the OAR for approval.

Milestone	Description	Schedule	Liquidated Damages Amount Per Calendar Day
	intent as the plans. a) Attendance & Review: The Contractor must coordinate a site meeting during this opening with the 4 Seasons Representative, OAR, AOR, Mechanical Engineer, Structural Engineer and M&O Representative. The Structural Engineer will determine if the existing anchorage is acceptable. b) Restoration: The Contractor must restore the roofing and skirting to a watertight condition within 24 hours of the investigation. *(2) Under-Unit Verification at the Children Center Building* Within 14 days of NTP, the Contractor must access the ceiling space to verify existing beams and joists and framing. If field conditions differ from the construction documents, an RFC must be issued immediately. (Note: Make sure to review Phases 1 and 2 FETU reports, prior to verification of crawl or above-ceiling spaces.) Prior to field work, the contractor shall verify existing rooftop AC and EF unit conditions, duct connections to remain, electrical service, control wiring, and thermostat locations. Coordination shall occur between mechanical, electrical, controls, and fire alarm trades to confirm installation sequencing, temporary control requirements, and cutover procedures. *(3)* Prior to field work, the contractor shall verify existing rooftop AC and EF conditions, existing duct connections, electrical service, control wiring, etc. Coordination shall occur between mechanical, electrical, controls, and fire alarm trades to confirm installation sequencing, temporary control requirements, and cutover procedures.		

* Milestone date to be determined by CONTRACTOR during development of the Construction Schedule and submitted to the OAR for approval.

Milestone	Description	Schedule	Liquidated Damages Amount Per Calendar Day
	(4) Submittals The contractor must submit all HVAC shop drawings within 14 calendar days of the NTP. The entire submission and approval process for HVAC must be completed within 60 calendar days upon effective date of NTP. *(5) Procurement* a) Carrier Air Conditioning Unit – approximately 12-week lead time b) Bard Wall Mounted Heat Pump Unit – approximately 16-week lead time c) Season 4 Air Conditioning Unit – approximately 32-week lead time (Important Note: Due to limited on-site storage availability, the contractor shall account for off-site storage, including potential storage at the adjacent school, and include all associated costs in the bid.)		
No. 5b	**B. <u>Rooftop AC Unit Installations in Children Center Building</u>** *(1) Prior to Unit Delivery and Shut Down* Electrical feeders, disconnects, grounding, control conduits, and control wiring shall be installed and tested up to the point of final termination. Temporary thermostats required for cutover shall be installed and verified operational. Condensate routing and any required gas piping preparation shall also be completed. All preparatory work shall be inspected by Project Inspection as required and completed in advance of unit deliveries. *(2) Crane submittal and other safety requirements* The contractor shall submit crane lift plans and site-specific safety	**MS 5b** - start after MS 1 with a duration of 328 calendar days	

* Milestone date to be determined by CONTRACTOR during development of the Construction Schedule and submitted to the OAR for approval.

Milestone	Description	Schedule	Liquidated Damages Amount Per Calendar Day
	documentation for review and approval prior to any lifting operations. No crane work shall commence until all required submittals are approved and a pre-lift safety meeting has been conducted. *(3) Pre-Installation Coordination* Prior to any field activities, a pre-installation coordination meeting shall be held with the General Contractor and all relevant subcontractors, including mechanical, electrical, controls, fire alarm, carpentry, and roofing. The meeting shall review site access, safety requirements, inspection points, and crane or lifting operations. A step-by-step replacement procedure shall be developed and agreed upon, detailing the controlled shutdown of the existing rooftop AC and EF units, removal sequencing, installation of the new leveling curb and manufacturer-provided curb, and placement of the new rooftop AC and EF units. Safety protocols, lockout/tagout procedures, temporary conditioning measures, and inspection requirements shall be reviewed to ensure a coordinated and safe replacement process with minimal disruption to building operations. *(4) Existing rooftop AC and EF Removal and Shutdown* On the scheduled replacement day, the existing rooftop units shall be shut down in a controlled manner following approved procedures. Electrical, gas, controls, and any associated fire alarm interfaces shall be safely disconnected. The roof opening shall be protected until curb installation is complete and watertight. *(5) Installation of Leveling Curb and Manufacturer-Provided Curb* A new leveling curb shall be installed at the existing rooftop units' location to correct alignment and elevation as required. Following leveling, the new		

***** Milestone date to be determined by CONTRACTOR during development of the Construction Schedule and submitted to the OAR for approval.

Milestone	Description	Schedule	Liquidated Damages Amount Per Calendar Day
	manufacturer-provided rooftop unit curbs shall be installed, secured, and flashed to maintain a weather-tight roof condition. Curb installations shall be inspected and approved prior to placement of the new units. *(6) Ductwork and Flex Connections* CONTRACTOR shall expedite the detailing, fabrication, and procurement of supply and return ductwork for the Multizone unit. Upon anchoring the new AC and EF roof curb, the CONTRACTOR—at their own expense—shall immediately detail the lined ductwork and flex connections. Reference Summary of Work for additional information. *(7) Installation of New Rooftop AC and EF Units* Setting new rooftop air conditioning unit, including all mounting hardware, controls, and associated appurtenances required for a complete installation. All work shall be subject to inspection by LAUSD inspectors. Performing final utility tie-ins, including reconnection of existing electrical, gas, and condensate piping; reconnecting and sealing existing supply and return ductwork to the new unit; integration with fire alarm and EMS systems; complete roofing patch and repair. ***Weather protection:*** Contractor shall provide 100% weather protection for all open roof curbs and penetrations during the transition from old to new units. This includes maintaining watertight integrity while curbs are exposed or being modified. Contractor shall be held liable for any interior water damage occurring during the installation window.		

* Milestone date to be determined by CONTRACTOR during development of the Construction Schedule and submitted to the OAR for approval.

Milestone	Description	Schedule	Liquidated Damages Amount Per Calendar Day
No. 5c	**C. <u>Fire Alarm Installation</u>** *(1) Pre-Construction and System Coordination* Prior to any field installation, the contractor shall coordinate the new fire alarm system design with the existing system to allow continuous fire protection throughout construction. Device locations, panel requirements, zoning, sequences of operation, and HVAC interface points shall be confirmed. Wiring pathways shall be identified to allow installation of the new system infrastructure without impairing the existing fire alarm system. Coordination with the mechanical contractor shall be completed to confirm monitoring and shutdown requirements for the new rooftop units. (Note: Make sure to review Phases 1 and 2 FETU reports, prior to verification of crawl or above-ceiling spaces.) *(2) Temporary Fire Protection Planning* Where demolition or replacement activities impact existing fire alarm protection, the contractor shall develop and coordinate a temporary fire protection and impairment plan. This may include coordinating temporary monitoring, assisting with fire watch requirements as directed by the OAR. All impairment activities shall be planned and communicated in advance to the OAR and school administration to minimize risk and disruption to building occupants. *(3) Installation of New Fire Alarm Infrastructure (Existing System Active)* The new fire alarm control panel (FACP), power supplies, and system backbone wiring shall be installed while the existing fire alarm system remains fully	**MS 5c** - start after MS 1 with a duration of 120 calendar days	

***** Milestone date to be determined by CONTRACTOR during development of the Construction Schedule and submitted to the OAR for approval.

Milestone	Description	Schedule	Liquidated Damages Amount Per Calendar Day
	operational. New conduits, raceways, and cabling shall be provided as required and routed independently of the existing system. All work shall be coordinated to avoid interference with active life safety systems. *(4) Installation of New Devices and HVAC Interfaces* New initiating devices (smoke detectors, heat detectors, duct detectors, manual pull stations) and notification appliances shall be installed in their final locations and wired back to the new fire alarm control panel. Interfaces required for the new HVAC rooftop units, including duct detector inputs, supervisory inputs, and fan shutdown relays, shall be installed and wired to the new panel. All HVAC connections shall be made in coordination with the mechanical contractor, with control wiring landed but not activated until final changeover/cutover. *(5) Programming and Pre-Testing of New System* Includes, but is not limited to, furnishing and installing a complete fire alarm system, including all field devices, wiring, and a new FACU, provide full system programming and integration with existing building systems (including HVAC/rooftop units emergency shutdown). The new fire alarm system shall be programmed in accordance with approved shop drawings and sequence-of-operations documentation while remaining isolated from the building life safety response. Pre-testing shall be conducted to verify device addressing, circuit integrity, HVAC interface functionality, and communication with monitoring equipment. Any deficiencies identified during pre-testing shall be corrected prior to system cutover.		

* Milestone date to be determined by CONTRACTOR during development of the Construction Schedule and submitted to the OAR for approval.

Milestone	Description	Schedule	Liquidated Damages Amount Per Calendar Day
No. 5d	**D. <u>Fire Alarm Cutover (Rooftop Units), Start-Up and Functional Testing</u>** *(1) Cutover* A scheduled and coordinated cutover shall occur. The existing fire alarm system shall be placed out of service only after the new system is fully installed, programmed, and verified ready for activation. At the time of cutover, monitoring services shall be transferred to the new system, HVAC shutdown and supervisory functions (including rooftop units) shall be activated, and the existing system panel and associated devices shall be disconnected. Temporary fire watch or impairment procedures shall be implemented if required. *(2) Start-Up and Testing* The RTU shall be started up and tested for heating, cooling, airflow, controls, and safeties. Fire alarm interactions shall be re-verified during operational testing to confirm no adverse impacts to life-safety systems.	**MS 5d** - start after MS 5c with a duration of 1 calendar day	
No. 5e	**E. <u>Wall-Mounted Heat Pump Units in the Bungalow</u>** *(1) Prior to Unit Delivery and Shut Down* Prior to field work, the Contractor shall conduct a coordination meeting with the General Contractor and relevant subcontractors to review scope, access, safety, and sequencing. Existing unit locations, electrical connections, wall penetrations, condensate routing, and control interfaces shall be verified. Replacement sequencing shall be planned to minimize disruption, with units typically replaced on a room-by-room basis.	**MS 5e** - start after MS 5c with a duration of 180 calendar days	

* Milestone date to be determined by CONTRACTOR during development of the Construction Schedule and submitted to the OAR for approval.

Milestone	Description	Schedule	Liquidated Damages Amount Per Calendar Day
	(2) Infrastructure Preparation Before removal of existing units, all preparatory work shall be completed. This includes verification of electrical capacity, installation or modification of mounting brackets as required, preparation of condensate drains, and confirmation that wall openings and sleeves can be reused. Any required minor electrical or control rough-in shall be completed and inspected in advance to minimize downtime. *(3) Shutdown and Removal of Existing Units* On the scheduled replacement date, the existing wall-mounted heat pump shall be shut down following lockout/tagout and safety procedures. Electrical connections, condensate piping, and refrigerant lines shall be properly disconnected. The existing unit shall be removed, and the wall opening shall be protected and cleaned in preparation for the new installation. *(4) Installation of New Wall-Mounted Heat Pump* The new wall-mounted heat pump shall be installed in the same location as the removed unit unless noted otherwise. The unit shall be securely mounted, and all refrigerant, electrical, and condensate connections shall be completed per manufacturer and contract requirements. Wall penetrations shall be sealed and finished to maintain weather and interior integrity. *(5) Electrical and Controls Connection* Electrical power and control wiring shall be terminated at the new unit. Thermostats or local controls shall be installed or reconnected as specified. Wiring shall be tested to verify proper communication and operation prior to		

* Milestone date to be determined by CONTRACTOR during development of the Construction Schedule and submitted to the OAR for approval.

Milestone	Description	Schedule	Liquidated Damages Amount Per Calendar Day
	startup. *(6) Startup and Functional Testing* The new heat pump shall be started up and tested to verify heating, cooling, airflow, control response, and condensate drainage. Following successful operation, final inspection shall be performed with the Owner or Inspector as required. Areas affected by the work shall be cleaned and restored.		
No. 5f	**F. <u>HVAC Test and Balancing, Commissioning and Training</u>** Provide HVAC testing and balancing by a certified agency to verify system performance in accordance with the Contract Documents. Complete commissioning to confirm proper operation of equipment, controls, and sequences of operation, and provide owner training on system operation and maintenance prior to final acceptance.	**MS 5f** - start after MS 5d with a duration of 60 calendar day	
	PHASE 2: Parking Lot		
No. 6	Includes, but is not limited to, new asphalt paving, parking striping, bollards, detectable warning surface and accessible parking, new accessible gate, signage. ***Schedule & Noise Constraints*:** All heavy demolition, waste removal, and indoor construction must be performed after 5:30 PM on weekdays or on weekends or Non-Instructional days. All work must strictly adhere to the City of Los Angeles noise ordinance to ensure compliance with local decibel limits and allowable work hours. ***Soil Testing and Management:*** Execute all required import/export material testing at	**MS 6** - start after MS 2 and 3 with a duration of 90 calendar days	

* Milestone date to be determined by CONTRACTOR during development of the Construction Schedule and submitted to the OAR for approval.

Milestone	Description	Schedule	Liquidated Damages Amount Per Calendar Day
	every project phase in strict compliance with Specification 01 4524 for Environmental Import/Export Material Testing. This includes sampling for environmental compliance and managing the hauling/removal of soil from the site.		
	PHASE 3A: Exterior (North Side of Campus)		

* Milestone date to be determined by CONTRACTOR during development of the Construction Schedule and submitted to the OAR for approval.

Milestone	Description	Schedule	Liquidated Damages Amount Per Calendar Day
No. 7	Includes, but is not limited to, new protective padding for post columns on the shade structures, new music and movement platform, new assistive listening sign and portable speaker system, new access walk, modification of (E) chainlink fencing, new door threshold and kickplate, new rubber play surface, concrete ramp, GraniteCrete paving, cobblestone dry swale, composite decking, permeable pavers, signs, landscape furniture, planting and irrigation systems. ***Emergency egress access:*** Install compliant, removable temporary walkway to maintain emergency egress routes for Classrooms 1, 2, 3, 4 and 5 to the Parking Lot. ***Schedule & Noise Constraints*:** All heavy demolition, waste removal, and indoor construction must be performed after 5:30 PM on weekdays or on Saturdays. All work must strictly adhere to the City of Los Angeles noise ordinance to ensure compliance with local decibel limits and allowable work hours. ***Soil Testing and Management:*** Execute all required import/export material testing at every project phase in strict compliance with Specification 01 4524 for Environmental Import/Export Material Testing. This includes sampling for environmental compliance and managing the hauling/removal of soil from the site. ***Temporary irrigation and maintenance of softscape/planting:*** Contractor is responsible for temporary irrigation and maintenance of all on-site planting (existing and new) for the duration of the system shutdown. Temporary watering measures must be sufficient to maintain plant health, and the Contractor shall be liable for any landscaping replacement costs resulting from inadequate care.	**MS 7** - start after MS 6 with a duration of 120 calendar days	
	PHASE 3B: Interior (Staff and All Gender Children Restrooms in the Children's Center Building)		

***** Milestone date to be determined by CONTRACTOR during development of the Construction Schedule and submitted to the OAR for approval.

Milestone	Description	Schedule	Liquidated Damages Amount Per Calendar Day
No. 8	• *Complete Staff Restroom within 120 calendar days* • *Complete All Gender Children Restroom in 150 calendar days* ***Schedule & Noise Constraints*:** All heavy demolition, waste removal, and indoor construction must be performed after 5:30 PM on weekdays or on Saturdays. All work must strictly adhere to the City of Los Angeles noise ordinance to ensure compliance with local decibel limits and allowable work hours.	**MS 8** - start after MS 6 with a duration of 150 calendar days	
	PHASE 4: Exterior (South Side Main Entrance)		

* Milestone date to be determined by CONTRACTOR during development of the Construction Schedule and submitted to the OAR for approval.

Milestone	Description	Schedule	Liquidated Damages Amount Per Calendar Day
No. 09	Includes, but is not limited to, access walk and stairs south of campus, new metal gates and chainlink fencing, new accessible door, new intercom call button, new bollard, live-edge wood cookie pavers, natural log border, signs, landscape furniture, planting and irrigation systems. This also includes the completion and testing of the irrigation control systems and training of district personnel to familiarize themselves with the new system. ***Emergency egress access:*** Install compliant, removable temporary walkway to maintain emergency egress routes from the main entrance of the Children's Center Building to the Parking Lot. ***Schedule & Noise Constraints*:** All heavy demolition, waste removal, and indoor construction must be performed after 5:30 PM on weekdays or on Saturdays. All work must strictly adhere to the City of Los Angeles noise ordinance to ensure compliance with local decibel limits and allowable work hours. ***Soil Testing and Management:*** Execute all required import/export material testing at every project phase in strict compliance with Specification 01 4524 for Environmental Import/Export Material Testing. This includes sampling for environmental compliance and managing the hauling/removal of soil from the site. ***Temporary irrigation and maintenance of softscape/planting:*** Contractor is responsible for temporary irrigation and maintenance of all on-site planting (existing and new) for the duration of the system shutdown. Temporary watering measures must be sufficient to maintain plant health, and the Contractor shall be liable for any landscaping replacement costs resulting from inadequate care.	**MS 09** - start after MS 8 with a duration of 120 calendar days	

* Milestone date to be determined by CONTRACTOR during development of the Construction Schedule and submitted to the OAR for approval.

Milestone	Description	Schedule	Liquidated Damages Amount Per Calendar Day
	PHASE 5: Exterior (West Side of Campus)		
No. 10	Includes, but is not limited to, new access walk, cobble stone swale, colored concrete and striping, permeable pavers, protective padding at shade structure columns, drinking fountain, new play mat, natural log border, composite decking, GraniteCrete paving, planting and irrigation, signs, landscape furniture. Coordinate with OAR prior to demo to determine locations. ***Emergency egress access:*** Install compliant, removable temporary walkway to maintain emergency egress routes for Classroom 4 to the Parking Lot. ***Schedule & Noise Constraints:*** All heavy demolition, waste removal, and indoor construction must be performed after 5:30 PM on weekdays or on Saturdays. All work must strictly adhere to the City of Los Angeles noise ordinance to ensure compliance with local decibel limits and allowable work hours. ***Soil Testing and Management:*** Execute all required import/export material testing at every project phase in strict compliance with Specification 01 4524 for Environmental Import/Export Material Testing. This includes sampling for environmental compliance and managing the hauling/removal of soil from the site. ***Temporary irrigation and maintenance of softscape/planting:*** Contractor is responsible for temporary irrigation and maintenance of all on-site planting (existing and new) for the duration of the system shutdown. Temporary watering measures must be sufficient to maintain plant health, and the Contractor shall be liable for any landscaping replacement costs resulting from inadequate care.	**MS 10 -** start after MS 9 with a duration of 120 calendar days	

***** Milestone date to be determined by CONTRACTOR during development of the Construction Schedule and submitted to the OAR for approval.

Milestone	Description	Schedule	Liquidated Damages Amount Per Calendar Day
No. 11	**Rain Day Impact Allowance:** Is defined as the last activity prior to the Substantial completion Milestone. No other activities may be concurrent with it. The duration of the Rain Day Impact Allowance activity will be based on Table#1, Sec 013216, and be calculated from the Notice to Proceed until the Substantial Completion Date.	**MS 11** - start after MS 10 with a duration of 48 calendar days	
No. 12	Substantial Completion: Is established in accordance with Article 14.12-14.13 of the General Conditions.	**MS 12** – 530 calendar days from effective date of the NTP	$750 / day
No. 13	Contract Completion: Is established in accordance with Article 14.18-14.19 of the General Conditions.	**MS 13** - start after MS 12 with a duration of 30 calendar days	$750 / day

END OF SECTION

* Milestone date to be determined by CONTRACTOR during development of the Construction Schedule and submitted to the OAR for approval.

SECTION 01 2513

SUBSTITUTION AND "OR EQUAL" PROCEDURES

PART 1 - GENERAL

1.01 This Section includes administrative and procedural requirements for handling requests for substitutions and "or equal" submitted pursuant to Article 6.14 of the General Conditions.

A. When an item of material or equipment is specified by the use of a proprietary name, make, trade name, or catalog number, the intent of the Guide Specification is to establish the type, function and quality required. Unless the Guide Specification or description contains or is followed by words reading that no like, equivalent item or no substitution is permitted, other items or equipment of other suppliers may be accepted.

B. Specified items of materials or equipment which are no longer manufactured and/or cannot be acquired from existing inventories will be considered as a basis for the proposed substitute items. Substitution evaluation of a proposed material and/or equipment shall be compared against Project Criteria requirements.

1.02 RELATED REQUIREMENTS

A. Section 01 3229: Project Forms.

B. Section 01 3300: Submittal Procedures.

C. Section 01 6000: Product Requirements.

D. Section 01 7700: Contract Closeout.

1.03 APPLICATION

A. OAR will review CONTRACTOR proposed changes in products or materials required by the Contract Documents in accordance with 6.14 of the General Conditions.

1. Substitutions: OAR will consider requests for substitution if a product is no longer manufactured or the OAR and ARCHITECT, after a diligent search have verified that product or material is not available to CONTRACTOR. The following are not considered to be valid requests for substitutions:

a. Revisions to the Contract Documents requested by OAR or ARCHITECT.

b. Specified options of products included in the Contract Documents.

c. Substitutions requested on a "or equal" basis.

2. "Or Equal": OAR will consider requests for "or equal" if submitted within the time indicated in Article 6.14 of the General Conditions.

1.04 SUBMITTALS

A. Transmit submittals as described in related Sections for each request for substitution or "or equal".

1. Compete the Substitution Request Form with each request for Substitution per Section 01 3229 "Project Forms".

2. Identify the product to be replaced in each request. Include related Specification Section and Drawing number.

3. Provide complete documentation denoting compliance with the requirements for substitutions, and the following information, as appropriate.

a. A detailed comparison of significant qualities of the proposed substitution with those specified in the Contract Documents. Significant qualities may include elements, such as performance, weight, size, durability, visual effect, warranties and specific requirements indicated.

b. Product Data, including Drawings, descriptions of products, fabrication, and installation procedures.

c. Samples, where applicable or requested.

d. CONTRACTOR certification the proposed substitution or "or equal" conforms to requirements of the Contract Documents in every respect and is appropriate for the applications indicated.

e. CONTRACTOR waiver of rights to an increase in the Contract Amount, Milestones and/or Contract Time.

4. If required, OAR and/or ARCHITECT will request additional information or documentation for evaluation.

5. ARCHITECT will provide a technical review of requests for substitutions and “or equals” and provide a recommendation to OAR.

6. If ARCHITECT provides a technical review of the proposed substitution, the OAR will forward the evaluation to the OWNER’s Maintenance and Operations Technical Unit for review. OAR will notify CONTRACTOR of acceptance or rejection of the substitution.

7. Where a proposed substitution or “or equal” involves and/or affects more than one Subcontractor, CONTRACTOR shall ensure each Subcontractor cooperates with the other Subcontractor involved to coordinate the Work, provide uniformity and consistency, and assure compatibility of all products.

8. CONTRACTOR submittal and ARCHITECT review of Shop Drawings, Product Data, material lists or Samples do not constitute an acceptable or valid request for substitutions or “or equals”.

PART 2 - PRODUCTS (Not used)

PART 3 – EXECUTION (Not used)

END OF SECTION

SECTION 01 2613

REQUEST FOR CLARIFICATION (DESIGN BID BUILD)

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Procedure for requesting clarification of the intent of the Contract Documents.

1.02 RELATED REQUIREMENTS

A. Section 01 1100: Summary of Work.

B. Section 01 3113: Project Coordination.

C. Section 01 3213: Construction Schedule.

D. Section 01 3229: Project Forms.

E. Section 01 7700: Contract Closeout.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION

3.01 PROCEDURE

A. CONTRACTOR shall prepare a Request for Clarification in the COLIN Change Order Workbook.

B. ARCHITECT response via the COLIN Change Order Workbook is a clarification of the intent of the Contract Documents and does not authorize changes in the Contract Amount, Milestones and/or Contract Time.

C. A Request for Clarification may be returned with a stamp or notation "Not Reviewed," if:

1. The requested clarification is ambiguous or unclear.

2. The requested clarification is equally available to the requesting party by researching and/or examining the Contract Documents.

3. CONTRACTOR has not reviewed the Request for Clarification prior to submittal.

4. The Request for Clarification is a request for approval of submittals.

5. The Request for Clarification is a request for approval of Substitutions.

6. The Request for Clarification is a request for approval of the Contractor's means and methods.

7. The Request for Clarification is incomplete.

D. Allow a minimum of nine days for review and response time, after receipt by ARCHITECT and OAR.

E. Changes or alterations to the approved drawings or specifications shall be made by means of addenda or change orders as per section 4-338 of the California Building Standards Commission's, California Administrative Code.

END OF SECTION

SECTION 01 2973

SCHEDULE OF VALUES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Procedure for submission of a certified Schedule of Values for review and approval by the OAR.

1.02 RELATED REQUIREMENTS

A. Section 01 2100: Allowances.

B. Section 01 2300: Alternates (Bid Items).

C. Section 01 2976: Progress Payment Procedures.

D. Section 01 3113: Project Coordination.

E. Section 01 3213: Construction Schedule.

E. Section 01 3229: Project Forms.

F. Section 01 3300: Submittal Procedures.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION

3.01 PREPARATION

A. Upon receipt of the Notice of Intent to Award, CONTRACTOR shall commence preparation of a Schedule of Values in accordance with the form included in Section 01 3229.

B. CONTRACTOR shall coordinate the preparation of a Schedule of Values with preparation of the Construction Schedule as set forth in Section 01 3213. The corresponding values from the specification division totals on cost loaded schedule shall match with the approved Schedule of Values.

C. Include the following Project identification on a certified Schedule of Values:

1. Project name and location.

2. Project Number.

3. Contract #.

4. CONTRACTOR name.

5. Date of Submittal.

D. The Schedule of Values shall be in tabular form with separate columns and shall include the following items:

1. Related Specification Section and Division.

2. Description of Work.

3. Name of Subcontractor, manufacturer or supplier.

4. Dollar value, quantity and unit of measure of each line item.

5. Percentage of Contract amount to nearest one-hundredth percent, adjusted to total 100 percent.

E. Round amounts to the nearest whole dollar; the total shall equal the Contract Amount.

F. Provide a breakdown of the Contract Amount in enough detail for the construction phases (and design phases, as applicable for Design Build projects) acceptable to OAR to facilitate continued evaluation of Application for Payment and progress reports. Coordinate with the Project Manual table of content and Schedule of Values form under Section 01 3229. Provide line items for subcontract amounts, where appropriate.

G. Provide separate line items for items in the Schedule of Values for total installed value of that part of the Work.

H. Provide separate line item for labor and material when required by the OAR.

I. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item except the amounts shown as separate line items as indicated under Schedule of Values form under Section 01 3229.

J. Temporary facilities and other cost items that are not direct cost of actual work-in-place shall be shown as separate line items as indicated under Schedule of Values form under Section 01 3229.

K. An approved certified Schedule of Values shall serve as the basis for the monthly certified Application for Payment.

L. If at any time, OWNER determines, in its reasonable discretion, that the schedule of Values does not approximate the actual cost being incurred by CONTRACTOR to perform the Work, CONTRACTOR shall prepare, for OAR approval, a revised Schedule of Values, which then shall be used as the basis for future progress payments. Without changing the Contract Amount, OWNER reserves the right to require CONTRACTOR:

1. To increase or decrease amounts within the line items in the Schedule of Values; and,

2. To conform the price breakdown to OWNER accounting practice.

3.02 SUBMITTAL

A. CONTRACTOR shall submit five certified copies of a Schedule of Values for review and approval by the OAR at least 14 days before the first Application for Payment.

B. OAR will review and if necessary, return the submitted Schedule of Values with summary comments noting items not in compliance with the requirements of the Contract Documents. CONTRACTOR shall revise the submitted Schedule of Values and return five copies within three days of receipt of summary comments.

C. Signature by OAR shall constitute acceptance of the submitted Schedule of Values.

D. An approved copy of the Schedule of Values by OAR will be transmitted to CONTRACTOR, and Inspector.

END OF SECTION

SECTION 01 2976

PROGRESS PAYMENT PROCEDURES (E-INVOICE)

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. This Section specifies administrative and procedural requirements for a certified Application for Payment using the E-Invoice process.

1. Coordinate the certified Schedule of Values (SOV) and certified Application for Payment with, but not limited to, the Construction Schedule, submittal log, and list of Subcontractors.

1.02 RELATED REQUIREMENTS:

A. Section 01 2100: Allowances.

B. Section 01 2300: Alternates (Bid Items).

C. Section 01 2973: Schedule of Values.

D. Section 01 3213: Construction Schedule.

E. Section 01 3229: Project Forms.

F. Section 01 7700: Contract Closeout.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION

3.01 APPLICATION FOR PAYMENT

A. Each certified Application for Payment shall be consistent with previous E-Invoice applications and payments as reviewed by OAR, paid for by OWNER, and:

1. The initial Application for Payment and Final Application for Payment at time of Substantial Completion involve additional requirements.

B. Payment Application Times: The period of Work covered by each Application for Payment and the payment date for each progress payment shall be as specified in

the General Conditions. The period covered by each Application for Payment is the previous month as specified in the General Conditions.

C. Payment Application Forms: Use E-Invoice application template for the Application for Payment. The E-Invoice payment application includes data input directly from the Contractor for review and approval by the OAR.

D. Application Preparation: Complete every entry on the form. Include execution by a person authorized to sign legal documents electronically on behalf of CONTRACTOR. OAR will return incomplete applications without action.

E. Transmittal: Electronically submit via the E-Invoice application each certified Application for Payment to OAR. All submittals shall be complete, including releases and similar attachments.

F. Initial Application for Payment. In accordance with 2.5.2 of the General Conditions; at least 14 days prior to submittal of the initial Application for Payment, the Contractor shall submit to the OAR, for review and approval, a SOV. Administrative actions and submittals, that must precede or coincide with submittal for the first certified Application for Payment shall include, but are not limited to, the following:

1. Approved Schedule of Values.

2. Notice of Award (NOA) / Notice to Proceed (NTP)

3. Copy of Facilities Contract Board Report

4. Advertisement for Bid

5. Performance and payment bonds.

6. Duly Signed Agreement

7. Designation of Subcontractors

8. Accord Certificate of OCIP Insurance /Certificate of Insurance for Hazardous Materials, as applicable

9. Escrow Agreement (if retention is by escrow account)

G. Progress Applications for Payment: On or before the fifth (5th) day of each calendar month following the month for which payment is requested, but not more than once per month, the Contractor inputs an itemized “pencil draft” Application for Payment for Work completed during the preceding month into the E-Invoice application for the OAR’s review and approval. The SOV line item amounts shall represent the amounts paid to their subcontractors. Such application

shall be certified by the CONTRACTOR under the penalty of perjury and shall be supported by the following or such portion thereof as the OAR requires:

1. the amount paid to the date of the application to CONTRACTOR, to all its Subcontractors, and all others furnishing labor, materials, or equipment;

2. certified payroll records submitted in electronic format as specified by OWNER and hard copy directly to Labor Compliance Program, as per Article 6.48, for the prior Application for Payment period in addition to OWNER OCIP forms;

3. a certification the Project record documents are current;

4. the approved Change Orders to the Contract Amount, Milestones and / or Contract Time;

5. in accordance with Articles 14.2.5 and 14.7, a summary of the retention withheld;

6. material invoices, evidence of equipment purchases, rental, and other supporting documentation and details of cost as Oar may require from time to time;

7. the percentage of completion of the Work by line item referenced to the certified Schedule of Values, and construction schedule updates;

8. a statement showing all payments made by CONTRACTOR for labor and materials on account of the Work covered in the preceding certified Application for Payment;

9. prior to CONTRACTOR receipt of any payment for monies due, as a result of a percentage of the Work completed, it shall furnish the OAR with a summary which must show payments to be made to Subcontractors and all others furnishing labor, material, and equipment covered by the payment application.

10. Owner Withholds and Assessments.

    a. Stop Payment Notices

    b. Prevailing Wage Violations and Certified Payroll (submitted directly to Labor Compliance in electronic format).

    c. Liquidated Damages.

    d. Assessments by OAR.

11. Supplemental Documents

    a. Updated and current Project Record Drawings (as-builts).

    b. Monthly Construction Schedule (updated, submitted and approved).

    c. List of Subcontractors (Payments Summary).

H. Final Application for Payment at Substantial Completion: Following OAR issuance of certificate of Substantial Completion, Contractor shall submit an Application for Payment:

1. Administrative actions, submittals and/or Work that shall precede or coincide with this application include:

    a. Occupancy permits and similar approvals by authorities having legal jurisdiction over Work.

    b. Removal of temporary facilities and services.

    c. Testing, adjusting and balance records.

    d. Removal of surplus materials, rubbish, and similar elements.

    e. Meter readings.

    f. Start-up performance reports.

    g. OWNER training and orientations.

    h. Operating and maintenance instruction manuals.

    i. Preliminary Warranties, guarantees and maintenance agreements.

    j. Delivery of extra materials, products and or stock.

    k. Change over information related to OWNER occupancy, use, operation, and maintenance.

    l. Final cleaning.

    m. Ensure that Work is completed.

    n. Advise on shifting insurance coverage.

    o. List of defective Work, recognized as exceptions to certificate of Substantial Completion.

p. Change of door locks, including keys, to OWNER system.

q. Certified Payroll (submitted directly to Labor Compliance in electronic format as specified by the OWNER including hard copy).

r. Certification that all benefit contributions due and owing to appropriate union trusts has been paid by CONTRACTOR and Subcontractors, as specified by the Project Stabilization Agreement (PSA) and Article 6.49 of the General Conditions.

s. Storm Water Pollution Prevention – Site Monitoring Reports, SWPP revisions, compliance certifications, and Notice of Termination (NOT) (see Section 01 7416).

t. Certification of Compliance with CEQA Mitigations.

u. Waivers and releases for CONTRACTOR.

I. Release of Retention. Within 60 (sixty) days after Substantial Completion certified by the OAR, the retention shall be paid except for one-hundred fifty percent (150%) of the value of the Punch List items and/or any amount which the OWNER otherwise has a right or obligation to withhold, in accordance with the Public Contract Code Section 7107. 1.

a. OAR shall make a determination of all outstanding items required by the Contract as a condition precedent to payment of retention and may withhold monies for all outstanding items considered in dispute as listed in Article 14.17 and including the following items:

b. Outstanding corrections to the Work which are required to remedy any defects therein, to obtain compliance with the Contract Documents or any requirements of applicable codes and/or ordinances including, but not limited to the filing of a DSA final verified report, or to fulfill any orders or directives of the OAR under the Contract;

c. CONTRACTOR shall have delivered to the OAR legible and reproducible final Project record documents, including “As-Built” drawings, with CONTRACTOR certification of the accuracy of the Project record documents, all guarantees and warranties, bonds, operation and maintenance instructions for equipment, products, and apparatus.

d. The OAR shall send one copy of the final Release of Retention Authorization package with attached Release of Retention Advisory Letter to the Contractor.

END OF SECTION

SECTION 01 3113

PROJECT COORDINATION (DESIGN BID BUILD)

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section specifies administrative and procedural requirements necessary for coordinating Work operations for Design Bid Build projects including, but not limited to, the following:

1. General coordination procedures.

2. Coordination drawings.

3. Building Information Modeling (BIM). *See Attachment A at the end of this Section.*

1.02. RELATED REQUIREMENTS

A. Section 01 1216: Phasing of the Work.

B. Section 01 3213: Construction Schedule.

C. Section 01 3300: Submittal Procedures.

D. Section 01 4523: Test and Inspection.

E Section 01 4525: Testing, Adjusting, and Balancing for HVAC.

F. Section 01 7700: Contract Closeout.

PART 2 - PRODUCTS

A. See Attached A at the end of this Section for BIM Software requirements.

PART 3 - EXECUTION

3.01 COORDINATION

A. CONTRACTOR shall coordinate operations included in various sections of Contract Documents to assure efficient and orderly installation of each part of Work. Coordinate Work operations included under related sections of Contract

Documents that depend on each other for proper installation, connection, and operation of Work, including but not limited to:

1. Schedule construction operations in sequence required where installation of one part of Work depends on installation of other components, before or after its own installation.

2. Coordinate installation of different components to assure maximum accessibility for required maintenance, service, and repair.

3. Provide provisions to accommodate items scheduled for later installation.

4. Prepare and administer provisions for coordination drawings and BIM files.

B. Where necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required in notices, reports, attendance at meetings, and:

1. Prepare similar memoranda for OAR and Separate Work Contract where coordination of their Work is required.

2. Administer the complete BIM process from modifying the basic files received from the A/E team.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and assure orderly progress of Work. Such administrative activities include, but are not limited to, following:

1. Preparation of schedules.

2. Installation, relocation, and removal of temporary facilities.

3. Delivery and processing of submittals.

4. Progress meetings.

5. Project closeout activities.

D. Conservation: Coordinate Work operations to assure operations are carried out with consideration given to conservation of energy, water, materials, and:

1. Salvage materials and equipment involved in performance of, but not actually incorporated into Work.

3.02 SUBMITTALS

A. Coordination Drawings and/or BIM Files: CONTRACTOR shall prepare coordination drawings to coordinate the installation of products and materials fabricated, furnished and installed by separate entities, under different parts of the Contract. CONTRACTOR shall notify OAR and ARCHITECT of all major conflicts in writing in a timely manner so that the design team can respond without construction delays. Coordination drawings shall address the following at a minimum:

1. Limitations in available space for installation or service. CONTRACTOR shall overlay plans of each trade and verify space requirements and conflicts between trades. Minor changes and adjustments that do not affect design intent shall be made by CONTRACTOR and shall be highlighted for ARCHITECT'S review.

2. Incompatibility between items provided under different trades (such as difference in voltage between equipment specified under Divisions 22 and 23 and electrical power provided under Division 26.)

3. Inconsistencies between drawings, specifications and codes (between trades and within each trade).

4. Additional items required for existing facilities construction projects shall be designed and prepared from available as-built drawings that are verified through non-invasive and non-destructive, visual observation only. CONTRACTOR shall field verify actual existing conditions during and upon completion of demolition work and incorporate findings into preparation of co-ordination drawings. Minor changes and adjustments that do not affect design intent shall be made by Sub-Contractor and shall be highlighted for OAR and ARCHITECT'S reviews.

B. Prepare coordination drawings in BIM with each trade on a separate layer, in specified color and scale. CONTRACTOR and each Subcontractor shall provide and forward reproducible copies and CAD drawing files in the order described here:

1. Structural drawings shall indicate location and sizes of columns, beams and other structural members, as well as wall, roof and slab penetrations, and will be provided to mechanical, electrical, low voltage and plumbing Sub-contractors for co-ordination. Structural items shall be indicated using black lines.

2. HVAC Subcontractor will indicate all ductwork, piping and equipment complete with installation and dimensioned service clearances, duct and pipe sizes, fitting types and sizes, top or bottom of duct and pipe elevations, distances of ducts, pipes and equipment from building reference points and hanger and support locations. Minor changes and

adjustments that do not affect design intent shall be made by Subcontractor and shall be highlighted for OAR and ARCHITECT'S reviews. Forward drawings to plumbing Subcontractor for further co-ordination. HVAC items shall be indicated using orange lines.

3. Plumbing Subcontractor will indicate all plumbing lines, and equipment complete with installation and dimensioned service clearances, pipe sizes, fitting types and sizes, top or bottom of pipe elevations, distances of pipes and equipment from building reference points and hanger/support locations Co-ordinate with HVAC Subcontractor. Minor changes and adjustments that do not affect design intent shall be made by Sub-contractor and shall be highlighted for OAR and ARCHITECT'S reviews Upon completion drawings shall be forwarded to Fire Sprinkler Subcontractor for further co-ordination. All Plumbing items shall be indicated using blue lines.

4. Fire sprinkler Subcontractor will indicate fire sprinkler piping and equipment complete with installation and dimensioned service clearances, pipe sizes, fitting types and sizes, top or bottom of pipe elevations, distances of pipes and equipment from building reference points and hanger or support locations. Co-ordinate with Plumbing and HVAC Subcontractors. Minor changes and adjustments that do not affect design intent shall be made by sub-contractors and shall be highlighted for OAR and ARCHITECT'S reviews. Upon completion drawings shall be forwarded to Electrical CONTRACTOR for further co-ordination. Fire sprinkler equipment shall be indicated using red lines.

5. Electrical and Low Voltage Subcontractors will indicate service and feeder conduit runs and other electrical equipment complete, including low voltage with installation and dimensioned service clearances, sizes, top or bottom of conduit and rack elevations, distances of conduits and equipment from building reference points and hanger and support locations. Co-ordinate with Fire Sprinkler, Plumbing and HVAC Subcontractors. Minor changes and adjustments that do not affect design intent shall be made by sub-contractors and shall be highlighted for OAR and ARCHITECT'S reviews. Upon completion drawings shall be forwarded to CONTRACTOR for further co-ordination. Electrical work shall be indicated in dark green lines. Low voltage work shall be indicated in light green lines.

6. CONTRACTOR will be responsible for the overall coordination review. As directed by OAR and/or ARCHITECT, the CONTRACTOR shall host BIM coordination sessions and provide full access to both OAR and ARCHITECT. As each coordination drawing is completed, CONTRACTOR will meet with OAR to review and resolve all conflicts on coordination drawings.

APPENDIX A
Building Information Modeling

I. Building Information Modeling – General Notes

1. The General Contractor and Subcontractors agrees to participate in BIM Coordination and clash-detection- and-resolution through the creation and editing of 3-dimensional computer models (BIM.) Architect and Engineer's involvement will be requested for major issues via RFC process.

2. The General Contractor will be provided BIM Files from the A/E team for Editing and adding required systems or required elements not included. The files are As Is and are not guaranteed to be fully coordinated. LAUSD / AE makes no guarantee and assumes no responsibility for the accuracy of these models – all trades are responsible for the requirements of the construction documents.

3. The General Contractor and Subcontractors agree to attend and participate in regular clash detection meetings. All relevant Subcontractors must participate in every meeting as determined by the General Contractor. General Contractor acknowledges that all coordination meetings will require attendance of personnel that are familiar with the use and functionality of BIM as well as an understanding of the scope of the Subcontractor's work, and that these personnel will attend all coordination meetings.

4. The General Contractor and Subcontractors will modify and provide models in digital form – Navisworks Manage software is required for this purpose. Uploaded models must be in. NWC, DWG, or IFC format. Any other format unless agreed to prior to coordination will not be acceptable for coordination uploads. Periodically, for archiving and FM purposes, as well as closeout requirements, the source model, or native format, will be required to be provided. For native modeling purposes, the choice of software is up to the General Contractor Subcontractor is required to attend all scheduled BIM coordination meetings. All regular meetings will be held online, through GoTo meeting. Periodically, at significant milestones and at the discretion of General Contractor or the Managing BIM Coordinator, BIM coordination meetings will be held at the project office, onsite. All Subcontractors will be required to attend such meetings or Subcontractor, but non-BIM 3D modelers, such as standard AutoCAD, will NOT meet the submission requirement. AutoCAD MEP is acceptable, as are many others. Questions should go the Managing BIM Coordinator who can discuss with the Design Team / Owner as required.

5. The General Contractor and Subcontractors shall provide a model that is coordinated in space to the coordinate system present in the consolidated

background model. No changes to position, rotation or scale of the Subcontractor's model must be necessary to match the Subcontractor's model to the position, rotation or scale of the consolidated model. Any models that are not coordinated with the consolidated model will be rejected for coordination purposes.

6. The Level of Detail shall meet or exceed the level required for effective clash detection. LOD of 400 is required. The model shall be provided with sufficient detail to ensure that all considerations for design intent, code, function and installation are presented for coordination.

7. General Contractor and Subcontractors shall document all architectural, structural building components, required mechanical, electrical, plumbing, low voltage, fire proofing and fire sprinkler systems equipment operating and maintenance clearances, foundations, site walls, vaults, site utilities and appurtenances from the proposed design, as- builts, surveys, pot holing or any demolition that exposes conditions to remain into the project working BIM model and the final record BIM model.

8. The current BIM to be provided by A/E does not contain steel stud framing. This complete framing system BIM shall be provided by General Contractor / Subcontractor using the specifications, wall types and details included in the Contract Documents for all applicable packages. This will be the basis of shop drawings.

9. General Contractor will administer the clash detection meetings via a District Approved BIM Coordinator and invite personnel as requested by the OAR / AOR. The BIM Coordinator shall have a minimum five (5) years demonstrated experience in BIM Coordination and is expected to remain as BIM Coordinator for the duration of the process. General Contractor and Subcontractors will edit and otherwise update their BIM models as required to clear all clashes related to their scope.

10. The participation in BIM modeling and clash detection does not relieve the General Contractor of its responsibilities under the District contract nor does it supersede the General Contractor responsibilities to meet the requirements of the contract documents, the providing of shop drawings or any other submissions required.

11. The BIM Model and all deliverables are the responsibility of General Contractor, both during and after construction until the final As-Built BIM is submitted to LAUSD for review and acceptance.

12. The General Contractor agrees that the BIM model may require updating throughout the life of the project, to address changes to the work by themselves or others, to ensure that the BIM model at the completion of the

project accurately depicts the finished conditions of the project. The General Contractor agrees to promptly make any changes necessary to meet this requirement.

13. General Contractor will designate a person to act as Managing BIM coordinator for the duration of the project. This person will act as a representative of the General Contractor throughout the project's lifespan and will be responsible for managing the BIM coordination process.

14. General Contractors administration of the BIM coordination process will include the following functions:

    a. Creating and publishing the schedule of coordination, including milestones, submission deadlines, and target completion dates.

    b. Establishing the specific modeling conditions unique to the project.

    c. Providing and maintaining the composite model.

    d. Distributing clash reports prior to each coordination meeting.

    e. Assigning Subcontractor responsibility for clash resolution.

    f. Contracting with subcontractors so they are required to provide and maintain a three-dimensional model of their scope of work. The 3D model will represent an "as-fabricated" level of information that will be sufficient for the purpose of confirming system design to match the intent of the contract documents. Providing and maintaining the 3D model does not relieve the Subcontractor of any additional obligations for providing shop drawings and submissions required by the contract documents and the Subcontractor's scope of work.

II. General Contractor and Subcontractor's Roles and Responsibilities

1. Subcontractors will designate a person to act as BIM Coordinator for the duration of the project. This person will act as a representative of the Subcontractor throughout the project's lifespan and will be responsible for managing the BIM coordination process. See above, for additional personnel requirements.

2. All elements provided in the model are to match installed or to-be-installed components to facilitate the coordination process.

3. All models must be provided in the colors assigned to each Subcontractor. Models not provided in the assigned colors may not be updated in the consolidated model prepared for that week's coordination meeting.

4. All access zones and “no-fly” zones are to be modeled with a transparent surface to differentiate the zones from hard components. Access zones and “no-fly” zones will be coordinated to in the BIM coordination process.

5. Subcontractors are required to maintain their 3D model throughout the BIM coordination and construction processes. These models are to be submitted weekly, or at times specified General Contractor. These models will be the basis of the deliverable as-built model provided to the Owner at the project closeout.

6. Required model elements vary by trade. Details, per trade, follow below:

   A. The **Structural Steel** model elements shall include, but are not limited to, columns, beams, floor slabs, lateral bracing, structural glass, stairs, miscellaneous steel, plates, braces, kickers, shear wall and slab penetrations, and open web joists showing correct web configurations. Means and methods such as hangers, supports, supplemental steel, and falsework must be included in the model. In the steel embedment shop drawing process, Contractor is responsible for coordinating and correcting interference between adjacent embedment’s / studs / welded bars and all adjacent steel reinforcing bar (rebar). All steel to be fireproofed should be shown. See Structural Concrete below.

   B. The **Structural Concrete** model elements shall include, but are not limited to, walls, columns, beams, floor and roof slabs, depressed slab areas, lateral bracing, stairs, miscellaneous steel, metal pan steps, plates, braces, kickers, shear wall and slab penetrations, and structural concrete including reinforcement. Typical for DSA poured in place concrete construction, there will be congestion of rebar, embedments, penetrations, and formwork. Contractor and subs shall examine all areas of congestion and assist in the coordination and resolution of embed shop drawings and penetrations to meet the intent of the design and physically fit all components within the constraints. Means and methods such as hangers, supports, supplemental steel, and falsework must be included in the model.

   C. The **Curtain Wall** model elements shall include, but are not limited to, curtain system grids, framing members, mullions, glass, sunshades, louvers, doors, operable vents, anchors, structural connections, and elements where coordination with other trades’ specific equipment is required (such as HVAC vents and window-wall fire suppression systems).

   D. The **Metal Stud Framing** model elements shall include, but are not limited to, top tracks, king studs, shaft wall studs, slip / drift, headers, soffit framing, connection clips, openings, joists, rafters, ceiling studs,

kickers, bridging, bracing, wall board and sheathing. Means and methods such as seismic bracing and falsework must be included in the model. All access doors in hard lid ceilings need to be shown. Height of Parapet walls in relation to HVAC equipment.

E. The **HVAC-Dry** model elements shall include, but are not limited to, ducts, air handling equipment, flanges, insulation, fire smoke dampers, variable air systems, and duct fittings. Means and methods such as hangers, supports, seismic bracing, supplemental steel, and falsework must be included in the model. Location of Air Intakes, Economizers.

F. The **HVAC-We**t model elements shall include, but are not limited to, all piping and conduit larger than ¾" in diameter, any grouping of two or more pipes or conduits regardless of size, insulation (modeled as a separate element), fittings, connections, pumps, valves, and all equipment required for system functionality. Means and methods such as hangers, supports, seismic bracing, supplemental steel, and falsework must be included in the model.

G. The **Plumbing** model elements shall include, but are not limited to, all piping 1" and larger in diameter, any grouping of two or more pipes or conduits regardless of size, insulation (modeled as separate elements), fittings, connections, pumps, valves, and all equipment required for system functionality. Means and methods such as hangers, supports, seismic bracing, and vibration isolation must be included in the model. Location of Air Intakes, Economizers in relation to vents with clearance as required by code / LAUSD.

H. The **Electrical** model elements shall include, but are not limited to, all conduit larger than 1" in diameter, any grouping of two or more conduits regardless of size, transformers, VFDs, panel boards, large disconnects, gutter boxes, pull boxes, control panels, annunciator panels, switchgear, transfer stations, cable trays, conduits, light fixtures, and elements where coordination with other trades' specific equipment is required (such as outlets and jacks embedded in casework). Means and methods such as hangers, supports, seismic bracing, and vibration isolation must be included in the model. Show clearances for service /maintenance requirements are met in front of panels and around HVAC equipment on roofs.

I. The **Fire Suppression System** model elements shall include, but are not limited to, main and branch piping, valves, fittings, drains, pumps, tanks, sensors, control panels, sprinkler heads, and seismic bracing. Means and methods such as hangers, supports, seismic bracing, and vibration isolation must be included in the model.

J. The **Building Management System** model elements shall include, but are not limited to, pipes and conduits greater than 1" in diameter, any grouping of two or more pipes or conduits regardless of size, cable trays, all major and critical valves (including shut-off, life-safety, isolation, and tamper and flow valves), all equipment and panels as indicated per the schedule, and elements where coordination with other trades' specific equipment is required (such as outlets and jacks embedded in casework). Means and methods such as hangers, supports, seismic bracing, and vibration isolation must be included in the model.

K. The **Telecommunication & Security** model elements shall include, but are not limited to, all piping and conduit greater than 1" in diameter, any grouping of two or more conduits regardless of size, cable trays, all major and critical valves (including shut-off, life-safety, isolation, and tamper and flow valves), and elements where coordination with other trades' specific equipment is required (such as outlets and jacks embedded in casework). Means and methods such as hangers, supports, seismic bracing, and vibration isolation must be included in the model.

L. The **Complete Underground Utility System** including wet utilities and dry utilities. The model should demonstrate how utilities will be installed in relation to each new utility, existing to remain and all structures. Inverts and POCs shall be included.

M. The **Overall BIM Mode**l shall contain enough information sufficient to visually and graphically (to scale) represent the true "clearance zones" (access) required to service, repair, and maintain all major equipment.

III. Coordination and Clash Resolution Procedure

1. A background model will be provided for the use of the coordination team. Use of this background model is at the sole discretion of the General Contractor and Subcontractors.

2. The Owner and Design Team makes no guarantees of its accuracy nor does the use of the background model relieve the General Contractor and their Subcontractors of their responsibilities to comply with the requirements of the requirements of the contract documents and provide a fully coordinated BIM project

3. Each Subcontractor must submit an updated model two days prior to each scheduled coordination meeting.

4. The models must be provided in the colors assigned to each contractor – see section VII/2 below. Models not provided in the assigned color may not be updated in the consolidated model prepared for that week's coordination

meeting.

5. Each Subcontractor must purchase at least one license of Navisworks Manage software. Native modeling software is at the discretion of the Subcontractor, but Autodesk Revit is recommended. Software must be release 2013 or later.

6. Each Subcontractor is responsible for maintaining a clash-free model and is required to clear all clashes, to the best of his ability, two days prior to each clash detection meeting. This updated model will be uploaded two days prior to the meeting. Subcontractors are encouraged to meet with other Subcontractors, one-on-one or in small groups, to clear clashes prior to the clash detection meeting. This can be done through GoTo Meeting or similar programs.

7. Any clashes remaining by the time of the clash detection meeting will be reviewed. General Contractor will make assignments to the appropriate Subcontractor(s) for resolving the clashes. The resolutions must be completed, to the best of the Subcontractors' abilities, prior to the next coordination meeting.

8. General Contractor and their required Subcontractors shall attend all scheduled BIM coordination meetings. All regular meetings shall be held online, through GoTo meeting. Periodically, at significant milestones and at the discretion of General Contractor or the Managing BIM Coordinator, BIM coordination meetings will be held at the project office, onsite. General Contractor will decide what Subcontractors will be required to attend such meetings.

9. The General Contractor and Subcontractors are required to follow the Hierarchy of Systems Coordination, as outlined below or as agreed to by Owner / Design Team:

   A. Structure
   B. Architecture and visible Trade Elements (Diffusers, Lighting, etc.)
   C. Mechanical Equipment location and access
   D. Hydronics, Plumbing and Fire Protection Mains & Gas lines
   E. All Ductwork
   F. Pressurized Piping over 2" in diameter & Fire Protection Branches
   G. Electrical Duct banks (concrete-encased)
   H. All other Plumbing
   I. All other HVAC and Hydronics
   J. Electrical Switchgear and Conduits over 2" in diameter
   K. Electrical Panels, Conduits 2" and smaller, and other equipment
   L. Fire Protection Drops
   M. Fire Alarm systems
   N. Sleeves through Rated Partitions
   O. Access Panels

10. The General Contractor and Subcontractors are required to attend meetings to review accessibility of system elements including, but not limited to, devices, panels, valves, and other equipment, with the Owner and Design Team.

11. For any clash between an Object and Construction Tolerance where the clash cannot be resolved via coordination, the Subcontractor whose Construction Tolerance is in question must provide field measurements in a timely manner once the scope in question is installed.

12. The General Contractor shall require Subcontractors to process, revise, and resubmit their 3D model in a timely manner in order to resolve coordination issues. If conditions exist where adjacent trades may be affected by a Subcontractor's coordination changes, the revising Subcontractor must contact the adjacent trade's Subcontractor to develop a resolution for all affected trades. General Contractor shall manage this process.

13. The General Contractor and their Subcontractor shall revise and resubmit their three-dimensional model to reflect changes to system design and functionality represented in any supplemental documentation including, but not limited to, RFIs, ASIs, Bulletins, Addenda, and Owner's Directives. Such revisions shall be made in accordance with the following sequence:

    A. Any Subcontractor with work directly affected by the design change documentation will draft a revised three-dimensional model while coordinating with adjacent trades.

    B. All revisions to model scope or layout not specifically described in the contract documents or supplemental information from the Architect or Owner shall be deemed to be Coordination Changes and shall not be eligible for any change request.

    C. The Subcontractor shall, upon completion of the coordination process for a given area and in consultation with the Owner, Architect and General Contractor, sign the 3D Coordination Sign-Off document. This document does not relieve any signee of the roles, responsibilities, or obligations outlined or implied elsewhere in this contract.

IV. Shop Drawing Submittals

1. Once coordination is complete for each zone of each building, General Contractor is required to submit for approval such two-dimensional, annotated, as-fabricated drawings as are required to make a complete representation of the entire scope. These drawings must be fully dimensioned projections including, but not limited to, plans, sections, elevations, and axonometric diagrams. The number, format, and medium of these drawings

shall be determined in the Subcontractor's contract. Printed copies must be delivered to per submittal requirements.

2. The General Contractor shall be responsible for incorporating Design or Field Revisions initiated after the sign-off of a given Zone into the Consolidated Model as negotiated with Owner and according to the sequence set forth in this document.

V. Closeout and As-Built Model Procedure

1. The General Contractor is responsible to provide complete, up to date, coordinated models, in NWD format as well as the native modeling format of the trades at the completion of the coordination process.

2. General Contractor shall require Subcontractors to maintain their BIM model throughout the construction process and reflect any changes in response to coordination changes or to RFIs, ASIs, Bulletins, Addenda and Owner's Directives.

3. At closeout, the Subcontractor must re-submit any shop drawings to reflect changes that occurred during the BIM coordination.

4. At closeout General Contractor shall provide complete As-Built record files to Owner / AOR per LAUSD Submittal and Close out requirements.

END OF SECTION

SECTION 01 3119

PROJECT MEETINGS (DESIGN BID BUILD)

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section specifies administrative and procedural requirements for Project meetings for Design Bid Build projects, including but not limited to, the following:

1. Job start meeting.
2. Pre-installation conferences.
3. Progress meetings.
4. Meetings as required by OAR.

1.02 RELATED REQUIREMENTS

A. Section 01 1216: Phasing of the Work.

B. Section 01 3113: Project Coordination.

C. Section 01 3213: Construction Schedule.

D. Section 01 3229: Project Forms.

E. Section 01 3300: Submittal Procedures.

PART 2 – PRODUCTS (Not used)

PART 3 - EXECUTION

3.01 JOB START MEETING

A. In accordance with General Conditions Article 2.6, OAR will schedule a job start meeting before starting the Work, at a time and date determined by OAR. Meeting shall be held at the Project site or another location as determined by OAR. Meeting will be held in order to review responsibilities, procedures, and other administrative requirements contained within the Contract Documents.

B. Authorized representatives of OWNER, INSPECTOR, ARCHITECT, CONTRACTOR and other parties shall attend the meeting. All participants at the meeting shall be familiar with the Project and authorized to conclude matters relating to the Work.

C. Agenda items shall include significant items which could affect progress of the Work, including, but not limited to the following:

1. Preliminary Construction Schedule.

2. Critical work sequencing.

3. Designation of responsible personnel.

4. Identification of OAR.

5. Procedures for processing field decisions.

6. Request for Proposal.

7. Request for Clarification.

8. Construction Directive and Change Order.

9. Procedures for processing Applications for Payment.

10. Prevailing wages.

11. Submittal and review of Shop Drawings, Product Data, material lists, and Samples.

12. Close out Document Preparation

    a. Operation and Maintenance Manuals

    b. Warranties

    c. As-built Drawings

13. Use of the Project site and/or premises.

14. Parking availability.

15. Office, work, and storage areas.

16. Equipment deliveries and priorities.

17. Safety procedures.

18. First Aid.

19. Security.

20. Housekeeping.

21. Working hours.

22. Contract Compliance Officer.

23. Insurance Services including OCIP.

24. Environmental Health and Safety.

25. Substantial Completion, Administrative Closeout and Contract Completion requirements and procedures.

26. Procedures for Mandatory Dispute and Claim Resolution.

27. Storm Water Pollution Prevention Plan (SWPPP).

28. CEQA Compliance.

D. OAR shall prepare and issue meeting minutes to attendees and interested parties no later than five calendar days after the meeting date.

3.02 PRE-INSTALLATION CONFERENCES

A. CONTRACTOR shall coordinate and conduct pre-installation conferences at the Project site as required by related Sections of the Contract Documents.

B. CONTRACTOR, manufacturers, and fabricators involved in or affected by the installation and its coordination or integration with other pre-ceding and/or subsequent installations of Work shall attend the meeting. CONTRACTOR shall advise OAR, INSPECTOR, and ARCHITECT of scheduled meeting dates in order to secure their attendance.

1. CONTRACTOR shall review the progress of construction activities and preparations for the particular activity under consideration at each pre-installation conference, including requirements for the following:

a. Contract Documents.

b. Options.

c. Related Construction Directives and Change Orders.

d. Purchases.

e. Deliveries.

f. Shop Drawings, Product Data, and quality-control samples.

g. Review of mockups.

h. Possible conflicts.

i. Compatibility problems.

j. Time schedules.

k. Weather limitations.

l. Manufacturer's recommendations.

m. Warranty requirements.

n. Compatibility of materials.

o. Acceptability of substrates.

p. Temporary facilities.

q. Space and access limitations.

r. Governing regulations.

s. Safety.

t. Inspecting and testing requirements.

u. Required performance results.

v. Recording requirements.

w. Protection.

2. CONTRACTOR shall record significant discussions and directives received from each conference. CONTRACTOR shall, within three (3) calendar days after the meeting date, distribute the minutes of the meeting to all concerned parties, including but not limited to, OAR, INSPECTOR, and ARCHITECT.

3.03 PROGRESS MEETINGS

A. Progress meetings will be held at the Project site at regular intervals, typically weekly, as determined by the OAR.

B. In addition to representatives of CONTRACTOR, OWNER, and ARCHITECT, each Subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of the Work shall, if requested by OAR, be represented at these meetings. All participants at the conference shall be familiar with the Project and authorized to conclude all matters relating to the Work.

C. Failure of CONTRACTOR to be so represented at any progress meeting which is held at a mutually agreed time or for which a written notice is given, shall not relieve CONTRACTOR from abiding by any and all OAR determinations or directives issued at such meeting.

D. OAR will review and correct or approve minutes of the previous progress meeting and will review other significant items affecting progress. Topics for discussion as appropriate to the status of the Project include but are not limited to:

1. Interface requirements.
2. Construction Schedule.
3. Sequence and coordination.
4. Status of submittals / RFCs.
5. Deliveries.
6. Off-site fabrication.
7. Access.
8. Site utilization.
9. Temporary Construction Facilities and Controls.
10. Hours of work.
11. Hazards and risks.
12. Housekeeping.
13. Quality of materials, fabrication, and execution.
14. Unforeseen conditions.
15. Testing and Inspection.
16. Defective Work.
17. Construction Directive.

18. Request for Proposal.

19. Change Order Proposals and Change Orders.

20. Documentation of information for payment requests.

21. Application for Payment.

22. Other items as required or as brought forth.

23. Initial Notice of Start of Issue, Event, Condition, Circumstance, or Cause of Perceived Delay, Disruption, Interference, Hindrance, Acceleration. (Article 12.2.1 of the General Conditions).

24. Final Notice of End of Issue, Event, Condition, Circumstance, or Cause of Perceived Delay, Disruption, Interference, Hindrance, Acceleration (Article 12.2.2 of the General Conditions).

25. Storm Water Pollution Prevention.

26. CEQA Compliance.

E. No later than three (3) calendar days after each progress meeting, OAR will prepare and distribute minutes of the meeting to each present and absent party. Include a brief summary, in narrative form, of progress, decisions, directives, actions taken, and all other issues since the previous meeting and report.

1. Schedule Updating: CONTRACTOR shall revise the Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized and issue the revised schedule at the next scheduled progress meeting.

3.04 PROJECT CLOSEOUT CONFERENCE

A. Preparation of As-Built Documents

B. Procedures required prior to Inspection for Substantial Completion and for Final Completion for acceptance.

C. Submittal of warranties

D. Requirements for preparing operations and maintenance documents and data

E. Requirements for delivery of material samples, attic stock, and spare parts

F. Requirements for demonstration and training

G. Preparation of Punch List

H. Procedures for processing Applications for Payment at Substantial Completion and Final Payment

I. Submittal procedures for closeout documents

J. District's Beneficial Occupancy requirements

K. Installation of District's FF&E

L. Responsibility for removing temporary facilities and controls.

3.05 ADDITIONAL MEETINGS

A. OAR, upon giving notice to the intended parties and without further obligation, may require additional meetings to discuss Work and/or Project related activities.

3.06 OWNER'S RIGHT TO RECORD

A. CONTRACTOR agrees on behalf of itself and all its subcontractors that the OWNER may audiotape or videotape any meetings, training and any work at any time during the Project

END OF SECTION

SECTION 01 3213
CONSTRUCTION SCHEDULE (LARGE PROJECTS)

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Required procedures, preparation, submittals, reviews, updates, and revisions to the cost/schedule integrated construction schedule. The purpose of this section is to:

1. Ensure adequate planning and execution of the Work by CONTRACTOR.
2. Establish a standard against which satisfactory completion of the Project can be measured by OWNER.
3. Assist CONTRACTOR and OAR in monitoring progress.
4. Aid in assessing the impact of any changes to the Contract.
5. Provide justification for progress payments.

1.02 RELATED REQUIREMENTS

A. Section 01 1100: Summary of Work.

B. Section 01 1216: Phasing of the Work.

C. Section 01 2300: Alternates (Bid Items).

D. Section 01 2973: Schedule of Values.

E. Section 01 2976: Progress Payment Procedures.

F. Section 01 3113: Project Coordination.

G. Section 01 3300: Submittal Procedures.

H. Section 01 4523: Testing and Inspection.

I. Section 01 4525: Testing, Adjusting, and Balancing for HVAC.

J. Section 01 5000: Construction Facilities and Temporary Controls.

K. Section 01 7700: Contract Closeout.

L. Section 01 7836: Warranties.

PART 2 – PRODUCTS

2.01 SCHEDULING SOFTWARE

A. CONTRACTOR shall utilize Primavera Scheduling Software (P6) to employ the Critical Path Method (CPM) in the development and maintenance of the construction schedule. If the version of Primavera Scheduling Software (P6) used is greater than Version 15.1, the CONTRACTOR shall save & export schedules in Version 15.1 before submitting to OWNER for review. The scheduling software

shall be capable of being resource loaded with manpower, costs and materials. It shall also be capable of generating time-scaled logic diagrams, resource histograms and profiles, bar charts, layouts and reports with any and/or all activity detail.

B. All schedule calculation rules, auto cost rules and resource calculation rules shall be in a format acceptable to OAR. When schedule calculations are performed, the "Retained Logic" setting shall be used. CONTRACTOR shall use the zero "Decimal Places" setting.

PART 3 – EXECUTION

3.01 SUBMITTALS

A. CONTRACTOR shall retain a construction scheduler to work in enough capacity to perform all of the requirements outlined in this Section. CONTRACTOR shall submit a resume of the proposed Scheduler for review and acceptance prior to the preparation of any Schedule. The resume shall demonstrate the proposed scheduler's capability to plan, coordinate, execute, and monitor a cost/resource loaded CPM schedule as required for this Project and have a minimum of five years direct experience using Primavera Project Planner. Scheduler will cooperate with OAR and shall be available on site for monitoring, maintaining and updating schedules in a timely manner. OAR has the right to refuse to accept the Scheduler based upon a lack of experience as required by this Section or based on lack of on-site performance and timeliness of schedule submittals. If OAR does not accept the proposed Scheduler, CONTRACTOR shall within one week of disapproval, propose another scheduler who meets the experience requirements stated above.

B. CONTRACTOR shall submit two color originals and three copies of all bar charts, reports and/or other required schedule data as outlined in this Section. CONTRACTOR shall electronically deliver the schedule file in its original format at the time of submittal.

C. CONTRACTOR shall attend a pre-construction scheduling conference with OAR within 7 days after Notice of Award. Contractor shall then develop and submit the Preliminary Construction Schedule within 10 days after Notice of Award.

D. CONTRACTOR shall submit the Proposed Baseline Schedule no later than 30 days from the Notice to Proceed (or as stipulated in the milestones under *Section 01 1219 Phasing of the Work Appendix A)*.

E. CONTRACTOR shall submit the Monthly Schedule Updates, Four-Week Rolling Schedules, and Recovery Schedules as required.

3.02 PRELIMINARY CONSTRUCTION SCHEDULE

A. The purpose of the cost-loaded Preliminary Construction Schedule is to provide an interim mechanism in which to measure performance on individual activities and to validate the CONTRACTOR'S monthly Application for Payment on work performed (starting with month one) during the first 90 calendar days of the job until the complete Baseline Schedule is approved by the OAR.

B. CONTRACTOR shall develop and submit a cost loaded Preliminary Construction Schedule as required by this Section. It shall be submitted in computer generated network format and shall be organized by Activity Codes representing the CONTRACTOR'S intended sequencing of the Work. The Preliminary Construction Schedule shall include activities for the first 90 calendar days following the NTP such as mobilization, preparation of submittals, specified review periods, procurement items, fabrication items, milestones, and detailed construction activities.

1. For Design Build projects, the DBE (Contractor) shall include separate design activities (schematic design, design development, 50% construction documents, 100% construction documents, etc.) as well as DSA review activities, revise & re-submit activities, DSA back-check, and DSA approval for each phase and DSA package of work.

C. Upon OAR'S acceptance of the Preliminary Construction Schedule, CONTRACTOR shall update the accepted Preliminary Construction Schedule each month (beginning with month 1) and submit these updates until CONTRACTOR'S Baseline Schedule is fully developed and accepted. Since updates to Preliminary Construction Schedule are the basis for payment to CONTRACTOR during the first three-month period, submittal and acceptance of such updates shall be a condition precedent to making of monthly payment, as referenced in General Conditions.

D. Provide a written narrative describing CONTRACTOR'S approach to mobilization, procurement, and construction during the first 90 calendar days including crew sizes, equipment and material delivery, site access, submittals, and permits.

E. Submit Bar Charts, Tabular Reports, a Cost flow Histogram, Electronic Data, and Plots in accordance with Article 3.04-L.

F. If the project is of a short duration and it would be more beneficial for the CONTRACTOR to forego the preliminary 90 day schedule, then upon CONTRACTOR request and OAR written Approval, the CONTRACTOR may go straight into development of the Baseline Schedule for the entire project. This will need to be implemented expeditiously in order to not impede the processing of the monthly pay applications. Approval of the Baseline schedule and first monthly update is precedent of the monthly pay application.

3.03 SCHEDULE OF VALUES

A. CONTRACTOR shall cost load activities in the Construction Baseline Schedule and allocate costs to the cost accounts of all activities. The cost accounts shall match the CSI sections listed in the Table Of Contents of the Specifications. The format shall be coordinated with *Specification Section 01 2973 (Schedule of Values*), *Specification Section 01 3229 (Project Forms)*, and *Specification Section 01 2976 (Progress Payment Procedures)*.

B. Submit a computer generated report from the Construction Baseline Schedule using the P6 scheduling software. The report shall contain the following data for each activity: Cost Account Number (by CSI section), Cost Account Description, Cost

Account Budget, Cost to Date, Cost this Period, and Cost to complete. Total costs shall be organized and totaled by CSI section. This report shall be the source of the data CONTRACTOR reports on the Schedule of Values.

C. The cost loading associated with the activities shall be based on CONTRACTOR estimates of costs that CONTRACTOR will incur performing the specific activities. If OAR determines that the costs are front loaded and/or the distribution of costs is unreasonable, CONTRACTOR shall revise accordingly and resubmit the Schedule of Values within five (5) days for OAR review.

3.04 BASELINE SCHEDULE CPM NETWORK

A. No later than 30 days from the Notice to Proceed (or as stipulated in the milestones under *Section 01 1219 Phasing of the Work Appendix A*), CONTRACTOR shall submit a detailed Proposed Baseline Schedule that covers the entire duration of the Project. This schedule shall convey CONTRACTOR'S plan for organizing, managing, and executing the Work.

1. Design Build projects. The Baseline schedule development process for Design Build projects is implemented in multiple time periods as the design progresses. The schedule should take the form of a rolling wave Baseline Schedule. This is defined as first creating a summary level schedule (generated using the approved Primavera scheduling software) with all of the design activities, design fees, all of the milestones, and summary level construction activities for each of the phases and DSA packages. As, each design phase or package achieves 100% Construction Document design status and is submitted to DSA, the DBE (Contractor) will then breakdown the summary level construction activities into more detail and add any missing scope items for that phase/package.

2. This rolling wave process will be repeated each time a new phase or package achieves design completion. The "data date" will be advanced up to the date of design completion for each particular phase/package. After each phase/package of the Design Build baseline schedule is approved by the OAR, the DBE will provide monthly schedule updates to the point to where the next design package achieves 100% Construction Document design status and then the next iteration of the Baseline Schedule development process begins.

3. This rolling wave process continues until all of the design packages are designed and DSA approved. For example, if you have a Design Build project that has six DSA packages then this project will ultimately have six detailed rolling wave Baseline Schedule iterations with six different "data dates" in time. The monthly schedule updates will be submitted monthly with a "data date" of the last day of each month (based off of the latest approved Baseline Schedule iteration).

B. The Proposed Baseline Schedule shall include activity descriptions, sequencing, logic relationships, duration estimates, cost loading by CSI section in accordance with Article 3.03, resource loading of manpower, and other information as set forth in this Section.

1. The Proposed Baseline Schedule shall include all Milestones stipulated in *Specification Section 01 1219, Phasing of the Work, Appendix A*, as well as all activities required to achieve timely completion of the Milestones.
2. The Proposed Baseline Schedule shall include activities for: (including design and DSA review periods for Design Build projects), all construction activities, the NTP, Milestones, submittals, coordination drawings, re-submittals, procurement of materials and equipment, manufacturing, fabrication & delivery, owner furnished contractor installed items (OFCI), access restrictions, work restrictions, phased occupancy, testing, start-up, and contract closeout activities. The Proposed Baseline Schedule shall allow a period for OAR and ARCHITECT (for Design Bid Build projects) to review each submittal, as required by *Section 01 3300* and other sections which require additional time for OWNER reviews and deferred submittal reviews by Division of the State Architect (DSA).
3. The Proposed Baseline Schedule shall include start and completion dates for: temporary facilities, construction of mock-ups, prototypes, samples, punch list, OWNER interfaces and furnishing of items, separate work contracts, regulatory agency approvals, and permits required for performance of the Work.
4. The Proposed Baseline Schedule shall allow for all foreseeable factors and risks which affect performance of the Work. Include allowances for weather conditions in accordance with Article 3.04-J, applicable laws, transportation, traffic, air quality, noise, or any other applicable regulatory requirements, regulations or collective bargaining agreements pertaining to labor.
5. The Proposed Baseline Schedule shall include an activity with a minimum review period of one hundred days for all Deferred Approvals required by DSA. In addition, as a predecessor to this activity, a separate 18 day OWNER review period shall be included in the Proposed Baseline Schedule.
6. CONTRACTOR shall not use any float suppression techniques such as preferential sequencing or logic, special hidden lag time between activities or milestones, float absorption activities, or unjustifiable over-estimating of activity durations in preparing the Proposed Baseline Schedule. Finish Milestones should be constrained to a “Finish on or before” constraint. No “Zero Free Float” constraints, No “Early” Constraints, and No “Mandatory Finish” constraints shall be utilized.
7. The Proposed Baseline Schedule shall include activity durations based on the crew sizes and equipment utilization that CONTRACTOR will maintain during the Project. No activity durations shall exceed (15) working days unless approved by the OAR. Non-construction activities such as procurement, delivery, or submittal activities are exempted. CONTRACTOR will need to perform their due-diligence to make sure that the activity man-power loading and activity durations are directly integrated.
8. CONTRACTOR shall include with the Proposed Baseline Schedule a written narrative report sufficiently comprehensive to explain the rationale behind

CONTRACTOR'S approach to the Work including but not limited to: activity durations, manpower flow, average crew sizes (by trade), equipment requirements, anticipated production rates, constraints, holidays and other non-work days, potential problem areas, permits, coordination with regulatory authorities, utilities, separate work contracts and other parties, and long lead delivery items requiring more than thirty days from the date of order to delivery to the Project site.

C. At the OAR'S request, furnish a detailed written explanation of CONTRACTOR'S basis for specific durations, logic, phasing, or other information. Such an explanation shall include CONTRACTOR'S rationale for selecting the number of crews, crew composition, number of shifts per day, number of hours in a shift, number of work days per week, construction equipment, and similar factors.

D. The Proposed Baseline Schedule activities shall contain the following data:

1. Activity ID numbers shall consist of a built-in intelligence scheme. Following OAR acceptance of the Baseline Schedule, Activity ID numbers shall not be changed.
2. Activity Descriptions shall provide adequate information that readily identifies each activity, work scope, and location.
3. At a minimum, activity codes specified in Article 3.04-G shall be applied to each activity. This is at the activity level and is different than WBS coding structure.
4. Cost accounts (in CSI Master Format) and Resource accounts shall be applied to each activity. They shall include lump sum costs, and man-hours/man-days (where applicable).

E. At OAR'S request, furnish a written explanation for each lead or lag relationship and each constrained date. Unjustifiable leads, lags, and constraints will result in OAR'S rejection of the Proposed Baseline Schedule.

F. Calendar Identification: In the scheduling software, identify all activities that will require overtime shifts, double shifts, and work on weekends or holidays. Identify non-work days and holidays in the schedule calendar. All milestones stipulated in Specification Section 01 1219, Phasing of the Work, Appendix A, shall be placed on a calendar with seven days per week. No holiday or non-workday restrictions are permitted on this calendar. Within the schedule software, the CONTRACTOR shall not use Primavera Global Calendars from past projects, but rather shall use project specific calendars created for this specific contract. The Calendar coding shall be transferable and compatible with the OWNER calendars as to not distort any start/finish dates and "total float" values upon schedule re-calculation.

G. Activity Codes: As a minimum, the Activity Codes shown in the Table 1 below shall be assigned to each activity.

Table 1

Name	Length	Description

TYPE	2	Type of activity (for example: mobilization, submittals, procurement/fabrication, construction, milestones, etcetera.)
AREA	2	Area or Building (for example: Bldg A, Building B, Courtyard, Athletic Fields, Street Work, etcetera.)
STAG	2	Stage (for example: Foundations, Superstructure, Exterior, Interior, Roof, Floor Number etcetera.)
SBST	2	Substage (a specific area within a stage such as: main electrical room, kitchen, room number, etcetera.)
RESP	7	Responsible Party (subcontractor and/or trade)
DIV	2	CSI Division
SPEC	5	CSI Specification Section number

1. OAR may require additional coding of activities. The mandatory activity code requirements listed in Table 1 are not to be construed as setting limits on CONTRACTOR'S management and coordination responsibilities, but are intended to guide CONTRACTOR in the administration of its contractual responsibilities.

H. Milestones: are designated dates as set forth in *Specification Section 01 1219*, *Phasing of the Work, Appendix A*, in which Work or portions thereof are required to start and complete in accordance with the Contract Documents.

1. Where the term completion or similar terms are used in regards to a Milestone, it shall be construed to mean all portions of the Work in the indicated phase, area, and zone are complete and acceptable to OAR. Where the term start or similar terms are used in the designation of a Milestone, it shall be construed to mean a portion of the Work in the indicated phase, area, or zone is required to be commenced.

2. A Proposed Baseline Schedule extending beyond the Milestones or Contract Time will not be acceptable.

3. Finish Milestones shall be constrained with "Finish on or before" type constraints in accordance with the dates stipulated in Specification Section 01 1219, Phasing of the Work, Appendix A.

4. In the P6 scheduling software, prior to opening the project, click the "dates" tab and place a "must finish by" date to match the Contract Completion Milestone date stipulated in Specification Section 01 1219, Phasing of the Work, Appendix A.

5. A Proposed Baseline Schedule indicating Work completed in less time than the Milestones and/or Contract Time will not be acceptable. Rather, CONTRACTOR shall show any unused contract time as float available to the project.

6. Milestones shall be placed on a calendar with seven days per week. No Holiday or non-workday restrictions are permitted on this calendar.

I. The Critical Path shall be clearly indicated on all schedules submitted. An activity is defined as critical when it is shown to be on the longest path from beginning to end.

J. CONTRACTOR shall allow for inclement weather in the Proposed Baseline Schedule by incorporating an activity titled "Rain Day Impact Allowance" as the last activity prior to the Substantial Completion Milestone. No other activities may be concurrent with it. The duration of the Rain Day Impact Allowance activity will be based on Table #2 below, and will be calculated from the Notice to Proceed until the original date of Substantial Completion.

Table 2: Cumulative Calendar Days "Rain Day Impact Allowance":

January	6	July	0
February	5	August	0
March	5	September	1
April	4	October	1
May	1	November	3
June	0	December	5

1. When inclement weather at the Project site impacts Critical Path activities, CONTRACTOR may provide the OAR with a written request for a weather impact day describing the inclement weather delay on the Critical Path activities. The inclement weather delay must be clearly indicated by a 70 percent decrease in the field labor workforce hours on Critical Path activities on the day in question as indicated by CONTRACTOR'S Daily reports from the day in question and the scheduled work days prior to the day in question. Upon OAR'S independent confirmation of the amount of rainfall and impact, OAR will authorize CONTRACTOR to reduce the duration of the Rain Day Impact Allowance by one day.

2. Inclement weather on non-scheduled workdays shall not be granted as weather impact days. If CONTRACTOR asks to work a specific weekend or holiday and gives OAR advanced, written notification of critical path work to be performed and a substantial amount of precipitation occurs that prevents the work from being performed, then that day can be claimed as a weather impact day. If the effects of inclement weather from a non-scheduled work day carry forward to a scheduled work day and impacts the Critical Path as noted above, then the scheduled work day will be considered impacted by weather. Any unused rain day allowance at the end of the project will be shown as available float to the Substantial Completion Milestone. Excusable, non-compensable time extensions will be granted for inclement weather to Substantial Completion milestone only after the weather impact area affecting the critical path work has exhausted the allotted cumulative Rain Day Impact Allowance. On projects that have multiple phases with defined start & finish dates, the cumulative rain impact

allowance may be split up (pro-rated) into their designated phases upon OAR Approval.

K. Cost loaded Activities:

1. Each activity included in the Proposed Baseline Schedule shall be assigned the cost CONTRACTOR estimates it will incur performing that activity. Each activity's assigned cost will be inclusive of overhead and profit so CONTRACTOR'S total overhead and profit is distributed over all activities on a pro rata basis. The sum of the costs assigned to activities shall equal the total contract value. No activity costs shall be assigned to manufacturing or delivery activities unless approved by OAR. If OAR finds that the costs are front loaded and the distribution of costs is unreasonable, CONTRACTOR shall re-distribute the costs and resubmit the revised Schedule of Values within five days for OAR backcheck.

   i. The DBE (CONTRACTOR) on Design Build projects shall include design costs broken down by design discipline based on project phasing requirements and DSA review periods. The sum of the costs assigned to the activities shall equal the total contract value.

2. CONTRACTOR shall cost load activities in the Proposed Baseline Schedule and allocate costs to related resource/cost accounts associated with each activity. The cost accounts shall match the CSI sections listed in the Table of Contents of the Specifications. The format shall be coordinated with *Specification Section 01 2973 (Schedule of Values)*, Specification *Section 01 3229 (Project Forms)*, and *Specification Section 01 2976 (Progress Payment Procedures)*. All cost-loaded activities shall roll-up to their designated CSI sections and shall be the basis for the data reported in the *Schedule of Values (Section 01 2973)*, *Project Forms (Section 01 3229)*, and *Progress Payment Procedures (Section 01 2976).*

3. Submit computer generated reports using the scheduling software which will be the basis for the approved Schedule of Values. The reports shall contain the following data for each activity: Cost/Resource Account Number (by CSI section), Cost/Resource Account Description, Cost/Resource Account Budget, Cost to Date, Cost this Period, and Cost at Completion. Total Costs shall be organized and totaled by CSI section.

4. Submit a Cost Flow Histogram in accordance with Article 3.04.L.3.

L. CONTRACTOR shall submit computer generated reports and plots with the Proposed Baseline Schedule submittal package. Format shall display the following columns: Activity ID, Activity Description, Original Duration, Remaining Duration, Percent Complete, Early Start, Early Finish, Late Start, Late Finish, and Total Float. Unless otherwise noted, bar charts and reports shall be on 8 ½ by 11 paper and bound.

1. Color Bar charts shall be generated separately for:

   a. Milestones only.

b. All Activities sorted by Early Start date and organized by Project, Area, Stage, and Substage. (The network shall be organized to show continuous flow of all activities from left to right). CONTRACTOR is reminded that during the monthly schedule update process, even the activities that have already been completed need to be shown in this "all activities" bar chart report.

c. Activities sorted by Responsibility.

d. Summary level of all activities sorted by craft/trade and area.

e. Critical Path (Longest Path). The network shall be organized to show continuous flow of all critical activities on the longest path from left to right (sorted by early start).

2. Reports:

a. Total Float sorted low to high.

b. Predecessors and Successors sorted by Activity ID.

3. Cost Flow Histogram

a. Using the costs assigned to each activity, develop a Histogram that projects the estimated invoice amounts by month for the Project duration. The histogram shall be produced from the scheduling software on 11" by 17" paper (landscape mode). It shall contain both a monthly bar histogram and a cumulative cost curve on the same graph. The Total Costs shall be based on the Early Dates option.

4. Man Power Histogram

a. Submit a planned man-power graphic bar histogram produced from the scheduling software on 11" by 17" paper (landscape mode) that displays total man-hours based on Early Dates. Show both a weekly bar histogram and a cumulative curve on same graph. In addition, provide a summary excel table of average crew sizes and peak crew sizes broken down by trade/subcontractor. CONTRACTOR will need to perform their due-diligence to make sure that the activity man-power loading is realistic and adequate based on material /labor cost estimates.

5. Provide a written narrative as required by Article 3.04.B.8.

6. Electronic data: Provide an electronic file in its original format of the Schedule. The electronic P6 files shall be saved in "XER" type format.(version 15.1)

7. Plots: Produce a color bar chart on E-size paper (30 by 42-inch) organized (at a minimum) by project, area, stage, and substage.

M. OAR will notify CONTRACTOR of any adjustments that are required for the Proposed Baseline Schedule to be accepted. CONTRACTOR shall perform any required adjustments to the Proposed Baseline Schedule and resubmit it for

acceptance certifying in writing that all information contained therein complies with the Contract Documents. OAR will review the Proposed Baseline Schedule for accuracy, reasonableness, and conformance with the Contract Documents and shall provide comments within ten days of receipt. Within five days after receiving OAR comments, CONTRACTOR shall both incorporate changes to address OAR concerns and resubmit the Proposed Baseline Schedule for OAR backcheck. This process will continue until the Proposed Baseline Schedule is accepted as the Baseline Schedule. Once accepted by OAR, the Baseline Schedule will be the basis upon which CONTRACTOR shall prepare updates that record and report actual performance and progress. The accepted Baseline Schedule and subsequent Monthly Updates (reference Articles 3.04 and 3.05 respectively) shall be the basis for consideration and analysis of requests for time extensions and CONTRACTOR progress payments.

N. OAR acceptance of the Baseline Schedule or CONTRACTOR'S failure to identify or include an element of the Contract, shall not release CONTRACTOR'S obligation to complete all required Work in accordance with the Contract Documents.

3.05 REQUIREMENTS FOR MONTHLY/WEEKLY SCHEDULE UPDATING

A. Once the Baseline Schedule is accepted by OAR, CONTRACTOR shall copy the Approved Baseline file to a new name, status the activities with actual as-built data through the end of the month & submit Monthly Schedule Updates beginning with month No. 1. The current month's schedule update cannot be accepted until the previous Monthly Schedule Update has been accepted by OAR. Each Monthly Schedule Update shall be submitted concurrently with the Monthly Pay Application no later than the fifth day of the succeeding month in accordance with Article 14 of the General Conditions.

B. Monthly Schedule Update Format.

1. Initially, the contractor shall status a current Monthly Schedule Update with actual Work progress only. No logic ties shall be modified. Status all Actual Start and Finish dates, adjust Remaining Durations where needed, and update Percent Completion of cost and resource loaded activities. No activity Original Durations or Logic shall be changed unless authorized by OAR. No new activities shall be added (except for the addition of new activities for every re-submittal and re-review required) or unless authorized by the OAR.

2. Once the schedule is statused in accordance with Article 3.05-B1, CONTRACTOR shall print (and submit with Monthly Schedule Update) a report of "out-of-sequence" logic that results from the updating process. CONTRACTOR shall then correct all "out-of-sequence" logic to reflect CONTRACTOR'S actual Work sequence. Prior to submission of the Monthly Schedule Update, CONTRACTOR shall review and validate that all remaining activities along with their schedule relationships are still accurate based on the actual work flow in the field. If CONTRACTOR

chooses to modify logic or add activities (other than out-of-sequence corrections), it shall be done in accordance with Article 3.07 for OAR Review & Approval. CONTRACTOR shall also submit a comparison report between the previous monthly schedule update and the current monthly update that will document the over-all changes (i.e. comparison software such as "Digger", or "Schedule Analyzer", etc.,).

3. During construction, CONTRACTOR may desire to break down specific activities into greater detail. If greater detail is necessary, then CONTRACTOR shall identify expanded activities such that the Baseline Schedule activities that the expanded activities originated from are readily apparent. CONTRACTOR shall not allow the aggregate duration of the expanded activities to exceed the duration assigned to the Baseline Schedule activity unless permitted by OAR in writing.

4. Autocost rules and calculation rules shall link Remaining Duration and Percent Complete.

5. The Data Date for the Monthly Schedule Updates shall be the first day of the succeeding month. At a minimum, three days prior to the submission of the Monthly Schedule Update, CONTRACTOR shall meet in person with OAR to present the proposed Percentages of Completion and Actual Start and Actual Finish dates. Once percentages of completion and actual dates have been agreed to, they shall be the basis of the Monthly Schedule Update.

6. CONTRACTOR shall submit a Cost Histogram that overlays the planned cost curve from the Baseline Schedule, against the monthly cumulative "cost to date" curve, and against the remaining activities planned curve from the current Monthly Schedule Update.

7. Written Narrative Report: CONTRACTOR shall include a written report to explain the Monthly Schedule Update. The narrative shall, at a minimum include the following headings with appropriate discussions of each topic:

    a. Introduction.

    b. A Summary of Work which was on-going (This Pay Period).

    c. Problem Areas and Proposed Solutions.

    d. Critical Path.

    e. Current and Anticipated Delays.

    f. Coordination of Work with Others.

    g. Milestone Status.

    h. Revisions: the standard schedule comparison report that compares the current update to the previous update shall be submitted to help document any variances/changes. However this comparison report will not be accepted by OWNER in lieu of the above written narrative requirements outline above.

8. In updating the Schedule, CONTRACTOR shall not modify Activity ID numbers, schedule calculation rules/criteria, or the Activity Coding Structure required.

9. Submit bar charts, reports, a cost flow histogram, man-power histogram, written narrative, electronic data, and plots in accordance with Article 3.04-L.

10. Submit a cost-loaded report (progressed monthly) produced from the scheduling software that displays all of the activities organized by the CSI section cost/resource accounts. This report shall be in compliance with Article 3.04-K, Section 01 2973 (Schedule of Values), Section 01 3229 (Project Forms), and Section 01 2976 (Progress Payment Procedures).

C. Four-Week Rolling Schedule: At each Weekly Progress Meeting, CONTRACTOR shall present a Four-Week Schedule in Bar Chart format. It shall show one (1) week of actual and three (3) weeks of forecasted progress. The Four-Week Rolling Schedule shall be used as a basis for discussing progress and work planned during the three (3) weeks.

1. The Four-Week Rolling Schedule shall be based on the most recent OAR Accepted Monthly Schedule Update. It shall include weekly updates to all construction, submittal, fabrication and procurement, and separate work contract activities. CONTRACTOR shall ensure that it accurately reflects the current progress of the Work.

2. CONTRACTOR shall discuss at the weekly Progress meeting the actual dates and any variances to critical or near critical activities.

3. Upon request by OAR, CONTRACTOR shall provide the Four-Week Rolling Schedule in electronic format.

4. If the Four-Week Rolling Schedule indicates activities are behind schedule, CONTRACTOR shall provide a Recovery Schedule in accordance with Article 3.06.

5. If the CONTRACTOR chooses to provide a Four-Week Rolling Schedule in a greater level of detail (by trade/subcontractor) outside of the monthly contractual P6 schedule database, then upon CONTRACTOR REQUEST and OAR written approval, the CONTRACTOR may proceed as long as the detailed activities roll-up to the contractual P6 monthly schedule updates. These detailed activities will need to be linked to the overall Substantial Completion date as to properly forecast whether the project is ahead or behind schedule during the weekly Progress Meetings. The Four-Week Rolling Schedule must accurately reflect the work that is going on during the current week and must accurately reflect what will happen in the next three weeks.

3.06 RECOVERY SCHEDULES

A. If a Monthly Schedule Update indicates negative float greater than ten (10) days on a critical path as result of events not predicated by the General Conditions

CONTRACTOR shall prepare a Proposed Recovery Schedule demonstrating CONTRACTOR'S plan to regain the time lost. The Recovery Schedule shall be submitted either in advance of or concurrent with the Monthly Schedule Update and CONTRACTOR progress request. Both the Monthly Schedule Update and the Proposed Recovery Schedule shall be based on the same percentages of completion and actual dates accepted by OAR under Article 3.05 B.

B. The Proposed Recovery Schedule shall be based on a copy of the Monthly Schedule Update for the calendar month during which the negative float first appears.

C. The Proposed Recovery Schedule shall include a written narrative that identifies the causes of the negative float on the critical path and provides CONTRACTOR'S proposed corrective action to ensure timely completion of all Milestones and the Substantial Completion Date. CONTRACTOR'S corrective actions shall include but are not limited to increasing concurrent operations, increasing labor, adding multiple shifts in a 24-hour period, and adding overtime.

D. During any period of time when CONTRACTOR is found to be behind schedule by OAR, the Monthly Schedule Update described above shall become a weekly requirement (at no additional cost to OWNER) to provide a greater degree of focus on the timely completion of the Work. These Updates shall be submitted to OAR every Monday morning. When CONTRACTOR is deemed by OAR to be back on schedule, CONTRACTOR may revert to submitting the schedule monthly.

E. CONTRACTOR'S progress payment may not be processed until OAR accepts the Proposed Recovery Schedule. Following such an acceptance, the Proposed Recovery Schedule will be known as the Recovery Schedule and future Work will be performed by CONTRACTOR in accordance with it.

3.07 FRAGNETS AND TIME EXTENSION REQUESTS

A. Float is not for exclusive use or benefit of either OWNER or CONTRACTOR but is an expiring resource available to both parties on a non-discriminatory basis. If required to meet specified Milestones, either party may utilize float. Adjustments to Milestones or Contract Time will only be authorized by Change Order and only to the extent the claimed adjustments exceed total float along the most critical path of the current Monthly Schedule Update in effect at the time of the claimed adjustments. The claimed adjustments to the Milestones and/or Contract Time must also cause the Substantial Completion Date to exceed that currently indicated in the Monthly Schedule Update. No time extensions will be granted nor delay damages paid under contract until all available float is used and the CONTRACTOR obtains a Time Extension Request approval from the OAR in accordance with Article 3.07 in its entirety. CONTRACTOR claimed adjustments to an existing negative float path will not receive consideration until the activity with the highest negative float is driven even further negative.

1. Claimed adjustments to the Milestones or Contract Time will be administered in conjunction with those set forth in the General Conditions.

B. Pursuant to the float sharing requirements of this Section, the use of float suppression techniques such as preferential sequencing or logic, special lead or lag

logic restraints, and extended activity times or durations are prohibited. The use of float time disclosed or implied by the use of alternate float suppression techniques shall be proportionally shared to benefit OWNER and CONTRACTOR. The use of any technique solely for the purpose of suppressing float will result in OWNER rejection of the submitted Monthly Schedule Update.

C. In the event CONTRACTOR believes the Project has suffered an adverse impact arising from events predicated by the General Conditions, CONTRACTOR may prepare a Time Extension Request by submitting a Schedule Fragnet and a written narrative outlining the detail of the impact. A Schedule Fragnet must demonstrate a critical path delay. Such a delay must adversely impact the Substantial Completion Date for CONTRACTOR to receive a time extension. To demonstrate such an impact successfully, CONTRACTOR shall prepare a Schedule Fragnet based on a copy of OWNER accepted Monthly Schedule Update for the calendar month during which the adverse impact occurred. This "copy" of the OWNER accepted Monthly Schedule Update shall however first be updated (by OWNER and CONTRACTOR jointly) with both Percentages of Completion and Actual Dates up to the day the delay commenced. This process will provide the "pre-delay" project status. Once OWNER and CONTRACTOR have agreed to the "pre-delay" project status, CONTRACTOR should make a copy of this "pre-delay" schedule and this copy is to be the starting point for CONTRACTOR'S Schedule Fragnet development. OWNER will evaluate the activities, logic, durations, etcetera, in the Schedule Fragnet and will evaluate if the adverse impact arose from events described by the General Conditions. The Fragnet shall also include CONTRACTOR-caused delays that affect the critical or near critical path in the network and should be accounted for in the Time Impact Analysis if overlapped at any point in time with OWNER-caused delay. If rain impact days were granted between the Start and Finish of OWNER-caused delay period, they should be accounted for in the Time Impact Analysis as well. Provided OWNER determines such an impact occurred, CONTRACTOR may be due a time extension equal to the number of proportioned days of variance/delay that resulted to the Substantial Completion Date.

D. Activities added into a Schedule Fragnet to demonstrate the impact of adverse event shall be assigned a unique activity code. The Schedule shall be organized by this unique activity code.

E. The Schedule Fragnet shall incorporate logic that accurately ties reflective of the adverse event to pre-event predecessor activities and post event successor activities.

F. The format and components of a Schedule Fragnet submittal shall be in accordance with this Section and the General Conditions. It is crucial for the Fragnet to be submitted within the same month of discovery so it can be resolved during the monthly schedule update review. The notice shall be transmitted to OAR within the stipulations outlined in the General Conditions.

G. If OWNER accepts CONTRACTOR'S Schedule Fragnet and an extension is granted, a Change Order will be prepared. OWNER will advise the CONTRACTOR on the change order number for his scheduling use. When

CONTRACTOR receives this Change Order number, all the activities added to the Schedule Fragnet shall be given Activity Identification Numbers that corresponds with the Change Order number. CONTRACTOR shall cost load and resource-load the activities if required by OWNER. If resource loading is required, the resource loading shall include a breakdown of labor, material, and equipment quantities.

H. If OWNER rejects CONTRACTOR'S Schedule Fragnet in part based on improper forecast logic or activity tasks then it shall be revised accordingly to conform to OWNER'S review comments and resubmitted. If the forecast logic and activity tasks cannot be agreed to then the pre-delay schedule outlined in Article 3.07-C shall be compared to the actual as-built data in the succeeding month of the encountering issue, event, condition, circumstance, and/or cause. The variance to the project between the pre-delay and post delay schedules shall be discussed in CONTRACTOR'S written narrative and proportioned between the different parties involved in the delay.

I. If OWNER rejects CONTRACTOR'S Schedule Fragnet in whole then CONTRACTOR may follow the procedures set forth in the General Conditions.

3.08 PAYMENT FOR SCHEDULING

A. The Work of this Section will be included as part of the bid price.

B. Preparation, revising, maintenance, and compliance with this Section and Section 01 2973 is an integral part of the Contract Documents and is specified to have a minimum value equal to 2 percent of the original Contract Amount or $150,000, whichever is less. This amount shall be proportionally cost loaded into two activities in both the Proposed Baseline Schedule and the Schedule of Values described in Section 01 2973. One activity for the "Baseline Schedule" and the other activity for the "Monthly Schedule Update Process" as follows:

1. CONTRACTOR may allocate twenty percent (20 percent) of the total cost and place in the "Baseline Schedule" activity. It can then be billed against when the OAR accepts the Proposed Baseline Schedule as the Baseline Schedule.

2. The remaining eighty percent (80 percent) may be cost loaded into the "Monthly Schedule Update Process" activity. This amount may be billed in equal monthly increments. The amount of those increments is determined by dividing the remaining cost by the total number of months in the Contract Time. Payment of these incremental amounts is contingent upon OAR acceptance of CONTRACTOR Monthly Schedule Updates, Recovery Schedules, Four-Week Rolling Schedules, Fragnets, Time Impact Analysis, and the updated Log of Required Submittals.

3. The CONTRACTOR shall anticipate in their base contract scope that numerous Fragnets and written time impact analyses will be required during the duration of the project with the Monthly Schedule Updates. Requests for extra scheduling services will not be considered until the CONTRACTOR demonstrates that all of the costs stipulated in Article 3.08-B has been expended.

3.09 FAILURE TO COMPLY WITH REQUIREMENTS

A. At any time during the project if CONTRACTOR fails to comply with the specified requirements, OWNER reserves the right to engage independent estimating and scheduling consultants to fulfill these requirements. Upon notice to CONTRACTOR, OWNER shall assess against CONTRACTOR, incurred costs for these additional services.

B. In such an event, OWNER will require, and CONTRACTOR shall participate and provide requested information to ensure the resulting Milestones Schedule accurately reflects CONTRACTOR's plan to execute the Work in compliance with the Contract Documents. If it becomes necessary for OWNER to recommend logic or duration revisions as a result of CONTRACTOR failure to furnish acceptable data, and if CONTRACTOR has objections to the recommendations, CONTRACTOR shall provide notice to OWNER within three days and CONTRACTOR shall provide an acceptable alternate plan. If CONTRACTOR fails to so note any objections and provide an acceptable alternate plan, or if CONTRACTOR implements the recommendations of OWNER without so noting any objections, CONTRACTOR will be deemed to have waived all objections and concurred with the recommended logic/duration revisions provided by ARCHITECT and/or OWNER.

C. Submittal of any Monthly Schedule Updates are subject to review and acceptance by OWNER. OWNER retains the right, including, but not limited to the General Conditions, to withhold progress payments in whole or part until CONTRACTOR submits a Monthly Schedule Update acceptable to OWNER. If a Monthly Schedule Update is "Rejected" due to the OWNER not receiving a satisfactory schedule that accurately reflects the on-going work activities, the OWNER will mandate a separate meeting with the CONTRACTOR and approved Scheduler to remedy the non-conformance. If after the 2nd consecutive month the OWNER still has to "Reject" the monthly Schedule update due to non-conformance, then the CONTRACTOR'S Scheduler will need to be replaced at no additional cost to the OWNER. CONTRACTOR shall within one week of disapproval, propose another Scheduler who meets the experience requirements stated in this Section.

3.10 CONTRACTOR RESPONSIBILITY

A. Nothing in this Section shall be construed to be a usurpation of CONTRACTOR authority, responsibility, and obligation to plan and schedule Work as CONTRACTOR deems necessary, subject to all other requirements of the Contract Documents.

B. CONTRACTOR shall involve the subcontractors, manufacturers, and suppliers in the development and periodic updating of the schedule.

3.11 RECORD DOCUMENTS / FINAL AS-BUILT SCHEDULE

A. Prior to Contract Completion of the Work, CONTRACTOR shall submit a final as-built schedule, and a time-scaled network diagram reflecting the actual dates of all activities. This shall be submitted prior to the final application of payment and prior to the request to release retention.

END OF SECTION

SECTION 01 3229

PROJECT FORMS (DESIGN BID BUILD)

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. The following, but not limited to, administrative forms and documents listed in this Section are to be utilized in the administration of the Work for Design Bid Build (DBB) projects. Upon the CONTRACTOR's request, the OAR may approve the use of alternate forms. Electronic versions of these forms are available on the LAUSD website.

B. From time to time, OWNER may release new revisions and new Project Forms. At any time during the Project, if requested by OAR, CONTRACTOR shall use the newly released Project Forms.

1.02 RELATED REQUIREMENTS

A. Division 01: Design Bid Build General Requirements.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION

3.01 FORMS

A. The following examples of forms are contained within this Section:

1. Allowance Disbursement Authorization.

    a. Use the COLIN Change Order Management process.

2. Application for Payment.

    a. Use the Application for Payment EInvoice process as indicated in COLIN.

3. Assessments.

    a. Use the FSD Training Materials Invoice Payments EInvoice system.

4. Certification of Compliance with Project Stabilization Agreement and Labor Compliance.

[1]Application for Payment (Multiple Projects Form) is available from the OAR.

a. Refer to Exhibit B.

5. Certification of Compliance with CEQA Mitigations.

a. Refer to Exhibit C.

6. Certificate of Substantial Completion.

a. Refer to Exhibit D.

7. Change Order.

a. Use the COLIN Change Order Management process.

8. Change Order Proposal.

a. Use the COLIN Change Order Management process.

9. Change Order Proposal – Compensable Delay Costs.

a. Use the COLIN Change Order Management process.

10. Change Order Proposal Guidelines.

a. Use the COLIN Change Order Management process.

11. Change Order Proposal – Labor Rate Calculation Form (Request for Rate Higher Than Fully burdened Labor Rates).

a. Refer to Exhibit E.

12. Conditional Waiver and Release – Final Payment.

a. Refer to Exhibit F.

13. Construction Directive (CD).

a. Use the COLIN Change Order Management process.

14. Correction Notice.

a. Refer to Exhibit G.

15. Daily Construction Report.

a. Use the COLIN Change Order Management process.

16. Daily Time and Material Record.

[1]Application for Payment (Multiple Projects Form) is available from the OAR.

a. Refer to Exhibit H.

17. Initial Notice of start of Issue. Event, Condition, Circumstance, or Cause of Perceived or Actual Delay, Disruption, Interference, Condition, Circumstance, or Cause of Perceived Delay, Disruption, Interference, Hindrance, Acceleration.

    a. Use the COLIN Change Order Management process.

18. Final Notice of End of Issue, Event, Condition, Circumstance, or Cause of Perceived or Actual Delay, Disruption, Interference, Condition, Circumstance, or Cause of Perceived Delay, Disruption, Interference, Hindrance, Acceleration.

    a. Use the COLIN Change Order Management process.

19. Five Day Notice.

    a. Refer to Exhibit I.B.

20. Liquidated Damages.

    a. Use the COLIN Change Order Management process.

21. List of Subcontractors.

    a. Use the COLIN Change Order Management process.

22. Notice of Award.

    a. Refer to Exhibit J.

23. Notice of Completion.

    a. Refer to Exhibit K.

24. Notice of Intent to Award.

    a. Refer to Exhibit L.

25. Notice of Partial Use or Occupancy (Beneficial Occupancy).

    a. Refer to Exhibit M.

26. Notice of Termination.

    a. Refer to Exhibit I “Five Day Notice”.

27. Notice to Proceed.

[1]Application for Payment (Multiple Projects Form) is available from the OAR.

a. Refer to Exhibit N.

28. "Or Equal" Request.

a. Refer to Exhibit Q.

29. Owner Assessment Summary.

a. Use the COLIN Change Order Management process.

30. Property Inventory.

a. Refer to Exhibit R.

31. Request for Certification of Substantial Completion.

a. Refer to Exhibit S.

32. Request for Clarification.

a. Use the COLIN Change Order Management process.

33. Request for Proposal.

a. Use the COLIN Change Order Management process.

34. Request for Reduction of Retention.

a. Refer to Exhibit T.

35. Schedule of Values.

a. Use the Schedule of Values EInvoice process as indicated in COLIN.

36. Storm Water Pollution Prevention – Site Monitoring Report.

a. Refer to Exhibit U.

37. Submittal Log.

a. Use the COLIN Change Order Management process.

38. Substitution Request.

a. Refer to Exhibit O.

39. Survey of Existing Site Conditions.

[1]Application for Payment (Multiple Projects Form) is available from the OAR.

a. Refer to Exhibit V.

40. Transmittal.

a. Use the COLIN Change Order Management process.

3.02 PROCEDURES

A. Allowance Disbursement Authorization: This form is used for the request and approval of Contract allowances. Sr. Project Manager approval is required for the use of all Allowance Disbursements.

B. Application for Payment: This form is used in requesting a progress payment in the EInvoice system.

C. Certification of Compliance with Project Stabilization Agreement and Labor Compliance Code Section 1776: This form is used to certify that all contributions due and owing to appropriate trust funds have been paid by CONTRACTOR and all Subcontractors, as specified by the Project Stabilization Agreement (PSA) and General Conditions Article 6.49. This form is also used to certify that CONTRACTOR has submitted all certified payroll records mandated by Labor Code 1776, and General Conditions Article 6.49

D. Certification of Compliance with CEQA Mitigations: This form is used to certify that all CEQA requirements were complied with by the CONTRACTOR.

E. Certificate of Substantial Completion: This form is used in accordance with Article 14.12 of the DBB General Conditions.

F. Change Order: This form is used to adjust the Contract Amount, Milestones or Contract Time.

G. Change Order Proposal: This form is used to communicate proposed adjustments to the Contract Amount, Milestones or Contract Time.

H. Change Order Proposal – Compensable Delay Costs: If Work is delayed by the acts or omissions of OWNER, ARCHITECT or separate contractor employed by OWNER, upon CONTRACTOR’s request and notice, in strict conformity with the General Conditions.

I. Change Order Proposal – Labor Rate Calculation Form: Request for Rate Higher Than Fully burdened Labor Rates

J. Construction Directive (CD): This form is used to issue a Construction Directive.

K. Conditional Waiver and Release – Final Payment: This document shall become effective to release any mechanic's lien, stop notice, or bond right the undersigned has on the job of the Los Angeles Unified School District

[1]Application for Payment (Multiple Projects Form) is available from the OAR.

L. Correction Notice: This form is used to provide notice of defective Work.

M. Daily Construction Report: This form is used to report daily Work activities and manpower levels of CONTRACTOR or Subcontractor.

N. Daily Time and Material Record: This form is used to provide daily records as set forth in Article 11.11 of the DBB General Conditions.

O. Initial Notice of Start of Issue, Event, Condition, Circumstance, or Cause of Perceived Delay, Disruption, Interference, Hindrance, Acceleration: This form is used to report any impacts to the Work as provided in COLIN.

P. Final Notice of End of Issue, Event, Condition, Circumstance, or Cause of Perceived Delay, Disruption, Interference, Hindrance, Acceleration: This form is used to report resolution of the Initial Notice of Issue as provided in COLIN.

Q. Five Day Notice: This notice is used according to the General Conditions.

R. List of Subcontractors: This is required as indicated in the COLIN Change Management process.

S. Notice of Award: Notice by OWNER advising the successful bidder that the OWNER has signed the Contract.

T. Notice of Partial Use or Occupancy (Beneficial Occupancy). This form is used for when the District occupies any or all portions of the Work at any time prior to Substantial Completion in accordance with Article 14.14.

U. Notice of Termination: DBE/Contractor shall submit a Notice of Termination (NOT) to the Los Angeles Regional Water Quality Control Board, LARWQCB. Provide a copy of NOT to OAR (See Section 01 7416).

V. Notice To Proceed: This form is used to establish the date of Contract Time commencement, and the date Contractor is authorized to commence performance of Contractor obligations.

W. “Or Equal” Request: This form is used to submit a list of proposed “or equal” substitutions.

X. Owner Assessment Summary: This form is used for all assessments or withholds by the Owner, permitted under the Contract or required by law, including without limitation, stop notices, prevailing wage violations, liquidated damages, additional consultant services, OCIP premiums, etc.

Y. Property Inventory: This form is used to establish Owner property in a space.

Z. “Request for Certification of Substantial Completion”: This form is used according to Article 14.12.

[1]Application for Payment (Multiple Projects Form) is available from the OAR.

AA. Request for Clarification: This form is to be used for clarification of the intent of the Contract Documents.

BB. Request for Proposal: This form is used to request a proposed adjustment in the Contract Amount, Milestones or Contract Time in response to the Work contained within the Request for Proposal.

CC. Request of Reduction of Retention: This form is used according to Article 14.8 of the General Conditions.

DD. Schedule of Values: This form is used to establish the basis of the certified Application for Payment.

EE. Storm Water Pollution Prevention Plan (SWPPP): Site Monitoring Reports: These forms are used to certify that construction activities are in compliance with SWPPP (see Section 01 7416).

FF. HH. Submittal Log: This form is a format for the listing of the required submittals.

GG. Substitution Request: This form is used to submit proposed substitutions of materials or equipment no longer manufactured or which cannot be acquired from existing inventories.

HH. Transmittal: This form is used for transmission of items related to the Contract.

END OF SECTION

[1]Application for Payment (Multiple Projects Form) is available from the OAR.

LOS ANGELES UNIFIED SCHOOL DISTRICT

Facilities Services Division

CERTIFICATION OF COMPLIANCE WITH PROJECT STABILIZATION AGREEMENT AND LABOR CODE SECTION 1776

The undersigned CONTRACTOR ON:

_____

(Project Name and Contract Number)

hereby certifies that CONTRACTOR and all Subcontractors of every tier performing work on this Project have submitted all certified payroll records mandated by Labor Code section 1776 and the Contract Documents.

If OWNER's Project Stabilization Agreement (PSA) is applicable, CONTRACTOR certifies that CONTRACTOR and all Subcontractors of every tier have complied with the PSA on the Project, including, but not limited to, signing the Letter of Assent, signing subscription agreement(s) if applicable and paying all employee benefit contributions to the appropriate trust funds. CONTRACTOR further certifies that, prior to making final payment to each Subcontractor, CONTRACTOR has obtain written releases from all appropriate trust funds affirming that such Subcontractor has paid all required employee benefits.

The undersigned is duly authorized to make this Certification on behalf of CONTRACTOR. The undersigned warrants and represents that he/she has personal knowledge of each statements in this Cerification and/or that he/she has conducted all necessary and appropriate inquiries to determine the truth, completeness and accuracy of the statements. The undersigned declares and certifies that the statements made herein are complete and accurate.

I declare under the laws of the State of California that the foregoing is true and correct.

Signature : _____ Date:_____

Print Name:_____

Title : _____

CONTRACTOR Name:_____

Address: _____

Phone/Fax Number/Email: _____

	CERTIFICATION OF COMPLIANCE WITH CEQA MITIGATIONS
	Project Name: **Date:**
	Contractor Name: **Contract No:**
	Monthly Time Period covered: From_____to_____

NOTE TO OAR: The following requirements are to be edited or expanded here and in Section 01 5000, Article 3.12 as necessary for the specific requirements of the Project. (Remove this note also.)

	REQUIREMENT	Applicable this time period (No/Yes)	In Compliance (No/Yes)
MMI-1.	Prior to Substantial Completion, CONTRACTOR shall, per design and in coordination with OWNER, perform night testing and make necessary adjustments to ensure that the lighting is installed to reduce glare such that neither the light source nor its image from a reflective surface results in spillage of light onto any point measured 5 feet from the school property line.		
MMIII-1	CONTRACTOR shall comply with and implement the applicable provisions of the most recently adopted South Coast Air Quality Management District Rule 403 and Rule 403 Implementation Handbook.		
MMV-1.	CONTRACTOR shall notify the OWNER in the event that an archaeological find or a potential archaeological find is discovered and shall cease construction activities in affected area. CONTRACTOR may resume construction activities only after receiving written notice from the OWNER. For work cessation beyond five days on the critical path, CONTRACTOR will be entitled to additional days.		
MMV-2	CONTRACTOR shall notify the OWNER in the event that human remains or possible human remains are discovered and shall cease construction activities in affected area. CONTRACTOR may resume construction activities only after receiving written notice from the OWNER. For work cessation beyond five days on the critical path, CONTRACTOR will be entitled to additional days.		
MMXI-1	During construction, CONTRACTOR shall ensure that all construction is performed in accordance with City of Los Angeles noise standards. No noise intensive construction or repair work shall be		

	REQUIREMENT	Applicable this time period (No/Yes)	In Compliance (No/Yes)
	performed between the hours of 9:00 pm and 7:00 am on any weekday, nor before 8 am or after 6 pm on any Saturday, or at any time on Sundays or federal holidays.		
MMXI-2.	CONTRACTOR shall ensure that all internal combustion powered equipment shall be equipped with properly operating mufflers and kept properly tuned to alleviate noise and pollution.		
MMXI-3.	During construction, CONTRACTOR shall locate portable equipment as far as possible from nearby residents.		
MMXI-4.	CONTRACTOR shall store and maintain equipment as far as possible from nearby residents.		

I hereby certify that all **CEQA** requirements were complied with in the time period stated or not for the following reasons.
Reasons for Noncompliance and efforts made to make correct such noncompliance:

_____
_____
_____
_____
_____

The undersigned warrants and represents that he/she has personal knowledge of each statements and/or that he/she has conducted all necessary and appropriate inquiries to determine the truth, completeness and accuracy of the statements.

_____ for this contract.
(Position/Title)

_____	_____	_____
Print Name	Signature	Date

Owner's Authorized Representative acknowledgement of Receipt

_____	_____	_____
Print Name	Signature	Date

Los Angeles Unified School District

FACILITIES SERVICES DIVISION

CERTIFICATE OF SUBSTANTIAL COMPLETION

School Name: _____ Date of Issuance: _____

Project Name: _____ Project Number: _____

Issued To: _____ Contract Number: _____

Issued By: _____

Project Description:

The Work performed under this Contract has been reviewed and found to be substantially complete. Substantial Completion is defined as the stage in the progress of the Work when all of the requirements of the Contract are completed, except Punch List items, final warranties and guaranties, and record documents submittals. A Punch List of items to be completed, corrected and/or submitted is attached hereto. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

The Contractor will complete, correct, or submit the items on the Punch List attached hereto within _____(Days) from the date of Substantial Completion.

The date of Substantial Completion of the Project designated above is hereby established as _____(Date) is also the date of commencement of all applicable warranties required by the Contract Documents except as noted below:

Warranty Exceptions:

Architect's Signature	***Name (Printed)***	***Date***
Contractor's Signature	***Name (Printed)***	***Date***

The Owner accepts the Work as substantially complete and will assume full possession thereof at _____ (time) on _____ (date).

Owner Authorized Representative Signature	***Name (Printed)***	***Date***
Senior Project Manager Signature	***Name (Printed)***	***Date***
Regional Construction Director Signature	***Name (Printed)***	***Date***

cc Facilities Construction Contracts, FCIU, Inspection

Certificate of Substantial Completion

EXHIBIT D

CHANGE ORDER PROPOSAL - LABOR RATE CALCULATION FORM
REQUEST FOR RATE HIGHER THAN FULLY BURDENED LABOR RATES

NOTE: The contractor is required to complete one form for each craft/trade/classification for which they request a rate higher than the FSD published fully burdened labor rates and attach the supporting documents.

PERFORMING CONTRACTOR _____ DATE _____

PROJECT _____ CONTRACT #. _____

PRIME CONTRACTOR _____ CONTRACTOR JOB #. _____

LOCAL UNION ☐ YES ☐ NO #. _____ PHONE ( ) _____ P.S.A. ☐ YES ☐ NO

CRAFT / TRADE _____ CLASSIFICATION _____ O.C.I.P. ☐ YES ☐ NO

WORKERS COMP. CLASS CODE _____ DATE WAGE EXPIRES _____

		STRAIGHT TIME Daily	OVERTIME Daily or Saturday	OVERTIME Sunday/Holiday
(A) BASIC HOURLY RATE				
FRINGES (EMPLOYER PAYMENTS)				
Health & Welfare	_____ /Hr	$0.00	$0.00	$0.00
Pension	_____ /Hr	$0.00	$0.00	$0.00
Vacation / Holiday	_____ /Hr	$0.00	$0.00	$0.00
Training	_____ /Hr	$0.00	$0.00	$0.00
Other Payments	/Hr	$0.00	$0.00	$0.00
Other (specify): _____	/Hr	$0.00	$0.00	$0.00
(B) Total Fringes		$0.00	$0.00	$0.00
(C) TOTAL PREVAILING WAGE (A+B)		$0.00	$0.00	$0.00
(D) PAYROLL TAXES & WORKERS' COMPENSATION				
F.I.C.A./Medicare	7.65 %			
F.U.T.A.	0.134 %			
S.U.T.A.	1.043 %			
E.T.T.	0.017 %			
Sub Total	**8.844** %			
Round up to	**9.000** %			
Adder				
Workers' Comp. *	0 %			
(E) Total	**9.00** x (A)	$0.00	$0.00	$0.00
TOTAL - HOURLY LABOR RATE (C+E)		$0.00	$0.00	$0.00

* This amount will be zero if an Owner-Controlled Insurance Program ("OCIP") is in effect

Note: If the actual numbers for payroll taxes are greater than 9%, please submit proper documents to justify the higher rate.

LOS ANGELES UNIFIED SCHOOL DISTRICT

Facilities Services Division

CONDITIONAL WAIVER AND RELEASE UPON FINAL PAYMENT

Upon receipt by the undersigned of a check from _____

in the sum of $ _____
(Amount of Check)

payable to _____
(Payee or Payees of Check)

and when the check has been properly endorsed and has been paid by the bank upon which it is drawn, this document shall become effective to release any mechanic's lien, stop notice, or bond right the undersigned has on the job of the Los Angeles Unified School District located at

_____.
(Project Name/Contract # and Address)

This release covers the final payment to the undersigned for all labor, services, equipment or material furnished on the job, except for disputed claims for additional work in the

amount of $ _____.

Before any recipient of this document relies on it, the party should verify evidence of payment to the undersigned.

Dated: _____ _____
(Company Name)

By: _____
(Title)

NON-CONFORMANCE ITEMS LIST

School Name:
Project Description:
Project Number(s):
DSA App. #(s):
Contract #:
Project Inspector:
General Contractor:

EXHIBIT F

Inspection Department
Trust • Credibility • Performance

Last updated on:

Scope	Item No.	Bldg. Name/# & Item Location	Project#	DSA 03-App#	DSA 154 (# or N/A)	Contract/Code Reference(s)	Description	Date Cited	Cited by	CCD Appvd (Y, N, or N/A)	Board Ratified Change (Y, N, N/A)	Date Closed	Closed by	Age in Days

SAMPLE

LOS ANGELES UNIFIED SCHOOL DISTRICT

Facilities Services Division

DAILY TIME AND MATERIAL RECORD

School Name: _____ Report No: _____

Project Name: _____ Date Performed: _____

Project Number: _____ Date of Report: _____

Issued To: (OAR) _____ CD Number: _____

LABOR:

Quantity	Description	Hours
	TOTAL	

EQUIPMENT:

Quantity	Description	Hours
	TOTAL	

MATERIAL:

Quantity	Description	Hours
	TOTAL	

Issued by: _____ _____ _____

(Contractor's Signature) *Name (Printed)* *Date*

Acknowledged By: _____ _____ _____

(Inspector of Record) *Name (Printed)* *Date*

(This acknowledgment does not constitute approval)

Facilities Services Division
333 S. Beaudry Avenue, 23rd Floor
Los Angeles, California 90017
Phone: (213) 241-4811

Alberto M. Carvalho
Superintendent

Pedro Salcido
Deputy Superintendent
Business Services & Operations

Krisztina Tokes
Chief Facilities Executive

5 DAY NOTICE

(Date of Issuance)

TO: *(Contractor Name and Address)*

TO: *(Performance Bond Surety)*

Project Name:
Project No.:
Contract No.:

In accordance with General Conditions Section 15.5.3 you are hereby given notice that within **five (5) days** of the date of this notice the CONTRACTOR and/or the Performance Bond Surety listed above must commence correction of the following deficiencies listed below:

Item No.	**Item Description**

In the event the Contractor and/or its performance bond surety fail to commence correction within five (5) days, the OWNER in accordance with General Conditions Article 15 Work Suspension and Termination may, at its sole discretion, under Contract, and/or in equity, do any and/or all of the following:

1. Without any further notice, make good such deficiencies (i.e., General Conditions Sections 15.1 through 15.3.9, inclusive) by whatever method OWNER deems most expedient with all costs and expenses thereof being deducted and/or drawn down, and charged against and/or from, the CONTRACTOR, the Contract funds; including retention, and/or the performance bond from the Contract Amount;

2. Without any further notice, terminate CONTRACTOR right to proceed with the Work of the Contract, in whole or in part, without terminating CONTRACTOR obligations under the Contract, the OWNER will then either:
    a. Issue a written notice to the performance bond surety demanding the performance bond to perform under the Contract and providing the surety with ten (10) days to commence performing and/or confirm that it will commence performing immediately under the Contract and the performance bond.
    b. complete the Work of the Contract, in whole or in part, by whatever method OWNER deems most expedient with all costs and expenses thereof being deducted and/or drawn down, and/or charged against and/or from CONTRACTOR, the Contract funds, including retention, and/or performance bond.

3. Initiate procedures to revoke any pre-qualification status the CONTRACTOR may have with the OWNER; and/or

4. Initiate procedures to have the CONTRACTOR declared a non-responsive CONTRACTOR and barred from all current and/or future OWNER Projects for a period of two (2) years to five (5) years;

(If options 2, 3, and/or 4 are to be used, you must consult with and get approval from the District's General Counsel's office BEFORE issuing this Notice.)

Issued By: _____

(Owner's Authorized Representative) *Signature* *Date*

Cc: Facilities Contract Administration, Design Manager, Architect, Inspector of Record, Local District ( ), Complex Project Manager, District ( )

EXHIBIT I

Alberto M. Carvalho
Superintendent

Pedro Salcido
Deputy Superintendent
Business Services & Operations

Krisztina Tokes
Chief Facilities Executive

Facilities Services Division
333 S. Beaudry Avenue, 23rd Floor
Los Angeles, California 90017
Phone: (213) 241-4811

July 14, 2025

(INSERT CONTRACT
NAME AND ADDRESS)

FAXED:

NOTICE OF AWARD

Contract No.:	**(Insert Number)**
Project:	**(Insert Project Name and Number)**
Project Description:	**(Insert Description)**
Contract Amount:	$xxxx
Contract Duration:	xxx Calendar Days

This is your notice that you have been awarded the contract for the above-referenced project on OCTOBER 15, 2014 hereby defined as the **EFFECTIVE DATE OF THE CONTRACT.**

The executed contract documents are ready for you to pick-up in the Facilities Construction Contracts office, 333 S Beaudry Ave., 22nd Fl., Los Angeles, CA 90017. **YOU MUST PICK THEM UP PROMPTLY.**

Please contact your project Owner Authorized Representative (OAR), (NAME), at (213) 241-1001 regarding scheduling of the Job Start Meeting and issuance of the Notice to Proceed.

If you should have any questions regarding award of contract, please contact our office at (562) 654-9007.

Sincerely,

CONTRACT ADMINISTRATOR

c: J DOE, RPMD
T JOHNSON, (OAR)
Inspection Section
Alliant Insurance Services
File (Bid No: 1510000)
Existing Facilities P/S

RECORDING REQUESTED BY

LOS ANGELES UNIFIED SCHOOL DISTRICT
BOARD OF EDUCATION

AND WITH RECORDED MAIL TO

LOS ANGELES UNIFIED SCHOOL DISTRICT
BOARD OF EDUCATION

Facilities Construction Contracts
1545 Wilshire Boulevard, Suite 100
Los Angeles, CA 90017

EXHIBIT J

NOTICE OF COMPLETION

Contract No.:

NOTICE IS HEREBY GIVEN by the Board of Education of

LOS ANGELES UNIFIED SCHOOL DISTRICT,

hereinafter called DISTRICT, address, 333 South Beaudry Avenue, Los Angeles, California, that as owner of property hereinafter described, the DISTRICT,

on or about the duly entered into a

contract with

of the City of ,

for the work of

at the

located at

that the
is the surety under the contract bonds furnished in connection with the contract, and that the work contemplated in the contract has been completed and accepted by the LAUSD Board of Education on the __the DAY OF ____, 201_.

SAMPLE

LOS ANGELES UNIFIED SCHOOL DISTRICT BOARD
OF EDUCATION

ERNIE C. BYRD, JR.
Senior Manager, Construction Contracts

I certify under penalty of perjury that the foregoing is true and correct.

Date

ERNIE C. BYRD, JR.

LOS ANGELES, CALIFORNIA
Form 82.27 A (Rev.)

EXHIBIT K

Alberto M. Carvalho
Superintendent

Pedro Salcido
Deputy Superintendent
Business Services & Operations

Krisztina Tokes
Chief Facilities Executive

Facilities Services Division
333 S. Beaudry Avenue, 23rd Floor
Los Angeles, California 90017
Phone: (213) 241-4811

June 16, 2023

(INSERT CONTRACT
NAME AND ADDRESS)

FAXED
Fax No. (888) 123-4567

NOTICE OF INTENT TO AWARD CONTRACT – REMAINING REQUIREMENTS

Contract No.: **(Insert Number)**
Project: **(Insert Project Name and Number)**
Project Description: **(Insert Description)**
Contract Amount: $xxxx
Contract Duration: xxx Calendar Days

This is your notice that you were determined to have submitted the lowest responsive bid for the above-referenced project. It is the District's intent to award the contract provided that you comply with all further requirements. This notice **IS NOT AN AWARD OF THE CONTRACT.**

The contract documents (sealed set of plans and specifications, copy of Bid & Acceptance Form and Bond forms) together with the Workers Compensation and General Liability Claim Kit, will be ready for you to pick-up in the Facilities Construction Contracts office, 333 S. Beaudry Ave., 22nd Fl., Los Angeles, CA 90017, on September 22, 2014. **YOU MUST PICK THEM UP PROMPTLY.**

Within **seven (7)** business days of the above pick-up date, by **[INSERT DATE]** you shall furnish to the FACILITIES CONSTRUCTION CONTRACTS office, the documents indicated below. (Refer to Bidding Requirements: Document 00700 General Conditions, Section 5.4.2)

PLEASE EXECUTE AND RETURN ALL DOCUMENTS RECEIVED. FAILURE TO DO SO WILL RESULT IN THE FORFEITURE OF YOUR BID BOND.

NOTICE OF INTENT TO AWARD: REMAINING REQUIREMENTS

__X__ 1. Bonds – Executed by contractor, and by Attorney-in-Fact for surety. The bonds with acknowledgment attached must be executed by a surety who is an admitted insurer authorized to transact surety insurance in the State of California. It is NOT necessary for the contractor or surety to obtain the Los Angeles County Clerk's Office certification prior to returning the bond to PROCUREMENT ADMINISTRATION.

2. Original Certificate of Insurance (Document 00620), as indicated below, executed by an authorized representative of insurer:

_____ Workers' Compensation
_____ Comprehensive General Liability
_____ Automobile Liability (Owned, hired, and non-owned)
_____ Pollution Liability (includes Asbestos/Lead Abatement) endorsement
_____ Facilities Construction Contracts already has the required insurance certificates on file

__X__ 3. **Confirmation of Enrollment in the Owner Controlled Insurance Program (OCIP).**
It is your responsibility to enroll into the OCIP. It is also your responsibility to ensure OCIP enrollments of all eligible listed subcontractors, and to provide assurance of their enrollment. The current Insurance Manual is available from the LAUSD Facilities website at *http:/www.laschools.org/fcs/cc/pq/file-storage/?folder_id=1045824*.

Please contact the Insurance Administrator at Alliant Insurance Services at 866-394-7937, or via email at *alliantwrapX@alliantinsurance.com*, to request enrollment packages. Note: All enrollments should be completed online. Access will be granted once Alliant has been notified of your awarded contract.

An OCIP enrollment packet will be sent to you by Alliant. It will include instructions for online access and enrollment. Please complete the enrollment ASAP to ensure your ability to start work in a timely fashion.

__X___4. A signed **Letter of Assent** (Attachment A to the Project Stabilization Agreement (PSA)). A Letter of **Assent must be executed and submitted by the prime contractor and all listed subcontractors to both Procurement Administration and Labor Compliance Department. Additionally, signed Letter(s) of Assent for subcontractors of all tiers that were not listed on Document 00440 must be submitted directly to Labor Compliance Department. Procurement Administration will NOT award any contract until ALL Letter(s) of Assent for the Prime Contractor and the listed subcontractors have been received.** See Section 2.5(b) of the PSA. Make sure all appropriate information is included in the body of the letter (i.e., company name, LAUSD construction contract #, and school name(s) or project site(s)). A sample Letter of Assent is attached herein for your reference.

Attachment B- Elevator Contractors- Acknowledges that the International Union of Elevators Constructors is signatory to the Project Stabilization Agreement (PSA)

__X___5. I certify under penalty of perjury under the laws of the State of California that my firm and all Subcontractors employed by my firm are in compliance with all requirements as set forth in the bidding and contract documents for this project.

__X___6. I certify under penalty of perjury under the laws of the State of California that my firm is still prequalified with the District and is eligible for an award of this contract, and that the information we submitted as part of the prequalification process remains unchanged.

Executed on _____, at _____, California
Date City

_____
Signature of Authorized Officer

_____ _____
Print Name Title

_____
Date

If you should have any questions regarding this notice, please contact your Owner Authorized Representative (OAR), [Insert Name], at (xxx.xxx.xxx), or our office at (213) 241.1000.

Please sign and return this notice to Facilities Construction Contracts.

Sincerely,

CONTRACT ADMINISTRATOR

c: (Name) , OAR
Alliant Insurance Services
File

Bid No: 1510000
EXISTING FACILITIES

P/S

EXHIBIT L

LOS ANGELES UNIFIED SCHOOL DISTRICT
Facilities Services Division

Date of Issuance:

Issued to Contractor:

NOTICE OF PARTIAL USE OR OCCUPANCY

Issued for School:
Project Name:
Project #:
Contract #:

As of and per Article 17 of the General Conditions (2017 Version), the Los Angeles Unified School District will take Partial Use or Occupancy of the following portions of the Work:

Occupancy:

_____

_____

_____

_____

Attached is a list of corrective work and/or deficiencies in those areas to be occupied. The corrective work and/or deficiencies listed are to be completed on, or before, and prior to the District's Partial Use or Occupancy of the areas and at no additional cost to the District.

This Notice does not constitute an acceptance of the Work, nor does it relieve Contractor from any obligations under the Contract Documents, including timely performance of the Punch List as defined in the General Conditions, which Punch List will not include the listed corrective work and/or deficiencies in the Work verified as complete prior to Partial Use or Occupancy of the areas identified in this Notice.

_____	_____	_____
Contractor's Signature	Printed	Date
_____	_____	_____
Owner's Authorized Representative	Printed	Date

LOS ANGELES UNIFIED SCHOOL DISTRICT

Facilities Services Division

1. Area(s) to be Occupied: (Attach a copy of the Safe School Plan identifying, with crosshatching, those specific areas to be occupied.)

2. Safety Measures and Responsibilities:_____
_____
_____
_____
_____

3. Security Measures and Responsibilities:_____
_____
_____
_____
_____

4. Maintenance and Operations Responsibilities:_____
_____
_____
_____
_____

5. Utility Service and Payment Responsibilities:_____
_____
_____
_____

6. Damage to Work Responsibilities:_____
_____
_____
_____
_____

7. Equipment Warranties and Guarantees Activated:_____
_____
_____
_____
_____
_____

(Attachments)

Office of Environmental Health & Safety
333 S. Beaudry Avenue, 21st Floor
Los Angeles, Ca 90017
Phone: (213) 241-3199

Essential Safety Checklist & Certificate of Occupancy

SAMPLE

*The purpose of this document is to identify **essential safety requirements** to be met prior to occupancy of new schools, buildings or major renovation projects at existing schools. A comprehensive listing of federal, state and local regulations dealing with school safety maybe found in the "OEHS School Inspection Guidebook".*

Date: 4/7/2023	**OEHS Inspector: George Karibyants**	**CPM: Mauricio Pinto**	
School: Kennedy SH	**CAL: Thomas Valdez**	**CPM in attendance?**	**Yes ☐ No ☒**
Designated Area: New Portable Bldgs-PKG-2	**Principal: Oscar Vasquez**	**Certificate of Substantial Completion?**	**Yes ☐ No ☒**

		Y	N	N/A
A.	**Access and Egress**			
1.	Are pathways to and from buildings adequately marked, unobstructed, and free of debris and tripping hazards?	☒	☐	☐
2.	Are the areas of the campus to be occupied adequately segregated from ongoing construction activity through the use of barricades, fencing or other means?	☒	☐	☐
3.	Are stairways, halls, and other exit pathways in all building corridors clearly identified with proper signage?	☒	☐	☐
4.	Are fire doors and associated panic hardware functional?	☒	☐	☐
5.	Are there at least 2 exit pathways for rooms with an occupant load greater than 50?	☒	☐	☐
B.	**Building & Room Conditions**			
1.	Is adequate lighting provided in all rooms?	☒	☐	☐
2.	Are electrical outlets and panels covered, and are other electrical components and wiring properly guarded and functional?	☒	☐	☐
3.	Has each classroom been provided with a hard-wired or wireless connection capable of calling 911 (if applicable to project)?	☒	☐	☐
4.	Are flooring materials, walls, and ceilings installed and properly finished and ready for use?	☒	☐	☐
5.	Are project areas free of significant chemical odors?	☒	☐	☐
6.	Is hot water available in food preparation areas and health office (if applicable to project)?	☒	☐	☐
7.	Are classrooms and other areas of the campus clean and free of construction debris?	☒	☐	☐
C.	**Fire Alarm and Suppression Systems**			
1.	Has the IOR issued a Project Status Report for the buildings to be occupied, indicating the fire alarm and suppression systems are complete?	☒	☐	☐
2.	If the Project Status Report indicates that fire safety systems are not complete and certified, has the IOR distributed a Fire Safety Status Report?	☒	☐	☐
3.	Has the Local Fire Authority reviewed the Fire Safety Status Report and concurs that there are no outstanding issues that prohibit occupancy?	☒	☐	☐
4.	Have fire extinguishers been mounted throughout project areas (within 75 feet of classrooms and 25 feet of flammable liquids storage areas (if applicable to project)?	☒	☐	☐
E.	**Clearance for Occupancy**			
1.	Has the Owner's Authorized Representative (OAR) issued a *Certificate of School Functional Readiness*, and has the IOR issued a Project Status Report indicating the facility or designated locations are ready for occupancy?	☒	☐	
2.	Has OEHS assessed compliance with the above requirements and determined the designated areas are safe to occupy?	☒	☐	

Notes:

1. Permanent covers for copper pipes will be installed within 30 days per construction team statement. Temporary barricades were placed by the cafeteria to minimize the safety hazards.
2. NFPA 72 and NFPA 24 are not certified as of 4/6/2023.
3. The portable Bldgs. under MEP connection & fixture installation progress, permanent switchgear JA1 not installed.
4. Ground testing report pending. - Complete per PSR on 4/7/23
5. County Health Department inspection completed, certification pending. - Final inspection report provided on 4/10/23; the kitchen is cleared for occupancy.

Signature: _____ **Date:** 4/7/2023

Revised 3/1/18

COUNTY OF LOS ANGELES ◆ DEPARTMENT OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH
SPECIALIZED SURVEILLANCE AND ENFORCEMENT BRANCH
PLAN CHECK PROGRAM - METROPLEX
3530 WILSHIRE BLVD, 9th FL, LOS ANGELES, CA 90010
PHONE: (213) 351-7352
WWW.PUBLICHEALTH.LACOUNTY.GOV/EH

SAMPLE

PLAN CHECK OFFICIAL INSPECTION REPORT

DATE	04/10/2023	**EHS**	MARISTELA YAMBAO
PLAN CHECK NUMBER	SR0262739		
PROGRAM ELEMENT	1702 - RESTAURANT (501-1,999 SF)		
OWNER / REQUESTER	JOHN BONILLA, PM		
DBA	LAUSD - JOHN F KENNEDY HIGH SCHOOL		
ADDRESS	11254 GOTHIC AVE, GRANADA HILLS, CA 91344		

FINAL REINSPECTION STATUS: APPROVED

CORRECTIONS COMPLETED

CORRECTION CATEGORY	DATE IDENTIFIED	DATE CORRECTED
WATER SUPPLY	03/07/2023	03/20/2023
PLAN SUBMITTAL/REMODEL	03/07/2023	03/20/2023
PLAN SUBMITTAL/REMODEL	03/20/2023	04/10/2023

ADDITIONAL REQUIREMENTS

OFFICE APPROVAL

COMMENTS

FINALED - TEMPORARY KITCHEN IS APPROVED FOR USE - CAMPS AND SCHOOL PROGRAMS WILL BE NOTIFIED

- NO NEW PERMIT WILL BE ISSUED; THE TEMPORARY KITCHEN WILL BE USING THE PERMIT FOR THE EXISTING CAFETERIA SINCE THE MAIN CAFETERIA WILL BE CLOSED WHILE THERE ARE CONSTRUCTION IN THE NEIGHBORING BUILDINGS. THIS IS THE REASON WHY A TEMPORARY KITCHEN IS BUILT. ONCE ALL CONSTRUCTION IS DONE, THIS TEMPORARY KITCHEN WILL BE DEMOLISHED AND THE MAIN CAFETERIA WILL REOPEN. A LETTER FROM THE SCHOOL IS ON FILE AND CHIEF OF CAMPS AND SCHOOL PROGRAMS IS AWARE.

Help us serve you better by completing a short survey. Visit our website at www.publichealth.lacounty.gov/eh.

EHS Signature

PLAN CHECK OFFICIAL INSPECTION REPORT

DATE	04/10/2023	**EHS**	MARISTELLA YAMBAO
PLAN CHECK NUMBER	SR0262739		
PROGRAM ELEMENT	1702 - RESTAURANT (501-1,999 SF)		
OWNER / REQUESTER	JOHN BONILLA, PM		
DBA	LAUSD - JOHN F KENNEDY HIGH SCHOOL		
ADDRESS	11254 GOTHIC AVE, GRANADA HILLS, CA 9[illegible]344		

SAMPLE

DISCLOSURES

It is a misdemeanor violation to begin operation without a valid Public Health Permit/License. The Public Health Permit/License will be issued by the Los Angeles County Department of Public Health Environmental Health Division (DPH-EH) Plan Check Program at the job site following final inspection and approval by all applicable agencies. Remodeled areas of an existing food facility/establishment must obtain a final inspection and approval from all applicable enforcement agencies prior to use.

Any future alteration, construction, building, renovation, repair, change of equipment, change of the operation of a food facility/establishment or change of menu may require plans to be submitted to the DPH-EH Plan Check Program. Additional approvals may be required from other enforcement agencies.

It is improper and illegal for any County officer, employee or inspector to solicit bribes, gifts or gratuities in connection with performing their official duties. Improper solicitations include requests for anything of value such as cash, discounts, free services, paid travel or entertainment, or tangible items such as food or beverages. Any attempt by a County employee to solicit bribes, gifts or gratuities for any reason should be reported immediately to either the County manager responsible for supervising the employee or the Fraud Hotline at (800) 544-6861 or www.lacountyfraud.org. YOU MAY REMAIN ANONYMOUS

Public Health Permit/License:
A separate fee is required for the Public Health Permit/License. A billing statement will be sent to the permit/license holder annually by the DPH-EH. The fee is required to be paid to perform or carry on, conduct or engage in any mobile food facility listed in Los Angeles County Code, Title 8, Section 8.04.720.

State and Local Licenses and Permits:
Contact the State of California and your local city hall regarding additional license and permit requirements.

Restrooms:
Customer may use restroom facilities if they are located in a customer area. Customers may not enter the food preparation area, food storage area, or the utensils washing /storage areas in order to access the restrooms. All food, utensils and equipment must be protected from contamination.

Routine Inspection: The DPH-EH conducts routine inspections of all food facilities in Los Angeles County. Following the issuance of your Public Health Permit by the Plan Check Program, an Environmental Health Specialist from your local district will conduct an inspection of your facility. If your Business is located in a city that has adopted the grading ordinance, the inspector will post a grade or score card at your facility. Grade / Score cards are not issued by the Plan Check Program.

Help us serve you better by completing a short survey. Visit our website at www.publichealth.lacounty.gov/eh.

EHS Signature

Los Angeles Unified School District

Facilities Services Division

CERTIFICATE OF SCHOOL READINESS

School/Project Name: Kennedy HS - Comprehensive Modernization
School Address: 11254 Gothic Ave
Granada Hills, CA 91344

Project Number: 10368160
Contract Number: 2110045
Date: 4/3/2023

SAMPLE

All school building areas to be occupied below are functionally complete and ready for occupancy by students and school administrators. See below:

- ☑ **New Portables at Jane Adams Continuation High School - Pkg 10**
- ☑ **Interim Housing Classrooms, Restrooms and Supporting Spaces at Village- Pkg 2**
- ☑ **Utility Make Ready - Pkg 1**
- ☑ **Interim Kitchen/Scramble Building**
- ☑ **Interim Clinic**
- ☑ **Interim Lunch Shelter**
- ☑ **Interim Basketball Courts**
- ☑ **Interim Housing Locker Rooms**

Thomas Valdez **Owner Authorized Representative (OAR) Name**	Thomas Valdez **OAR Signature**	4/3/2023 **Date**
Mike Bagheri **Senior Project Manager Name**	**Senior Project Manager Signature**	4/3/2023 **Date**
Robert Lester **Regional Director Name**	Robert Lester Digitally signed by Robert Lester DN: cn=Robert Lester, o=Project Execution, ou=LAUSD - FSD, email=robert.lester@lausd.net, c=US Date: 2023.04.04 05:53:14 -07'00' **Regional Director Signature**	4/4/2023 **Date**

cc: OEHS Safety Representative
IOR
M&O
School Mgmt Services
Director of Construction
Project File

Los Angeles Unified School District

Facilities Services Division
Facilities Construction Contracts

JOHN DEASY
Superintendent of Schools

KELLY SCHMADER
Chief Facilities Executive
Facilities Services Division

MARK HOVATTER
Director
Facilities Contracts

SAMPLE

July 17, 2025

FAXED:
CERTIFIED MAIL:
RETURN RECEIPT REQUESTED

This is your **NOTICE TO PROCEED** in connection with:

Contract No.:
Project:
Description:

The period for completion of the subject work, according to the contract, is as follows:

Start Date	Calendar Days	Contract Completion Date:

Your attention is called to the Contract provisions with reference to the liquidated damages in the event the work is not completed within the Contract Time and/or Milestones.

Before you accept the site for construction, you are required to make a survey of the site with the assigned Project Inspector. Damages and irregularities existing on the site, not noted during the preconstruction survey, will be assumed to be caused by your operation.

The Owner Authorized Representative (OAR) for this project is _____ , at (Telephone number) and he/she will be the focal point for all formal communication on this project from this date on.

LOURDES V. JUSAY
CONTRACT EXECUTION SUPERVISOR

LVJ/

C:	Inspection Section	Fax: 213-745-1486	District Board Member(s):
	Labor Compliance	Fax: 213-633-3387	LD Superintendent:
	FCIU	Fax: 213-633-8191	LD Facilities Director:
	Accounts Payable	Fax: 213-241-8912	LD Project Manager:
	OEHS	Fax: 213-241-6816	Complex PM:
	Asbestos Technical Unit (ATU)	Fax: 213-745-1488	School Principal:
	School Police: Watch Commander	Fax: 213-742-0221	Field CAA-
	AON Risk Services	Fax: 213-689-4358	
	AON Service Center	Fax: 800-363-6695	
	OCIP Representative: Robert Reider	Fax: 213-241-8993	
	OAR:		

New Construction/Existing Facilities

LOS ANGELES UNIFIED SCHOOL DISTRICT

Facilities Services Division

EXHIBIT B

OR EQUAL / SUBSTITUTION / DEVIATION SUPPORTING DOCUMENT REQUEST FORM

School Name: _____ Date: _____

Project Name: _____ Project Number: _____

Substitution Request No.: _____

Contractor pursuant to General Condtions 6.14.5 submits the proposed items. If the OWNER accepts such items so described, the undersigned may furnish such item with all necessary labor, materials, equipment and incidentals to perform and complete the Work.

Item No.	SPECIFIED ITEM	Specification Section	Proposed Or Equal / Substitution / Deviation (and name of Subcontractor if different)

CERTIFICATION

Under penalty of perjury under the Laws of California, I certify that the proposed substitution will be readily available, perform adequately the functions and achieve the results called for by the design concept, be similar in substance to that specified, and be suited to the same use as that specified.

Contractor: _____ _____ _____

(Please print name of company) (Name and title) (Contractor's Signature) (Date)

Los Angeles Unified School District

Facilities Services Division

PROPERTY INVENTORY

School Name: _____ Date: _____

Project Name: _____ Project No.: _____

Issued To: _____ Contract No.: _____

Item No.	Description Room/Space	Qty	Fixed and/or Portable (F/P)	Condition (Poor/Fair/New)	Comments

Issued by: _____ _____ _____

Signature *Name (Printed)* *Date*

cc:

LOS ANGELES UNIFIED SCHOOL DISTRICT

Facilities Services Division

Exhibit C

REQUEST FOR CERTIFICATE OF SUBSTANTIAL COMPLETION

The undersigned CONTRACTOR on:

_____

(Project Name and
Contract Number)

hereby certifies, that the Work under the Contract is substantially complete as defined by this Contract. CONTRACTOR further certifies that the remaining Work as shown in the attached CONTRACTOR's Corrective List developed and substantiated by the CONTRACTOR, are minor corrective items and will be corrected within the time frame prescribed in the Administrative Closeout.

All of the following submittals and/or actions must be delivered, completed and approved to achieve Substantial Completion:

- ☐ Contractor's Corrective List attached
- ☐ Operation/Maintenance Manuals
- ☐ Preliminary Warranties and Guarantees
- ☐ Spare parts & extra materials
- ☐ Final clean-up
- ☐ Owner training & orientations
- ☐ Testing, Inspection and Balance of all equipment and systems
- ☐ Certification of Compliance with PSA and Labor Code
- ☐ Regulatory agency operating and construction permits
- ☐ All Deviation corrections and Change Order(s) Work
- ☐ All documents precedent to Substantial Completion

The undersigned is duly authorized to make this request on behalf of CONTRACTOR. The undersigned warrants and represents that he/she has personal knowledge of each statement in this Request and/or that he/she has conducted all necessary and appropriate inquiries to determine the truth, completeness and accuracy of the statements. The undersigned declares and certifies that the statements made herein are complete and accurate.

I declare, under the law of the State of California, that the foregoing is true and correct.

Signature: _____ Date: _____

Print Name: _____ Title: _____

LOS ANGELES UNIFIED SCHOOL DISTRICT

Facilities Services Division

CONTRACTOR Name: _____

Address: _____

Phone/Fax Number/Email: _____

Owner Use Only:

OAR Signature Date: _____ Date: _____

LOS ANGELES UNIFIED SCHOOL DISTRICT

EXHIBIT Q

Facilities Services Division

Request for Reduction of Retention

Section I: Completed by the Contractor

To: _____ **Date:** _____

Owner Authorized Representative (OAR)

From (Contractor): _____ **Project Number:** _____

Project Name: _____ **Contract Number:** _____

I request a reduction of retention on the above project subject to verification of the following criteria:

1. The project is more than 50 percent complete.
2. All work performed to date has been completed per the Contract Documents to the full satisfaction of the OAR.
3. [1]No Stop Notices or Withholds from my subcontractors on previously approved progress payments are filed.
4. "As built" drawings are current, maintained at the job site, and available for verification.
5. The Project Schedule for the current month is submitted and approved.
6. The job is fully staffed and will continue to be staffed in all crafts and is on Schedule.
7. The Project is in full compliance with the OCIP (Safety) Program.
8. The Project is fully compliant with CEQA and SWPP requirements.

I declare that the above criteria have been met and are true and correct. I further certify that upon receipt of payment, retention owed to subcontractors will be disbursed as required per the Public Contract Code Section 7107.

Contractor Name	Contractor Signature	Date

Section II: Completed by the Owner Authorized Representative (OAR)

Today's Date: _____ **Substantial Completion Date:** _____ **Actual % of work completed:** _____ %

(A) Current Contract Amount *(including approved COs):*		$0.00
(B) Completed & Stored To Date: *(from last Pay Appl)*		$0.00
(C) Current Amount Retained	(10 % x B):	$0.00
(D) Recommended Retention	(5-10% x A):	$0.00
(E) *Additional Retention Required (Line D - Line C):		$0.00
(F) Retention Release Amount (Line C - Line D):		$0.00

For Contracts with Escrow Agreements

Escrow Agent: _____

Escrow Account No.: _____

Amount currently in Escrow Account:

$ _____

Amount to be Retained in Escrow:

$ _____

**FCC requires copy prior to processing*

***Additional Retention Amount will be retained at the rate 10% from the future Application for Payments to a maximum of amount indicated under line item D.**

Current Contract Amount to Date: $0.00 **% Retention Recommended to be Held:** (Enter %) **Retention To Be Held:** $0.00

(Recommend between 5% minimum and 10% maximum)

I concur that all criteria listed above is verified, true and correct and recommend approval of this request.

Enter Name		
Owner Authorized Representative	*(Signature)*	Date

Section III: Administrative Approvals

Owner may consider other factors, outside of the criteria listed above, when determining and approving the percentage reduction of retention granted.

Enter Name		
Regional Dir/Regional Proj Management Dir	*(Signature)*	Date
Enter Name		
Director of Construction	*(Signature)*	Date
Approved: *Enter Name*		
Deputy Chief Facilities Executive	*(Signature)*	Date

[1] OAR must attach a statement that he has verified there are no current Stop Notices or Withholds.

EXHIBIT R

_____ _ OWNER Project Number	**Los Angeles Unified School District As OWNER** ATTACHMENT "A" **STORM WATER POLLUTION PREVENTION SITE MONITORING REPORT**	STATE OF CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

School Name: _____ _____
Project Description: Contract Number

I. **Type of Examination:** (Use one form for each type of examination):

☐ Prior to Anticipated Storm Event ☐ After Actual Storm Event ☐ Weekly

Date Examined: _____

II. **Check the response for each SWPPP question below**:

	YES	NO
1. Do you have an approved Storm Water Pollution Prevention Plan (SWPPP) and a BMP Handbook on the Project site?	☐	☐
2. Does your SWPPP incorporate an up-to-date erosion control plan?	☐	☐
3. Is the erosion control installed per plan?	☐	☐
4. Is the Work at a stage where the erosion control plan can not be constructed, is the erosion control at the Maximum Extent Practicable for the stage you are in?	☐	☐
5. Did you observe the presence of any floating materials such as oil, grease, pieces of wood, paper, etc., odor, toxics, and/ or sediments?	☐	☐
6. If yes, what is it that you observed?	_____	

III. Check the status of the following items as observed:

SWPPP Items	Not Applicable	Acceptable	Not Acceptable		Repairs Required	Date Repairs Completed
1. De-silting Basins (Cleaned)	☐	☐	☐	--	☐	_____
2. Water Quality Basin	☐	☐	☐	--	☐	_____
3. Silt Fences	☐	☐	☐	--	☐	_____
4. Hay bales/ Check dams/ Sandbags	☐	☐	☐	--	☐	_____
5. Berms and Dikes	☐	☐	☐	--	☐	_____
6. Sand/Gravel Inlet	☐	☐	☐	--	☐	_____
7. Slope Protection - Polymer and Mulch	☐	☐	☐	--	☐	_____
8. Vegetation / Re-vegetation	☐	☐	☐	--	☐	_____
9. Dust Control	☐	☐	☐	--	☐	_____

10.	Surface Erosion	☐	☐	☐	--	☐
11.	Slope Instability	☐	☐	☐	--	☐
12.	Storage	☐	☐	☐	--	☐
13.	Disposal	☐	☐	☐	--	☐
14.	Spills	☐	☐	☐	--	☐
15.	Clean-up	☐	☐	☐	--	☐
16.		☐	☐	☐	--	☐
17.		☐	☐	☐	--	☐

Detailed Storm Water Quality Construction Site Inspection Checklist

ATTACHMENT "A" (Cont.)

GENERAL INFORMATION				
Project Name				
Project Number	LAUSD Ref. No.			
Contractor				
Inspector's Name				
Inspector's Title				
Signature				
Date of Inspection				
Inspection Type (Check Applicable)	❒ Prior to forecast rain ❒ 24-hr intervals during extended rain		❒ After a rain event ❒ Other _____Weekly or Quarterly____	
Season (Check Applicable)	❒ Rainy		❒ Non-Rainy	
Storm Data	Storm Start Date & Time:		Storm Duration (hrs):	
	Time elapsed since last storm (Circle Applicable Units)	Min. Hr. Days	Approximate Rainfall Amount (inches)	

PROJECT AREA SUMMARY AND DISTURBED SOIL AREA (DSA) SIZE		
Total Project Area	_____	Acres
Field Estimate of Active DSAs	_____	Acres
Field Estimate of Non-Active DSAs	_____	Acres

INSPECTION OF BMPs - ATTACHMENT "A" (Cont.)				
BMP	**Yes**	**No**	**N/A**	**Corrective Action**
Preservation of Existing Vegetation				
Is temporary fencing provided to preserve vegetation in areas where no construction activity is planned?				
Location:				
Location:				
Location:				
Location:				
Erosion Control				
Does the applied temporary erosion control provide 100% coverage for the affected areas?				
Are any non-vegetated areas that may require temporary erosion control?				
Is the area where erosion controls are used required free from visible erosion?				
Location:				
Location:				
Location:				
Location:				
Temporary Linear Sediment Barriers (Silt Fence, Fiber Rolls, Sandbag Barriers, etc.)				
Are temporary linear sediment barriers properly installed, functional and maintained?				
Are temporary linear sediment barriers free of accumulated litter?				
Is the built-up sediment less than 1/3 the height of the barrier?				
Are cross barriers installed where necessary and properly spaced?				
Location:				
Location:				
Location:				
Location:				
Location:				
Storm Drain Inlet Protection				
Are storm drain inlets internal to the project properly protected?				
Are storm drain inlet protection devices in working order and being properly maintained?				
Location:				
Location:				
Location:				
Location:				

INSPECTION OF BMPs - ATTACHMENT "A" (Cont.)				
BMP	**Yes**	**No**	**N/A**	**Corrective Action**
Location:				
Sediment Basins				
Are basins designed in accordance with the requirements of the General Permit?				
Are basins maintained to provide the required retention/detention?				
Are basin controls (inlets, outlets, diversions, weirs, spillways, and racks) in working order?				
Location:				
Location:				
Location:				
Location:				
Stockpiles				
Are all locations of temporary stockpiles, including soil, hazardous waste, and construction materials in approved areas?				
Are stockpiles protected from run-on, run-off from adjacent areas and from winds?				
Are stockpiles located at least 15 m from concentrated flows, downstream drainage courses and storm drain inlets?				
Are required covers and/or perimeter controls in place?				
Location:				
Location:				
Location:				
Location:				
Concentrated Flows				
Are concentrated flow paths protected and free from visible erosion?				
Location:				
Location:				
Location:				
Location:				
Tracking Control				
Is the entrance stabilized to prevent tracking				
Is the stabilized entrance inspected daily to ensure that it is working properly				
Are points of ingress/egress to public/private roads inspected and swept and vacuumed as needed?				
Are all paved areas free of visible sediment tracking or other particulate matter?				
Location:				
Location:				

INSPECTION OF BMPs - ATTACHMENT "A" (Cont.)				
BMP	**Yes**	**No**	**N/A**	**Corrective Action**
Location:				
Location:				
Wind Erosion Control				
Is dust control implemented?				
Location:				
Location:				
Location:				
Location:				
Dewatering Operations				
Are all one-time dewatering operations covered by the General Permit inspected before and as they occur and BMPs implemented as necessary during discharge?				
Is ground water dewatering handled in conformance with the dewatering permit issued by the LARWQCB?				
Is required treatment provided for dewatering effluent?				
Location:				
Location:				
Location:				
Location:				
Vehicle & Equipment Fueling, Cleaning, and Maintenance				
Are vehicle and equipment fueling, cleaning and maintenance areas reasonably clean and free of spills, leaks, or any other deleterious material?				
Are vehicle and equipment fueling, cleaning and maintenance activities performed on an impermeable surface in dedicated areas?				
If no, are drip pans used?				
Are dedicated fueling, cleaning, and maintenance areas located at least 15 m away from downstream drainage facilities and watercourses and protected from run-on and runoff?				
Is wash water contained for infiltration/ evaporation and disposed of appropriately?				
Is on-site cleaning limited to washing with water (no soap, soaps substitutes, solvents, or steam)?				
On each day of use, are vehicles and equipment inspected for leaks and if necessary, repaired?				
Location:				
Location:				
Location:				
Location:				
Waste Management & Materials Pollution Control				

INSPECTION OF BMPs - ATTACHMENT "A" (Cont.)				
BMP	**Yes**	**No**	**N/A**	**Corrective Action**
Are material storage areas and washout areas protected from run-on and runoff, and located at least 15 m from concentrated flows and downstream drainage facilities?				
Are all material handling and storage areas clean; organized; free of spills, leaks, or any other deleterious material; and stocked with appropriate clean-up supplies?				
Are liquid materials, hazardous materials, and hazardous wastes stored in temporary containment facilities?				
Are bagged and boxed materials stored on pallets?				
Are hazardous materials and wastes stored in appropriate, labeled containers?				
Are proper storage, clean-up, and spill-reporting procedures for hazardous materials and wastes posted in open, conspicuous and accessible locations adjacent to storage areas?				
Are temporary containment facilities free of spills and rainwater?				
Are temporary containment facilities and bagged/boxed materials covered?				
Are temporary concrete washout facilities designated and being used?				
Are temporary concrete washout facilities functional for receiving and containing concrete waste and are concrete residues prevented from entering the drainage system?				
Do temporary concrete washout facilities provide sufficient volume and freeboard for planned concrete operations?				
Are concrete wastes, including residues from cutting and grinding, contained and disposed of off-site or in concrete washout facilities?				
Are spills from mobile equipment fueling and maintenance properly contained and cleaned up?				
Is the site free of litter?				
Are trash receptacles provided in the yard, field trailer areas, and at locations where workers congregate for lunch and break periods?				
Is litter from work areas collected and placed in watertight dumpsters?				
Are waste management receptacles free of leaks?				
Are the contents of waste management receptacles properly protected from contact with storm water or from being dislodged by winds?				
Are waste management receptacles filled at or beyond capacity?				
Location:				
Location:				
Location:				
Location:				
Temporary Water Body Crossing or Encroachment				
Are temporary water body crossings and encroachments constructed appropriately?				

INSPECTION OF BMPs - ATTACHMENT "A" (Cont.)				
BMP	**Yes**	**No**	**N/A**	**Corrective Action**
Does the project conform to the requirements of the 404 permit and/or 1601agreement?				
Location:				
Location:				
Location:				
Location:				
Illicit Connection/ Discharge				
Is there any evidence of illicit discharges or illegal dumping on the project site?				
If yes, has the Owner/Operator been notified?				
Location:				
Location:				
Location:				
Location:				
Discharge Points				
Are discharge points and discharge flows free from visible pollutants?				
Are discharge points free of any significant sediment transport?				
Location:				
Location:				
Location:				
Location:				
SWPPP Update				
Does the SWPPP and Project Schedule adequately reflect the current site conditions and contractor operations?				
Are all BMPs shown on the Erosion Control Plans installed in the proper location(s) and according to the details in the SWPPP?				
Location:				
Location:				
Location:				
Location:				
General				
Are there any other potential concerns at the site?				
Location:				
Location:				
Location:				
Location:				
Storm Water Monitoring				

INSPECTION OF BMPs - ATTACHMENT "A" (Cont.)				
BMP	**Yes**	**No**	**N/A**	**Corrective Action**
Does storm water discharge directly to a water body listed in the General Permit as impaired for sediment/sedimentation or turbidity?				
If yes, were samples for sediment/sedimentation or turbidity collected pursuant to the sampling and analysis plan in the SWPPP?				
Did the sampling results indicate that the discharges are causing or contributing to further impairment?				
If yes, were the erosion/sediment control BMPs improved or maintained to reduce the discharge of sediment to the water body?				
Were there any BMPs not properly implemented or breaches, malfunctions, leakages or spills observed which could result in the discharge of pollutants to surface waters that would not be visually detectable in storm water?				
If yes, were samples for non-visually detectable pollutants collected pursuant to the sampling and analysis plan during rain events?				
If sampling indicated pollution of the storm water, were the leaks, breaches, spills, etc. cleaned up and the contaminated soil properly disposed of?				
Were the BMPs maintained or replaced?				
Were soil amendments (e.g., gypsum, lime) used on the project?				
If yes, were samples for non-visually detectable pollutants collected pursuant to the sampling and analysis plan in the SWPPP?				
If sampling indicated pollution of the storm water by the use of the soil amendments, is there a contingency plan for retention onsite of the polluted storm water?				
Did storm water contact stored materials or waste and run off the construction site? (Materials not in watertight containers, etc.)				
If yes, were samples for non-visually detectable pollutants collected pursuant to the sampling and analysis plan in the SWPPP?				

IV. Describe any problems or required repairs checked above and the necessary actions needed:

Item	Description of Problem or Required Repair	Action Needed

Examination Performed by CONTRACTOR: _____ _____

By (Print Name, Title and Sign) Date

Verified by Inspector: _____ _____

Print Name, Title and Sign Date

OWNER Project Number	**Los Angeles Unified School District As OWNER ATTACHMENT "B" GENERAL CONSTRUCTION ACTIVITY STORM WATER PERMIT**	STATE OF CALIFORNIA STATE WATER BOARD WDID NO.

COMPLIANCE CERTIFICATION

School Name: _____ _____

Project Description: Contract Number

ANNUAL CERTIFICATION

I certify the Project has met the following conditions: All elements of the Storm Water Pollution Prevention Plan are in place; construction materials and equipment maintenance waste have been disposed of properly; and the Project site is in compliance with all local storm water management requirements including erosion/sediment control requirements, and the appropriate use permits have been obtained. The reports have been uploaded to smarts.waterboards.ca.gov system.

CONTRACTOR: _____

Print Name: _____ Title: _____

Signature: _____ Date: _____

SUBSTANTIAL COMPLETION CERTIFICATION

I certify the Project has been completed and the following conditions have been met: All elements of the Storm Water Pollution Prevention Plan have been completed; construction materials and equipment maintenance waste have been disposed of properly; the Project site is in compliance with all local storm water management requirements including erosion/sediment control requirements and the appropriate use permits have been obtained; and a post-construction storm water operation, and management plan is in place.

CONTRACTOR: _____

Print Name: _____ Title: _____

Signature: _____ Date: _____

Los Angeles Unified School District
Facilities Services Division

REPORT DATE

SAMPLE ONLY; CONTRACTOR MAY USE HIS OWN FORM.

ATTACHMENT "C"

POST CONSTRUCTION BMP INSTALLATION LOG AND MAINTENANCE LOG

Quarterly Certification Letter

ATTACH SITE PLAN WITH BMPS HIGHLIGHTED

BMP	INSTALLATION INSTRUCTIONS LOCATION	MAINTENANCE DATE	NEXT SCHED DATE
1			
2			
3			
4			
5			
6			

OAR NAME SIGNATURE DATE	CONTRACTOR NAME SIGNATURE DATE

ATTACHMENT "D"

LAUSD CONSTRUCTION STORM WATER TRAINING FORM

01 7416 ATTACHMENT C JUNE 2010

SAMPLE ONLY; CONTRACTOR MAY USE HIS OWN FORM.

MEETING DATE	PROJECT	PROJECT NUMBER

ATTENDANCE-SIGNATURE (Add additional sheets if required)

STORM WATER TOPICS DISCUSSED

SUGGESTIONS / COMMENTS

OAR COMMENTS

OAR SIGNATURE	DATE	CONTRACTOR	DATE

SUGGESTED TOPICS FOR DISCUSSION

[ ] PREPARING FOR A STORM EVENT	[ ] GOOD HOUSEKEEPING	[ ] MAINTENANCE POST
[ ] MAINTAINING STOCKPILES	[ ] SOURCE CONTROL	[ ] CASQA MANUAL
[ ] DUST CONTROL	[ ] OAR ROLE & RESPONSIBILITY	[ ] SWPPP UPDATING
[ ] TRAINING NEW STAFF	[ ] CONTRACTOR ROLE	[ ] SCHEDULING
[ ] RECORD KEEPING	[ ] FREQUENTLY ASKED QUESTIONS	[ ] PREVENTING FLOODI

Los Angeles Unified School District
Facilities Services Division

REPORT DATE

SAMPLE ONLY; CONTRACTOR MAY USE HIS OWN FORM.

ATTACHMENT "E"

OAR / CONTRACTOR CHECK LIST

Quarterly Certification Letter

SITE _____

PROJECT NUMBER _____

IS SWPPP BOOK ONSITE AND UPDATED	[ ] YES	[ ] NO
TRAINING RECORDS	[ ] YES	[ ] NO
CONSTRUCTION SCHEDULE	[ ] YES	[ ] NO
EROSION CONTROL PLAN	[ ] YES	[ ] NO
Property Line Dileanated	[ ] YES	[ ] NO
Active / Inactive Areas	[ ] YES	[ ] NO
Drainage Patterns	[ ] YES	[ ] NO
Discharge Points	[ ] YES	[ ] NO
Sampling Points	[ ] YES	[ ] NO
BMPs with legend	[ ] YES	[ ] NO
Staging Areas, Stockpiles, entrance exit	[ ] YES	[ ] NO
Vehicle Storage, concrete wahsout	[ ] YES	[ ] NO
SIGNED COPY OF NOI ON WALL	[ ] YES	[ ] NO
WEEKLY REPORTS FILED	[ ] YES	[ ] NO
LATEST DATED: _____		

SWPPP AMENDMENTS DOCUMENTED

ANNUAL FEES PAID AND REPORTS FILED LATEST DATED: _____

Data Submitter _____
login _____
OAR _____
login _____

DATE OF LAST OEHS INSPECTION VISIT LATEST DATED: _____

WERE OEHS RECOMMENDATION IMPLEMENTED [ ] YES [ ] NO

CERTIFICATION OF CONTRACTORS QSP

Name _____
Agency _____
Number _____
Expiration Date _____
Email _____
Phone _____

Sampling Kit Lab Name

COMMENTS

OAR NAME	CONTRACTOR NAME
SIGNATURE	SIGNATURE
DATE	DATE

SAMPLE ONLY; CONTRACTOR SHALL USE WATER BOARDS FORM.

Los Angeles Unified School District
Facilities Services Division

Attachment "F"
Quarterly / Annual Non-Stormwater Form

I. WDID NO. _____

II. FACILITY OPERATOR INFORMATION

Facility Name _____ Contact Person _____

Mailing Address _____ Title _____

City _____ State **CA** Zip _____ Phone _____

III. FACILITY SITE INFORMATION

Facility Name _____ Contact Person _____

Location _____ Title _____

City _____ State **CA** Zip _____ Phone _____

IV. PERMIT LANGUAGE

All dischargers are required to conduct quarterly, non-storm water visual inspections. For these inspections, the discharger must visually observe each drainage area for the presence of (or indications of prior) unauthorized and authorized non-storm water discharges and their sources.

CGP Section II.E describes authorized non-storm water discharges including those from de-chlorinated potable water sources such as: fire hydrant flushing, irrigation of vegetative erosion control measures, pipe flushing and testing, water to control dust, uncontaminated ground water

dewatering, and other discharges not subject to a separate general NPDES permit adopted by a region. Additionally, authorized non-storm water discharges must not be used to clean up failed or inadequate construction or post-construction BMPs designed to keep materials onsite. Authorized non-storm water dewatering discharges may require a permit because some Regional Water Boards have adopted General Permits for dewatering discharges. The General Permit prohibits the discharge of storm water that causes or threatens to cause pollution, contamination, or nuisance.

Non-storm water discharges directly connected to receiving waters or the storm drain system have the potential to negatively impact water quality. The discharger must implement measures to control all non-storm water discharges during construction, and from dewatering activities associated with construction. Examples include; properly washing vehicles in contained areas, cleaning streets, and minimizing irrigation runoff.

Non-storm water discharges include a wide variety of sources, including improper dumping, spills, or leakage from storage tanks or transfer areas. Non-storm water discharges may non-storm water discharges regulated by this General Permit shall not contain a hazardous substance equal to or in excess of reportable quantities established in 40 C.F.R. §§ 117.3 and 302.4, unless a separate NPDES Permit has been issued to regulate those discharges.

V. <u>DOCUMENT CHECKLIST</u> (Please check each item to verify that the documents are attached)

☐ Did Authorized Discharge take place ☐ Did Unauthorized Discharge take place

☐ Form 2 Attached ☐ Form 3 Attached

Structural Best Management Practices Housekeeping for Non-Visible Pollutants	**BMP Conditions E, NM, N/A YES OR NO**	**Actions Taken or BMPs Added**
Drainage Areas		
Free of Floating & Suspended Material		
Free of Sheen/Discoloration		
Free of Turbidity		
Free of Odor		
Construction Materials Storage Areas		
Materials Properly Stored		
Pollutants Covered		
Pollutants Bermed		
Construction Waste Management		
Containment Stockpiled Waste		
Containment Sanitary Facilities		
Containment Waste Watertight Containers		
Vehicle Storage/Fueling/Spill Prevention		
Fueling Procedures/Designated Areas		
Vehicle Storage with Containment		
Spill Kit Onsite		
Concrete Residuals & Washouts Wastes		
Properly Placed Washout		
Secondary Containment		
Landscape Materials		
Stored Away from Flow Lines		
Containment Fertilizers/Soil Amendments		
Secondary Containment Plants		
Observations/Comments:		

E-EFFECTIVE N/M-NEEDS MAINTENANCE N/A-NOT APPLICABLE
YES or NO

Attachment "F" (Cont.)

REPORT – PART A FORM 2 QUARTERLY VISUAL OBSERVATIONS OF AUTHORIZED NON STORM WATER DISCHARGES (NSWDs)

- Quarterly dry weather visual observations are required of each authorized NSWD.
- Observe each authorized NSWD source, impacted drainage area, and discharge location.
- Authorized NSWDs must meet the conditions provided in Section D (pages 5-6), of the General Permit.
- Make additional copies of this form as necessary.

QUARTER: **JULY-SEPT.** DATE: _	**Observers Name:** _ **Title:** **Signature:**	**WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER?** **YES** ☐ If **YES**, complete Part B of this form. **NO** ☐
QUARTER: **OCT.-DEC.** DATE: _	**Observers Name:** _ **Title:** **Signature:**	**WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER?** **YES** ☐ If **YES**, complete Part B of this form. **NO** ☐
QUARTER: **JAN.-MARCH** DATE: _	**Observers Name:** _ **Title:** **Signature:**	**WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER?** **YES.** ☐ If **YES**, complete Part B of this form. **NO** ☐
QUARTER: **APRIL-JUNE** DATE: _	**Observers Name:** _ **Title:** **Signature:**	**WERE ANY AUTHORIZED NSWDs DISCHARGED DURING THIS QUARTER? NO** **YES** ☐ If **YES**, complete Part B of this form. **NO** ☐

Attachment "F" (Cont.)

REPORT
FORM 2 – QUARTERLY VISUAL OBSERVATIONS OR AUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

DATE/TIME OF OBSERVATION	SOURCE AND LOCATION OF AUTHORIZED NSWD Example: Air conditioner Units on Building C	NAME OF AUTHORIZED NSWD Example: Air conditioner condensate	DESCRIBE AUTHORIZED NSWD CHARACTERISTICS Indicate weather authorized NSWD is clear, cloudy, or discolored, causing staining, contains floating objects or an oil sheen, has odors, etc.		DESCRIBE ANY REVISED OR NEW BMP's AND PROVIDE THEIR IMPLEMENTATION DATE
			At the NSWD Source	At the NSWD Drainage Area and Discharge Location	
_____ _____☐ AM ☐ PM					
_____ _____☐ AM ☐ PM					
_____ _____☐ AM ☐ PM					
_____ _____☐ AM ☐ PM					
_____ _____☐ AM ☐ PM					

Attachment "F" (Cont.)

REPORT – PART A FORM 3 QUARTERLY VISUAL OBSERVATIONS OF UNAUTHORIZED NON STORM WATER DISCHARGES (NSWDs)

- Unauthorized NSWDs are discharges (such as wash or rinse waters) that do not meet the conditions provided in Section D (pages 5-6) of the General Permit.
- Quarterly visual observations are required to observe current and detect prior unauthorized NSWD.
- Quarterly visual observations are required during dry weather and at all facility drainage areas.
- Each unauthorized NSWD source, impacted drainage area, and discharge location must be identified and observed.
- Unauthorized NSWDs that can not be eliminated within 90 days of observation must be reported to the Regional Board in accordance with Section A.10.e of the General Permit.
- Make additional copies of this form as necessary.

QUARTER: **JULY-SEPT.** **DATE/TIME OF OBSERVATIONS** ☐ **AM** ☐ **PM** _____	**Observers Name:** _ **Title:** **Signature:**	**WERE ANY AUTHORIZED NSWDs OBSERVED?** **YES** ☐ **NO** ☐ **WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NAWDS?** **YES** ☐ **NO** ☐ If **YES**, complete Part B of this form.
QUARTER: **OCT.-DEC.** **DATE/TIME OF OBSERVATIONS** ☐ **AM** ☐ **PM** _____	**Observers Name:** _ **Title:** **Signature:**	**WERE ANY AUTHORIZED NSWDs OBSERVED?** **YES** ☐ **NO** ☐ **WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NAWDS?** **YES** ☐ **NO** ☐ If **YES**, complete Part B of this form.
QUARTER: **JAN.-MARCH** **DATE/TIME OF OBSERVATIONS** ☐ **AM** ☐ **PM** _____	**Observers Name:** _ **Title:** **Signature:**	**WERE ANY AUTHORIZED NSWDs OBSERVED?** **YES** ☐ **NO** ☐ **WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NAWDS?** **YES** ☐ **NO** ☐ If **YES**, complete Part B of this form.
QUARTER: **APRIL-JUNE** **DATE/TIME OF OBSERVATIONS** ☐ **AM** ☐ **PM** _____	**Observers Name:** _ **Title:** **Signature:**	**WERE ANY AUTHORIZED NSWDs OBSERVED?** **YES** ☐ **NO** ☐ **WERE THERE INDICATIONS OF PRIOR UNAUTHORIZED NAWDS?** **YES** ☐ **NO** ☐☐

_		If **YES**, complete Part B of this form.

Attachment "F" (Cont.)

REPORT
FORM 3 – QUARTERLY VISUAL OBSERVATIONS OR UNAUTHORIZED NON-STORM WATER DISCHARGES (NSWDs)

OBSERVATION DATE (FROM REVERSE SIDE)	**NAME OF UNAUTHORIZED NSWD** Example: Vehicle Wash Water	**SOURCE AND LOCATION OF AUTHORIZED NSWD** Example: NW Corner of Parking Lot	**DESCRIBE UNAUTHORIZED NSWD CHARACTERISTICS** Indicate weather unauthorized NSWD is clear, cloudy, or discolored, causing stains, contains floating objects or an oil sheen, has odors, etc.		**DESCRIBE CORRECTIVE ACTIONS TO ELIMINATE UNAUTHORIZED NSWD AND TO CLEAN IMPACTED DRAINAGE AREAS. PROVIDE UNAUTHORIZED NSWD ELIMINATION DATE**
			AT THE UNAUTHORIZED NSWD SOURCE	**AT THE UNAUTHORIZED NSWD DRAINAGE AREA AND DISCHARGE LOCATION**	
_____ _____☐ AM ☐ PM					
_____ _____☐ AM ☐ PM					
_____ _____☐ AM ☐ PM					
_____ _____☐ AM ☐ PM					
_____ _____☐ AM ☐ PM					

ATTACHMENT "G"

EDIT NOTE: Architect/Engineer shall fill all applicable information requested in this form. Contractor to complete the remaining information.

POST-CONSTRUCTION STORMWATER MANAGEMENT PLAN

Project:

(Facility Owner)
(Facility Name)

(Facility Location)

Date Prepared: *(Date of Submission)*

Prepared for:

Prepared by:

Landowner Name

Address

Telephone Number

Name of person(s) responsible for maintenance of stormwater management practices

Address

Telephone Number

I. INTRODUCTION

A. Project Description

This section provides description of the new project construction;

The proposed *[elementary/middle/high]* school will be constructed on an approximately ____ acre site located along the *[north/south/east/west]* side of _____. The majority of this new *[elementary/middle/high]* school site is in a *[flat/hillside]* area and initially covered with_____. The site generally slopes from *[north/south/east/west]* to *[north/south/east/west]*. There is a difference in elevation of about ___ feet across the site.

1. Site Address: _____

2. Project Status: ***[Indicate** if submitted to DSA for final approval or not]* _____

3. Site Conditions:

EDIT NOTE: Refer to LAUSD Stormwater Technical Manual Chapter 2.1 Assessing Site Conditions and Other Constraints

Groundwater

Groundwater was [*not*] encountered in the borings in any of the explorations done for geotechnical evaluation prepared by _____.

The borings were drilled to a maximum depth of _____ ft.

Soils

The project site is located within the Los Angeles River flood plain and is overlain by alluvial deposits consisting of inter-bedded layers of sand, gravel, silt and clay.

Slopes

The proposed school site is at approximately ____ feet above mean sea level. And has a general slope of approximately ___%.

B. Vicinity Map

See Appendix #1

(*Provide in a separate sheet with scale and north arrow showing project site with reference to major highways and freeways.)*

II. STORM WATER TREATMENT STRATEGY

See Appendix #2

Describe the post-construction stormwater management strategy based on the recommendations of the "LAUSD Stormwater Technical Manual, dated October 2009". The "Technical Manual" recommends the use of Low Impact Design (LID) strategies for

stormwater management. LID is a site design approach that uses techniques to store, infiltrate, evaporate, and detain run-off on site. Assess the site's potential for stormwater infiltration and implementation of LID techniques and structural BMPs based on study of available information regarding site layout and slope, soil type, geotechnical conditions, and local groundwater resources.

Outline individual systems applied at the site, detailing the series of flow and treatment patterns and conveyance to the main stormwater line. Include diagrams as necessary.

EDIT NOTE: Refer to LAUSD Stormwater Technical Manual Chapter 2: Site Assessment and BMP Selection

Site Drainage Areas, Land Uses and Proposed BMPs

Drainage Area	Land Use	BMP Selected	Treatment Type
A	Buildings/Roofs and Associated Landscaped Areas; Playfield	GS-1 Hydrodynamic Separator; GS-1 Catch Basin Inserts	Pre-Treatment
		INF-3 Proprietary Infiltration BMP	Highly Recommended Structural Treatment BMP
B	Buildings/Roofs and Associated Landscaped Areas	BIO-2 Planter Boxes	Recommended Structural Treatment BMP
C	Outdoor Eating Area	GS-2 Catch Basin Inserts	Pre-Treatment
		BIO-1 Bioretention	Highly Recommended Structural Treatment BMP
D	Roadway, Driveways and Parking Lot	INF-4 Permeable Pavement	Highly Recommended Structural Treatment BMP

IV. NON-STRUCTURAL BMPs

EDIT NOTE: Refer to LAUSD Stormwater Technical Manual Chapter 5.1: Maintenance and Operations for detailed guidance on source control (non structural) BMPs. Indicate whichever is applicable

V. MONITORING AND MAINTENANCE

Indicate a maintenance plan developed for the life of each stormwater management practice including the required maintenance activities and maintenance activity schedule.

EDIT NOTE: Refer to LAUSD Stormwater Technical Manual Chapter 5: Maintenance and Operations for detailed guidance on monitoring and maintenance operations.

- All BMPs shall be operated, monitored, and maintained for the life of the project and at a minimum, all structural BMPs shall be inspected, cleaned-out, as needed and where necessary, repaired, at the following minimum frequencies: 1) prior to October 1st each year, 2) during each month between October 1st and April 15th of each year and, 3) at least twice during the dry season (between April 16 and September 30th of every year).
- Debris and other water pollutants removed from structural BMPs during cleanout shall be contained and disposed of in a proper manner as needed.
- The drainage system and the associated structures and BMPs shall be maintained according to manufacturer's specification and to ensure maximum pollutant removal efficiencies as needed.
- All structural BMPs must be accessible for inspection by City personnel during regular business hours.

VI. OTHER INFORMATION

EDIT NOTE: Other information requested in writing by the district to determine compliance of the proposed stormwater management measures with the provisions of this ordinance.

APPENDIX 1

EDIT NOTE: Architect: insert vicinity plan.

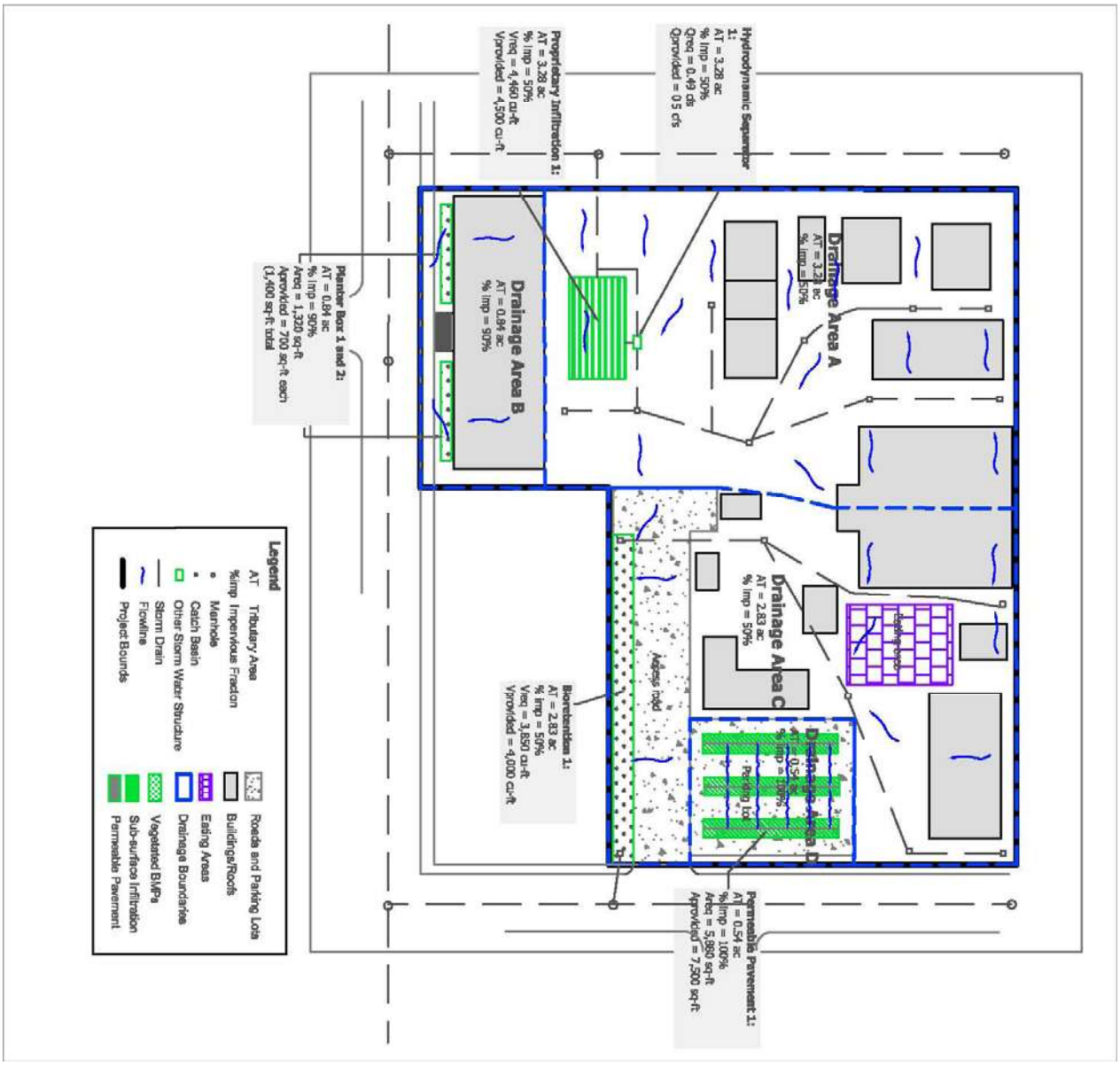
VICINITY MAP

APPENDIX 2

SCHEMATIC OF POST CONSTRUCTION BMP's

EDIT NOTE: Architect: insert project site plan.

(Sample Only)



LOS ANGELES UNIFIED SCHOOL DISTRICT

Facilities Services Division

SURVEY OF EXISTING SITE CONDITIONS

School Name: _____ Date: _____

Project Name: _____ Project Number: _____

To *(OAR)* : _____ Contract Number: _____

This is to certify that we have inspected the Project site and that we hereby agree that it conforms to the conditions represented as existing by the Contract documents at the start of the Contract Time, except:

Attachments: Pictures dated _____.

Video Tape dated _____.

CONTRACTOR signature	***Name (Printed)***	***Date***

Accepted by:

Owner Authorized Representative (OAR)	***Name (Printed)***	***Date***
Inspector of Record (IOR) signature	***Name (Printed)***	***Date***

cc:

7/17/2025

SECTION 01 3300

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Administrative and procedural requirements for electronic submittal via COLIN as required for the Work for Design Bid Build projects including, but not limited to; Shop Drawings, Product Data, Samples, material lists, and quality control items.

B. Throughout the Contract Documents, the minimum acceptable quality of materials, fabrication, and execution have been defined by the name and catalog number of a manufacturer and by reference of recognized industry standards.

C. To ensure that specified products are furnished and installed in accordance with the design intent, procedures have been established for submittal of design data and for its review by the OAR, and others.

1.02 RELATED REQUIREMENTS

A. Section 01 1216: Phasing of the Work.

B. Section 01 2513: Product Substitution Procedures.

C. Section 01 2973: Schedule of Values.

D. Section 01 2976: Progress Payment Procedures.

E. Section 01 3113: Project Coordination.

F. Section 01 3213: Construction Schedule.

G. Section 01 3229: Project Forms.

H. Section 01 4523: Testing and Inspection.

I. Section 01 4525: Testing, Adjusting, and Balancing for HVAC.

J. Section 01 5000: Construction Facilities and Temporary Controls.

K. Section 01 7123: Field Engineering.

L. Section 01 7329: Cutting and Patching.

M. Section 01 7416: Storm Water Pollution Prevention.

N. Section 01 7700: Contract Closeout.

O. Section 01 7836: Warranties.

PART 2 – PRODUCTS (Not used)

PART 3 - EXECUTION

3.01 PROCEDURES

A. CONTRACTOR is required to review and approve every submittal and shop drawing prior to submittal through COLIN to the OAR. Should CONTRACTOR determine a submittal contains errors, or does not meet the requirements of the contract, CONTRACTOR shall immediately return the submittals and shop drawings to the producer and expedite the corrections prior to submitting through COLIN. Submittals shall not be used by CONTRACTOR to request clarifications, submit questions, substitutions, or deviations. The CONTRACTOR shall perform the following prior to submitting it through COLIN:

1. Verify the submittal is complete in all respects and follows the requirements of the Contract Documents without variance.

2. Confirm that no substitutions have been included. If substitutions are included, CONTRACTOR shall eliminate them from the submittal and process them in accordance with General Conditions Article 6.14.

3. Identify any variances from the requirements of the Contract Documents and confirmed that the identified variance meets but does not exceed the allowable limitations or tolerances as defined in these specifications.

4. Verify that all submitted materials, dimensions and tolerances are compatible with existing or planned conditions of the Work in order to erect, fabricate, or install the submitted assembly in conformance with the requirements of the Contract Documents.

5. Coordinate and verify that the dimensions match CONTRACTOR measured field or installation conditions.

6. Coordinate and verify that the products of separate manufacturers required within any field produced assembly are compatible in all respects for such assembly.

7. Package together all related submittals or shop drawings where such is necessary for a comprehensive OWNER review and approval prior to submission to COLIN.

B. CONTRACTOR shall separate by trade and system type with reference to the appropriate specification sections and electronically submitted to COLIN for review by the OAR. OAR will not accept submittals received from sources other than from CONTRACTOR.

C. The OAR shall further distribute electronically through COLIN to PROJECT INSPECTOR and other District personnel as required. Work shall not commence, unless otherwise approved by OAR, until approved submittals are transmitted to CONTRACTOR.

D. CONTRACTOR shall clearly identify any deviations from the Contract Documents on each submittal. Any deviation not so noted is not acceptable.

E. CONTRACTOR shall coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities requiring sequential activity.

F. Timing of Submittals:

1. In accordance with General Conditions, CONTRACTOR shall submit through COLIN, those Shop Drawings, Product Data, diagrams, materials lists, Samples and other submittals required by the Contract Documents for review by the OAR.

2. The scheduling of submittals shall be sequenced to support the progress of the Work, and shall be:

a. Submitted sufficiently in advance of construction, fabrication or installation in order to allow time for transmittal, review, modification, correction, (and resubmission and re-review when required.)

b. Phased with adequate time between submittals and resubmittals, as necessary, in order to allow for proper review by the OWNER without negative impact to the Milestones Schedule.

3. CONTRACTOR shall revise, update and submit the submittal schedule to OAR on the first of each month, or as required by OAR.

4. CONTRACTOR shall allow in the Construction Schedule, at least fifteen (15) days for OAR and AOR/EOR reviews following submittal to COLIN. Deferred approval items shall be allowed additional time for DSA review.

5. No adjustments to the Contract Time or Milestones will be authorized because of a failure to transmit submittals through COLIN sufficiently in advance of the Work to permit review and processing or where CONTRACTOR fails to provide OAR submittals on related items.

6. In case of product substitution, Shop Drawing preparation shall not commence until such time as OWNER accepts or rejects the proposed substitution in accordance with the procedures via a Change Directive as described in the General Conditions.

G. If required, resubmit submittals in a timely manner. Resubmit as specified for initial submittal but identify as such. Review times for re-submitted items shall be as per the time frames for initial submittal review.

H. Shop Drawing preparation shall not commence until such time as CONTRACTOR receives Product Data acceptance.

I. The CONTRACTOR's ARCHITECT will use COLIN for the ACTION Stamp.

3.02 SHOP DRAWINGS

A. Shop Drawings are original drawings prepared by CONTRACTOR, Subcontractor, supplier, or distributor illustrating some portion of Work by showing fabrication, layout, setting, or erection and shall not be based on reproduced Contract Documents or copied standard information.

B. Produce Shop Drawings to an accurate scale that is large enough to indicate all pertinent features and methods. Except for templates, patterns, and similar full-size drawings, electronically submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 24 by 36 inches.

C. Shop Drawings shall include fabrication and installation drawings, setting diagrams, schedules, patterns, templates, and similar drawings. Include the following information:

1. Dimensions.

2. Identification of products and materials included by sheet and detail number.

3. Compliance with specified standards.

4. Notation of coordination requirements.

5. Notation of dimensions established by field measurement.

D. Provide a space of approximately 4 by 5 inches on the label or beside the title block on Shop Drawings to record CONTRACTOR and ARCHITECT review, and the action taken. Include the following information on the label for processing and recording action taken:

1. Project name.

2. Date.

3. Name and address of ARCHITECT.

4. Name and address of CONTRACTOR.

5. Name and address of Subcontractor.

6. Name and address of supplier.

7. Name and address of manufacturer.

8. Name and title of appropriate Specification section.

9. Drawing number and detail references, as appropriate.

3.03 PRODUCT DATA

A. Collect Product Data into a single submittal for each element of Work or system. Product Data includes printed information, such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, wiring diagrams, schedules, illustrations, or performance curves.

1. Mark each copy to show or delineate pertinent materials, products, models, applicable choices, or options. Where Product Data includes information on several products that are not required, clearly mark copies to indicate the applicable information. Include the following information:

a. Manufacturer's printed recommendations.

b. Compliance with trade association standards.

c. Compliance with recognized testing agency standards.

d. Application of testing agency labels and seals.

e. Notation of dimensions verified by field measurement.

f. Notation of coordination requirements.

g. Notation of dimensions and required clearances.

h. Indicate performance characteristics and capacities.

i. Indicate wiring diagrams and controls.

2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed by CONTRACTOR.

3.04 SAMPLES

A. Procedure:

1. Submit Samples of sufficient size, quantity, cured and finished and physically identical to the proposed product or material. Samples include partial or full sections or range of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches denoting color, texture, and/or pattern.

a. Mount or display Samples in the manner to facilitate review of qualities indicated. Include the following:

1) Specification section number and reference.

2) Generic description of the Sample.

3) Sampling source.

4) Product name or name of manufacturer.

5) Compliance with recognized standards.

6) Availability and delivery time.

2. Submit Samples for review of size, kind, color, pattern, and texture. Submit Samples for a final check of these characteristics with other elements and a comparison of these characteristics between the final submittal and the actual component as delivered and installed.

a. Where variations in color, pattern, texture, or other characteristic is inherent in the material or product represented, submit at least three (3) multiple units that show the approximate limits of the variations. Refer to other Specification Sections for additional requirements.

b. Refer to other Specification sections for requirements for Samples that illustrate materials, fabrication techniques, assembly details, connections, operation, and similar construction characteristics.

c. Refer to other sections for Samples to be returned to CONTRACTOR for incorporation into the Work. Such Samples must be undamaged at time of installation. On the transmittal indicate special requests regarding disposition of Sample submittals.

d. Samples not incorporated into the Work, or otherwise not designated as Owner property, remain the property of CONTRACTOR and shall be removed from the Project site prior to Substantial Completion.

3. Color and Pattern: Whenever a choice of color or pattern is available in a specified product, submit accurate color chips and pattern charts to OAR for review and selection.

4. Number Required: Submit six, minimum, of each. Two will be returned to CONTRACTOR.

B. When specified, erect field Samples and mock-ups at the Project site to illustrate products, materials, fabrications, or execution and to establish standards by which completed Work shall be judged.

C. Maintain sets of Samples, as returned, at the Project site, for quality comparisons throughout the course of the Work. Sample sets may be used to obtain final acceptance of the Work associated with each set.

3.05 QUALITY CONTROL SUBMITTALS

A. Submit quality control submittals, including design data, certifications, manufacturer's field reports, and other quality control submittals as required under other sections of the Contract Documents.

B. When other sections of the Contract Documents require manufacturer's certification of a product, material, or installation complies with specified requirements, submit a notarized certification from the manufacturer certifying compliance with specified requirements.

C. Certification shall be signed by an officer of the manufacturer or other individual authorized to sign documents on behalf of the represented company.

D. Requirements for submittal of inspection and test reports are specified in other sections of the Contract Documents.

END OF SECTION

SECTION 01 3546

INDOOR AIR QUALITY PROCEDURES

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes:

1. CONTRACTOR's requirements and actions to ensure that the building and the mechanical system are free of Volatile Organic Compounds (VOCs), moisture, dust, mold, and microbes prior to achieving Substantial Completion.

2. CONTRACTOR requirements for temporary construction ventilation, dust protection, preconditioning of materials, protection of materials, sequencing, and duct protection.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 01 1216 - Phasing of the Work.

3. Section 01 4525 - Testing, Adjusting, and Balancing for HVAC.

4. Section 01 5000 - Construction Facilities and Temporary Controls.

5. Section 01 6000 - Product Requirements.

6. Section 23 3000 - Air Distribution.

7. Section 23 8000 - Heating, Ventilating, and Air Conditioning Equipment.

C. Referenced Standards:

1. ASHRAE 62.1, Ventilation for Acceptable Indoor Air Quality.

2. ASHRAE 52.2, Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size.

D. VOC-Emitting Materials. Related Sections:

1. Section 06 1000 - Rough Carpentry.

2. Section 06 2000 - Finish Carpentry.

3. Section 06 4000 - Architectural Woodwork.

4. Section 07 9200 - Joint Sealants.

5. Section 09 2900 - Gypsum Board.

6. Section 09 6513 - Rubber Base.

7. Section 09 6516 - Resilient Sheet Flooring.

8. Section 09 6518 - Rubber Flooring and Stair Covering.

9. Section 09 9000 - Painting and Coating.

10. Section 09 9643 - Chemical-Resistant Coatings.

E. VOC-Emitting Furnishings and Equipment. Related Sections:

1. Section 06 4000 - Architectural Woodwork.

2. Section 10 1100 - Visual Display Units.

3. Section 10 2113 - Plastic Toilet Compartments.

F. Porous and Fibrous Materials. Related Sections:

1. Section 07 2100 - Thermal Insulation.

2. Section 09 5113 - Acoustical Panel Ceilings.

3. Section 09 6813 - Tile Carpeting.

4. Section 09 8433 - Cementitious Wood Fiber Acoustical Units.

1.02 SUBMITTALS

A. CONTRACTOR shall develop and submit to the OAR for review and approval a Construction Indoor Air Quality (IAQ) Plan using the blank form provided after the end of this Section. Plan shall be submitted within 120 days of Notice to Proceed (NTP). Implementation of the approved IAQ Plan shall be included in the project Construction Schedule.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

3.01 QUALITY CONTROL

A. CONTRACTOR shall conduct inspections to confirm that measures proposed in the Construction IAQ Plan are followed during construction and shall report on the progress of the Plan during the progress meetings described in Section 01 3119: Project Meetings.

3.02 PROJECT CONDITIONS

A. During construction, prior to Substantial Completion and Building Flush Out, systems designed with particle filters shall not be operated at any time without filters in place. Filters used during construction shall have a minimum rating of MERV 8. Following construction completion, replace filters per Section 23 8000, Heating, Ventilating, and Air Conditioning Equipment.

B. Following completion of building envelope maintain continuous Temporary Construction Ventilation of interior areas where VOC-Emitting Materials and VOC-Emitting Furnishings and Equipment, identified in Paragraphs 1.01.D and 1.01.E of this Section, areas are installed.

1. Temporary Construction Ventilation may be supplied via the building's HVAC system and shall comply with the following requirements:

   a. Return air grilles shall be sealed or temporary MERV 8 air filters shall be installed.

   b. Provide MERV 8 air filters to filter the outside air.

   c. Provide a minimum of three air changes per hour of outside air while maintaining the building interior temperature between 60 degrees F and 85 degrees F with the relative humidity not to exceed 60 percent.

2. The Temporary Construction Ventilation specified requirements for building interior temperature and/or relative humidity may be exceeded only when the building HVAC unit is operating at 100 percent capacity.

3. Temporary Construction Ventilation may be supplied via temporary ducts and fans, sufficient to provide no less than three air changes per hour, and exhausted directly to the outside/outdoors while maintaining the building interior temperature between 60 degrees F and 85 degrees F with the relative humidity not to exceed 60 percent.

4. Maintain continuous Temporary Construction Ventilation for a minimum period of 72 hours after installation of the VOC-Emitting Materials unless otherwise indicated elsewhere in these Specifications.

C. Temporary Construction Ventilation shall be provided for post-building-flush-out, post-occupancy touch-up, or punch list activities involving VOC-Emitting materials. Touch-up activities involving VOC-Emitting Materials shall not occur when students or staff are present.

D. Prior to installation, allow VOC-Emitting Furnishings and Equipment, identified in Paragraph 1.01.E of this Section, to off-gas in dry, well-ventilated space for 14 calendar days.

1. Remove containers and packaging to maximize off-gassing of VOCs.

2. Precondition products in ventilated warehouse or other ventilated building. Preconditioning at the project site is acceptable, provided that Temporary Construction Ventilation and Sequencing measures are taken as described in Paragraph 3.02.B and Article 3.03 of this Section.

3. Products requiring preconditioning include, at a minimum, VOC-Emitting Furnishings and Equipment that contain vinyl or other flexible plastics, resins, adhesives, foam rubber, and fiberboards with urea-formaldehyde binders. Products bearing CHPS-approval as low- emitting materials GREENGUARD Certification, Indoor Advantage Gold Certification, Green Label Plus Certification, or other OWNER-approved certification shall be excluded from this preconditioning requirement.

3.03 SEQUENCING

A. Where VOC-Emitting Materials identified in Paragraph 1.01.D of this Section are applied on-site, apply the VOC-Emitting Materials prior to installation of any Porous and Fibrous Materials identified in Paragraph 1.01.F of this Section. Maintain the continuous Temporary Construction Ventilation requirements described above for a period of 72 hours before installation of porous and fibrous materials.

1. Where this sequencing requirement is not possible, protect porous materials with polyethylene vapor retarders. Tape polyethylene edges to insure a complete seal. Maintain continuous ventilation per temporary construction ventilation requirements described above for a period of 72 hours before removing polyethylene.

B. Completion: Complete interior finish material installation prior To Building Flush-Out as described in Paragraph 3.05.C of this Section.

3.04 PROTECTION

A. Moisture Protection:

1. Protect materials specified in Paragraphs 1.01.D, 1.01.E and 1.01.F of this Section from water intrusion or penetration.

2. Weatherproof enclosures shall be temporarily constructed to store and protect the materials from moisture sources.

3. Materials shall be covered to protect them from rain and other moisture sources and, if resting on the ground, shall use spacers to allow air to circulate between the ground and the materials.

4. Materials including porous or fibrous materials with visible mold and microbial growth shall not be installed.

   a. Non-porous materials with minor visible mold and microbial growth shall be decontaminated.

   b. Structural lumber showing visible signs of mold shall be removed from the project site or be decontaminated, per specification Section 06 1000 - Rough Carpentry, prior to installation.

B. Duct Protection:

1. Seal ducts during transportation and delivery, per Section 23 3000, Air Distribution.

2. Seal ducts during construction to prevent accumulation of dust and debris. If seals must be removed for temporary construction ventilation purposes, they shall be resealed upon conclusion of the required ventilation period. Remove seals prior to HVAC system start-up.

3. During dust producing activities in enclosed buildings, such as drywall installation and finishing, sanding, cutting, or grinding, CONTRACTOR shall turn HVAC ventilation system off and protect HVAC system supply and return openings from dust infiltration. Separate dust-producing activities from the rest of the construction area using plastic sheathing. Provide temporary ventilation.

3.05 CLEANING

A. Just prior to Substantial Completion, vacuum carpeted and soft surfaces with a Green Label certified vacuum.

B. Duct Cleanliness:

1. Before shipment to site ensure ducts are clean and duct openings protected with a self-adhering film, as specified On Section 23 3000, Air Distribution.

2. Just prior to Substantial Completion and prior to using any ducts to circulate air, ensure that the ducts are free of dust and dirt.

C. Building Flush-Out:

1. Building Flush-Out procedures of this Section supersede those described those of Section 01 4525: Testing, Adjusting, and Balancing of HVAC.

2. At construction completion, prior to occupancy and with all interior finishes installed, replace filtration media with new per HVAC equipment schedule and perform a building flush-out. Flush-out shall supply a total air volume of 14,000 cubic feet of outdoor air per square foot of floor area while maintaining an internal temperature of at least 60 degrees Fahrenheit and relative humidity no higher than 60%.

3. If OWNER elects to partially use and/or occupy the Work prior to completion of the flush-out, the space may be occupied following delivery of a minimum of 3,500 cubic feet of outdoor air per square foot of floor area. Once the space is occupied, it shall be ventilated at a minimum rate of 0.30 cubic feet per minute (cfm) per square foot of outside air. During each day of the flush-out period, ventilation shall begin a minimum of 3 hours prior to occupancy and continue during occupancy. These conditions shall be maintained until a total of 14,000 cubic feet per square foot of outside air has been delivered to the space.

4. During building flush-out, when required to perform touch-up or punch list activities involving VOC-Emitting Materials as described in Article 1.01 of this Section, extend Building Flush-Out by a minimum of four days continuously after the touch-up or punch list activities at the maximum tempered outside air rate for 24 hours per day in the space where the touch-up or punch list activities occurred.

5. If Continuous Construction Ventilation is not possible, non-continuous flush-out shall total an equivalent of air as described in Paragraph 3.05-C.2 above.

6. Return ventilation system to normal operation following flush-out period to minimize energy consumption.

CONSTRUCTION INDOOR AIR QUALITY (IAQ) PLAN

Contractor shall complete and submit this Plan to the OAR no later than one hundred twenty (120) days after receipt of Notice to Proceed.

GENERAL CONTRACTOR:

Name: _____ Title: _____

Telephone:_____ Fax:_____

Email: _____

I have read and understood and will implement the following Construction IAQ Plan.

Signature: _____ Date: _____

I. CONSTRUCTION VENTILATION (Per paragraphs 3.02.A through C)

List project materials requiring Construction Ventilation per Part 1 of this Section. Attach additional sheet if necessary. Circle the following Temporary Construction Ventilation approach to be used.	
3.02.B	Ventilation will be supplied via building's HVAC system. • ___ Return air grilles are sealed. Exhaust is provided via open windows or doors. OR: • Return air grilles are used for exhaust. HVAC will provide a minimum 35 percent outside air. Air filters with a minimum MERV rating of 8 will be provided at return air grilles. • Building HVAC will be turned off during dust generating activities.
3.02.B.3	Ventilation will be accomplished via open windows, temporary ducts, and temporary fans ducted directly to the outdoors. • Supply air diffusers, return air grilles, and/or open ducts will be sealed. Make-up air will be provided through open windows or doors or other transfer air devices. • HVAC system will provide make-up air. Return air grilles will be sealed.
Required	• Ventilation will provide no less than three air changes per hour.

	• Ventilation will be continuous for a period no less than 72 hours after completion of installation of VOC-emitting materials. • Filters used during Construction Ventilation will be replaced prior to Substantial Completion

II. PRECONDITIONING (Per paragraph 3.02.D)

List project materials requiring Preconditioning per Part 1 of this Section. Attach additional sheet if necessary.

Circle the following Preconditioning approach to be used.

A	Preconditioning will occur in dry and well-ventilated offsite location. Where is the offsite location?
B	Preconditioning will occur onsite. Check the applicable approach. ☐ Ventilation will be supplied via building's HVAC system. See paragraph 3.02.B above. ☐ Ventilation will be accomplished via open windows, temporary ducts, and temporary fans. See paragraph 3.02.B.3 above.
Required	• Containers and packaging will be removed prior to Preconditioning. • Preconditioning will occur for fourteen (14) continuous days prior to installation

III. SEQUENCING (Per Article 3.03)

List project porous and fibrous materials requiring Sequencing consideration per Part 1 of this Section. Attach additional sheet if necessary.	
Required	• Previously installed Porous or Fibrous Materials located in a room where VOC-Emitting Materials are to be installed will be protected with polyethylene vapor retarder. Polyethylene will not be removed until completion of a 72-hour ventilation period. • Installation of interior finish materials will complete fourteen (14) days prior to Substantial Completion

IV. PROTECTION (Per Article 3.04)

List project materials requiring Protection per Part 1 of this Section. Attach additional sheet if necessary.	
Required	• Weatherproof enclosures shall be temporarily constructed to store and protect the materials from moisture sources. Materials shall be covered from rain and other moisture sources and if resting on the ground, use spacers to allow air to circulate between the ground and the materials. • Materials including porous or Fibrous Materials with visible microbial growth shall not be installed. • Materials that are not defined as Porous or Fibrous with visible microbial growth shall be decontaminated prior to installation. Lumber exhibiting a minor amount of "lumberyard mold" need not be discarded. • Temporary ventilation shall be provided during dust producing activities. See Item I Construction Ventilation above. Supply air diffusers and return air grilles shall be covered. • Ducts shall be sealed during transportation, delivery, and construction.

END OF CONSTRUCTION INDOOR AIR QUALITY PLAN

SECTION 01 4213

ABBREVIATIONS, SYMBOLS AND ACRONYMS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. List of abbreviations, symbols, and acronyms of societies, institutes, and associations generally appearing in the Contract Documents.

1.02 RELATED REQUIREMENTS

A. Division 01 - General Requirements

1.03 ABBREVIATIONS

ac	Alternating current
amp	ampere
C	Degrees Centigrade, Celsius
Cat 6	Category 6, unshielded twisted pair cabling
CFC	Chlorofluorocarbon
cfh	Cubic feet per hour
cfm	Cubic feet per minute
cm	Centimeter
Co.	Company
Corp.	Corporation
d	Penny
DBE	Design Build Entity
db.	Decibel
DB	Dry bulb
dc	Direct current
ePTZ	Digital Pan Tilt Zoom
F	Degrees Fahrenheit
fpm	Feet per minute
FPS	Frames per Second
ft	Foot or feet
GA	Gage
gph	Gallons per hour
gpm	Gallons per minute

HP	Horsepower
Hz	Hertz
ID	Inside Diameter
Inc.	Incorporated
IP	Internet Protocols
IR light	Infrared light
Kbps	Kilobits per Second
KHz	Kilohertz
Kip	thousand pounds
Ksf	Thousand pounds per square foot
Ksi	Thousand pounds per square inch
Kv	Kilovolt
KVA	Kilovolt amperes
KW	Kilowatt
KWH	Kilowatt hour
LED	Light Emitting Diode
LF	Linear foot
Lb(s)	Pound(s)
LCD	Liquid Crystal Display
Lux	A standard unit of illumination measurement
Max	Maximum
MBH	1000 BTUs per hour
MHz	Mega hertz
mil	Thousandth of an inch
Min	Minimum
mm	Millimeter
mph	Miles per hour
NA	Not Applicable
NIC	Not in Contract
OC	On Center
OD	Outside Dimension
oz.	Ounce
PCF	Pounds per cubic foot
pH	Acidity-alkalinity balance
PoE	Power Over Ethernet – A standard for providing power over network cable
psf	Pounds per square foot
psi	Pounds per square inch
psig	Pounds per square inch, gage

PTS	Pan–Tilt–Zoom
PVC	Polyvinylchloride
QoS	Quality of Service
RF	Radio frequency
rpm	Revolutions per minute
SDK	Software Development Kit
SF	Square foot
SIP	Session Initiation Protocol
SMA	Software Maintenance Agreement
SS	Stainless Steel
SSL	Secure Sockets Layer
SSM	Server Software Module
SY	Square yard
TCP	Transmission Control Protocol
TLS	Transport Layer Security
UI	User Interface
Unicast	Communication between a single sender and single receiver on network
UPnP	Universal Plug and Play
V	Volts
VBR	Variable Bit Rate
VMS	Video Management System
W	Watts
WB	Wet bulb
WDR	Wide dynamic range

1.04 SYMBOLS

#	Number or pound
'	Foot or feet
"	Inch(es)
%	Percent
◦	Degree (Angle or Temperature)

1.05 ACRONYMS

AA	The Aluminum Association, Inc
AABC	Associated Air Balance Council
AAMA	American Architectural Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
AATCC	American Association of Textile Chemists and Colorists

ABMA	American Boiler Manufacturers Association
ACI	American Concrete Institute
ACS	Access Control System
AEC	Automatic Echo Cancellation
ADA	Americans with Disabilities Act
ADAAG	Americans with Disabilities Act Accessibility Guidelines
AFF	Above Finish Floor
AGC	Automatic Gain Control
ALPR	License Plate Recognition
AGA	American Gas Association
AGC	Automatic Gain Control
AGCIH	American Conference of Governmental Industrial Hygienists
AI	Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Movement and Control Association, Inc.
ANI	Automatic Number Identification
ANSI	American National Standards Institute
APA	APA – The Engineered Wood Association
API	Application Programming Interface
ARI	Air-Conditioning and Refrigeration Institute
ARS	Automated Route Selection
ARP	Address Resolution Protocol
ATSC	Advanced Television Systems Committee
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATBCB	Architectural & Transportation Barriers Compliance Board
AWI	Architectural Woodwork Institute
AWPA	American Wood Preservers Association
AWPI	American Wood Preservers Institute
AWS	American Welding Society
AWWA	American Water Works Association
BBS	Backbone Switch
BGP	Border Gateway Protocol
BHMA	Builders Hardware Manufacturers Association
BIA	Brick Institute of America

BICSI	Building Industry Consulting Services, International
BRI	Basic Rate Interface
BOOTP	Bootstrap Protocol
BTU	British thermal unit
CAL/OSHA	California Occupational Safety and Health Administration
CAC	Call Admission Control
CAS	Channel Associated Signaling
CAT 5e	Category 5e
CBC	California Building Code
CCR	California Code of Regulations
CCK	Complementary Code Keying
CDR	Call Detail Record
CDPH	California Department of Public Health
CEC	California Electrical Code
CESM	Compact Edge Switch-Managed
CFR	Code of Federal Regulations
CHPS	Collaborative for High Performance Schools
CIF	Common Intermediate Format
CISPI	Cast Iron Soil Pipe Institute
CLFMI	Chain Link Fence Manufacturers Institute
CLI	Command Line Interface
CLID	Calling Line Identification
CMAS	California Multiple Award Schedule
CMC	California Mechanical Code
CNG	Comfort Noise Generation
CNID	Calling Party Name Identification
CQC	California Quality Control (CMA Standards)
Codec	Coder/Decoder
COP	Coefficient of performance
COS	Class of Service
CPC	California Plumbing Code
CRA	California Redwood Association
CSA	Client Software Application
CRI	Carpet and Rug Institute
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standards, U.S. Department of Commerce
CS	Communications Server
CSFM	California State Fire Marshal
CSI	Construction Specifications Institute

CTIOA	Ceramic Tile Institute of America
CTI	Cooling Tower Institute
DHCP	Dynamic Host Configuration Protocol
DHI	Door and Hardware Institute
DHCP	Dynamic Host Configuration Protocol
DGM	Dynamic Graphical Map
DNS	Domain Name System
DSA	Division of the State Architect
DTV	Digital Television
DSS	Direct Station Selection
DTMF	Dual Tone Multiple Frequency
DVD	Digital Video Disc
EER	Energy efficiency ratio
EIA	Electronic Industries Alliance
EIS	Electronic Image Stabilization
ESM	Edge Switch-Managed
E&M	Ear and Mouth
FAT	Field Acceptance Testing
FEP	Front End Processor
FEP	Fluorinated Ethylene Propylene
FPS	Frames per Second
FTP	File Transfer Protocol
FXS	Foreign Exchange Station
EPA	Environmental Protection Agency
ETL	ETL Testing Laboratories
FCC	Federal Communication Commission
FDA	Food and Drug Administration
FECC	Far End Camera Control
FPS	Frames per Second
FM	Factory Mutual
FPS	Frames per Second
FS	Federal Specifications
FTP	File Transfer Protocol
FXO	Foreign Exchange Office
FXS	Foreign Exchange Station
GA	Gypsum Association
GANA	Glass Association of North America
GBIC	Gigabit Interface Converter
GUI	Graphical User Interface

GigE	Gigabit Ethernet
HMMA	Hollow Metal Manufacturer's Association
HPVA	Hardwood Plywood & Veneer Association
HTTP	Hypertext Transfer Protocol
HTTPS	Hypertext Transfer Protocol over SSL
HVAC	Heating, Ventilation, and Air Conditioning
IACS	International Annealed Copper Standards
IAMPO	International Association of Plumbing and Mechanical Officials
IC	Intercom
ICBO	International Conference of Building Officials
ICEA	Insulated Cable Engineers Association
ICMP	Internet Control and Message Protocol
ID	Identifier
IDF	Intermediate Distribution Frame
IEEE	Institute of Electrical & Electronic Engineers, Inc.
IDS	Intrusion Detection System
IEC	International Electro technical Commission
IES	Illuminating Engineering Society
IMI	International Masonry Institute
IOR	Inspector of Record
IP	Internet Protocol
IP Router	Internet Protocol Router
IPVC	Internet Protocol Video Conferencing
IPX	Internetwork Packet Exchange
IRI	Industrial Risk Insurers
ISDN	Integrated Services Digital Network
ISO	International Organization for Standardization
ISA	Industry Standard Architecture
ISDN	Integrated Services Digital Network
ISM	Intermediate Switch-Managed (Fiber Switch)
ISMS	Integrated Security Monitoring and Management System
ISP	Internet Service Provider
ITD	OWNER, Information Technology Division
ITU	International Telecommunication Union
IVR	Interactive Voice Response
JPEG	Joint Photographic Experts Group (image format)
Kbps	Kilobits per Second
LAN	Local Area Network
LCD	Liquid Crystal Display
LDC	Local Distribution - Cabinet

LDF	Local Distribution Frame
LED	Light Emitting Diode
LIU	Light Interconnection Unit
MAC	Media Access Control
MAN	Metropolitan Area Network
MBR	Maximum Bit Rate
MCU	Multipoint Conference Unit
MDF	Main Distribution Frame
MDF-BBS	Main Distribution Frame Backbone Switch
MIB	Management Information Base
MIC	Message Integrity Check
MLD	Multicast Listener Discovery
MLSFA	Metal Lath/Steel Framing Association
MPOE	Main Point of Entry
MPEG	Moving Picture Experts Group
MP-BGP	Multi-Protocol Border Gateway Protocol
MOS	Mean Opinion Scale
MSS	Manufacturers Standardization Society of the Valve & Fittings Industry.
NAAMM	National Association of Architectural Metal Manufacturers
NAT	Network Address Translation
NAT-PT	NAT Protocol Translation
NAS	Network Attached Storage
NBFU	National Board of Fire Underwriters
NBS	National Bureau of Standards
NCMA	National Concrete Masonry Association
NEBB	National Environmental Balancing Bureau
NEBS	Network Equipment Building System
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NEC	National Electrical Code
NFPA	National Fire Protection Association
NFPA	National Forest Products Association
NIC	Network Interface Card
NIOSH	National Institute for Occupational Safety and Health
NIST	National Institute of Standards and Technology
NMP	Simple Network Management Protocol
NOFMA	National Oak Flooring Manufacturers Association
NPCA	National Paint and Coatings Association

NPDES	National Pollutant Discharge Elimination System
NRCA	National Roofing Contractors Association
NSF	National Sanitation Foundation
NTP	Network Time Protocol
NTSC	National Television System Committee
NTMA	National Terrazzo & Mosaic Association
NTSC	National Television System Committee
NUSIG	National Uniform Seismic Installation Guidelines
NWMA	National Woodwork Manufacturers Association
OAR	OWNER Authorized Representative
OC-3	Optical Carrier Level-3 (~155 Mbps)
OEHS	Office of Environmental Health and Safety (LAUSD's)
OFNR	Optical Fiber Non-Conductive Riser
OFNP	Optical Fiber Non-Conductive Plenum
OID	Object Identifier
OPX	Off Premise Extension
OSHA	Occupational Safety & Health Administrations
OSI	Open Systems Interconnection
OSPF	Open Shortest Path First
OTDR	Optical Time Domain Reflectometer.
ONVIF	Open Video Interface Forum
OWAN	OWNER's Wide Area Network
OWNER	Los Angeles Unified School District
PA	Public Address
PABX	Private Auxiliary Branch Exchange
PA/IC	Public Address/Intercommunications
PAL	Phase Alternating Line
PAT	Port Address Translation
PBX	Private Branch Exchange
PCA	Portland Cement Association
PCI	Precast/Prestressed Concrete Institute
PCM	Pulse Code Modulation
PDI	Plumbing and Drainage Institute
PEI	Porcelain Enamel Institute
PHB	Per Hop Behavior (DiffServ)
PIC	PBX Integration Card

PIM	Protocol-Independent Multicast
PING	Packet Internet Groper
PINX	Private Integrated Services Network Exchange
PIP	Picture in Picture
PMO	Project Management Office
PoE	Power-over-Ethernet
POP	Point of Presence
POTS	Plain Old Telephone System
PRI	Primary Rate Interface
PS	Product Standard, U.S. Department of Commerce
PSIP	Program and System Information Protocol
PSTN	Public Switched Telephone Network
PZM	Pressure Zone Microphone
QCIF	Quarter CIF – See CIF
QoS	Quality of Service
QSIG	Q-Signaling
RADIUS	Remote Access Dial-In User Service
RIP	Routing Information Protocol
RIPng	Routing Information Protocol Next Generation
RIS	Redwood Inspection Service
RMON	Remote Network Monitoring
RMON2	Remote Network Monitoring Version 2
SAN	Storage Area Network
SCAQMD	South Coast Air Quality Management District
SCSI	Small Computer System Interface
SDEI	Steel Deck Institute
SDI	Steel Door Institute
SFM	State Fire Marshal
SFP	Small Form-factor Pluggable transceiver
SFP+	Enhanced Small Form-factor Pluggable transceiver
SFPA	Southern Forest Products Association
SIF	Source input format (NTSC)
SIP	Session Initiation Protocol
SIGMA	Sealed Insulating Glass Manufacturers Association
SJI	Steel Joist Institute
SLC	Small Learning Community
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SMDI	Simple Message Desk Interface

SMI	Structure of Management Information
SMTP	Simple Mail Transfer Protocol
SMPTE	Society of Motion Picture and Television Engineers
SNA	Systems Network Architecture
SNMP	Simple Network Management Protocol
SSH	Secure Shell
SSID	Service Set Identifier
SSL	Secure Socket Layer
SSPC	Steel Structures Painting Council
S/P DIF	Sony/Philips Digital InterFace
SWI	Steel Window Institute
TEHO	Tail End Hop Off
TCA	Tile Council of America
TCP	Transmission Control Protocol
TFTP	Trivial File Transfer Protocol
TIA	Telecommunications Industry Association
TKIP	Temporal Key Integrity Protocol
TLS	Transport Layer Security
TOS	Type of Service
UBPPA	Uni-Bell PVC Pipe Association
UCI	Uniform Construction Index
UFAS	Uniform Federal Accessibility Standards
UL	Underwriters' Laboratories, Inc.
UM	Unified Messaging
UPS	Uninterruptible Power Supply
UPnP	Universal Plug and Play
URL	Uniform Resource Locator
USDA	United State Department of Agriculture
UTC	Coordinated Universal Time
UTP	Unshielded Twisted Pair
UPS	Uninterruptible Power Supply
USP	Unified Security Platform
USW	Unified Web Client
VAD	Voice Activity Detection
VBR	Variable Bit Rate
VLAN	Virtual Local Area Network
VM	Voice Mail
VSS	Video Surveillance System

VoD	Video on Demand
VFD	Vacuum Fluorescent Display
VTC	Video Teleconference
WAN	Wide Area Network
WDR	Wide dynamic range
WLAN	Wireless Local Area Network
WCLIB	West Coast Lumber Inspection Bureau
WDMA	Window and Door Manufacturers Association
WWPA	Western Wood Products Association

PART 2 - PRODUCTS (Not applicable)

PART 3 – EXECUTION (Not applicable)

END OF SECTION

SECTION 01 4523

TESTING AND INSPECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Testing and inspection services to meet requirements of the California Building Code (CBC) and the Division of the State Architect (DSA).

B. Related Requirements:

1. Section 03 2000 – Concrete Reinforcing.
2. Section 03 3000 – Cast-in-Place Concrete.
3. Section 03 3713 - Shotcrete.
4. Section 04 2200 – Concrete Unit Masonry.
5. Section 05 1200 – Structural Steel Framing.
6. Section 06 1000 – Rough Carpentry.
7. Section 06 1733 – Wood I Joist.
8. Section 06 1736 – Metal Web Wood Joist.
9. Section 06 1813 – Glue Laminated Beams.
10. Section 07 8116 – Cementitious Fireproofing
11. Section 07 8123 – Intumescent Fireproofing
12. Section 31 2319 – Excavation Fill for Structures.

1.02 REFERENCES

A. American Concrete Institute (ACI):

1. ACI 318 – Building Code Requirements for Structural Concrete and Commentary.

B. American Institute of Steel Construction (AISC):

1. AISC 360 – Specification for Structural Steel Buildings.

2. AISC 341 – Seismic Provisions for Structural Steel Buildings.

C. ASTM International (ASTM):

1. ASTM A108 – Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished.

2. ASTM A370 – Standard Test Methods and Definitions for Mechanical Testing of Steel Products.

3. ASTM A706 – Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement.

4. ASTM C31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field.

5. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete.

6. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry.

7. ASTM C1140 - Standard Practice for Preparing and Testing Specimens from Shotcrete Test Panels.

8. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms.

9. ASTM C1604 - Standard Test Method for Obtaining and Testing Drilled Cores of Shotcrete.

10. ASTM E164 - Standard Practice for Contact Ultrasonic Testing of Weldments.

11. ASTM E488 - Standard Test Methods for Strength of Anchors in Concrete Elements.

12. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing.

13. ASTM E605 - Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members.

14. ASTM E1444 - Standard Practice for Magnetic Particle Testing.

15. ASTM F606 - Standard Test Methods for Determining the Mechanical Properties of Externally and Internally Threaded Fasteners, Washers, Direct Tension Indicators, and Rivets.

D. Association of the Wall and Ceiling Industry (AWCI):

1. AWCI Technical Manual 12-B - Standard Practice for the Testing and Inspection of Field Applied Thin Film Intumescent Fire-Resistive Materials; an Annotated Guide.

E. American Welding Society (AWS):

1. AWS D1.1 – Structural Welding Code.

2. AWS D1.4 – Structural Welding Code – Reinforcing Steel.

3. AWS D1.8 – Structural Welding Code – Seismic Supplement.

F. Division of the State Architect (DSA) Interpretation Regulations (IR):

1. DSA IR 17-2 – Nondestructive Testing (N.D.T.) of Welds.

2. DSA IR 17-3 – Structural Welding Inspection.

3. DSA IR 17-8 – Sampling and Testing of High Strength Bolts, Nuts and Washers.

4. DSA IR 17-9 – High Strength Bolting Inspection.

5. DSA IR 17-10 – Sampling, Testing and Tagging of Reinforcing Bars.

6. DSA IR 17-11 – Identification, Sampling and Testing of Threaded Steel Anchor Bolts and Anchor Rods.

7. DSA IR 22-3 – Open Web Steel Joists and Joist Girders.

8. DSA IR 23-4 – Metal-Plate-Connected Wood Trusses.

9. DSA IR-23-8 – Manufactured Wood-Chord-Metal-Web Trusses.

1.03 REGULATORY REQUIREMENTS

A. Laboratories performing testing shall have DSA’s Laboratory Evaluation and Acceptance Program approval prior to providing material testing or special inspection services.

B. Tests of materials and inspections shall be in accordance to Section 4-213 through 4-219 of the California Building Standards Commission’s, California Administrative Code.

C. Required material testing, inspections and special inspections are indicated on the DSA approved DSA-103, Listing of Structural Tests & Special Inspections (T&I List). OAR will provide CONTRACTOR copy of DSA-103.

1.04 TESTS

A. OWNER will contract with a DSA approved testing laboratory to perform the testing indicated on the Contract Documents, including the Tests and Special Inspections (T&I) list.

B. Selection of material to be tested shall be by the Testing Laboratory and not by CONTRACTOR.

C. Any material shipped from the source of supply prior to having satisfactorily passed such testing and inspection, or prior to the receipt of notice from Project Inspector such testing and inspection is not required, shall not be incorporated into the Work.

D. OWNER will select, and directly reimburse, the Testing Laboratory for costs of all DSA required tests and inspections; however, the Testing Laboratory may be reimbursed by CONTRACTOR for such costs as specified or noted in related sections of the Contract Documents.

E. The Testing Laboratory is not authorized to release, revoke, alter, or enlarge requirements of the Contract Documents or approve or accept any portion of the Work.

F. The Testing Laboratory shall not perform any duties of CONTRACTOR.

G. CONTRACTOR shall provide an insulated curing box with the capacity for twenty concrete cylinders and will relocate said box and cylinders as rapidly as required in order to provide for progress of the Work.

1.05 TEST REPORTS

A. Test reports shall include all tests performed, regardless of whether such tests indicate the material is satisfactory or unsatisfactory. Samples taken but not tested shall also be reported. Records of special sampling operations, when and as required, shall also be reported. Reports shall indicate the material (or materials) was sampled and tested in accordance with requirements of CBC, Title 24, Parts 1 and 2, as indicated on the Contract Documents. Test reports shall indicate specified design strength and specifically state whether or not the material (or materials) tested comply with the specified requirements.

1.06 VERIFICATION OF TEST REPORTS

A. Each Testing Laboratory shall submit to the Division of the State Architect, in duplicate, a verified report covering all tests required to be performed by that agency during the progress of the Work. Such report, covering all required tests, shall be furnished prior to Substantial Completion and/or, when construction on the Work is suspended, covering all tests up to the time of Work suspension.

1.07 INSPECTION BY OWNER

A. OWNER, and its representatives, shall have access, for purposes of inspection, at all times to all parts of the Work and to all shops wherein the Work is in preparation. CONTRACTOR shall, at all times, maintain proper facilities and provide safe access for such inspection.

B. OAR shall have the right to reject materials and/or workmanship deemed defective Work and to require correction. Defective workmanship shall be corrected in a satisfactory manner and defective materials shall be removed from the premises and legally disposed of without charge to OWNER. If CONTRACTOR does not correct such defective Work within a reasonable time, fixed by written notice and in accordance with the terms and conditions of the Contract Documents, OWNER may correct such defective Work and proceed in accordance with related Articles of the Contract Documents.

C. CONTRACTOR is responsible for compliance to all applicable local, state, and federal regulations regarding codes, regulations, ordinances, restrictions, and requirements.

1.08 PROJECT INSPECTOR

A. A Project Inspector will be employed by OWNER in accordance with requirements of Title 24 of the California Code of Regulations with their duties specifically defined therein. Additional DSA Special Inspectors may be employed and assigned to the Work by OWNER in accordance with the requirements of the CBC and DSA.

B. Inspection of Work shall not relieve CONTRACTOR from any obligation to fulfill all terms and conditions of the Contract Documents.

C. CONTRACTOR shall be responsible for scheduling times of inspection, tests, sample taking, and similar activities of the Work.

1.09 STRUCTURAL TESTS AND SPECIAL INSPECTIONS

A. Soils:

1. General: Periodic inspection by Geotechnical Engineer for verification of the following construction activities in conformance to CBC Table 1705A.6:

    a. Site has been prepared properly prior to placement of controlled fill and/or excavations for foundations.

    b. Foundation excavations are extended to proper depth and have reached proper material.

    c. Materials below footings are adequate to achieve the design bearing capacity.

2. Compacted Fills: Testing and inspections shall be in conformance to Table 1705A.6:

    a. Geotechnical Engineer will continuously verify the use of proper materials and inspect lift thicknesses, placement, and compaction during placement of fill.

    b. Testing Laboratory under the supervision of the Geotechnical Engineer will:

        1) Perform qualification testing of fill materials.

        2) Test the compaction of fill.

3. Retaining Walls:

    a. Continuous inspections by Geotechnical Engineer:

        1) Placement, compaction and inspection of soil per CBC Section 1705A.6.1 for fills supporting foundations.

        2) Segmental retaining walls; inspect placement of units, dowels, connectors, etc.

    b. Concrete Retaining Walls: Provide tests and inspections as indicated on paragraphs below for concrete.

    c. Masonry Retaining Walls: Provide tests and inspections as indicated on paragraphs below for masonry.

B. Concrete:

1. Cast in Place Concrete: Inspection and testing in conformance to CBC Table 1705A.3:

a. Inspection of reinforcement, including prestressing tendons and verification of placement, per ACI 318, sections 25.2, 25.2, 25.5.1 through 26.5.3.

b. Reinforcing bar welding: Inspect per AWS D1.4, ACI 318 26.5.4.

1) Verification of weldability of reinforcing bars other than ASTM A706.

2) Inspect single-pass fillet welds, maximum 5/16".

3) Inspect all other welds.

c. Inspect anchors cast in concrete per ACI 318, section 17.8.2.

d. Inspect anchors post-installed in hardened concrete members:

1) Continuous inspection of adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads, per ACI 318, section 17.8.2.4.

2) Mechanical anchors and adhesive anchors, not defined in previous paragraph, per ACI 318, section 17.8.2.

e. Design Mix:

1) Verify use of required mix, per ACI 318, chapter 19 and sections 26.4.3 and 26.4.4.

2) Batch Plant Inspection: The quality and quantity of materials used in transit-mixed concrete and in batched aggregates shall be continuously inspected as required by CBC section 1705A.3.2. If approved by DSA, batch plant inspection may be reduced to periodic if plant complies with CBC section 1705A3.3.1, item 1, and requires first batch inspection, weightmaster, and batch tickets.

f. Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete, per ASTM C172, ASTM C31, ACI 318, sections 26.4.5 and 26.12.

g. Inspect concrete and shotcrete placement for proper application techniques, per ACI 318, section 26.4.5.

h. Verify maintenance of specified curing temperature and techniques per ACI 318 sections 26.4.7 through 26.4.9 and CBC section 1908.9.

i. Inspect prestressed concrete for:

1) Application of prestressing forces, per ACI 318 section 26.9.2.1

2) Grouting of bonded prestressing tendons per ACI 318 section 26.9.2.3.

j. Inspection of erection of precast concrete members per ACI 318 chapter 26.8.

k. Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs per ACI 318 section 26.10.1.b.

l. Sampling and testing of reinforcing steel per ASTM A370, DSA IR 17-10 and CBC section 1910A.2. CONTRACTOR shall submit mill certificate indicating compliance with requirements for reinforcement, anchors, ties, and metal accessories.

2. Post-installed Anchors:

a. Special Inspector will inspect installation of post-installed anchors in hardened concrete members as required by CBC table 1705A.3, item 4.

1) Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads, per ACI 318, section 17.8.2.4.

2) Mechanical anchors and adhesive anchors not defined above, per ACI 318, section 17.8.2.

b. Testing Laboratory will test post-installed anchors in conformance to CBC section 1905A and ASTM E488.

C. Structural Masonry:

1. Material Verification and Testing:

a. Sampling and testing of reinforcing steel per ASTM A370, DSA IR 17-10 and CBC section 1910A.2. CONTRACTOR shall submit mill certificate indicating compliance with requirements for reinforcement, anchors, ties, and metal accessories.

b. Submit manufacturer’s certificate of compliance for masonry units, mortar and grout materials. Test masonry units, mortar and grout (unit strength method).

c. Testing Laboratory will test masonry prisms in conformance with ASTM C1314.

d. Special Inspector will verify proportions of site-prepared, premixed or preblended mortar and grout, per ASTM C780.

e. Testing Laboratory will test core-drilled samples in conformance with CBC 2114.6.2.

2. Inspection:

a. Special Inspector will continuously inspect preparation of prisms per ASTM C1314.

b. Special inspector will verify size, location and condition of dowels and construction supporting masonry.

c. Special inspector will verify size specified size, grade and type of reinforcement.

d. Special inspector will verify weldability of reinforcing bars other than ASTM A706. Special inspector to inspect reinforcing bar welding: Inspection to be in conformance with AWS D1.4, ACI 318 26.5.4.

e. Special inspector will inspect placement of reinforcement, connectors, masonry units and construction of mortar joints.

f. Special inspector will verify protection of masonry during cold weather temperature (temperature below 40^{o} F) or hot weather (temperature above 90^{o} F).

g. Special inspector will inspect type, size and location of anchors and all other items to be embedded in masonry, including other details of anchorage of masonry to structural members, frames and other construction.

h. Special inspector will inspect grout space prior to grouting and placement of grout.

3. Post-installed Anchors in Masonry:

a. Special inspector will inspect anchors cast in concrete per ACI 318, section 17.8.2.

b. Special inspector will inspect anchors post-installed in hardened concrete members:

1) Continuous inspection of adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads, per ACI 318, section 17.8.2.4.

2) Mechanical anchors and adhesive anchors, not defined in previous paragraph, per ACI 318, section 17.8.2.

c. Testing Laboratory will test post-installed anchors in conformance to CBC section 1905A and ASTM E488.

D. Structural Steel:

1. Special inspector will verify that all materials are properly marked in conformance with AISC 360, Section 3.3 and applicable ASTM standards.

a. Mill certificates indicating material properties that comply with requirements.

b. Materials, sizes, types and grades complying with requirements.

2. Testing Laboratory will test unidentified materials in conformance with ASTM A370.

3. Special inspector will examine seam welds of HSS shapes in conformance with DSA IR-17-3.

4. Special inspections and non-destructive testing of structural steel elements shall be in conformance to CBC section 1705A.2.1.

E. High Strength Bolts:

1. Special inspector will verify identification markings and manufacturer's certificates of compliance conform to ASTM standards specified in the Contract Documents, per DSA IR 17-9.

2. Testing Laboratory will test high-strength bolts, nuts and washers in conformance with ASTM F606, ASTM A370 and DSA IR 17-8.

3. Special inspector will inspect bearing-type ("snug tight") bolt connections in conformance with AISC 360, section M2.5 and DSA IR 17-9.

4. Special inspector will inspect slip-critical bolt connections in conformance with AISC 360, section M2.5.

F. Welding:

1. Verification of Materials, Equipment and Welders:

a. Special inspector will verify weld filler material identification markings per AWS designation listed on the Contract Documents and the WPS.

b. Special inspector will verify material manufacturer's certificate of compliance.

c. Special inspector will verify WPS, welder qualifications and equipment in conformance to DSA IR 17-3.

2. Shop Welding: Special inspector will inspect the following, per CBC 1705A.2.1, AISC 360 (and AISC 341, as applicable) and DSA IR 17-3:

a. Groove, multi-pass fillet welds larger than 5/16", plug and slot welds.

b. Single-pass fillet welds equal or less than 5/16".

c. Inspect welding of stairs and railing systems.

d. Verification of reinforcing steel weldability.

e. Welding of reinforcing steel, per AWS D1.4.

3. Field Welding: Special inspector will inspect the following, per CBC 1705A.2.1, AISC 360 (and AISC 341, as applicable) and DSA IR 17-3:

a. Groove, multi-pass fillet welds larger than 5/16", plug and slot welds.

b. Single-pass fillet welds equal or less than 5/16".

c. End welded studs (ASTM A108) installation, including bend test.

d. Floor and roof deck welds.

e. Welding of structural cold-formed steel.

f. Welding of stairs and railing systems.

g. Verification of reinforcing steel weldability.

h. Inspect welding of reinforcing steel.

4. Non-Destructive Testing: Testing Laboratory will test perform ultrasonic and magnetic particle testing in conformance to AISC 360 section N5.5, AISC 341 appendix Q5.2, AWS D1.1, AWS D1.8, ASTM E543, ASTM E1444, ASTM E164 and DSA IR 17-2.

G. Steel Joists and Trusses: Continuous inspection, special inspector will verify size, type and grade for all chord and web members as well as connectors and weld filler material, verify joist profile, dimensions and chamber (if applicable); verify all weld locations, lengths and profiles; mark or tag each joist, in conformance with CBC section 2207.1 and DSA IR 22-3.

H. Fire-Proofing:

1. Spray Applied:

a. Project inspector will examine structural steel surface conditions, inspect application, take samples, measure thickness, and verify compliance of all aspects of application with Construction Documents, in conformance with CBC sections and ASTM E.605 and ASTM E 736.

b. Testing Laboratory will test bond strength in conformance with ASTM E736, per CBC section 1705A.15.6.

c. Testing Laboratory will test density in accordance with ASTM E605, per CBC section 1705A.15.5.

2. Intumescent Fire-Resistant Coatings: Special inspector will inspect and test in accordance with AWCI 12-B, per CBC section 1705A.16.

I. Anchor Bolts, Anchor Rods and Other Steel:

1. Testing Laboratory will sample and test not readily identifiable anchor bolts and anchor rods in accordance with DSA IR 17-11.

2. Testing Laboratory will sample and test not readily identifiable threaded rod not used for foundation anchorage per procedures noted in DSA IR 17-11.

J. Prefabricated Wood Structural Elements:

1. Special inspector will continuously inspect fabrication of glued-laminated timber in accordance with CBC section 1704A2.5.

2. Special inspector will continuously inspect fabrication of manufactured open-web trusses in accordance with CBC 1704A2.5 and DSA IR 23-4.

3. Special inspector will continuously inspect fabrication of manufactured metal plate connected trusses in accordance with CBC 1704A2.5 and DSA IR 23-8.

PART 2 – PRODUCTS (Not used).

PART 3 – EXECUTION (Not used).

END OF SECTION

SECTION 01 4524

ENVIRONMENTAL IMPORT/EXPORT MATERIALS TESTING

PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies the requirements for the sampling, testing, transportation and certification of imported fill materials or exported fill materials from school sites.

B. This Section defines:

1. CONTRACTOR requirements for use of existing, imported or generated materials on school sites.
2. CONTRACTOR requirements for stockpiling materials for use on schools sites.
3. CONTRACTOR requirements for exporting materials from a school site including transportation.
4. Testing requirements for all materials imported, exported, stockpiled or generated for use on a school site.
5. CONTRACTOR testing and reporting requirements.
6. CONTRACTOR submittal requirements.

C. Related Requirements:

1. Division 1: General Requirements.
2. Section 01 1100: Summary of Work.
3. Section 01 3113: Project Coordination.
4. Section 01 3213: Construction Schedule.
5. Section 01 3300: Submittal Procedures.
6. Section 01 7700: Contract Closeout.
7. Section 31 2200: Grading.
8. Section 31 2313: Excavation and Fill.
9. Section 31 2316: Excavation and Fill. (Pavement)
10. Section 31 2319: Excavation and Fill (Structures).
11. Section 31 2323: Excavation and Fill (Utilities).
12. Section 31 2333: Excavation and Fill for Synthetic Play Fields.
13. Section 32 1100: Base Course.

1.02 OBJECTIVES

A. Ensure that fill materials imported to school sites are safe for students, staff and visitors.

B. Ensure that materials exported from school sites for use at school and non-school sites or offsite disposal/recycling are adequately characterized for lawful disposition.

C. Ensure that representative data be collected so that analytical determinations can be made in regard to the first two objectives.

D. Require CONTRACTOR to contract with and pay for the services of a licensed environmental professional (licensed State of California Professional Engineer [PE Civil] or Professional Geologist [PG]) familiar with environmental site assessment and waste classification and disposal requirements to perform such services.

E. Require CONTRACTOR to contract with and pay for an independent, approved California Department of Health Services certified testing laboratory to perform analytical testing of imported, exported and site generated fill materials.

F. Require CONTRACTOR to pay all fees required by authorities having jurisdiction over area.

G. Require CONTRACTOR to post bonds required by authorities having jurisdiction over area.

1.03 DEFINITIONS

A. Definitions not furnished in text of this section:

1. CEQA: California Environmental Quality Act.

2. EIR: Environmental Impact Report.

3. Environmental Health Supervisor, Environmental Compliance Group: Individual at OEHS, who ensures OWNER compliance with all pertinent regulations, ordinances, codes, and/or policies.

4. OEHS: OWNER's Office of Environmental Health and Safety.

5. Licensed Environmental Professional: Person licensed in the State of California and with sufficient knowledge and experience to competently perform environmentally-related work, including (but necessarily limited to) environmental site investigations, remedial projects, and other tasks involving the collection of soil, soil vapor, and groundwater samples; the selection of analytical methods for said samples; the interpretation of analytical data; the preparation of work plans, reports, and other relevant documents; and the supervision and/or oversight of remedial contractors. For the purposes of this Section, a licensed environmental professional shall include a Professional Geologist or "P.G." or a Civil Professional Engineer or "P.E."

6. ug/kg: micrograms/kilogram.

7. mg/kg: milligrams/kilogram.

8. NA: Not Applicable.

9. RCRA: federal Resource Conservation and Recovery Act.

10. Soil Certification/Sample Data Report: Report documenting location, volume, sampling procedures, analytical methods, chemical test results, and recommendations for either disposing or re-using stockpiled soil excavated from OWNER sites or proposed for import to same. Preparation of report is to follow the procedures given in Article 1.04 of this Section.

11. Soil Sampling Plan (SSP): As described in Article 1.04 of this Section, a document providing sufficient guidance with which to adequately characterize soil proposed for import to, or export from, an OWNER's school Site. Guidance in this document is to be in accordance with the procedures described in Article1.04 of this Section.

12. STLC: Soluble Threshold Limit Concentrations as defined in Tables II and III, Chapter 11, Article 3, § 66261.24-1 of Title 22 of the California Code of Regulations (CCR).

13. TCLP: Toxicity Characteristic Leaching Procedure, test Method 1311, documented in Title 40, Part 261, Subpart C, § 261.24 of the Code of Federal Regulations (CFR).

14. TPH: Total Petroleum Hydrocarbons.

15. TTLC: Total Threshold Limit Concentrations, as defined in Tables II and III, Chapter 11, Article 3, § 66261.24-1 of Title 22 of the CCR.

16. USEPA or EPA: United States Environmental Protection Agency.

17. VOCs: Volatile Organic Compounds.

18. WET: Waste Extraction Test, as defined in Appendix II-1, Chapter 11 of Title 22 of the CCR.

1.04 SUBMITTALS

A. CONTRACTOR shall submit to OAR for transmittal to the OEHS:

1. A qualifications statement for CONTRACTOR's independent California certified testing laboratory and required licensed environmental professional (California Professional Civil Engineer (PE) or Professional Geologist (PG) prior to the start of Work. CONTRACTOR's licensed environmental professional must possess recent demonstrated environmental experience in soil sampling and waste classification.

2. A draft import/export Soil Sampling Plan (SSP) prepared by CONTRACTOR's licensed environmental professional for review and concurrence by OEHS. The objective of the SSP is to obtain representative sample data. The Draft SSP or equivalent document acceptable to OEHS must be submitted at least 72 hours prior to all proposed import/export sampling activities. The consultant's proposal (with or without fees) is acceptable in lieu of a SSP.

   a. At a minimum, the Draft SSP shall include a site map which shows the location of the proposed import/export soils and the location and number of the proposed stockpile samples. The draft SSP shall also contain information pertaining to the total volume of the stockpile proposed for sampling and the rationale in support of the proposed sampling

approach. Existing environmental documentation specific to the import/export site shall be utilized by the CONTRACTOR's environmental professional to support the proposed sampling approach and analytical method suite. It is the responsibility of the CONTRACTOR to request this information in advance from the OAR if they do not already have access to a copy at the jobsite.

b. Lacking this information or rationale, samples shall be analyzed for all analytical methods described in paragraph 3.02 E. Guidance for the minimum number of samples per total volume of soil to be excavated is provided in Table 1. Supplemental samples may be required by OEHS if pothole sampling is utilized. In addition, the draft SSP shall contain all necessary contact information for the import/export site and a proposed schedule for the sampling activities.

c. OEHS will either approve the document or request that revisions be made. This process shall continue until OEHS approves the draft SSP.

3. Draft Soil Certification/Sample Data Report:

a. A draft Soil Certification/Sample Data Report prepared by CONTRACTOR's licensed environmental professional for review and concurrence. At a minimum the draft Soil Certification/Sample Data Report shall contain:

1) A site map showing the location of the in situ sampling locations or the stockpile(s) and stockpile sample locations.

2) A detailed discussion and evaluation of the laboratory results.

3) A summary of findings and recommendations that provide a determination on the waste classification of the subject materials, based on the representative sample results.

4) Recommendations for additional step-out samples, if any.

5) Chain-of-custody forms and all laboratory data with respective QA/QC sheets.

b. CONTRACTOR must allow OEHS a minimum of 72 hours to review the draft Soil Certification/Sample Data Report. OEHS will either approve the document or request that revisions be made. This shall continue until OEHS approves the draft Soil Certification/Sampling Data Report.

c. Upon revision of the draft Soil Certification/Sample Data Report by the CONTRACTOR'S licensed environmental professional and acceptance by OEHS, the final report, signed and stamped by the licensed professional, shall be submitted to the OAR for distribution to OEHS and the project file. If the soil is to be exported to or imported from, an OWNER school site, if it satisfied the requirements of paragraphs 3.02.F and 3.02.G of this Section, then a PG or civil PE must sign and stamp the final report.

1) The Environmental Health Supervisor, Environmental Compliance Group will confirm that the proposed waste

classification for the proposed import/export material is appropriate. For materials designated unacceptable for export except to a licensed facility, or for those materials sent electively by CONTRACTOR to a licensed facility, the Environmental Health Supervisor, Environmental Compliance Group will provide information on the necessary waste manifest documentation.

2) If an OAR/Complex Project Manager (CPM) would like OEHS to conduct the soil sampling and/or soil removal, the OAR/CPM should submit a Project Referral Form with completed COLIN funding line information to OEHS at least 3 weeks prior to when the work needs to be conducted. Submit the Project Referral Form to: environmental_review@lausd-oehs.org

4. Written documentation, e-mail is acceptable, verifying that all export soil data for any soils exported for use at a non-school site, including the final Certification Report prepared by CONTRACTOR's licensed environmental professional, were provided to the proposed recipient prior to export and delivery.

5. Prior to import/export, written documentation in the form of a letter sent by the transporter to the CONTRACTOR, who must in turn submit it to OEHS, to verify the following:

   a. The hauling contract for each load imported to, or exported from, the school site specifies the use of "clean" trucks and/or trailer beds, in which the material will be carried;

   b. The actual trucks and/or trailer beds utilized for import/export activities will be clear of visible contamination or deleterious materials;

   c. The trucks will go directly from the source location to the recipient location with no detours or stops at other locations; and

   d. Short loads will not be augmented by other materials that were not tested as part of the final SSP.

   e. All import/export transportation activities shall be conducted in accordance with all applicable local, state and federal rules and regulations.

6. Certification, in the form of haul tickets or completed waste manifests, documenting the volume and recipient of all import/export materials and activities. This documentation shall be coordinated through the OEHS Environmental Health Supervisor, Environmental Compliance Group.

   a. For approved import/export to unregulated facilities (landfill) or non-school sites, haul tickets may be utilized, but shall contain the following minimum information:

      1) Date(s) of haul activity.

      2) Address of source site.

      3) Address of recipient.

4) Load volume.

5) Time of departure from source.

6) Time of arrival at recipient site.

7) Signature of recipient or recipient's agent.

8) It is the CONTRACTOR's responsibility to confirm that no other trips or short-load augmentation occurred and submit documentation to the OAR and OEHS.

b. For export to regulated facilities (landfills, recyclers, etc.), the appropriate waste manifest as determined by the OEHS Environmental Health Supervisor, Environmental Compliance Group in paragraph 1.04.A.3 must be completed and a copy of the executed manifest, signed by the receiving site, must be provided to the OAR. The waste manifest copy, signed by the receiving facility and based on the manifest address, will be sent directly to OEHS and the OEHS Environmental Health Supervisor, Environmental Compliance Group.

1.05 APPROVALS

A. No import or export of earth or geotechnical grading or filling materials can occur at OWNER sites without prior approval by OEHS.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Imported:

1. Soils: Soils proposed for import shall be tested pursuant to the requirements of this Section (01 4524), unless a variance has been requested by CONTRACTOR and approved by OEHS prior to the import of the subject materials.

2. Gravels: Clean gravel, consisting of native rock from a commercial source, may be granted a variance from the testing requirements of this Section provided a request for variance is submitted by CONTRACTOR for review and approval at least 72 hours prior to import. CONTRACTOR shall provide written documentation, which identifies the source, volume and proposed transport date(s) of the material for review.

a. Furthermore, a letter signed and stamped by either a Civil PE or PG and originating from the commercial source must state the following:

1) The quarry does not mine ultramafic (i.e. natural asbestos containing) materials.

2) The gravel is produced from virgin aggregate materials and does not contain any contaminated or reclaimed or recycled materials.

b. Additionally, a letter from the material transporter and signed by the same must state the following:

1) Haul truck and/or trailer beds transferring the material are clear of visible contamination and deleterious materials.

2) Haul trucks will go directly from the quarry source to the site with no trips or augmentation of short loads with other materials.

c. The request for variance requires approval by OEHS prior to CONTRACTOR importing the materials.

3. Sands: Clean sand from a commercial source may be granted a variance from the testing requirements of this Section provided a request for variance is submitted by CONTRACTOR for review and approval at least 72 hours prior to import. CONTRACTOR shall provide written documentation, which identifies the source, volume and proposed transport date of the material for review.

a. Furthermore, a letter signed and stamped by either a Civil PE or PG and originating from the commercial source must state the following:

1) The source does not mine ultramafic (i.e. natural asbestos containing) materials.

2) The sand is produced from virgin materials and does not contain any contaminated or reclaimed or recycled materials.

b. Additionally, a letter from the material transporter and signed by the same must state the following:

1) Haul truck and/or trailer beds transferring the material are clear of visible contamination or deleterious materials.

2) Haul trucks will go directly from the commercial source to the site with no trips or augmentation of short loads with other materials.

c. The request for variance requires approval by OEHS prior to CONTRACTOR importing the materials.

4. Miscellaneous Material: No miscellaneous material containing crushed concrete, asphalt, construction debris, recycled, or other potential deleterious materials may be utilized or imported to an OWNER project site for use as fill or grading material.

B. Exported/Site Generated:

1. Soils: Soils proposed for export shall be tested pursuant to the requirements of the subject section, unless a variance has been requested by CONTRACTOR and approved by OEHS prior to the import of the subject materials. Once soils or other materials for export have been tested, they cannot be disturbed or reused for any purpose without prior approval by OEHS.

2. Gravels/Sands: Gravels, sands, or other natural rock materials shall not be exported from an OWNER project site without prior testing by CONTRACTOR pursuant to this Section (01 4524) and/or approval by OEHS. An exception to

this provision is gravel adhering to concrete or asphalt pavement. In this instance and in consultation with OEHS, which shall make the final decision, CONTRACTOR may dispose of said materials and construction debris without sampling and analytical testing required under this Section.

3. Miscellaneous Material. No miscellaneous material or other similar materials shall be exported from an OWNER project site without prior testing by CONTRACTOR pursuant to this Section (01 4524) and/or approval by OEHS. No crushed miscellaneous material containing concrete, asphalt, construction debris, or other potential deleterious materials that is generated onsite may be used as fill or grading material of any sort at an OWNER project site. Crushed asphalt shall be segregated and stockpiled separately. The onsite use of crushing equipment is not permitted.

PART 3 - EXECUTION

3.01 GRADING/EXCAVATION

A. If the CONTRACTOR encounters an area with discolored, stained, and/or odorous soils or any other evidence of contamination during excavation/grading work, CONTRACTOR must immediately notify the OAR, cease work in the aforementioned area, and secure the area with fencing, tape, stakes or other suitable means to prevent entry by personnel or equipment. In turn, the OAR will immediately notify OEHS, which will initiate a construction response to address the contamination, in accordance with pertinent regulatory requirements.

3.02 SAMPLING AND TESTING

A. CONTRACTOR shall contract with, and pay for, the services of a licensed environmental professional, licensed State of California Professional Civil Engineer (PE) or Professional Geologist (PG), to oversee or perform sampling of Materials that are subject to this Section.

B. CONTRACTOR shall contract with, and pay for, an independent, approved California Department of Health Services certified testing laboratory to perform testing of imported, exported and site generated fill materials.

C. All fill/grading material, unless otherwise specified in writing by OEHS, whether imported or exported, must be tested at the site of origin. Import/export testing and certification process shall include the steps listed below. OWNER retains the right to refuse any fill material proposed for use at a school site.

1. Stockpile all materials for sampling (standard stockpile or backhoe pothole stockpile). Crushed fill materials generated by CONTRACTOR at a school site must be segregated by material.

2. Submit draft SSP for review and concurrence by OEHS. SSP must include figures identifying the site location, the in situ sampling boundary or stockpile location, the sampling locations, and a brief site history including the type of remedial activity that occurred at the source site, if any.

3. Collect and analyze samples (see Table 1 for number of samples per volume) per the SSP. Samples must include both discrete samples and composite samples.

    a. Discrete samples correspond to a single sample depth at a single sampling/boring location. Discrete samples are to be used for producing composite samples, as described in subparagraph b. below, and for analysis, in accordance with paragraph 3.02.E.1, which applies only to VOCs and TPH-g. For analysis of these compounds, the licensed professional shall collect one discrete sample from each sampling location and samples should be collected at different depths between these locations, so that all stockpile depths are equally represented.

    b. Composite samples correspond to three sample depths from a single sampling location (this includes in situ samples). Each composite sample shall consist of three discrete samples collected near the top, middle, and bottom of the stockpile or in situ boring location at each sampling location. The licensed environmental professional shall then have the analytical laboratory combine the discrete samples into a single composite sample. The laboratory should be directed to retain a sufficient quantity of each discrete sample for further analysis, as necessary. The composite sample shall be analyzed, in accordance with paragraph 3.02.E.2, which describes required testing other than for VOCs and TPH-g. Once materials for export have been stockpiled and tested, they may not be used onsite for any purpose without prior approval by OEHS.

        1) Composite samples with analyte concentrations approximating or exceeding acceptable screening criteria, as specified below in paragraphs F through H, may be attributed to constituents within one or more discrete samples. Analyzing the discretes comprising the composite may reveal the discrete samples with elevated analyte concentrations and, thus, better isolate (and minimize) the volume of soils within the stockpile requiring removal and licensed disposal.

4. Submit draft Soil Certification/Sample Data Report for review and concurrence by OEHS.

5. Submit final Soil Certification/Sample Data Report to the OEHS. All certified material not utilized or exported within a period of 90 days will be subject to retesting unless a variance is requested by CONTRACTOR and is approved by OEHS prior to use or import/export of the subject materials.

6. Submit required pre import/export documentation/record to the OAR and to OEHS, e-mail is acceptable.

7. Submit post import/export certifications to the OAR and OEHS, e-mail is acceptable.

8. In addition to the preceding, requirements, and as necessary or as specified by OEHS, certifications and submittals as indicated in previous articles of PART 3 or in the remainder of this Section may be required.

D. Import/export fill materials shall be samples in situ or stockpiled by CONTRACTOR (or at export site) and are deemed acceptable for import/export or reuse only when it is demonstrated to the satisfaction of OEHS that the subject materials meet the requirements of this Section.

E. As described in paragraph 1.04.A.2.b, lacking site-specific data or sample rationale to support a more focused analytical approach; the CONTRACTOR shall analyze all samples for the following substances according to the methods indicated below. Table 3 is a waste classification flowchart for use by CONTRACTOR's licensed environmental professional. In all cases, detection levels and quality assurance/quality control methods shall be in accordance with standard method reporting limits, best laboratory practices and the following USEPA (EPA) methods for discrete and composite samples:

1. Discrete samples shall be analyzed for Volatile Organic Compounds (VOCs), utilizing EPA Method 8260B/5035 and for Total Petroleum Hydrocarbons (TPH) gasoline (TPH-g), utilizing EPA Method 8015M [with EPA Method 5035 extraction using either volatile organic analysis (VOA) kits, EnCores®, or an equivalent soil collection device].

2. Composite samples shall be analyzed for the following:

   a. TPH, utilizing EPA Method 8015M, for full carbon-chain speciation (including diesel, oil, and other long-chain hydrocarbons).

   b. Polychlorinated biphenyls, utilizing EPA Method 8082.

   c. Semi-Volatile Compounds (SVOCs), utilizing EPA Method 8270C.

   d. Organochlorine Pesticides (OCPs), utilizing EPA Method 8081A.

   e. Organophosphorous Pesticides (OPPs), utilizing EPA Method 8141A.

   f. Chlorinated Herbicides, utilizing EPA Method 8151A.

   g. California Code of Regulations Title 22 (CAM 17) Metals, utilizing EPA Method 6010B/7470A.

   h. Hexavalent Chromium, utilizing EPA Method 7199.

   i. Arsenic/Thallium, utilizing EPA Method 6020.

3. For EPA Method 8270C, a Method Detection Limit (MDL) of 250 ug/kg in addition to the Practical Quantitation Limit (PQL) or equivalent. This requirement is due to a recent DTSC directive requiring MDLs or PQLs to be sufficiently low to detect Carcinogenic Polycyclic Aromatic Hydrocarbons (CPAHs) in the composite sample, even if these compounds exceed actionable concentrations (900 ug/kg) in only one of the three discrete samples comprising the composite.

4. The certified laboratory may also need to analyze the composite samples for polycyclic aromatic hydrocarbons (PAHs), a component of semi-volatile compounds, if the data evaluation performed in accordance with paragraph 3.02.G of this Section (01 4524) does not meet DTSC requirements. The analytical methods to be used for this purpose are EPA Method 8270 SIM, if the

samples contain relatively high concentrations of hydrocarbons, or EPA Method 8310, if the samples contain low concentrations of hydrocarbons.

F. Import/export fill material may be deemed defective for use by OEHS at a school site if any of the following results are obtained:

1. TPH are present at concentrations exceeding 100 milligrams per kilogram (mg/kg) for gasoline and/or 1,000 mg/kg for oil/diesel and long-chain hydrocarbons.

2. Solvents and other VOCs are present at concentrations exceeding the laboratory reporting limit. Detections between the laboratory reporting limit and the practical quantitation limit (J-flags) should not be reported.

3. PCBs are present at concentrations exceeding the laboratory reporting limit. Detections between the laboratory reporting limit and the practical quantitation limit (J-flags) should not be reported.

4. SVOCs are present at concentrations exceeding the laboratory reporting limit. Detections between the laboratory reporting limit and the practical quantitation limit (J-flags) should not be reported.

5. OCPs are present at concentrations exceeding the laboratory reporting limit. Detections between the laboratory reporting limit and the practical quantitation limit (J-flags) should not be reported.

6. OPPs are present at concentrations exceeding the laboratory reporting limit. Detections between the laboratory reporting limit and the practical quantitation limit (J-flags) should not be reported.

7. Chlorinated herbicides are present at concentrations exceeding the laboratory reporting limit. Detections between the laboratory reporting limit and the practical quantitation limit (J-flags) should not be reported.

8. California Code of Regulations Title 22 (CAM 17) Metals at concentrations exceeding site-specific background. Detections between the laboratory reporting limit and the practical quantitation limit (J-flags) should not be reported.

9. Hexavalent chromium is present at concentrations exceeding 300 ug/kg.

G. As mentioned in paragraph 3.02.E, evaluate concentrations of CPAHs, a subset of SVOCs, in the import/export material by conducting the analyses set forth below.

1. Comparing CPAH concentrations with the benzo(a)pyrene [b(a)p] equivalent concentration of 900 ug/kg, the background concentration for CPAHs defined in "A Methodology For Using Background PAHs To Support Remediation Decisions," prepared by the Environ Corporation for the Southern California Gas Company and Southern California Edison, January 24, 2002 (referred to as "document"). In this document, CPAHs are defined in Table 2, and Potency Equivalency Factors (PEFs) for each CPAH are listed in Table 3. Using the correct PEF for each CPAH, the licensed environmental professional shall convert the concentration of each CPAH into its b(a)p equivalent concentration. The summation of these b(a)p equivalents for each CPAH must not exceed 900 ug/kg. If CPAHs do not exceed the laboratory reporting limit, then the licensed

environmental professional must perform the procedure described above, using the PEF and the laboratory reporting limit (LRL) for each CPAH. The result will be the LRL for each CPAH converted to b(a)p equivalent concentrations. The summation of these b(a)p equivalent concentrations (representing the LRL for each CPAH) must not exceed 900 ug/kg.

H. Evaluate concentrations of metals in import fill by conducting the analysis set forth below.

1. Compare the maximum detected metal concentrations in import/export material samples to either DTSC or US EPA regulatory action levels for either residential or school sites, whichever is more conservative. If any metal concentration exceeds its listed regulatory action level, the fill material fails and shall be deemed defective and unacceptable for use.

2. In addition to paragraph 3.02.G.1, import/export fill shall be deemed defective and unacceptable for use if any of the following results are obtained:

a. Arsenic concentrations greater than or equal to12.0 mg/kg.

b. Lead concentration greater than or equal to 80 mg/kg.

c. Import/Export materials at school sites with total lead concentrations greater than or equal to 50 mg/kg shall be analyzed for leachability (STLC) prior to export. Materials exceeding STLC limits identified in Table 2 are deemed defective and unacceptable for use at school sites.

d. Import/Export materials at school sites with total chromium concentrations greater than or equal to 100 mg/kg shall be tested for hexavalent chromium.

I. All export/import material shall be characterized, handled, and documented in accordance with applicable US EPA and State of California hazardous waste and hazardous materials regulations (See Table 2). For the purpose of this specification, “contaminated” shall mean any soil or geotechnical material with constituent concentrations, which would require disposal at a regulated facility (i.e., California hazardous waste or RCRA hazardous waste). Refer to Article 3.04 COSTS which outline the disposal fee requirements for excavated contaminated soil. OAR must be notified at least 72 hours prior to the disposal of hazardous waste or hazardous material. No material disposal or reuse can take place without prior written approval of OEHS.

J. Specification test results and OEHS approvals are valid for a period of 90 days from the date of the subject testing unless a variance is requested by CONTRACTOR and approved by OEHS. Previously approved materials shall not be utilized or disposed offsite after the 90 day limit without prior review and approval by OEHS.

K. Requests for variances to this Specification Section shall be submitted in writing to OEHS a minimum of two weeks in advance of need for review and approval. The request for a variance from soil sampling for export must state the following: “The soil for export is less than 10 cubic yards, has no visible staining, is not odorous, and appears native”. A photograph of the stockpiled soil must be included in the variance request. The photograph must have a representative scale within it in order for OEHS to determine the volume of soil to be exported. The request for variance must provide all available testing data, and a rationale to support the request. OEHS will review the request for variance and will provide its preliminary determination within 72 hours.

Once OEHS approves the variance from sampling, the soil stockpile may be removed as “construction related debris”. Certain requests may require final approval by the DTSC.

3.03 TRANSPORTATION

A. Details of the samples and testing must be submitted to and approved by OEHS Environmental Compliance Manager before the materials from which the samples were collected undergo transportation.

B. Haul Routes and Regulations/Restrictions: CONTRACTOR must comply with requirements of project environmental disclosure documents (i.e., CEQA EIR) and authorities having jurisdiction over the project area and the proposed activities (e.g. Regional Water Quality Control Board, DTSC, etc.).

3.04 COSTS

A. CONTRACTOR shall pay all fees required by authorities having jurisdiction over area.

B. Contractor shall pay all fees for disposal and/or processing of impacted and/or hazardous fill materials at a regulated facility.

C. CONTRACTOR shall post and pay for all bonds required by authorities having jurisdiction over area.

TABLE 1: MINIMUM SAMPLING FREQUENCY	
Volume (Cubic Yards)*	Sampling Frequency*
0 - 500	1 per 100 CY
501 - 1,000	1 per 250 CY
1,001 - 5,000	1 per 250 CY for first 1000 CY 1 per 500 CY thereafter
> 5,000	12 samples for first 5000 CY 1 per 1000 CY thereafter

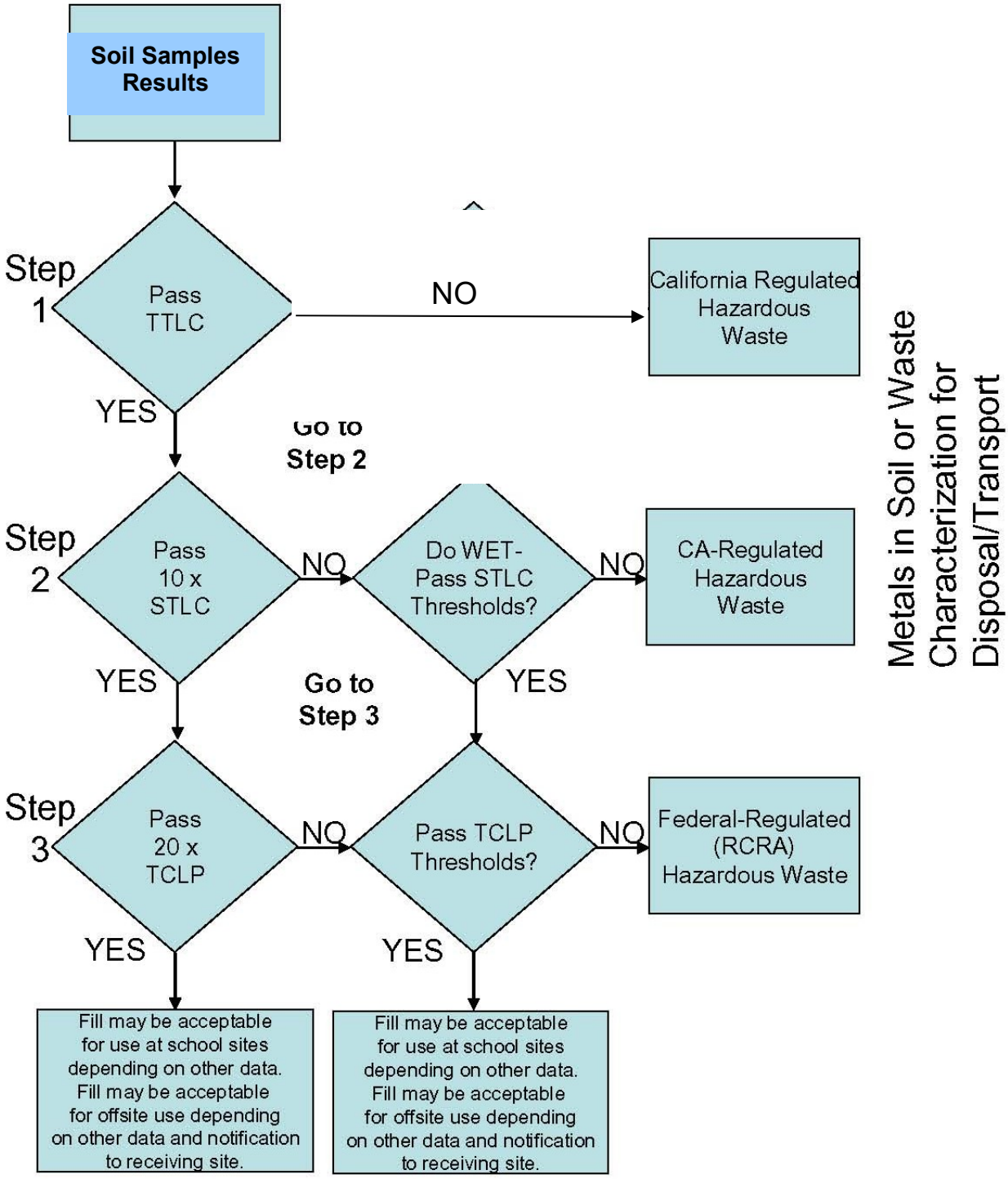
All samples are to be collected, analyzed and accepted before import/export: materials going to licensed facilities must meet sampling criteria from that facility. The rationale for sample approach should be discussed in the draft SSP.

Pothole stockpile sampling may require discrete depth supplemental sampling in order to achieve representative results. The rationale for sample approach should be discussed in the draft SSP. In-situ (in place) sampling by mechanical boring or a hand auger method is acceptable if no space exists to store the soil stockpile at the site with prior OEHS approval.

*Discuss alternative screening & sampling approaches with OEHS representative for project.

Chemicals of Potential Concern	TABLE 2 WASTE CHARACTERIZATION				
	Hazardous Waste if Exceed Criteria - TTLC Level* (mg/kg)	Additional WET Leaching Tests if Exceed Hazardous Waste Criteria - 10 times STLC Level** (mg/kg)	California - Regulated Hazardous Waste - Soluble Threshold Limit Concentration - STLC Level (mg/l)	Additional TCLP Leaching Tests if Exceed Hazardous Waste Criteria - 20 times TCLP Level** (mg/kg)	Federally-Regulated (RCRA) Hazardous Waste - Toxicity Characteristic Leaching Procedure - TCLP Level (mg/l)
CAM 17 Metals					
Antimony	500	150	15	NA	NA
Arsenic	500	50	5	100	5
Barium	10,000	1,000	100	2,000	100
Beryllium	75	7.5	0.75	NA	NA
Cadmium	100	10	1	20	1
Chromium	2,500	50	5	100	5
Cobalt	8,000	800	80	NA	NA
Copper	2,500	250	25	NA	NA
Lead	1,000	50	5	100	5
Mercury	20	2	0.2	4	0.2
Molybdenum	3,500	3,500	350	NA	NA
Nickel	2,000	200	20	NA	NA
Selenium	100	10	1	20	1
Silver	500	50	5	100	5
Thallium	700	70	7	NA	NA
Vanadium	2,400	240	24	NA	NA
Zinc	5,000	2,500	250	NA	NA
Chromium (VI)	500	50	5	NA	NA

TABLE 3 – WASTE CLASSIFICATION FLOWCHART



END OF SECTION

EXHIBIT 1

INTEROFFICE CORRESPONDENCE
Los **A**ngeles **U**nified **S**chool **D**istrict
Office of Environmental Health and Safety

TO: Anthony Gennaro
Owner Authorized Representative
FSD – Project Execution

DATE: October 3, 2025

FROM: Molly Zorba (CP) MZ
Site Assessment Project Manager
Office of Environmental Health and Safety

SUBJECT: **SYLVAN PARK EARLY EDUCATION CENTER**
OUTDOOR CLASSROOM AND CAMPUS UPGRADE (COLIN #10374546)
SOIL SAMPLING DETERMINATION

This correspondence has been prepared to document soil determination in regard to the applicability of South Coast Air Quality Management District (SCAQMD) Rule 1466 to the Outdoor Classroom and Campus Upgrade project at Sylvan Park Early Education Center, 15011 Delano Street, Van Nuys, California 91411. In accordance with Office of Environmental Health and Safety (OEHS) guidelines, soil sampling was conducted to determine the presence of subsurface compounds in underlying soils associated with this project.

On August 29, 2025, at the direction of OEHS staff, Parsons conducted limited soil sampling throughout areas where soil disturbances will occur per the 119 sheet set of drawings, *Outdoor Classroom and Campus Upgrade at Sylvan Park Early Education Center*, dated April 10, 2025, and prepared by Herrick Y AU. OEHS has determined that SCAQMD Rule 1466 does not apply to the subject project for the following reason:

- Results of the sampling investigation revealed that for all sample locations, identified compounds covered by SCAQMD Rule 1466 were classified as less than the reporting limit or detected contaminant concentrations were below associated regulatory thresholds.

As a precaution, dust mitigation measures shall be implemented during any project-related excavation and/or earth-disturbing activities. Additionally, if any stained or odorous soil is observed during construction, stop work shall be initiated and OEHS shall be notified. If the project requires the disposal of excess soil, soil sampling per the LAUSD Specification Section 01-4524 will be required prior to characterization and acceptance for off-site disposal.

Should you have any questions or concerns regarding this memorandum, please contact OEHS Site Assessment Project Manager Molly Zorba at (213) 241- 3417 or at cp-molly.zorba@lausd.net.

ATTACH: *South Coast Air Quality Management District – Rule 1466 Soil Sampling and Analysis Report, Sylvan Park Early Education Center*, by Parsons, dated September 30, 2025

COPY: Project File

PARSONS

100 West Walnut Street • Pasadena, CA 91124 • (626) 440-2000 • Fax: (626) 440-2630 • www.parsons.com

September 30, 2025

Ms. Molly Zorba
Los Angeles Unified School District
Office of Environmental Health and Safety
333 North Beaudry Street, 21st Floor
Los Angeles, CA 90017

Site: **Los Angeles Unified School District**
Sylvan Park Early Education Center
15011 Delano Street, Van Nuys, CA 91411

Reference: **South Coast Air Quality Management District – Rule 1466**
Soil Sampling and Analysis Report

Ms. Zorba,

This South Coast Air Quality Management District (SCAQMD) – Rule 1466 Soil Sampling and Analysis Report (Report) is submitted to the Los Angeles Unified School District (LAUSD) Office of Environmental Health and Safety (OEHS) to document Parsons environmental soil sampling and analyses activities conducted at the Sylvan Park Early Education Center (Site) located at 15011 Delano Street in Van Nuys, California 91411 (**Figure 1**). Per LAUSD's request, soil samples were collected, analyzed, and the data was tabulated in this document to determine if SCAQMD Rule 1466 will apply to the future work in the subject areas and to evaluate the potential import/export of the soil from the Site per Section 01 4524.

1.0 INTRODUCTION

This Report summarizes Parsons soil sampling and analysis activities conducted at 10 soil borings (SB1 through SB10) that were completed at various locations around the Site where LAUSD anticipates pavement will be removed and soil will be disturbed, during future school improvement activities (**Figure 2**). Soil samples were collected at discrete depth intervals; 0.5-feet (ft) and 2.0-ft below the bottom of the base material or the top of existing soil surface, to characterize near-surface conditions. Attachments to this Report include the tabulated summaries of laboratory analytical data (**Tables 1** through **7**), a figure depicting the Site and approximate boring locations (**Figure 2**), the geophysical survey report (**Appendix A**), boring logs (**Appendix B**), and certified analytical laboratory reports, including chain-of-custody (CoC) documentation and laboratory quality assurance/quality control (QA/QC) summaries (**Appendix C**).

2.0 PRE-FIELD AND FIELD ACTIVITIES

The following activities were completed prior to the intrusive soil sampling work:

- A Site-specific Health and Safety Plan was prepared for the Site.
- The proposed soil boring locations were marked on the ground with chalk by LAUSD-OEHS staff on August 22, 2025.
- Underground Service Alert (USA) was notified of the proposed soil sampling on August 25, 2025, and USA ticket number A252370175-00A was issued. Representatives from

the utility companies then either marked their subsurface structures or contacted a Parsons representative to discuss potential utility and subsurface structure conflicts.

- The proposed boring locations were geophysically surveyed by Subsurface Surveys, a private utility locator, on August 29, 2025, for the presence of underground utilities using geophysical methods (including ground-penetrating radar, electromagnetic utility locating, and deep-search metal detector). A copy of the geophysical report is included as **Appendix A**.

Soil sampling field activities were performed on August 29, 2025, including pavement coring, hand augering, soil sampling, and backfilling of the borings. Soil samples were collected at 0.5-ft and 2.0-ft below base material or soil surface, using a hand auger. The 2.0-ft samples were placed on hold pending review of the laboratory results of the 0.5-ft sample. At three randomly selected boring locations, a composite sample was prepared in the field by combining equal portions of soil collected from the 0.5-foot depth interval. The composite sample was placed on hold at the laboratory pending the results of the discreet samples analysis.

Boring logs were prepared in the field, and documented information, including boring and sample identification, sample depths, lithologic description in accordance with the United Soil Classification System, and observation of any evidence of potential soil impacts (e.g., odor, staining). The boring logs are included in **Appendix B**.

Following soil sampling, each boring was backfilled with soil cuttings and completed at the top with concrete to match the surrounding grade elevation. Between boreholes, the head of the hand auger was decontaminated to minimize the potential for cross-contamination between samples.

Each soil sample was collected in a new, laboratory-provided glass jar. Samples designated for volatile organic compound (VOC) analysis were collected in a Terra Core sample kit. The glass jars and Terra Cores were labeled, placed in bubble wrap, and immediately placed into iced coolers for temporary storage. The cooler was delivered to the certified analytical laboratory for chemical analyses after the sampling was complete. Samples inside the coolers were maintained at 4 degrees Celsius (or below) using bagged ice. CoC protocol was followed for all soil samples collected for laboratory analyses, with CoCs documentation accompanying the samples from the Site to the laboratory.

3.0 LABORATORY ANALYSES

The discrete soil samples collected from the 10 boring locations were submitted to 1 Laboratories, Inc., an Environmental Laboratory Accreditation Program-certified laboratory, located in Los Angeles, California for laboratory analysis. The 0.5-ft samples were analyzed for:

- Title 22 Metals by Environmental Protection Agency (EPA) Method 6010B/7471A (**Table 1**)
- Hexavalent Chromium (Cr[VI]) by EPA Method 7199 (**Table 1**)
- Moisture Content using Method ASTM D2216 (**Table 2**)
- Organochlorine Pesticides (OCPs) using Method 8081A (**Table 3**)
- Polyaromatic Hydrocarbons (PAHs) using Method SIM 8270C (**Table 4**)

Positive Lab Service in Los Angeles, California analyzed samples for:

- Arsenic by EPA Method 6020 (**Table 1**)
- Polychlorinated Biphenyls (PCBs) using Method 8082 (**Table 5**)

AIH Laboratory in Anaheim, California analyzed samples for:

- Asbestos by Polarized Light Microscopy (PLM) Count (**Table 2**)

Two randomly selected 0.5-ft samples were also analyzed by 1 Laboratories, Inc. for:

- VOCs by EPA Method 8260B (**Table 6**)
- Total petroleum hydrocarbons (TPH) by EPA Method 8015B (**Table 7**)

The laboratory analytical results from the soil sampling activities are presented in **Tables 1** through **7.** These tables also include the risk-based screening levels, where applicable, for each analyte. A copy of the certified laboratory analytical report is provided in **Appendix C**.

4.0 SCREENING LEVELS

For direct exposures to soils, the DTSC's (2015) Preliminary Endangerment Assessment Manual states that risk-based screening levels used should be "the USEPA Regional Screening Level (RSL) for residential land use, modified as necessary by the DTSC in HHRA Note 3." Thus, the screening levels used here are, in general, the USEPA RSLs (2024) unless DTSC (2022) has published a screening value of its own, termed the DTSC-SLs. Chemicals with special considerations are discussed in more detail below. The screening levels are referred to here and after as RSLs.

Arsenic: The residential risk-based screening levels from EPA (2023) and DTSC (2022) of 0.68 and 0.11 milligrams per kilogram (mg/kg), respectively, both of which are well below typical background concentrations. DTSC (2020) conducted a statistical evaluation of background arsenic concentrations in soils from Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties. Based on an evaluation of 1,086 data points, the DTSC derived an upper-bound background threshold value for arsenic of 12 mg/kg, which is used in this assessment as the screening level for arsenic.

Lead: Adverse health effects from lead exposure are typically correlated with concentrations of lead in whole blood. While EPA uses 10 micrograms per deciliter (µg/dl) as the threshold level of concern, California Office of Environmental Health Hazard Assessment (OEHHA 2007) uses 1 µg/dl. A screening level of 80 mg/kg-protective of a 90th percentile estimate of one µg/dl blood lead in children- was developed by Cal EPA (OEHHA 2009) and is currently used by DTSC (2022). This value represents the concentration of lead in soil expected to result in a one µg/dl increase in blood lead in the most sensitive receptor (i.e., child or fetus). According to DTSC (2022), individual samples may exceed 80 mg/kg, provided that the 95% upper confidence limit (UCL) of the mean remains below 80 mg/kg and no significant hot spots are present.

5.0 ANALYTICAL RESULTS

Metal concentrations in the 10 shallow (0.5-ft depth) soil samples are summarized in **Table 1**. The following ranges were reported by the laboratory for each metal:

- *Antimony*: 3.18 J mg/kg (SB2-0.5) to 6.45 J mg/kg (SB8-0.5); not detected in six of 10 samples.
    - All detections below RSL.
- *Arsenic*: 2.14 mg/kg (SB3-0.5 and SB4-0.5) to 9.07 mg/kg (SB5-0.5)
    - All detections below RSL.
- *Barium*: 113 mg/kg (SB7-0.5) to 163 mg/kg (SB9-0.5)
    - All detections below RSL
- *Total Chromium*: 23.9 mg/kg (SB7-0.5) to 34.7 mg/kg (SB5-0.5)
    - No RSL for total chromium

- *Copper*: 21.2 mg/kg (SB4-0.5) to 37.8 mg/kg (SB10-0.5)
    - All detections below RSL.
- *Lead*: 5.58 mg/kg (SB4-0.5) to 41.2 mg/kg (SB5-0.5)
    - All detection below RSL.
- *Mercury*: 0.0183 J mg/kg (SB9-0.5) to 0.288 J mg/kg (SB10-0.5)
    - All detections were below the RSL.
- *Molybdenum*: 2.82 J mg/kg (SB2-0.5) to 3.88 mg/kg (SB8-0.5); not detected in three of 10 samples.
    - All detections were below the RSL.
- *Nickel*: 20.0 mg/kg (SB7-0.5) to 25.2 mg/kg (SB5-0.5)
    - All detections were below the RSL.
- *Vanadium*: 41.3 mg/kg (SB7-0.5) to 55.9 mg/kg (SB4-0.5)
    - All detections were below the RSL.
- *Zinc*: 59.3 mg/kg (SB4-0.5) to 144 mg/kg (SB9-0.5)
    - All detections were below the RSL.
- Beryllium, cadmium, hexavalent chromium, cobalt, selenium, silver, and thallium were not detected above their respective laboratory detection limits.

All 10 discreet soil samples were analyzed for asbestos containing material. Laboratory results indicate that no asbestos was detected (**Table 2**).

Moisture content ranged from 5.0 % (SB9-0.5) to 17.3 % (SB7-0.5) in the shallow discreet soil samples (**Table 2**).

Concentrations of the 10 discreet soil samples for OCPs are summarized in **Table 3**. The reported ranges for each detected OCP are as follows:

- *4,4'-DDT*: 3.83 micrograms per kilogram (µg/kg) (SB4-0.5) to 72.7 µg/kg (SB1-0.5); not detected in five of the 10 samples.
    - All detections were below the RSL.
- *Endosulfan 1*: 3.39 µg/kg (SB4-0.5) to 52.1 µg/kg (SB1-0.5); not detected in six of the 10 samples.
    - All detections were below the RSL.

Laboratory results for PAHs (**Table 4**) and PCBs (**Table 5**) indicate that none of these compounds were detected above their respective laboratory reporting limits in the shallow discreet soil samples.

Concentrations of VOCs in the two shallow soil samples are summarized in **Table 6**. Acetone, benzene, and toluene were detected at B9-0.5. The detections were below RSLs.

Concentrations of TPH in the two soil samples are summarized in **Table 7**. The following is a summary of the TPH detections:

- TPH as Gasoline (C4-C12) – Not detected in either sample.
- TPH as Diesel (C13-C22) – Detected at SB4-0.5 (39.4 mg/kg) and SB9-0.5 (35.9 mg/kg). Both detections are below the RSL.

- TPH as Oil Range Organics (C23-C40) – Detected at SB4-0.5 (12.4 mg/kg) and SB9-0.5 (10.9 mg/kg). Both detections are below the RSL.

After reviewing the results of the shallow samples (0.5-ft), the deeper samples (2.0-ft) were not analyzed. The composite sample from the three randomly selected shallow soil samples was also not analyzed.

6.0 FINDINGS AND RECOMMENDATIONS

The following findings are derived from laboratory results from the soil sampling conducted at LAUSD's Sylvan Park Early Education Center:

- Arsenic, lead and other metal concentrations were all below their RSLs.
- Asbestos was not detected in any of the soil samples analyzed.
- Two OCP compounds (4,4'-DDE and Endosulfan I) were detected above their reporting limits. No other OCPs were detected. The 4,4'-DDE and Endosulfan I detections are below RSLs.
- PAHs and PCBs were not detected above their respective laboratory reporting limits in any of the soil samples analyzed.
- Three VOC compounds (acetone, benzene, and toluene) were detected above their reporting limits, in one sample. The concentrations detectioned were all below their RSLs. No other VOCs were detected.
- All TPH detections were below their respective RSLs.

Based on the above findings, the following actions are recommended:

- SCAQMD Rule 1466 does not apply to construction activities.
- Contractors must comply with LAUSD Section 01-4524 regarding the import and export of soil during construction activities.

7.0 REFFERENCES

DTSC 2015. *Preliminary Endangerment Assessment Manual. A guidance manual for evaluating hazardous substance release sites*.

DTSC. 2020. *Human Health Risk Assessment (HHRA) Note Number 11: Southern California Ambient Arsenic Screening Level*. December 2020.

DTSC, 2022. *HERO HHRA Note Number 3, DTSC-Modified Screening Levels (DTSC-SLs).* January.

OEHHA, 2007. Development of health criteria for schools site risk assessment pursuant to Health and Safety Code Section 901(g): child-specific benchmark change in blood lead concentration for school site risk assessment.

OEHHA, 2009. *Revised California human health screening levels for lead*.

USEPA (US Environmental Protection Agency). 2024. *Regional Screening Levels for Chemical Contaminants at Superfund Sites*. November. Available online at https://www.epa.gov/risk/regional-screening-levels-rsls

If you have questions or comments regarding this document, please contact me at 626-344-6565.

Sincerely,

Pete Shair, PG 8362
Project Geologist

Attachments:

Table 1 – Analytical Results for Select Metals in Soil Results
Table 2 – Analytical Results for Asbestos Containing Material in Soil Results
Table 3 – Analytical Results for Organochlorine Pesticides in Soil Results
Table 4 – Analytical Results for Polyaromatic Hydrocarbons in Soil Results
Table 5 – Analytical Results for Polychlorinated Biphenyls in Soil Results
Table 6 – Analytical Results for Volatile Organic Compounds in Soil Results
Table 7 – Analytical Results for Total Petroleum Hydrocarbons in Soil Results

Figure 1 – Site Location
Figure 2 – Soil Boring Locations

Appendix A – Private Utility Locate Report
Appendix B – Boring Logs
Appendix C – Certified Laboratory Analytical Report

TABLES

TABLE 1
METALS IN SOIL RESULTS
LAUSD - SYLVAN PARK EARLY EDUCATION CENTER

--		Sample Depth	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Hexavalent Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Units		ft	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Test Methods		--	6010B	6020	6010B	6010B	6010B	6010B	7199	6010B	6010B	6010B	7471A	6010B	6010B	6010B	6010B	6010B	6010B	6010B
Screening Levels[1]		--	31	12	15,000	160	7.1	NA	0.95	23	3,100	80	23	390	820	390	390	0.78	390	23,000
Sample ID	Sample Date	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SB1-0.5	8/29/2025	0.5	ND<2.64	**5.34**	**133**	ND<1.86	ND<1.62	**29.6**	ND<0.0112	ND<2.16	**26.2**	**39.0**	**0.0793 J**	ND<2.54	**24.2**	ND<1.00	ND<3.00	ND<0.750	**51.4**	**78.3**
SB2-0.5	8/29/2025	0.5	**3.18 J**	**3.65**	**160**	ND<1.86	ND<1.62	**26.9**	ND<0.0112	ND<2.16	**27.2**	**33.5**	**0.0718 J**	**2.82 J**	**23.6**	ND<1.00	ND<3.00	ND<0.750	**46.0**	**123**
SB3-0.5	8/29/2025	0.5	**3.42 J**	**2.14**	**147**	ND<1.86	ND<1.62	**26.0**	ND<0.0112	ND<2.16	**22.4**	**18.1**	**0.0193 J**	**2.85 J**	**24.2**	ND<1.00	ND<3.00	ND<0.750	**46.5**	**94.6**
SB4-0.5	8/29/2025	0.5	**4.10 J**	**2.14**	**129**	ND<1.86	ND<1.62	**29.0**	ND<0.0112	ND<2.16	**21.2**	**5.58**	**0.0218 J**	ND<2.54	**24.2**	ND<1.00	ND<3.00	ND<0.750	**55.9**	**59.3**
SB5-0.5	8/29/2025	0.5	ND<2.64	**9.07**	**149**	ND<1.86	ND<1.62	**34.7**	ND<0.0112	ND<2.16	**25.1**	**41.2**	**0.0388 J**	**3.08 J**	**25.2**	ND<1.00	ND<3.00	ND<0.750	**55.2**	**137**
SB6-0.5	8/29/2025	0.5	ND<2.64	**3.44**	**119**	ND<1.86	ND<1.62	**33.1**	ND<0.0112	ND<2.16	**30.4**	**19.2**	**0.0498 J**	ND<2.54	**22.7**	ND<1.00	ND<3.00	ND<0.750	**42.9**	**98.6**
SB7-0.5	8/29/2025	0.5	ND<2.64	**3.80**	**113**	ND<1.86	ND<1.62	**23.9**	ND<0.0112	ND<2.16	**31.0**	**22.7**	**0.0252 J**	**3.08 J**	**20.0**	ND<1.00	ND<3.00	ND<0.750	**41.3**	**119**
SB8-0.5	8/29/2025	0.5	**6.45 J**	**3.29**	**149**	ND<1.86	ND<1.62	**24.2**	ND<0.0112	ND<2.16	**26.6**	**26.1**	**0.0422 J**	**3.88 J**	**22.4**	ND<1.00	ND<3.00	ND<0.750	**42.1**	**125**
SB9-0.5	8/29/2025	0.5	ND<2.64	**8.09**	**163**	ND<1.86	ND<1.62	**27.2**	ND<0.0112	ND<2.16	**26.5**	**17.6**	**0.0183 J**	**3.15 J**	**23.9**	ND<1.00	ND<3.00	ND<0.750	**46.5**	**144**
SB10-0.5	8/29/2025	0.5	ND<2.64	**5.05**	**134**	ND<1.86	ND<1.62	**27.4**	ND<0.0112	ND<2.16	**37.8**	**31.5**	**0.288 J**	**3.65 J**	**24.2**	ND<1.00	ND<3.00	ND<0.750	**45.0**	**109**

Notes:

mg/kg = milligrams per kilogram

ND = not detected less than the laboratory Method Detection Limit

NA = not applicable

ft = feet below base material or soil surface

1 = Residential screening levels were taken from the following sources:

US EPA Regional Screening Level (RSL) Summary Table (November 2024)

Arsenic: DTSC. 2020. Southern California Ambient Arsenic Screening Level. HHRA Note 11. December.

All results analyzed by anlytical method EPA 6010B included the following analytical laboratory qualifier:

J = Analyte was positively identified and the associated numerical value is an approaximate estimate concentration

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TABLE 2

ASBESTOS CONTAINING MATERIAL IN SOIL AND MOISTURE CONTENT RESULTS

LAUSD - SYLVAN PARK EARLY EDUCATION CENTER

Sample ID	Sample Collection Date	Depth (ft)	Asbestos Type (%)	Moisture Content (%)
SB1-0.5	8/29/2025	0.5	None Detected	8.7
SB2-0.5	8/29/2025	0.5	None Detected	13.1
SB3-0.5	8/29/2025	0.5	None Detected	12.0
SB4-0.5	8/29/2025	0.5	None Detected	10.4
SB5-0.5	8/29/2025	0.5	None Detected	7.0
SB6-0.5	8/29/2025	0.5	None Detected	11.0
SB7-0.5	8/29/2025	0.5	None Detected	17.3
SB8-0.5	8/29/2025	0.5	None Detected	5.9
SB9-0.5	8/29/2025	0.5	None Detected	5.0
SB10-0.5	8/29/2025	0.5	None Detected	10.3

Notes:

Asbestos Type analyzed by PLM Qualitative

Moisture Content analyzed by ASTM D2216

PLM = Polarized Light Microscopy

ft = feet below base material or soil surface

TABLE 3
ORGANOCHLORINE PESTICIDES IN SOIL RESULTS
LAUSD - SYLVAN PARK EARLY EDUCATION CENTER

--		Sample Depth	4,4'-DDT	Endosulfan I	All other OCPs
--		ft	µg/kg	µg/kg	µg/kg
Screening Levels[1]		--	1900	470	NA
Sample ID	Sample Date	--	--	--	--
SB1-0.5	8/29/2025	0.5	**72.7**	**52.1**	ND
SB2-0.5	8/29/2025	0.5	ND<1.00	ND<1.00	ND
SB3-0.5	8/29/2025	0.5	**5.30**	**9.28**	ND
SB4-0.5	8/29/2025	0.5	**3.83**	**3.39**	ND
SB5-0.5	8/29/2025	0.5	**59.5**	**46.9**	ND
SB6-0.5	8/29/2025	0.5	ND<1.00	ND<1.00	ND
SB7-0.5	8/29/2025	0.5	ND<1.00	ND<1.00	ND
SB8-0.5	8/29/2025	0.5	ND<1.00	ND<1.00	ND
SB9-0.5	8/29/2025	0.5	ND<1.00	ND<1.00	ND
SB10-0.5	8/29/2025	0.5	**4.38**	ND<1.00	ND

1 = Residential screening levels were taken from the following source:
US EPA Regional Screening Level (RSL) Summary Table (November 2024)
µg/kg = micrograms per kilogram
ND = not detected less than the laboratroy Practical Quantitation Limit (PQL)
NA = not applicable
ft = feet below base material or soil surface
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TABLE 4

POLYCYCLIC AROMATIC HYDROCARBONS IN SOIL RESULTS

LAUSD - SYLVAN PARK EARLY EDUCATION CENTER

Sample ID	Sample Collection Date	Sample Depth	All PAHs
Units		ft	µg/kg
Sample ID	Date	--	--
SB1-0.5	8/29/2025	0.5	ND
SB2-0.5	8/29/2025	0.5	ND
SB3-0.5	8/29/2025	0.5	ND
SB4-0.5	8/29/2025	0.5	ND
SB5-0.5	8/29/2025	0.5	ND
SB6-0.5	8/29/2025	0.5	ND
SB7-0.5	8/29/2025	0.5	ND
SB8-0.5	8/29/2025	0.5	ND
SB9-0.5	8/29/2025	0.5	ND
SB10-0.5	8/29/2025	0.5	ND

Notes:

mg/kg = milligrams per kilogram

ND = not detected less than the laboratory Practical Quantitation Limit (PQL)

ft = feet below base material or soil surface

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TABLE 5
POLYCHLORINATED BIPHENYLS IN SOIL RESULTS
LAUSD - SYLVAN PARK EARLY EDUCATION CENTER

Sample ID	Sample Collection Date	Depth (ft)	PCB-1016	PCB-1221	PCB-1232	PCB-1242	PCB-1248	PCB-1254	PCB-1260
Units			µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Screening Levels[1]			4,100	200	170	230	230	240	240
SB1-0.5	8/29/2025	0.5	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0
SB2-0.5	8/29/2025	0.5	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0
SB3-0.5	8/29/2025	0.5	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0
SB4-0.5	8/29/2025	0.5	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0
SB5-0.5	8/29/2025	0.5	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0
SB6-0.5	8/29/2025	0.5	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0
SB7-0.5	8/29/2025	0.5	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0
SB8-0.5	8/29/2025	0.5	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0
SB9-0.5	8/29/2025	0.5	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0
SB10-0.5	8/29/2025	0.5	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0	ND<50.0

Notes:

1 = Residential screening levels were taken from the following sources:
US EPA Regional Screening Level (RSL) Summary Table (November 2024)

PCBs = polychlorinated biphenyls analyzed by Environmental Protection Agency Method 8082

µg/kg = micrograms per kilogram

ND = not detected less than the laboratory Practical Quantitation Limit

ft = feet below base material or soil surface

TABLE 6
VOLATILE ORGANIC COMPOUNDS IN SOIL RESULTS
LAUSD - SYLVAN PARK EARLY EDUCATION CENTER

--	--	Sample Depth	Acetone	Benzene	Toluene	All other VOCs
Units		**ft**	**µg/kg**	**µg/kg**	**µg/kg**	**µg/kg**
Screening Level[1]		**--**	**74,000**	**1.2**	**4,900**	**NA**
Sample ID	**Sample Date**	**--**	**--**	**--**	**--**	**--**
SB4-0.5	8/29/2025	0.5	ND<100	ND<1.00	ND<5.00	ND
SB9-0.5	8/29/2025	0.5	**264**	**0.690 J**	**0.830 J**	ND

Notes:

1 = Residential screening levels were taken from the following source:
US EPA Regional Screening Level (RSL) Summary Table (November 2024)

µg/kg = micrograms per kilogram
Volatile Organic Compounds analyzed by United States
Environmental Protection Agency Method 8260B
NA = not applicable
J = Analyte was positively identified and the associated numerical value is an approaximate estimate concentration reported between the Method Detection Limit (MDL) nand Practical Quantitation Level (PQL)
ND = not detected less than the laboratory Practical Quanitation Limit (PQL)
ft = feet below base material or soil surface
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TABLE 7
TOTAL PETROLEUM HYDROCARBONS IN SOIL RESULTS
LAUSD - SYLVAN PARK EARLY EDUCATION CENTER

--		Sample Depth	TPH as GRO	TPH as DRO	TPH as ORO
Units		**ft**	**mg/kg**	**mg/kg**	**mg/kg**
Screening Level[1]			**430**	**260**	**12,000**
Sample ID	**Sample Date**	--	--	--	--
SB4-0.5	8/29/2025	0.5	ND<10.0	**39.4**	**12.4**
SB9-0.5	8/29/2025	0.5	ND<10.0	**35.9**	**10.9**

NOTES:
1 - Residential direct contact screening levels were taken from the following source:
SFBRWQCB. 2019. Environmental Screening Levels. July.
mg/kg = miligrams per kilogram
Total petroleum hydrocarbons analyzed by United States Environmental Protection Agency Method 8015M
TPH = total petroleum hydrocarbons
GRO = gasoline range organics
DRO = diesel range organics
ORO = oil range organics
ND = not detected less than the laboratory Practical Quantitation Limit (PQL)
ft = feet below base material or soil surface
-- = left intentionally blank

FIGURES

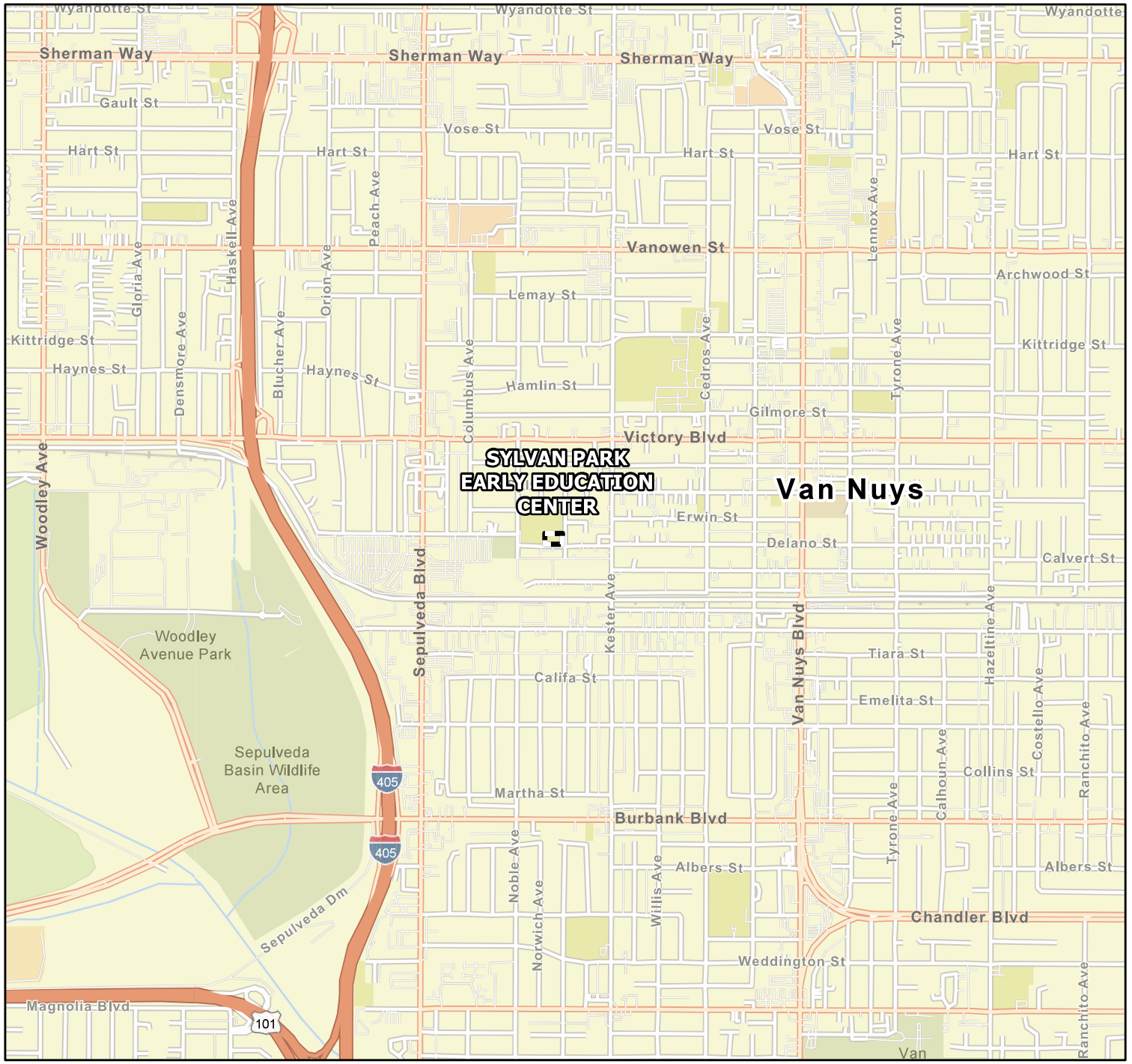


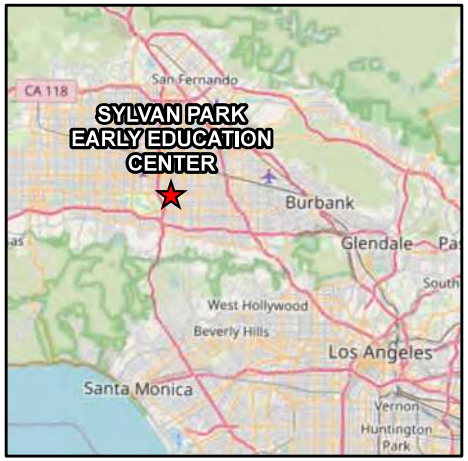
FIGURE 1

SITE LOCATION

Sylvan Park Early Education Center
15011 Delano Street
Van Nuys, CA 91411

Legend

Sylvan Park Early Education Center



PARSONS

Coordinate System: Image - Open Street
NAD 1983 StatePlane California V FIPS 0405 Feet

Feet
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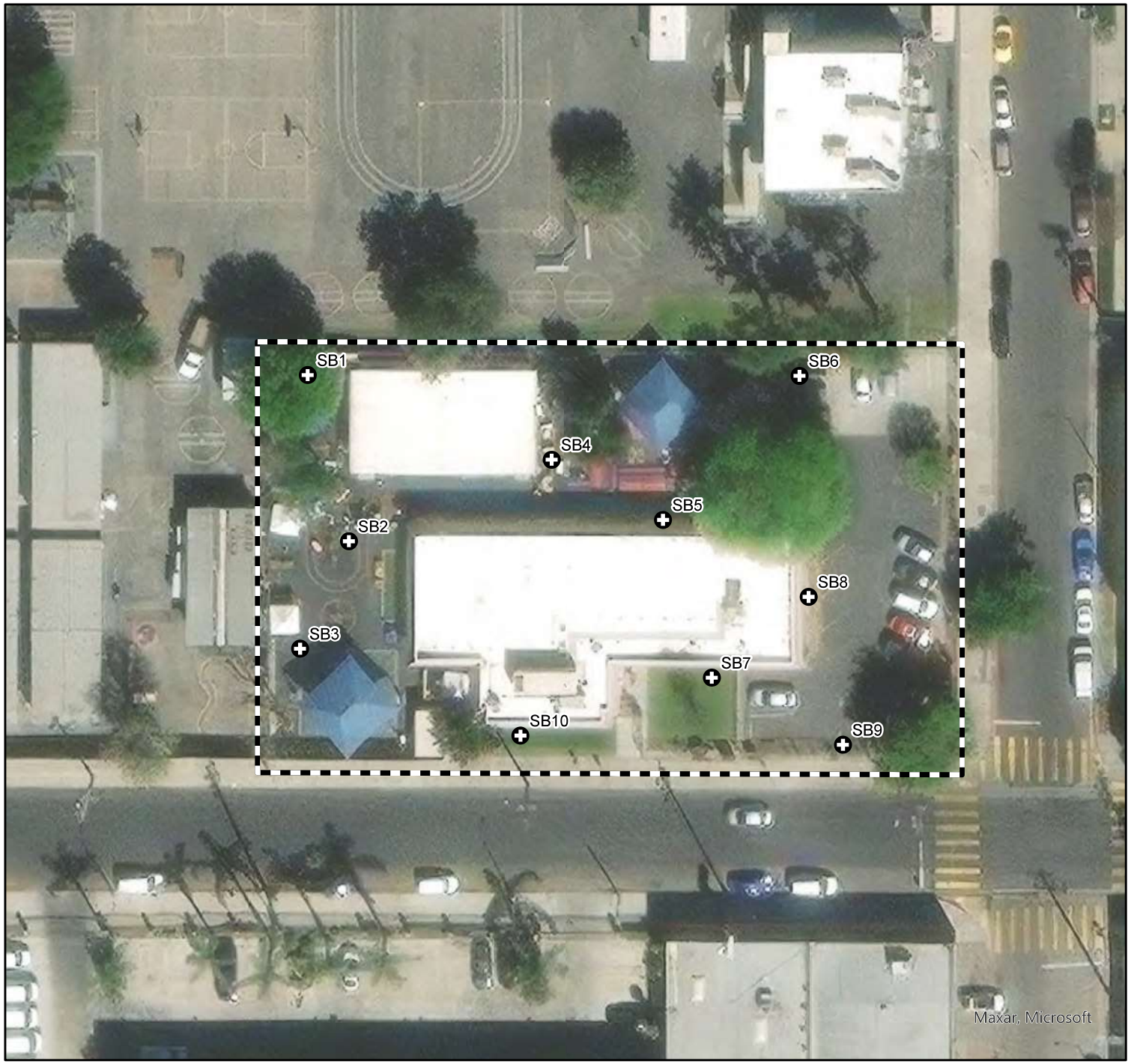

FIGURE 2

SOIL BORING LOCATIONS

Sylvan Park Early Education Center
15011 Delano Street
Van Nuys, CA 91411

Legend

- Soil Boring
- Sylvan Park Early Education Center

Boring locations are approximate.

PARSONS

Coordinate System: Image - ESRI Basemaps
NAD 1983 StatePlane California V FIPS 0405 Feet

25 0 25 50 Feet

N

Path: V:\LAUSD\LAUSD_SylvanPark\ArcPro\LAUSD_SylvanPark\LAUSD_SylvanPark.aprx **Layout:** LAUSD_SylvanParkSite **Date Saved:** 9/12/2025 11:40 AM **Date Exported:** 9/12/2025 12:31 PM

APPENDIX A
Private Utility Locate Report

SubSurface Surveys
An Applied Geophysical Company
2075 Corte Del Nogal, Suite W
Carlsbad, California 92011
Office: 760-476-0492
Fax: 760-476-0493

Parsons
Attn: Justin King
100 W Walnut St
Pasadena, California 91124

September 4th, 2025

Subject: Geophysical Survey
Sylvan Park Early Education Center
15011 Delano St
Van Nuys, California

Project Number: 25-370

This report is to present the results of our geophysical survey carried out over Sylvan Park Early Education Center located at 15011 Delano Street in Van Nuys, California (Figure 1), on August 29th, 2025. The purpose of the survey was to locate and identify, insofar as possible, piping, conduit, and other underground utilities that may exist in the vicinity of ten (10) specific locations designated for future drilling activities.

A combination of electromagnetic induction (EM), magnetometry, and ground penetrating radar (GPR) were applied to the search. A utility locator with line tracing capabilities was also brought to the field and used where risers exist onto which a signal could be impressed and traced.

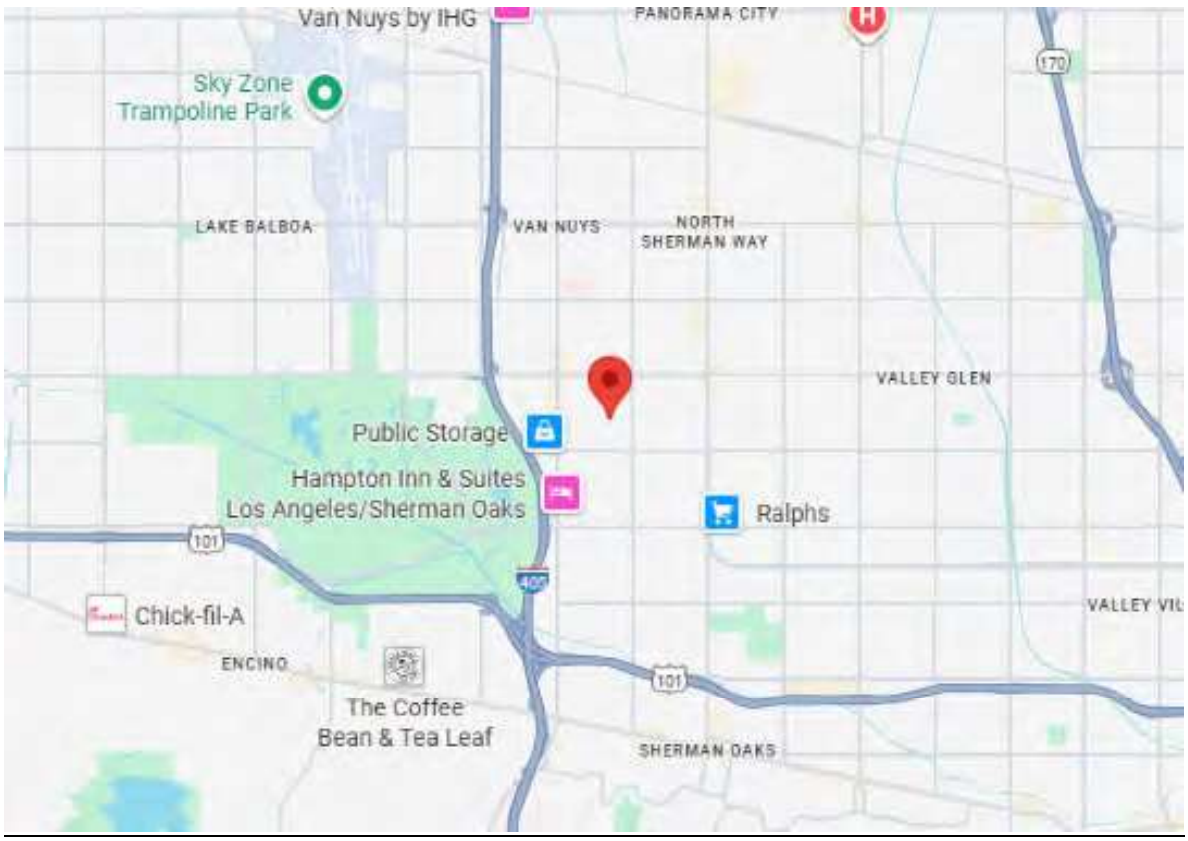

FIGURE 1 –Site Location Map (Map data ©2025 Google)

Survey Design – The areas to be surveyed, along with the specific borehole location, were indicated in the field by the client. The magnetic gradiometer, line tracer, M-Scope and GPR were traversed systematically over each borehole along the eight lines of the standard search pattern (Figure 2), wherein, there are two sets of three parallel lines, mutually orthogonal, and two diagonals, all centered on the marked drill location. Adjacent parallel lines are approximately 5 feet apart, and each line is approximately 20 feet long, access permitting. Other traverses were taken, access permitting, for detailing and confirmation where anomalous conditions were found.

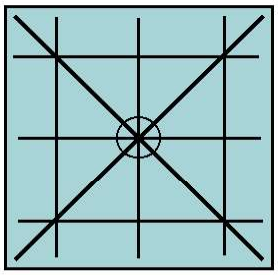

Figure 2: Standard search pattern around target

Hard copy of the EM data was not acquired, that is, discrete readings on the nodes of a grid were not recorded that could be put into a contoured map format. Rather, the instruments' meters were read continuously, and in real-time, during each traverse. This free-traversing method allowed for immediate detection of anomalous objects and facilitated the opportunity to investigate them further, without first having to download data in the office. The lack of hard copy for EM data sets does not degrade the quality of the survey in any way. Hard copy merely provides a basis for report documentation of these geophysical fields, if such documentation is needed.

The line tracers were used to impress signals onto pipes, generally through accessible risers and tracer wires when present, to delineate the lines' locations and orientations. The instruments were also used in passive mode, configured to detect 60 Hz electrical signals and other common radio-frequency signals.

A Fischer M-Scope was used for the EM sampling. A Sensors and Software Noggin Ground Penetrating Radar unit with a 500 MHz antenna produced the radar images. The magnetic gradiometer was a Schonstedt GA-52, and a RD 8200 and RIDGID SR-60 SeekTech utility locator rounded out the tools applied.

Brief Description of the Geophysical Methods Applied - The line locator is used to passively detect energized high voltage electric lines and electrical conduit (60 Hz), RF signals (4-35 kHz), as well as to actively trace other utilities using a discrete signal. Where risers are present, the utility locator transmitter can be connected directly to the object, and a signal (256 Hz - 200 kHz) is sent traveling along the conductor, pipe, conduit, etc. In the absence of a riser, the transmitter can be used to impress an input signal on the utility by induction. In either case, the receiver unit is tuned to the input signal, and is used to actively trace the signal along the pipe's surface projection.

The magnetic gradiometer has two flux gate magnetic fixed sensors that are passed closely to and over the ground. When not in close proximity to a magnetic object, that is, only in the earth's field, the instrument emits a sound signal at a low frequency. When the instrument passes over a buried iron or steel object, so that locally there is a high magnetic gradient, the frequency of the emitted sound increases. The frequency is a function of the gradient between the two sensors.

The GPR instrument beams energy into the ground from its transducer/antenna, in the form of electromagnetic

waves. A portion of this energy is reflected back to the antenna at a boundary in the subsurface across which there is an electrical contrast. The instrument produces a continuous record of the reflected energy as the antenna is traversed across the ground surface. The greater the electrical contrast, the higher the amplitude of the returned energy. The radar wave travels at a velocity unique to the material properties of the ground being investigated, and when these velocities are known, the two-way travel times can be converted to depth. The depth of penetration and image resolution produced are a function of ground electrical conductivity and dielectric constant.

The M-Scope device energizes the ground by producing an alternating primary magnetic field with AC current in a transmitting coil. If conducting materials are within the area of influence of the primary field, AC eddy currents are induced to flow in the conductors. A receiving coil senses the secondary magnetic field produced by these eddy currents, and outputs the response to a meter in the form of ground conductivity values for the M-Scope. The strength of the secondary field is a function of the conductivity of the object, say a pipe, tank or cluster of drums, its size, and its depth and position relative to the instrument's two coils. Conductive objects, to a depth of approximately 7 feet for the M-Scope are sensed. The devices are also somewhat focused; that is, they are more sensitive to conductors below the instrument than they are to conductors off to the side.

Interpretation and Conclusions - The interpretation took place in real time as the survey progressed, and accordingly, the findings of our investigation were marked on the ground cover with spray chalk paint and further documented with site photographs of each surveyed area (Figures 3-12).

Piping and utilities detected during the survey were marked with spray chalk paint using red for electric, yellow for gas, blue for water, green for sanitary sewer and white for lines of unknown utility type.

Once all detectable buried cultural objects were marked and accounted for, our findings were discussed in the field with the client, at the conclusion of the survey. After our findings were discussed, each borehole was then marked cleared by Subsurface Surveys and Associates with a white circle and a yellow “SSS”. Please refer to the graphics along with the markings in the field for a better representation of our findings.

Limitations and Further Recommendations - It should be understood that limitations inherent in geophysical instruments and/or surveying techniques exist at all sites, and nearly all sites exhibit conditions under which instruments might not perform optimally. Consequently, the detection of buried objects in all circumstances **cannot be guaranteed**. Such limitations are numerous and include, but are not limited to, rebar-reinforced ground cover, abrupt changes in ground cover type, above-ground obstacles preventing full traverses or traverses in one direction only, above-ground conductive objects interfering with instrument signal, nearby powerlines or EM transmitters, highly conductive background soil conditions, limiting GPR penetration, non-metallic targets, shallower or larger objects shielding deeper or smaller targets, tracing signal jumping from one line to another, and inaccessible risers, cleanouts, valve boxes, and manholes. If one or more geophysical instrument is rendered ineffective and cannot be utilized, the quality of the survey can be somewhat degraded.

For the above reasons, and in the interest of maximum safety, we encourage our clients to take advantage of Underground Service Alert (USA), Dig Alert, or other similar services, when possible. Furthermore, we recommend hand-auguring and the use of a drilling method known as air knifing and vacuum extraction, when feasible or if applicable to this project. These methods may significantly limit damage to underground pipes, conduits, and utilities that might not have been detectable during the course of this survey. Please bear in mind, that geophysical surveying is only one of several levels of protection that is available to our clients.

SubSurface Surveys may include maps in some reports. While they are an accurate general representation of

the site and our findings, they are not of engineering quality (i.e., measured and mapped by a licensed land surveyor).

SubSurface Surveys and Associates makes no guarantee either expressed or implied regarding the accuracy of the findings and interpretations present. And, in no event will SubSurface Surveys and Associates be liable for any direct, indirect, special, incidental, or consequential damages resulting from interpretations and opinions presented herewith.

All data acquired in these surveys are in confidential file in this office, and are available for review by your staff, or by us at your request, at any time. We appreciate the opportunity to participate in this project. Please call, if there are questions.

Bret Herman
Staff Geophysicist

Travis Crosby, GP# 1044
California State Geophysics Registration GP1044
Senior Geophysicist, SubSurface Surveys

Figure 3

Figure 4

Figure 5

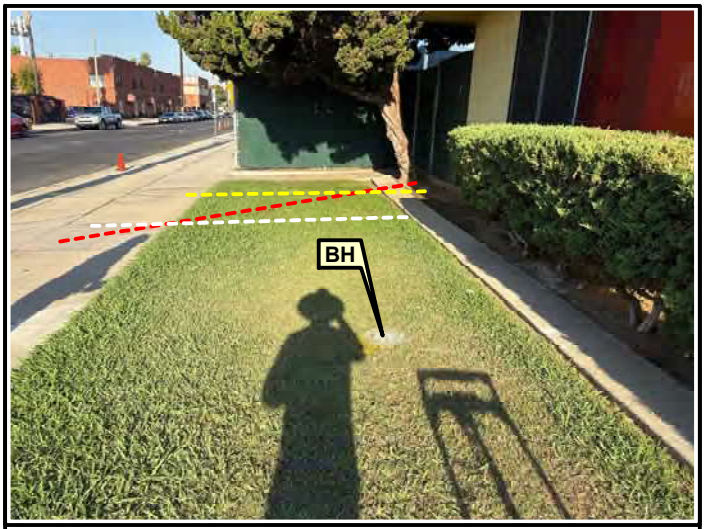

Figure 6

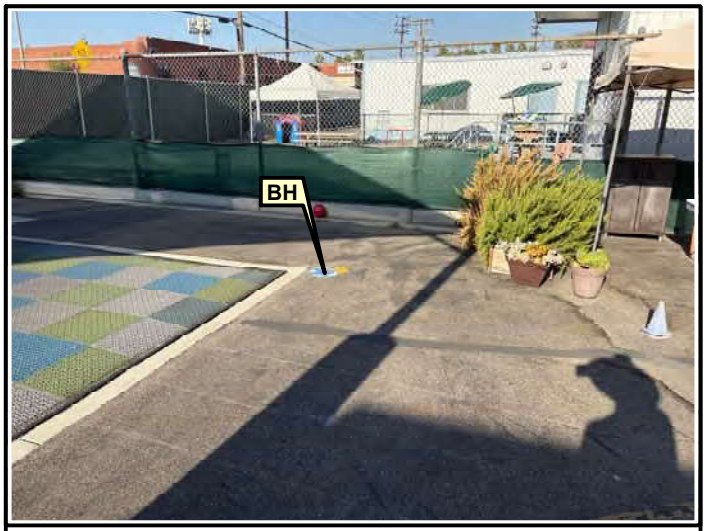

Figure 7

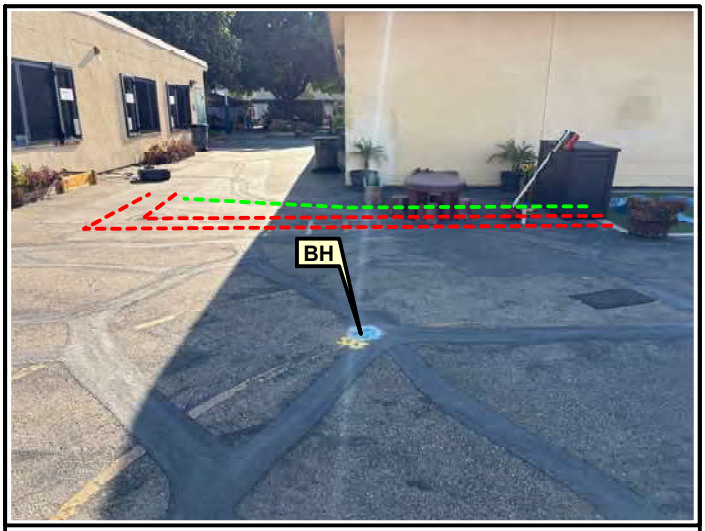

Figure 8

Sub Surface Surveys	SITE: **Sylvan Park Early Education Center** **15011 Delano Street** **Van Nuys, California**	TITLE: **Site Photographs**	SURVEY DATE: **August 29th, 2025**
		PREPARED FOR: **Parsons**	SSS PROJECT NO: **25-370**

Figure 9

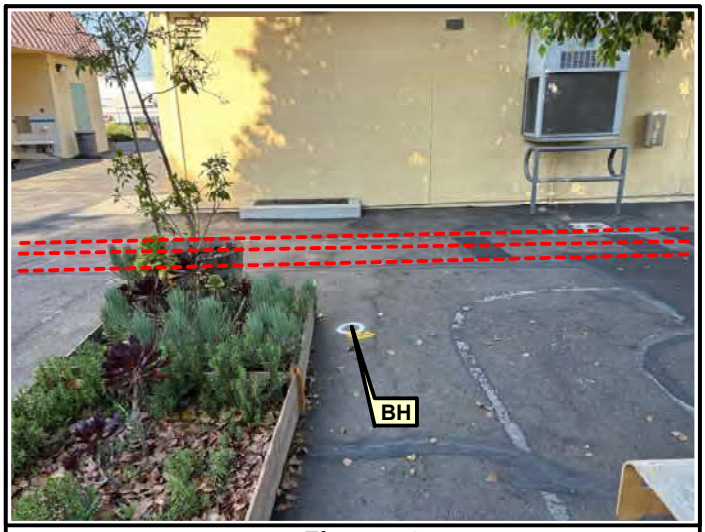

Figure 10

Figure 11

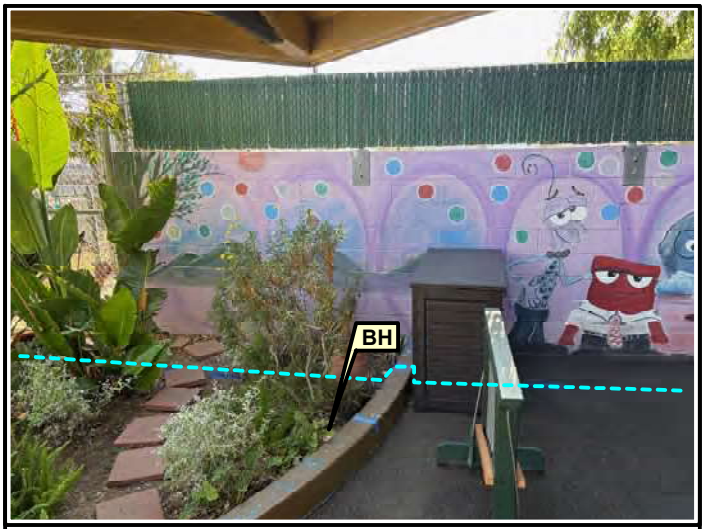

Figure 12

Sub Surface Surveys	SITE: **Sylvan Park Early Education Center** **15011 Delano Street** **Van Nuys, California**	TITLE: **Site Photographs**	SURVEY DATE: **August 29th, 2025**
		PREPARED FOR: **Parsons**	SSS PROJECT NO: **25-370**

APPENDIX B
Boring Logs

PARSONS

Field Boring Log

Location of Boring/Well:

Job No. 454555

Client/Site: LAUSD Sylvan Park Early Education Center

Drilling Co./Method: Rice General

Boring/Well Number **SB1**

Sampling Method: Hand Auger

Sheet 1 of 1

Weather Conditions: Sunny

Drilling

Surface Conditions: Soil

Start Date 8/29/2025 Time 0939

Finish Date 8/29/2025 Time 0945

Datum:

Geologist:

Reviewed By:

Iso 100 PPM

Type or Instrument/Serial No.

Calibration Date/Gas:

Sample Container:

Sample Analyses:

Personal Sampling: ☐ Yes ☒ No

Person Sampled:

Sample No. / Sample Depth	Time	Sampler Blows	Inches Driven / % Recovery	PID (ppm) Auger	PID (ppm) Sample	XRF Lead (ppm)	Depth in Feet	USCS Soil Type	Notes
							0		
	0940								
							0.5		Silt, with trace gravel, loose, moist, brown
							1		
							1.5		
	0945								Same as above
							2		Total Depth 2-ft bgs
									Backfilled with cuttings to grade
							2.5		
							3		
							3.5		
							4		
							4.5		
							5		

PARSONS **Field Boring Log**

Location of Boring/Well:

Job No. 454555 | Client/Site: LAUSD Sylvan Park Early Education Center

Drilling Co./Method: Rice General | Boring/Well Number **SB2**

Sampling Method: Hand Auger | Sheet 1 of 1

Weather Conditions: Sunny | Drilling

Surface Conditions: asphalt | Start Date 8/29/2025 Time 0934 | Finish Date 8/29/2025 Time 0938

Datum:

Geologist: Reviewed By:

Type or Instrument/Serial No.: Iso 100 PPM Calibration Date/Gas:

Sample Container: Sample Analyses:

Personal Sampling: Person Sampled: Yes ☐ No ☒

Sample No. / Sample Depth	Time	Sampler Blows	Inches Driven / % Recovery	PID (ppm) Auger	PID (ppm) Sample	XRF Lead (ppm)	Depth in Feet	USCS Soil Type	Notes
							0		
	0935								
							0.5		Silt, with trace gravel, loose, moist, dark brown
							1		
							1.5		
	0937								Same as above
							2		Total Depth 2-ft bgs
									Backfilled with cuttings and paved at grade
							2.5		
							3		
							3.5		
							4		
							4.5		
							5		

PARSONS **Field Boring Log**

Location of Boring/Well:

Job No. 454555 | Client/Site: LAUSD Sylvan Park Early Education Center

Drilling Co./Method: Rice General | Boring/Well Number **SB3**

Sampling Method: Hand Auger | Sheet 1 of 1

Weather Conditions: Sunny | Drilling

Surface Conditions: asphalt | Start | Finish

Datum: | Date 8/29/2025 | Date 8/29/2025

Notes: 2-inches of asphalt and 3-inches of base | Time 0921 | Time 0932

Geologist:

Reviewed By:

Iso 100 PPM

Type or Instrument/Serial No.

Calibration Date/Gas:

Sample Container:

Sample Analyses:

Personal Sampling: [X] No [ ] Yes

Person Sampled:

Sample No. / Sample Depth	Time	Sampler Blows	Inches Driven / % Recovery	PID (ppm) Auger	PID (ppm) Sample	XRF Lead (ppm)	Depth in Feet	USCS Soil Type	
							0		
	0925						0.5		Sandy Silt, trace gravel and clay, dense, moist, dark brown
							1		
							1.5		
	0930								Same as above
							2		Total Depth 2-ft bgs
									Backfilled with cuttings and paved at grade
							2.5		
							3		
							3.5		
							4		
							4.5		
							5		

PARSONS **Field Boring Log**

Location of Boring/Well:

Job No. 454555 | Client/Site: LAUSD Sylvan Park Early Education Center

Drilling Co./Method: Rice General | Boring/Well Number **SB4**

Sampling Method: Hand Auger | Sheet 1 of 1

Weather Conditions: Sunny | Drilling

Surface Conditions: asphalt | Start Date 8/29/2025 Time 0950 | Finish Date 8/29/2025 Time 1012

Datum:

Geologist:

Reviewed By:

Iso 100 PPM

Type or Instrument/Serial No.

Calibration Date/Gas:

Sample Container:

Sample Analyses:

Personal Sampling: [ ] Yes [X] No

Person Sampled:

Sample No. / Sample Depth	Time	Sampler Blows	Inches Driven / % Recovery	PID (ppm) Auger	PID (ppm) Sample	XRF Lead (ppm)	Depth in Feet	USCS Soil Type	Notes: 2.5-inches of asphalt and 3-inches of base
							0		
	0955						0.5		Sandy Silt, loose, dry, light brown
							1		
							1.5		
	0958								SILT, dense, moist, dark brown
							2		Total Depth 2-ft bgs
									Backfilled with cuttings and paved at grade
							2.5		
							3		
							3.5		
							4		
							4.5		
							5		

PARSONS **Field Boring Log**

Location of Boring/Well:

Job No. 454555 | Client/Site: LAUSD Sylvan Park Early Education Center

Drilling Co./Method: Rice General | Boring/Well Number **SB5**

Sampling Method: Hand Auger | Sheet 1 of 1

Weather Conditions: Sunny | Drilling

Surface Conditions: asphalt | Start Date 8/29/2025 Time 1011 | Finish Date 8/29/2025 Time 1020

Datum:

Geologist:

Reviewed By:

Iso 100 PPM

Calibration Date/Gas:

Type or Instrument/Serial No.

Sample Container:

Sample Analyses:

Personal Sampling: ☒ No ☐ Yes

Person Sampled:

Sample No. / Sample Depth	Time	Sampler Blows	Inches Driven / % Recovery	PID (ppm) Auger	PID (ppm) Sample	XRF Lead (ppm)	Depth in Feet	USCS Soil Type	Notes: 2-inches of asphalt and 1.5-inches of base
							0		
	1015						0.5		Sandy Silt, with trace gravel, loose, moist, dark brown
							1		
							1.5		
	1018								Sandy Silt, loose, moist, dark brown
							2		Total Depth 2-ft bgs
									Backfilled with cuttings and paved at grade
							2.5		
							3		
							3.5		
							4		
							4.5		
							5		

PARSONS **Field Boring Log**

Location of Boring/Well:

Job No. 454555 | Client/Site: LAUSD Sylvan Park Early Education Center

Drilling Co./Method: Rice General | Boring/Well Number **SB6**

Sampling Method: Hand Auger | Sheet 1 of 1

Weather Conditions: Sunny | Drilling

Surface Conditions: soil | Start Date 8/29/2025 Time 1021 | Finish Date 8/29/2025 Time 1030

Datum:

Geologist:

Reviewed By:

Iso 100 PPM

Type or Instrument/Serial No.

Calibration Date/Gas:

Sample Container:

Sample Analyses:

Personal Sampling: ☐ Yes ☒ No

Person Sampled:

Sample No. / Sample Depth	Time	Sampler Blows	Inches Driven / % Recovery	PID (ppm) Auger	PID (ppm) Sample	XRF Lead (ppm)	Depth in Feet	USCS Soil Type	Notes:
							0		
	1022						0.5		Silt, with trace gravel, loose, moist, dark brown
							1		
							1.5		
	1025								Same as above, brown
							2		Total Depth 2-ft bgs
									Backfilled with cuttings to grade
							2.5		
							3		
							3.5		
							4		
							4.5		
							5		

PARSONS **Field Boring Log**

Location of Boring/Well:

Job No. 454555 | Client/Site: LAUSD Sylvan Park Early Education Center

Drilling Co./Method: Rice General | Boring/Well Number **SB7**

Sampling Method: Hand Auger | Sheet 1 of 1

Weather Conditions: Sunny | Drilling

Surface Conditions: soil | Start Date 8/29/2025 Time 0813 | Finish Date 8/29/2025 Time 0820

Datum:

Geologist:

Reviewed By:

Iso 100 PPM

Calibration Date/Gas:

Type or Instrument/Serial No.

Sample Container:

Sample Analyses:

Personal Sampling: ☐ Yes ☒ No

Person Sampled:

Sample No. / Sample Depth	Time	Sampler Blows	Inches Driven / % Recovery	PID (ppm) Auger	PID (ppm) Sample	XRF Lead (ppm)	Depth in Feet	USCS Soil Type	Notes:
							0		
	0815						0.5		Silt, with trace sand,dense, moist, dark brown
							1		
							1.5		
	0819								Silty Sand, trace gravel, loose, moist, light brown.
							2		Total Depth 2-ft bgs
									Backfilled with cuttings to grade
							2.5		
							3		
							3.5		
							4		
							4.5		
							5		

PARSONS **Field Boring Log**

Location of Boring/Well:

Job No. 454555 | Client/Site: LAUSD Sylvan Park Early Education Center

Drilling Co./Method: Rice General | Boring/Well Number **SB8**

Sampling Method: Hand Auger | Sheet 1 of 1

Weather Conditions: Sunny | Drilling

Surface Conditions: soil | Start Date 8/29/2025 Time 0803 | Finish Date 8/29/2025 Time 0809

Datum:

Geologist:

Reviewed By:

Iso 100 PPM

Type or Instrument/Serial No.

Calibration Date/Gas:

Sample Container:

Sample Analyses:

Personal Sampling: ☐ Yes ☒ No

Person Sampled:

Sample No. / Sample Depth	Time	Sampler Blows	Inches Driven / % Recovery	PID (ppm) Auger	PID (ppm) Sample	XRF Lead (ppm)	Depth in Feet	USCS Soil Type	Notes:
							0		
	0804						0.5		Sandy Silt, with trace gravel, moist, loose, dark brown.
							1		
							1.5		
	0807								Same as above
							2		Total Depth 2-ft bgs
									Backfilled with cuttings to grade
							2.5		
							3		
							3.5		
							4		
							4.5		
							5		

PARSONS

Field Boring Log

Location of Boring/Well:

Job No. 454555

Client/Site: LAUSD Sylvan Park Early Education Center

Drilling Co./Method: Rice General

Boring/Well Number **SB9**

Sampling Method: Hand Auger

Sheet 1 of 1

Weather Conditions: Sunny

Drilling

Surface Conditions: soil

Start Date 8/29/2025 Time 0749

Finish Date 8/29/2025 Time 0754

Datum:

Geologist:

Reviewed By:

Iso 100 PPM

Type or Instrument/Serial No.

Calibration Date/Gas:

Sample Container:

Sample Analyses:

Personal Sampling: ☐ Yes ☒ No

Person Sampled:

Sample No. / Sample Depth	Time	Sampler Blows	Inches Driven / % Recovery	PID (ppm) Auger	PID (ppm) Sample	XRF Lead (ppm)	Depth in Feet	USCS Soil Type	Notes:
							0		
	0750						0.5		Sandy Silt, with trace gravel, moist, loose, dark brown.
							1		
							1.5		
	0753								Same as above
							2		Total Depth 2-ft bgs
									Backfilled with cuttings to grade
							2.5		
							3		
							3.5		
							4		
							4.5		
							5		

PARSONS **Field Boring Log**

Location of Boring/Well:

Job No. 454555 | Client/Site: LAUSD Sylvan Park Early Education Center

Drilling Co./Method: Rice General | Boring/Well Number **SB10**

Sampling Method: Hand Auger | Sheet 1 of 1

Weather Conditions: Sunny | Drilling

Surface Conditions: soil | Start Date 8/29/2025 Time 0835 | Finish Date 8/29/2025 Time 0845

Datum:

Geologist:

Reviewed By:

Iso 100 PPM

Type or Instrument/Serial No.

Calibration Date/Gas:

Sample Container:

Sample Analyses:

Personal Sampling: ☒ No ☐ Yes

Person Sampled:

Sample No. / Sample Depth	Time	Sampler Blows	Inches Driven / % Recovery	PID (ppm) Auger	PID (ppm) Sample	XRF Lead (ppm)	Depth in Feet	USCS Soil Type	Notes:
							0		
	0750						0.5		Sandy Silt, with trace gravel, moist, loose, dark brown.
							1		
							1.5		
	0753								Same as above
							2		Total Depth 2-ft bgs
									Backfilled with cuttings to grade
							2.5		
							3		
							3.5		
							4		
							4.5		
							5		

APPENDIX C
Certified Analytical Laboratory Report

1 Laboratories

2520 N. San Fernando Road, Unit A, Los Angeles, CA 90065
323-254-7700 www.1labsinc.com cs@1labsinc.com

September 30 2025

1 Labs Workorder No: 2508433

Parsons
100 W. Walnut St.
Pasadena, CA 91124
Phone Number: (626) 533-3740

Project Manager: Justin King
Project Name: 454555
Project Number: [none]
Site Address: Sylvan Park Early Education Center

Enclosed are the results of analyses for samples received by the laboratory on August 29, 2025. If you have any questions concerning this report, please feel free to contact us.

Checked By:

Trinh Pham
Principal

Approved By:

Joe Sevrean
Laboratory Director

1 Laboratories, Inc. LLC (1LABS) accepts sample materials from clients for analysis with the assumption that all of the information provided to 1LABS verbally or in writing by our clients (and/or their agents), regarding samples being submitted to 1LABS, is complete and accurate. 1LABS accepts all samples subject to the following conditions:

1) 1LABS is not responsible for verifying any client-provided information regarding any samples submitted to the laboratory.

2) 1LABS is not responsible for any consequences resulting from any inaccuracies, omissions, or misrepresentations contained in client-provided information regarding samples submitted to the laboratory.

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CHAIN OF CUSTODY

cs@1labsinc.com

2520 N. San Fernando Road, Unit A, Los Angeles, CA 90065 PH: (323) 254-7700

1 Laboratories

Customer Information:

Client Name: Parsons
Address: 100 W. Walnut St
City, State, Zip: Pasadena, Ca 91124
Project Manager: Justin King
Telephone No.: 310-809-5743
Send Report via: [ ] e-mail (address) Justin.King@parsons.com

Billing Information

Client Name: Parsons
Address: Same
City, State, Zip: Same
Contact Same
Telephone No.: Same
Send Invoice via: [ ] e-mail (address) Justin.King@parsons.com

Turnaround Time

[ ] Routine (5 to 7 business days)
[ ] 3 Business DAYS [ ] 2 Business DAYS
[ ] RUSH *(notify lab)
[ ] 24 Business HRS [ ] 8 Business HRS
[ ] 4 Business HRS

Report Type: [ ] Results Only [ ] Level 1 [✓] Level 2 [ ] Level 3 [ ] Level 4 [ ] EDD

Project Name/Number: 454555
Location: Sylvan Park Early Education Center
PO No.:

WORK ORDER NUMBER: 2508433

Sampled by (PRINT): Alex Gonzalez
Sampler Signature:
Sampler Phone No.:

#	Lab ID	Client Sample ID	Date Collected	Time Collected	No. of Containers	Matrix	Grab / Comp	Preservative Types	Analysis Requested: OCPs 8081A	PCBs 8082	PAHs 8270 SIM	Arsenic 6020	CAM Metals 6010B/7471B	Cr VI 7199	Moisture Content	TPH-G 8015	TPH-D 8015	VOCs 8260	Additional Notes
1	2508433-01	SB9-0.5	8/29/25	0750	7	SS	G		X	X	X	X	X	X	X	X	X	X	
2	-02	SB9-2.0	8/29/25	0753	1	SS	G												hold analysis
3	-03	SB8-0.5	8/29/25	0804	1	SS	G		X	X	X	X	X	X	X				
4	-04	SB8-2.0	8/29/25	0807	1	SS	G												hold analysis
5	-05	SB7-0.5	8/29/25	0815	1	SS	G		X	X	X	X	X	X	X	\			
6	-06	SB7-2.0	8/29/25	0819	1	SS	G												hold analysis
7	-07	CS1-0.5	8/29/25	0820	1	SS	G												hold analysis
8	-08	SB10-0.5	8/29/25	0838	1	SS	G		X	X	X	X	X	X	X				
9	-09	SB10-2.0	8/29/25	0840	1	SS	G												hold analysis
10	-10	SB3-0.5	8/29/25	0925	1	SS	G		X	X	X	X	X	X	X				

* Instructions on back

Sample Disposition [ ] Dispose as appropriate [ ] Return [ ] Archive

Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
	8/29/25 1125		8/29/25 1125
Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time

Comments:

Version 2.0

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CHAIN OF CUSTODY

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2520 N. San Fernando Road, Unit A, Los Angeles, CA 90065 PH: (323) 254-7700

1 Laboratories

Customer Information:

Client Name: Parsons
Address: 100 w. Walnut St
City, State, Zip: Pasadena, Ca 91124
Project Manager: Justin Kirs
Telephone No.: 310-809-5743
Send Report via: [ ] e-mail (address) Justin.Kirs@parsons.com

Billing Information

Client Name: Parsons
Address: same
City, State, Zip: same
Contact same
Telephone No.: same
Send Invoice via: [ ] e-mail (address) same

Turnaround Time

[✓] Routine (5 to 7 business days)
[ ] 3 Business DAYS [ ] 2 Business DAYS
[ ] RUSH *(notify lab)
[ ] 24 Business HRS [ ] 8 Business HRS
[ ] 4 Business HRS

Report Type: [ ] Results Only [ ] Level 1 [✓] Level 2 [ ] Level 3 [ ] Level 4 [ ] EDD

Project Name/Number: 454555
Location: Sylmar Park Early Education Center
PO No.:
Sampled by (PRINT): Alex Gonzalez
Sampler Signature:
Sampler Phone No.:

WORK ORDER NUMBER: 2508433

#	Lab ID	Client Sample ID	Date Collected	Time Collected	No. of Containers	Matrix	Grab / Comp	Preservative Types	Analysis Requested: ORG 8081A	ORG 8082	PAHs 8270SIM	Arsenic 6020	CAM Metals 6010B/7471B	Cr VI 7199	moisture content	TPH-D BUSD	TPH-P/D 8015	VOCs 8260B	Additional Notes
1	2508433-11	SB3-2.0	8/29/25	0930	1	SS	G												hold analysis
2	-12	SB2-0.5	8/29/25	0935	1	SS	G		X	X	X	X	X	X	X				
3	-13	SB2-2.0	8/29/25	0937	1	SS	G												
4	-14	SB1-0.5	8/29/25	0940	1	SS	G		X	X	X	X	X	X	X				~~hold analysis~~ per run
5	-15	SB1-2.0	8/29/25	0945	1	SS	G												Hold analysis
6	-16	SB4-0.5	8/29/25	0955	7	SS	G		X	X	X	X	X	X	X	X	X	X	
7	-17	SB4-2.0	8/29/25	0958	1	SS	G												Hold analysis
8	-18	SB5-0.5	8/29/25	1015	1	SS	G		X	X	X	X	X	X	X				
9	-19	SB5-2.0	8/29/25	1018	1	SS	G												Hold analysis
10	-20	SB6-0.5	8/29/25	1022	1	SS	G		X	X	X	X	X	X	X				

* Instructions on back

Sample Disposition [ ] Dispose as appropriate [ ] Return [ ] Archive

Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
	8/29/25 1125		8/29/25 11:25
Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time

Comments:

Version 2.0

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CHAIN OF CUSTODY

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2520 N. San Fernando Road, Unit A, Los Angeles, CA 90065 PH: (323) 254-7700

1 Laboratories

Customer Information:

Client Name: Persons
Address: 100 W. Walnut St
City, State, Zip: Pasadena, CA 91124
Project Manager: Justin King
Telephone No.: 310-804-5343
Send Report via: [ ] e-mail (address) Justin.King@persons.com

Billing Information

Client Name: Same
Address:
City, State, Zip:
Contact
Telephone No.:
Send Invoice via: [ ] e-mail (address)

Turnaround Time

[X] Routine (6 to 7 business days)
[ ] 3 Business DAYS [ ] 2 Business DAYS
[ ] RUSH *(notify lab)
[ ] 24 Business HRS [ ] 8 Business HRS
[ ] 4 Business HRS

Report Type: [ ] Results Only [ ] Level 1 [X] Level 2 [ ] Level 3 [ ] Level 4 [ ] EDD

Project Name/Number: 454555
Location: Sylvan Park Early Education Center
PO No.:
WORK ORDER NUMBER: 2508433

Sampled by (PRINT): Alex Gonzalez
Sampler Signature:
Sampler Phone No.:

#	Lab ID	Client Sample ID	Date Collected	Time Collected	No. of Containers	Matrix	Grab / Comp	Preservative Types	Analysis Requested: OCPs 8081A	PCBs 8082	PAHs 8270SIM	CAM metals 6010B/7471A	Moisture Content	Arsenic 6020	Cr VI 7199				Additional Notes
1	2508433-21	SB6-2.0	8/29/25	1025	1	SS	G		X AG	X AG	X AG	X AG	X AG	X AG	X AG				Hold analysis
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

* Instructions on back

Sample Disposition [ ] Dispose as appropriate [ ] Return [ ] Archive

Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
	8/29/25 1125		8/29/25 11:25
Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time
Relinquished By (signature)	Date/Time	Received By (signature)	Date/Time

Comments:

Version 2.0

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COOLER RECEIPT FORM

Client Name: Parsons

Project Name: 454555 Project No.:

1LABS Job Number: 2508433

Date Received: 8/29/25 Received by: YH

Carrier: ☐ 1LABS Courier ☑ Client ☐ GSL ☐ FedEx ☐ UPS
☐ Others:

Samples were received in: ☐ Cooler (4) ☐ Other (Specify):

Sample Container Temperature: 4 °C IR Gun S/N:

Type of sample containers: VOA, ~~Glass bottles;~~ Wide mouth jars, HDPE bottles, Metal sleeves, Acetate sleeves, 5035 Kit: 1LABS or Clint, Tedlar Bags, Summa Canister: 6L, 3L, 1L, Others (Specify):

How are samples preserved: ☐ None, ☑ Ice, ☐ Blue Ice, ☐ Dry Ice
☐ None, ☐ HNO_3, ☐ NaOH, ☐ ZnOAc, ☐ HCl, ☐ $Na_2S_2O_3$, ☐ MeOH, ☑ $NaHSO_4$
☐ Other (Specify):

	Yes	No	N/A	Note or Comment
1. Are the COCs Correct?	✓			
2. Are Sample labels legible & indelible ink?	✓			
3. Do samples match the COC?	✓			
4. Are the required analyses clear?	✓			
5. Is there enough samples for required analysis?	✓			
6. Does cooler or samples have custody seal(s)?		✓		
7. Are sample containers in good condition?	✓			
8. Are samples preserved?	✓			
9. Are samples preserved properly for the intended analysis?	✓			
10. Are the VOAs free of headspace? See footnote.	✓			
11. Are the jars free of headspace?	✓			

* = see note below. N/A = Not Applicable

PLEASE NOTE ALL SAMPLES WILL BE DISPOSED OF 30 DAYS AFTER RECEIVING DATE. IF 1LABS IS INFORMED OTHERWISE, THERE WILL BE A STORAGE CHARGE PER SAMPLE PER MONTH FOR ANY SAMPLE HELD BEYOND 30 DAYS.

◯ Example maximum headspace bubble size; acceptance criteria not to exceed 5-6 mm in diameter.

For headspace bubbles exceeding 6 mm in diameter, sample receiving will tag the VOA and notify the Project Manager. The Project Manager will contact client for Analyze or Resample instructions.

1 Laboratories

2520 N. San Fernando Road, Unit A, Los Angeles, CA 90065
323-254-7700 www.1labsinc.com cs@1labsinc.com

Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

CASE NARRATIVE

The sample and analytical summary section summarizes the samples received and the requested analyses as specified on the chain-of-custody.

The reported analytical results apply to:
1) The condition of the sample upon receipt
2)The requested analysis for each sample
3) The quality control associated with each sample.

Unless noted, results of soil and solid samples are based on wet weight.

Qualifiers are noted when necessary.

Dilutions were conducted due to matrix interference.

Analyses for PCBs by EPA 8082 and Arsenic by EPA 6020 were subcontracted to Positive Lab Service (CA ELAP 1131).

Analyis for Asbestos was subcontracted to AIH Laboratory, Inc (NVLAP 500079-0).

See attached laboratory reports.

1 Laboratories

2520 N. San Fernando Road, Unit A, Los Angeles, CA 90065
323-254-7700 www.1labsinc.com cs@1labsinc.com

Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Samples and Analytical Summary

1 Laboratories received the following samples on 08/29/2025 with the following specifications

Client ID: SB9-0.5 **Sample Date:** 08/29/2025 7:50

Lab ID: 2508433-01 **Matrix:** Soil **Quantity of Containers:** 9

Method	Analyte	Units	TAT
7199	Chromium, Hexavalent By 7199	ug/kg	5
8081A	Organochlorine Pesticides	ug/kg	5
ASTM D2216	Moisture Content	%	5
EPA 600/R-93-116	Asbestos	%	5
EPA 6010B	ICP Metals	mg/kg	5
EPA 6020	Arsenic, Total	ug/kg	5
EPA 7471A	Mercury, Total	mg/kg	5
EPA 8015B	8015 DRO/ORO	mg/kg	5
EPA 8015B	8015B GRO	mg/kg	5
EPA 8082	Polychlorinated Biphenyls (PCBs)	ug/kg	5
EPA 8260B VOC	Volatile Organic Compounds by 8260B	ug/kg	5
EPA 8270C SIM	Polycylic Aromatic Hydrocarbon(PAHs)	ug/kg	5

Client ID: SB9-2.0 **Sample Date:** 08/29/2025 7:53

Lab ID: 2508433-02 **Matrix:** Soil **Quantity of Containers:** 1

Method	Analyte	Units	TAT
Archive	Sample on hold	[blank]	5

Client ID: SB8-0.5 **Sample Date:** 08/29/2025 8:04

Lab ID: 2508433-03 **Matrix:** Soil **Quantity of Containers:** 3

Method	Analyte	Units	TAT
7199	Chromium, Hexavalent By 7199	ug/kg	5
8081A	Organochlorine Pesticides	ug/kg	5
ASTM D2216	Moisture Content	%	5
EPA 600/R-93-116	Asbestos	%	5
EPA 6010B	ICP Metals	mg/kg	5
EPA 6020	Arsenic, Total	ug/kg	5

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Samples and Analytical Summary
(Continued)

1 Laboratories received the following samples on 08/29/2025 with the following specifications

EPA 7471A	Mercury, Total	mg/kg	5
EPA 8082	Polychlorinated Biphenyls (PCBs)	ug/kg	5
EPA 8270C SIM	Polycylic Aromatic Hydrocarbon(PAHs)	ug/kg	5

Client ID: SB8-2.0 **Sample Date:** 08/29/2025 8:07

Lab ID: 2508433-04 **Matrix:** Soil **Quantity of Containers:** 1

Method	Analyte	Units	TAT
Archive	Sample on hold	[blank]	5

Client ID: SB7-0.5 **Sample Date:** 08/29/2025 8:15

Lab ID: 2508433-05 **Matrix:** Soil **Quantity of Containers:** 3

Method	Analyte	Units	TAT
7199	Chromium, Hexavalent By 7199	ug/kg	5
8081A	Organochlorine Pesticides	ug/kg	5
ASTM D2216	Moisture Content	%	5
EPA 600/R-93-116	Asbestos	%	5
EPA 6010B	ICP Metals	mg/kg	5
EPA 6020	Arsenic, Total	ug/kg	5
EPA 7471A	Mercury, Total	mg/kg	5
EPA 8082	Polychlorinated Biphenyls (PCBs)	ug/kg	5
EPA 8270C SIM	Polycylic Aromatic Hydrocarbon(PAHs)	ug/kg	5

Client ID: SB7-2.0 **Sample Date:** 08/29/2025 8:19

Lab ID: 2508433-06 **Matrix:** Soil **Quantity of Containers:** 1

Method	Analyte	Units	TAT
Archive	Sample on hold	[blank]	5

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Samples and Analytical Summary

(Continued)

1 Laboratories received the following samples on 08/29/2025 with the following specifications

Client ID: CSI-0.5 **Sample Date:** 08/29/2025 8:20

Lab ID: 2508433-07 **Matrix:** Soil **Quantity of Containers:** 1

Method	Analyte	Units	TAT
Archive	Sample on hold	[blank]	5

Client ID: SB10-0.5 **Sample Date:** 08/29/2025 8:58

Lab ID: 2508433-08 **Matrix:** Soil **Quantity of Containers:** 3

Method	Analyte	Units	TAT
7199	Chromium, Hexavalent By 7199	ug/kg	5
8081A	Organochlorine Pesticides	ug/kg	5
ASTM D2216	Moisture Content	%	5
EPA 600/R-93-116	Asbestos	%	5
EPA 6010B	ICP Metals	mg/kg	5
EPA 6020	Arsenic, Total	ug/kg	5
EPA 7471A	Mercury, Total	mg/kg	5
EPA 8082	Polychlorinated Biphenyls (PCBs)	ug/kg	5
EPA 8270C SIM	Polycylic Aromatic Hydrocarbon(PAHs)	ug/kg	5

Client ID: SB10-2.0 **Sample Date:** 08/29/2025 8:40

Lab ID: 2508433-09 **Matrix:** Soil **Quantity of Containers:** 1

Method	Analyte	Units	TAT
Archive	Sample on hold	[blank]	5

Client ID: SB3-0.5 **Sample Date:** 08/29/2025 9:25

Lab ID: 2508433-10 **Matrix:** Soil **Quantity of Containers:** 3

Method	Analyte	Units	TAT

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Samples and Analytical Summary

(Continued)

1 Laboratories received the following samples on 08/29/2025 with the following specifications

7199	**Chromium, Hexavalent By 7199**	**ug/kg**	**5**
8081A	**Organochlorine Pesticides**	**ug/kg**	**5**
ASTM D2216	**Moisture Content**	**%**	**5**
EPA 600/R-93-116	**Asbestos**	**%**	**5**
EPA 6010B	**ICP Metals**	**mg/kg**	**5**
EPA 6020	**Arsenic, Total**	**ug/kg**	**5**
EPA 7471A	**Mercury, Total**	**mg/kg**	**5**
EPA 8082	**Polychlorinated Biphenyls (PCBs)**	**ug/kg**	**5**
EPA 8270C SIM	**Polycylic Aromatic Hydrocarbon(PAHs)**	**ug/kg**	**5**

Client ID			**Sample Date**
SB3-2.0			**08/29/2025 9:30**
Lab ID		**Matrix**	**Quantity of Containers**
2508433-11		**Soil**	**1**

Method	**Analyte**	**Units**	**TAT**
Archive	**Sample on hold**	**[blank]**	**5**

Client ID			**Sample Date**
SB2-0.5			**08/29/2025 9:35**
Lab ID		**Matrix**	**Quantity of Containers**
2508433-12		**Soil**	**3**

Method	**Analyte**	**Units**	**TAT**
7199	**Chromium, Hexavalent By 7199**	**ug/kg**	**5**
8081A	**Organochlorine Pesticides**	**ug/kg**	**5**
ASTM D2216	**Moisture Content**	**%**	**5**
EPA 600/R-93-116	**Asbestos**	**%**	**5**
EPA 6010B	**ICP Metals**	**mg/kg**	**5**
EPA 6020	**Arsenic, Total**	**ug/kg**	**5**
EPA 7471A	**Mercury, Total**	**mg/kg**	**5**
EPA 8082	**Polychlorinated Biphenyls (PCBs)**	**ug/kg**	**5**
EPA 8270C SIM	**Polycylic Aromatic Hydrocarbon(PAHs)**	**ug/kg**	**5**

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Samples and Analytical Summary

(Continued)

1 Laboratories received the following samples on 08/29/2025 with the following specifications

Client ID: SB2-2.0 **Sample Date:** 08/29/2025 9:37

Lab ID: 2508433-13 **Matrix:** Soil **Quantity of Containers:** 1

Method	Analyte	Units	TAT
Archive	Sample on hold	[blank]	5

Client ID: SB1-0.5 **Sample Date:** 08/29/2025 9:40

Lab ID: 2508433-14 **Matrix:** Soil **Quantity of Containers:** 3

Method	Analyte	Units	TAT
7199	Chromium, Hexavalent By 7199	ug/kg	5
8081A	Organochlorine Pesticides	ug/kg	5
ASTM D2216	Moisture Content	%	5
EPA 600/R-93-116	Asbestos	%	5
EPA 6010B	ICP Metals	mg/kg	5
EPA 6020	Arsenic, Total	ug/kg	5
EPA 7471A	Mercury, Total	mg/kg	5
EPA 8082	Polychlorinated Biphenyls (PCBs)	ug/kg	5
EPA 8270C SIM	Polycylic Aromatic Hydrocarbon(PAHs)	ug/kg	5

Client ID: SB1-2.0 **Sample Date:** 08/29/2025 9:45

Lab ID: 2508433-15 **Matrix:** Soil **Quantity of Containers:** 1

Method	Analyte	Units	TAT
Archive	Sample on hold	[blank]	5

Client ID: SB4-0.5 **Sample Date:** 08/29/2025 9:55

Lab ID: 2508433-16 **Matrix:** Soil **Quantity of Containers:** 9

Method	Analyte	Units	TAT

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Samples and Analytical Summary
(Continued)

1 Laboratories received the following samples on 08/29/2025 with the following specifications

7199	**Chromium, Hexavalent By 7199**	**ug/kg**	**5**
8081A	**Organochlorine Pesticides**	**ug/kg**	**5**
ASTM D2216	**Moisture Content**	**%**	**5**
EPA 600/R-93-116	**Asbestos**	**%**	**5**
EPA 6010B	**ICP Metals**	**mg/kg**	**5**
EPA 6020	**Arsenic, Total**	**ug/kg**	**5**
EPA 7471A	**Mercury, Total**	**mg/kg**	**5**
EPA 8015B	**8015 DRO/ORO**	**mg/kg**	**5**
EPA 8015B	**8015B GRO**	**mg/kg**	**5**
EPA 8082	**Polychlorinated Biphenyls (PCBs)**	**ug/kg**	**5**
EPA 8260B VOC	**Volatile Organic Compounds by 8260B**	**ug/kg**	**5**
EPA 8270C SIM	**Polycylic Aromatic Hydrocarbon(PAHs)**	**ug/kg**	**5**

Client ID			**Sample Date**
SB4-2.0			**08/29/2025 9:58**
Lab ID		**Matrix**	**Quantity of Containers**
2508433-17		**Soil**	**1**

Method	**Analyte**	**Units**	**TAT**
Archive	**Sample on hold**	**[blank]**	**5**

Client ID			**Sample Date**
SB5-0.5			**08/29/2025 10:15**
Lab ID		**Matrix**	**Quantity of Containers**
2508433-18		**Soil**	**3**

Method	**Analyte**	**Units**	**TAT**
7199	**Chromium, Hexavalent By 7199**	**ug/kg**	**5**
8081A	**Organochlorine Pesticides**	**ug/kg**	**5**
ASTM D2216	**Moisture Content**	**%**	**5**
EPA 600/R-93-116	**Asbestos**	**%**	**5**
EPA 6010B	**ICP Metals**	**mg/kg**	**5**
EPA 6020	**Arsenic, Total**	**ug/kg**	**5**
EPA 7471A	**Mercury, Total**	**mg/kg**	**5**
EPA 8082	**Polychlorinated Biphenyls (PCBs)**	**ug/kg**	**5**
EPA 8270C SIM	**Polycylic Aromatic Hydrocarbon(PAHs)**	**ug/kg**	**5**

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Samples and Analytical Summary

(Continued)

1 Laboratories received the following samples on 08/29/2025 with the following specifications

Client ID			Sample Date
SB5-2.0			**08/29/2025 10:18**
Lab ID		**Matrix**	**Quantity of Containers**
2508433-19		**Soil**	**1**

Method	Analyte	Units	TAT
Archive	Sample on hold	[blank]	5

Client ID			Sample Date
SB6-0.5			**08/29/2025 10:22**
Lab ID		**Matrix**	**Quantity of Containers**
2508433-20		**Soil**	**3**

Method	Analyte	Units	TAT
7199	Chromium, Hexavalent By 7199	ug/kg	5
8081A	Organochlorine Pesticides	ug/kg	5
ASTM D2216	Moisture Content	%	5
EPA 600/R-93-116	Asbestos	%	5
EPA 6010B	ICP Metals	mg/kg	5
EPA 6020	Arsenic, Total	ug/kg	5
EPA 7471A	Mercury, Total	mg/kg	5
EPA 8082	Polychlorinated Biphenyls (PCBs)	ug/kg	5
EPA 8270C SIM	Polycylic Aromatic Hydrocarbon(PAHs)	ug/kg	5

Client ID			Sample Date
SB6-2.0			**08/29/2025 10:25**
Lab ID		**Matrix**	**Quantity of Containers**
2508433-21		**Soil**	**1**

Method	Analyte	Units	TAT
Archive	Sample on hold	[blank]	5

Total Number of Samples received: **21**

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Positive Hits Summary

Lab ID **2508433-01** | **Client ID** SB9-0.5 | **Sampled** 08/29/2025 07:50

Method	Analyte	Result	Qualifier	Unit	Analyzed
EPA 7471A	Mercury	0.0183	J	mg/kg	09/03/2025 16:01
EPA 6010B	Barium	163		mg/kg	09/04/2025 10:50
EPA 6010B	Chromium	27.2		mg/kg	09/04/2025 10:50
EPA 6010B	Copper	26.5		mg/kg	09/04/2025 10:50
EPA 6010B	Lead	17.6		mg/kg	09/04/2025 10:50
EPA 6010B	Molybdenum	3.15	J	mg/kg	09/04/2025 10:50
EPA 6010B	Nickel	23.9		mg/kg	09/04/2025 10:50
EPA 6010B	Vanadium	46.5		mg/kg	09/04/2025 10:50
EPA 6010B	Zinc	144		mg/kg	09/04/2025 10:50
EPA 8015B	TPH DROs (C13-C22)	35.9		mg/kg	09/04/2025 14:27
EPA 8015B	TPH OROs (C23-40)	10.9		mg/kg	09/04/2025 14:27
EPA 8260B VOC	Acetone	264		ug/kg	09/02/2025 13:47
EPA 8260B VOC	Benzene	0.690	J	ug/kg	09/02/2025 13:47
EPA 8260B VOC	Toluene	0.830	J	ug/kg	09/02/2025 13:47
ASTM D2216	Moisture Content	5.0		% wet	09/04/2025 11:22
ASTM D2216	Solids Content	95.0		% wet	09/04/2025 11:22

Lab ID **2508433-03** | **Client ID** SB8-0.5 | **Sampled** 08/29/2025 08:04

Method	Analyte	Result	Qualifier	Unit	Analyzed
EPA 7471A	Mercury	0.0422	J	mg/kg	09/03/2025 16:03
EPA 6010B	Antimony	6.45	J	mg/kg	09/04/2025 11:23
EPA 6010B	Barium	149		mg/kg	09/04/2025 11:23
EPA 6010B	Chromium	24.2		mg/kg	09/04/2025 11:23
EPA 6010B	Copper	26.6		mg/kg	09/04/2025 11:23
EPA 6010B	Lead	26.1		mg/kg	09/04/2025 11:23
EPA 6010B	Molybdenum	3.88	J	mg/kg	09/04/2025 11:23
EPA 6010B	Nickel	22.4		mg/kg	09/04/2025 11:23
EPA 6010B	Vanadium	42.1		mg/kg	09/04/2025 11:23
EPA 6010B	Zinc	125		mg/kg	09/04/2025 11:23
ASTM D2216	Moisture Content	5.9		% wet	09/04/2025 11:22
ASTM D2216	Solids Content	94.1		% wet	09/04/2025 11:22

Lab ID **2508433-05** | **Client ID** SB7-0.5 | **Sampled** 08/29/2025 08:15

Method	Analyte	Result	Qualifier	Unit	Analyzed
EPA 7471A	Mercury	0.0252	J	mg/kg	09/03/2025 16:05
EPA 6010B	Barium	113		mg/kg	09/04/2025 11:26
EPA 6010B	Chromium	23.9		mg/kg	09/04/2025 11:26
EPA 6010B	Copper	31.0		mg/kg	09/04/2025 11:26

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Positive Hits Summary
(Continued)

Lab ID **2508433-05** | **Client ID** SB7-0.5 | **Sampled** 08/29/2025 08:15

Method	Analyte	Result	Qualifier	Unit	Analyzed
EPA 6010B	Lead	22.7		mg/kg	09/04/2025 11:26
EPA 6010B	Molybdenum	3.08	J	mg/kg	09/04/2025 11:26
EPA 6010B	Nickel	20.0		mg/kg	09/04/2025 11:26
EPA 6010B	Vanadium	41.3		mg/kg	09/04/2025 11:26
EPA 6010B	Zinc	119		mg/kg	09/04/2025 11:26
ASTM D2216	Moisture Content	17.3		% wet	09/04/2025 11:22
ASTM D2216	Solids Content	82.7		% wet	09/04/2025 11:22

Lab ID **2508433-08** | **Client ID** SB10-0.5 | **Sampled** 08/29/2025 08:58

Method	Analyte	Result	Qualifier	Unit	Analyzed
EPA 7471A	Mercury	0.0288	J	mg/kg	09/03/2025 16:07
EPA 6010B	Barium	134		mg/kg	09/04/2025 11:29
EPA 6010B	Chromium	27.4		mg/kg	09/04/2025 11:29
EPA 6010B	Copper	37.8		mg/kg	09/04/2025 11:29
EPA 6010B	Lead	31.5		mg/kg	09/04/2025 11:29
EPA 6010B	Molybdenum	3.65	J	mg/kg	09/04/2025 11:29
EPA 6010B	Nickel	24.2		mg/kg	09/04/2025 11:29
EPA 6010B	Vanadium	45.0		mg/kg	09/04/2025 11:29
EPA 6010B	Zinc	109		mg/kg	09/04/2025 11:29
8081A	4,4´-DDT	4.38		ug/kg	09/03/2025 22:17
ASTM D2216	Moisture Content	10.3		% wet	09/04/2025 11:22
ASTM D2216	Solids Content	89.7		% wet	09/04/2025 11:22

Lab ID **2508433-10** | **Client ID** SB3-0.5 | **Sampled** 08/29/2025 09:25

Method	Analyte	Result	Qualifier	Unit	Analyzed
EPA 7471A	Mercury	0.0193	J	mg/kg	09/03/2025 16:09
EPA 6010B	Antimony	3.42	J	mg/kg	09/04/2025 11:32
EPA 6010B	Barium	147		mg/kg	09/04/2025 11:32
EPA 6010B	Chromium	26.0		mg/kg	09/04/2025 11:32
EPA 6010B	Copper	22.4		mg/kg	09/04/2025 11:32
EPA 6010B	Lead	18.1		mg/kg	09/04/2025 11:32
EPA 6010B	Molybdenum	2.85	J	mg/kg	09/04/2025 11:32
EPA 6010B	Nickel	24.2		mg/kg	09/04/2025 11:32
EPA 6010B	Vanadium	46.5		mg/kg	09/04/2025 11:32
EPA 6010B	Zinc	94.6		mg/kg	09/04/2025 11:32
8081A	4,4´-DDT	5.30		ug/kg	09/03/2025 22:30
8081A	Endosulfan I	9.28		ug/kg	09/03/2025 22:30
ASTM D2216	Moisture Content	12.0		% wet	09/04/2025 11:22

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Positive Hits Summary
(Continued)

Lab ID	Client ID				Sampled
2508433-10	SB3-0.5				08/29/2025 09:25
Method	Analyte	Result	Qualifier	Unit	Analyzed
ASTM D2216	**Solids Content**	**88.0**		**% wet**	**09/04/2025 11:22**

Lab ID	Client ID				Sampled
2508433-12	SB2-0.5				08/29/2025 09:35
Method	Analyte	Result	Qualifier	Unit	Analyzed
EPA 7471A	**Mercury**	**0.0718**	**J**	**mg/kg**	**09/03/2025 16:11**
EPA 6010B	**Antimony**	**3.18**	**J**	**mg/kg**	**09/04/2025 11:34**
EPA 6010B	**Barium**	**160**		**mg/kg**	**09/04/2025 11:34**
EPA 6010B	**Chromium**	**26.9**		**mg/kg**	**09/04/2025 11:34**
EPA 6010B	**Copper**	**27.2**		**mg/kg**	**09/04/2025 11:34**
EPA 6010B	**Lead**	**33.5**		**mg/kg**	**09/04/2025 11:34**
EPA 6010B	**Molybdenum**	**2.82**	**J**	**mg/kg**	**09/04/2025 11:34**
EPA 6010B	**Nickel**	**23.6**		**mg/kg**	**09/04/2025 11:34**
EPA 6010B	**Vanadium**	**46.0**		**mg/kg**	**09/04/2025 11:34**
EPA 6010B	**Zinc**	**123**		**mg/kg**	**09/04/2025 11:34**
ASTM D2216	**Moisture Content**	**13.1**		**% wet**	**09/04/2025 11:22**
ASTM D2216	**Solids Content**	**86.9**		**% wet**	**09/04/2025 11:22**

Lab ID	Client ID				Sampled
2508433-14	SB1-0.5				08/29/2025 09:40
Method	Analyte	Result	Qualifier	Unit	Analyzed
EPA 7471A	**Mercury**	**0.0793**	**J**	**mg/kg**	**09/03/2025 16:14**
EPA 6010B	**Barium**	**133**		**mg/kg**	**09/04/2025 11:37**
EPA 6010B	**Chromium**	**29.6**		**mg/kg**	**09/04/2025 11:37**
EPA 6010B	**Copper**	**26.2**		**mg/kg**	**09/04/2025 11:37**
EPA 6010B	**Lead**	**39.0**		**mg/kg**	**09/04/2025 11:37**
EPA 6010B	**Nickel**	**24.2**		**mg/kg**	**09/04/2025 11:37**
EPA 6010B	**Vanadium**	**51.4**		**mg/kg**	**09/04/2025 11:37**
EPA 6010B	**Zinc**	**78.3**		**mg/kg**	**09/04/2025 11:37**
8081A	**4,4´-DDT**	**72.7**		**ug/kg**	**09/03/2025 20:56**
8081A	**Endosulfan I**	**52.1**		**ug/kg**	**09/03/2025 20:56**
ASTM D2216	**Moisture Content**	**8.7**		**% wet**	**09/04/2025 11:22**
ASTM D2216	**Solids Content**	**91.3**		**% wet**	**09/04/2025 11:22**

Lab ID	Client ID				Sampled
2508433-16	SB4-0.5				08/29/2025 09:55
Method	Analyte	Result	Qualifier	Unit	Analyzed
EPA 7471A	**Mercury**	**0.0218**	**J**	**mg/kg**	**09/03/2025 16:20**

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Positive Hits Summary
(Continued)

Lab ID **2508433-16** | **Client ID** SB4-0.5 | **Sampled** 08/29/2025 09:55

Method	Analyte	Result	Qualifier	Unit	Analyzed
EPA 6010B	Antimony	4.10	J	mg/kg	09/04/2025 11:40
EPA 6010B	Barium	129		mg/kg	09/04/2025 11:40
EPA 6010B	Chromium	29.0		mg/kg	09/04/2025 11:40
EPA 6010B	Copper	21.2		mg/kg	09/04/2025 11:40
EPA 6010B	Lead	5.58		mg/kg	09/04/2025 11:40
EPA 6010B	Nickel	24.2		mg/kg	09/04/2025 11:40
EPA 6010B	Vanadium	55.9		mg/kg	09/04/2025 11:40
EPA 6010B	Zinc	59.3		mg/kg	09/04/2025 11:40
EPA 8015B	TPH DROs (C13-C22)	39.4		mg/kg	09/04/2025 14:27
EPA 8015B	TPH OROs (C23-40)	12.4		mg/kg	09/04/2025 14:27
8081A	4,4´-DDT	3.83		ug/kg	09/03/2025 21:10
8081A	Endosulfan I	3.39		ug/kg	09/03/2025 21:10
ASTM D2216	Moisture Content	10.4		% wet	09/04/2025 11:22
ASTM D2216	Solids Content	89.6		% wet	09/04/2025 11:22

Lab ID **2508433-18** | **Client ID** SB5-0.5 | **Sampled** 08/29/2025 10:15

Method	Analyte	Result	Qualifier	Unit	Analyzed
EPA 7471A	Mercury	0.0388	J	mg/kg	09/03/2025 16:22
EPA 6010B	Barium	149		mg/kg	09/04/2025 11:43
EPA 6010B	Chromium	34.7		mg/kg	09/04/2025 11:43
EPA 6010B	Copper	25.1		mg/kg	09/04/2025 11:43
EPA 6010B	Lead	41.2		mg/kg	09/04/2025 11:43
EPA 6010B	Molybdenum	3.08	J	mg/kg	09/04/2025 11:43
EPA 6010B	Nickel	25.2		mg/kg	09/04/2025 11:43
EPA 6010B	Vanadium	55.2		mg/kg	09/04/2025 11:43
EPA 6010B	Zinc	137		mg/kg	09/04/2025 11:43
8081A	4,4´-DDT	59.5		ug/kg	09/03/2025 21:23
8081A	Endosulfan I	46.9		ug/kg	09/03/2025 21:23
ASTM D2216	Moisture Content	7.0		% wet	09/04/2025 11:22
ASTM D2216	Solids Content	93.0		% wet	09/04/2025 11:22

Lab ID **2508433-20** | **Client ID** SB6-0.5 | **Sampled** 08/29/2025 10:22

Method	Analyte	Result	Qualifier	Unit	Analyzed
EPA 7471A	Mercury	0.0498	J	mg/kg	09/03/2025 16:24
EPA 6010B	Barium	119		mg/kg	09/04/2025 11:45
EPA 6010B	Chromium	33.1		mg/kg	09/04/2025 11:45
EPA 6010B	Copper	30.4		mg/kg	09/04/2025 11:45
EPA 6010B	Lead	19.2		mg/kg	09/04/2025 11:45

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Positive Hits Summary

(Continued)

Lab ID	Client ID				Sampled
2508433-20	SB6-0.5				08/29/2025 10:22
Method	Analyte	Result	Qualifier	Unit	Analyzed
EPA 6010B	**Nickel**	**22.7**		**mg/kg**	**09/04/2025 11:45**
EPA 6010B	**Vanadium**	**42.9**		**mg/kg**	**09/04/2025 11:45**
EPA 6010B	**Zinc**	**98.6**		**mg/kg**	**09/04/2025 11:45**
ASTM D2216	**Moisture Content**	**11.0**		**% wet**	**09/04/2025 11:22**
ASTM D2216	**Solids Content**	**89.0**		**% wet**	**09/04/2025 11:22**

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Analytical Results

Client Sample ID: SB9-0.5

Laboratory Sample ID: 2508433-01 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Total Mercury (CVAA)					Batch ID: BI50029		Prepared: 09/03/2025 12:00			
Mercury	**0.0183**	J	0.00464	0.200	mg/kg	1	7471A	09/03/2025 16:01	NK	EPA 7471A
Total Metals by ICP					Batch ID: BI50047		Prepared: 09/03/2025 11:20			
Antimony	ND		2.64	15.0	mg/kg	5	EPA 3050B	09/04/2025 10:50	LE	EPA 6010B
Barium	**163**		1.20	2.50	mg/kg	5	EPA 3050B	09/04/2025 10:50	LE	EPA 6010B
Beryllium	ND		1.86	12.5	mg/kg	5	EPA 3050B	09/04/2025 10:50	LE	EPA 6010B
Cadmium	ND		1.62	12.5	mg/kg	5	EPA 3050B	09/04/2025 10:50	LE	EPA 6010B
Chromium	**27.2**		0.555	2.50	mg/kg	5	EPA 3050B	09/04/2025 10:50	LE	EPA 6010B
Cobalt	ND		2.16	12.5	mg/kg	5	EPA 3050B	09/04/2025 10:50	LE	EPA 6010B
Copper	**26.5**		2.16	12.5	mg/kg	5	EPA 3050B	09/04/2025 10:50	LE	EPA 6010B
Lead	**17.6**		2.21	5.00	mg/kg	5	EPA 3050B	09/04/2025 10:50	LE	EPA 6010B
Molybdenum	**3.15**	J	2.54	12.5	mg/kg	5	EPA 3050B	09/04/2025 10:50	LE	EPA 6010B
Nickel	**23.9**		1.32	5.00	mg/kg	5	EPA 3050B	09/04/2025 10:50	LE	EPA 6010B
Selenium	ND		1.00	5.00	mg/kg	5	EPA 3050B	09/04/2025 10:50	LE	EPA 6010B
Silver	ND		3.00	12.5	mg/kg	5	EPA 3050B	09/04/2025 10:50	LE	EPA 6010B
Thallium	ND		0.750	10.0	mg/kg	5	EPA 3050B	09/04/2025 10:50	LE	EPA 6010B
Vanadium	**46.5**		2.78	12.5	mg/kg	5	EPA 3050B	09/04/2025 10:50	LE	EPA 6010B
Zinc	**144**		2.86	15.0	mg/kg	5	EPA 3050B	09/04/2025 10:50	LE	EPA 6010B
Chromium, Hexavalent By Ion Chromatography					Batch ID: BI50072		Prepared: 09/02/2025 11:40			
Chromium, Hexavalent	ND		11.2	25.0	ug/kg	1	EPA 3060A	09/03/2025 14:26	AGS	7199
Total Petroleum Hydrocarbons(TPH-g)					Batch ID: BI50001		Prepared: 09/02/2025 10:43			
TPH GROs (C4-C12)	ND		0.500	10.0	mg/kg	1	5030B	09/02/2025 13:38	tri	EPA 8015B
			% Recovery		Acceptance Limits					
Surrogate: 4-Bromofluorobenzene			*99.1 %*		*70-120*		5030B	09/02/2025 13:38	tri	*EPA 8015B*

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Analytical Results

Client Sample ID: SB9-0.5

Laboratory Sample ID: 2508433-01 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Total Petroleum Hydrocarbons(TPH DRO/ORO)					Batch ID: BI50014		Prepared: 09/02/2025 15:50			
TPH DROs (C13-C22)	**35.9**		3.63	10.0	mg/kg	1	3550B	09/04/2025 14:27	TP	EPA 8015B
TPH OROs (C23-40)	**10.9**		3.63	10.0	mg/kg	1	3550B	09/04/2025 14:27	TP	EPA 8015B
			% Recovery		Acceptance Limits					
Surrogate: o-Terphenyl			*78.0 %*		*60-125*		3550B	09/04/2025 14:27	TP	*EPA 8015B*
Organochlorine Pesticides					Batch ID: BI50025		Prepared: 09/03/2025 09:34			
Aldrin	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 15:20	TTN	8081A
alpha-BHC	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 15:20	TTN	8081A
beta-BHC	ND		0.200	1.00	ug/kg	1	3550	09/03/2025 15:20	TTN	8081A
gamma-Chlordane	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 15:20	TTN	8081A
alpha-Chlordane	ND		0.133	1.00	ug/kg	1	3550	09/03/2025 15:20	TTN	8081A
4,4´-DDD	ND		0.121	1.00	ug/kg	1	3550	09/03/2025 15:20	TTN	8081A
4,4´-DDE	ND		0.150	1.00	ug/kg	1	3550	09/03/2025 15:20	TTN	8081A
4,4´-DDT	ND		0.108	1.00	ug/kg	1	3550	09/03/2025 15:20	TTN	8081A
delta-BHC	ND		0.164	1.00	ug/kg	1	3550	09/03/2025 15:20	TTN	8081A
Dieldrin	ND		0.120	1.00	ug/kg	1	3550	09/03/2025 15:20	TTN	8081A
Endosulfan I	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 15:20	TTN	8081A
Endosulfan II	ND		0.124	1.00	ug/kg	1	3550	09/03/2025 15:20	TTN	8081A
Endosulfan sulfate	ND		0.126	1.00	ug/kg	1	3550	09/03/2025 15:20	TTN	8081A
Endrin	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 15:20	TTN	8081A
Endrin aldehyde	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 15:20	TTN	8081A
Endrin ketone	ND		0.367	2.00	ug/kg	1	3550	09/03/2025 15:20	TTN	8081A
gamma-BHC, Lindane	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 15:20	TTN	8081A
Heptachlor	ND		0.156	1.00	ug/kg	1	3550	09/03/2025 15:20	TTN	8081A
Heptachlor Epoxide	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 15:20	TTN	8081A
Methoxychlor	ND		0.182	1.00	ug/kg	1	3550	09/03/2025 15:20	TTN	8081A
Toxaphene	ND		2.50	12.5	ug/kg	1	3550	09/03/2025 15:20	TTN	8081A
Chlordane (total)	ND		0.233	2.00	ug/kg	1	3550	09/03/2025 15:20	TTN	8081A
			% Recovery		Acceptance Limits					
Surrogate: TCMX			*78.1 %*		*30-150*		3550	09/03/2025 15:20	TTN	*8081A*
Surrogate: DCBP			*77.6 %*		*30-150*		3550	09/03/2025 15:20	TTN	*8081A*

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Analytical Results

Client Sample ID: SB9-0.5

Laboratory Sample ID: 2508433-01 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Volatile Organic Compounds				Batch ID:	BI50002		Prepared:	09/02/2025 11:02		
1,2,4- Trimethylbenzene	ND		0.404	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
2-Butanone (MEK)	ND		2.73	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Acetone	**264**		49.6	100	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Benzene	**0.690**	J	0.233	1.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Bromobenzene	ND		0.407	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Bromochloromethane	ND		0.255	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Bromodichloromethane	ND		0.399	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Bromoform	ND		0.544	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Bromomethane	ND		0.530	1.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
n-Butylbenzene	ND		0.339	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
sec-Butylbenzene	ND		0.461	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
tert-Butylbenzene	ND		0.472	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Carbon disulfide	ND		0.721	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Carbon tetrachloride	ND		0.265	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Chlorobenzene	ND		0.379	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Chloroethane	ND		0.166	1.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Chloroform	ND		0.486	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Chloromethane	ND		0.131	1.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
4-Chlorotoluene	ND		0.402	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
2-Chlorotoluene	ND		0.462	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
1,2-Dibromo-3-chloropropane	ND		1.67	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Dibromochloromethane	ND		0.437	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
1,2-Dibromoethane	ND		0.530	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Dibromomethane	ND		0.183	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
1,2-Dichlorobenzene	ND		0.409	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
1,3-Dichlorobenzene	ND		0.329	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
1,4-Dichlorobenzene	ND		0.383	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Dichlorodifluoromethane	ND		0.104	1.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
1,1-Dichloroethane	ND		0.243	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
1,2-Dichloroethane	ND		0.265	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
1,1-Dichloroethene	ND		0.167	1.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
cis-1,2-Dichloroethene	ND		0.257	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
trans-1,2-Dichloroethene	ND		0.245	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
1,1-Dichloropropene	ND		0.301	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
1,2-Dichloropropane	ND		0.880	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
1,3-Dichloropropane	ND		0.614	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
2,2-Dichloropropane	ND		0.408	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
cis-1,3-Dichloropropene	ND		0.312	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
trans-1,3-Dichloropropene	ND		0.318	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Ethylbenzene	ND		0.357	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Hexachlorobutadiene	ND		0.327	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Analytical Results

Client Sample ID: SB9-0.5

Laboratory Sample ID: 2508433-01 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Volatile Organic Compounds					Batch ID: BI50002		Prepared: 09/02/2025 11:02			
2-Hexanone	ND		1.62	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Isopropylbenzene	ND		0.397	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
p-Isopropyltoluene	ND		0.450	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Methyl tert-Butyl Ether (MTBE)	ND		0.499	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
4-Methyl-2-pentanone (MIBK)	ND		0.124	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Methylene chloride	ND		1.03	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Naphthalene	ND		5.08	10.0	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
n-Propylbenzene	ND		0.398	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Styrene	ND		0.354	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
1,1,1,2-Tetrachloroethane	ND		0.460	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
1,1,2,2-Tetrachloroethane	ND		0.739	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Tetrachloroethene	ND		0.331	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Toluene	**0.830**	J	0.254	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
1,2,3-Trichlorobenzene	ND		0.585	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
1,2,4-Trichlorobenzene	ND		0.416	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
1,1,1-Trichloroethane	ND		0.276	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
1,1,2-Trichloroethane	ND		0.350	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Trichloroethene	ND		0.324	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Trichlorofluoromethane	ND		0.204	1.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
1,2,3-Trichloropropane	ND		3.57	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
1,3,5- Trimethylbenzene	ND		0.371	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Vinyl acetate	ND		0.520	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
Vinyl chloride	ND		0.267	1.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
m,p-Xylenes	ND		0.805	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
o-Xylene	ND		0.862	5.00	ug/kg	1	5030B	09/02/2025 13:47	CZ	EPA 8260B VOC
			% Recovery		Acceptance Limits					
Surrogate: 4-Bromofluorobenzene			*95.5 %*		*75-125*		5030B	09/02/2025 13:47	CZ	*EPA 8260B VOC*
Surrogate: Dibromofluoromethane			*101 %*		*75-125*		5030B	09/02/2025 13:47	CZ	*EPA 8260B VOC*
Surrogate: Toluene-d8			*99.7 %*		*75-125*		5030B	09/02/2025 13:47	CZ	*EPA 8260B VOC*

1 Laboratories

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Analytical Results

Client Sample ID: SB9-0.5

Laboratory Sample ID: 2508433-01 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Wet Chemistry										
Moisture Content	**5.0**				% wet	1	ASTM D2216	09/04/2025 11:22	AP	ASTM D2216
Solids Content	**95.0**				% wet	1	ASTM D2216	09/04/2025 11:22	AP	ASTM D2216
8270 PAH SIM				Batch ID: BI50024			Prepared: 09/03/2025 09:30			
Acenaphthene	ND		6.90	25.0	ug/kg	5	3550B	09/04/2025 10:30	TTN	EPA 8270C SIM
Acenaphthylene	ND		6.90	25.0	ug/kg	5	3550B	09/04/2025 10:30	TTN	EPA 8270C SIM
Anthracene	ND		6.20	25.0	ug/kg	5	3550B	09/04/2025 10:30	TTN	EPA 8270C SIM
Benzo(a)anthracene	ND		4.24	25.0	ug/kg	5	3550B	09/04/2025 10:30	TTN	EPA 8270C SIM
Benzo[a]pyrene	ND		11.5	25.0	ug/kg	5	3550B	09/04/2025 10:30	TTN	EPA 8270C SIM
Benzo[b]fluoranthene	ND		11.6	25.0	ug/kg	5	3550B	09/04/2025 10:30	TTN	EPA 8270C SIM
Benzo(ghi)perylene	ND		25.0	25.0	ug/kg	5	3550B	09/04/2025 10:30	TTN	EPA 8270C SIM
Benzo[k]fluoranthene	ND		12.2	25.0	ug/kg	5	3550B	09/04/2025 10:30	TTN	EPA 8270C SIM
Chrysene	ND		7.10	25.0	ug/kg	5	3550B	09/04/2025 10:30	TTN	EPA 8270C SIM
Dibenz(a,h)anthracene	ND		23.6	25.0	ug/kg	5	3550B	09/04/2025 10:30	TTN	EPA 8270C SIM
Fluoranthene	ND		5.20	25.0	ug/kg	5	3550B	09/04/2025 10:30	TTN	EPA 8270C SIM
Fluorene	ND		6.25	25.0	ug/kg	5	3550B	09/04/2025 10:30	TTN	EPA 8270C SIM
Indeno (1,2,3-cd) pyrene	ND		22.1	25.0	ug/kg	5	3550B	09/04/2025 10:30	TTN	EPA 8270C SIM
Naphthalene	ND		7.90	25.0	ug/kg	5	3550B	09/04/2025 10:30	TTN	EPA 8270C SIM
Phenanthrene	ND		7.25	25.0	ug/kg	5	3550B	09/04/2025 10:30	TTN	EPA 8270C SIM
Pyrene	ND		5.15	25.0	ug/kg	5	3550B	09/04/2025 10:30	TTN	EPA 8270C SIM
2-Methylnaphthalene	ND		3.00	25.0	ug/kg	5	3550B	09/04/2025 10:30	TTN	EPA 8270C SIM
			% Recovery	Acceptance Limits						
Surrogate: Nitrobenzene-d5		*S-04*	*577 %*	*25-130*			3550B	09/04/2025 10:30	TTN	*EPA 8270C SIM*

Analytical Results

Client Sample ID: SB8-0.5

Laboratory Sample ID: 2508433-03 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Total Mercury (CVAA)				Batch ID: BI50029			Prepared: 09/03/2025 12:00			
Mercury	**0.0422**	J	0.00464	0.200	mg/kg	1	7471A	09/03/2025 16:03	NK	EPA 7471A
Total Metals by ICP				Batch ID: BI50047			Prepared: 09/03/2025 11:20			
Antimony	**6.45**	J	2.64	15.0	mg/kg	5	EPA 3050B	09/04/2025 11:23	LE	EPA 6010B
Barium	**149**		1.20	2.50	mg/kg	5	EPA 3050B	09/04/2025 11:23	LE	EPA 6010B
Beryllium	ND		1.86	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:23	LE	EPA 6010B
Cadmium	ND		1.62	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:23	LE	EPA 6010B
Chromium	**24.2**		0.555	2.50	mg/kg	5	EPA 3050B	09/04/2025 11:23	LE	EPA 6010B
Cobalt	ND		2.16	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:23	LE	EPA 6010B
Copper	**26.6**		2.16	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:23	LE	EPA 6010B
Lead	**26.1**		2.21	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:23	LE	EPA 6010B

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Analytical Results

Client Sample ID: SB8-0.5

Laboratory Sample ID: 2508433-03 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Total Metals by ICP					Batch ID: BI50047		Prepared: 09/03/2025 11:20			
Molybdenum	**3.88**	J	2.54	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:23	LE	EPA 6010B
Nickel	**22.4**		1.32	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:23	LE	EPA 6010B
Selenium	ND		1.00	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:23	LE	EPA 6010B
Silver	ND		3.00	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:23	LE	EPA 6010B
Thallium	ND		0.750	10.0	mg/kg	5	EPA 3050B	09/04/2025 11:23	LE	EPA 6010B
Vanadium	**42.1**		2.78	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:23	LE	EPA 6010B
Zinc	**125**		2.86	15.0	mg/kg	5	EPA 3050B	09/04/2025 11:23	LE	EPA 6010B
Chromium, Hexavalent By Ion Chromatography					Batch ID: BI50072		Prepared: 09/02/2025 11:40			
Chromium, Hexavalent	ND		11.2	25.0	ug/kg	1	EPA 3060A	09/03/2025 15:01	AGS	7199
Organochlorine Pesticides					Batch ID: BI50025		Prepared: 09/03/2025 09:34			
Aldrin	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:50	TTN	8081A
alpha-BHC	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:50	TTN	8081A
beta-BHC	ND		0.200	1.00	ug/kg	1	3550	09/03/2025 21:50	TTN	8081A
gamma-Chlordane	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:50	TTN	8081A
alpha-Chlordane	ND		0.133	1.00	ug/kg	1	3550	09/03/2025 21:50	TTN	8081A
4,4′-DDD	ND		0.121	1.00	ug/kg	1	3550	09/03/2025 21:50	TTN	8081A
4,4′-DDE	ND		0.150	1.00	ug/kg	1	3550	09/03/2025 21:50	TTN	8081A
4,4′-DDT	ND		0.108	1.00	ug/kg	1	3550	09/03/2025 21:50	TTN	8081A
delta-BHC	ND		0.164	1.00	ug/kg	1	3550	09/03/2025 21:50	TTN	8081A
Dieldrin	ND		0.120	1.00	ug/kg	1	3550	09/03/2025 21:50	TTN	8081A
Endosulfan I	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:50	TTN	8081A
Endosulfan II	ND		0.124	1.00	ug/kg	1	3550	09/03/2025 21:50	TTN	8081A
Endosulfan sulfate	ND		0.126	1.00	ug/kg	1	3550	09/03/2025 21:50	TTN	8081A
Endrin	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:50	TTN	8081A
Endrin aldehyde	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:50	TTN	8081A
Endrin ketone	ND		0.367	2.00	ug/kg	1	3550	09/03/2025 21:50	TTN	8081A
gamma-BHC, Lindane	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:50	TTN	8081A
Heptachlor	ND		0.156	1.00	ug/kg	1	3550	09/03/2025 21:50	TTN	8081A
Heptachlor Epoxide	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:50	TTN	8081A
Methoxychlor	ND		0.182	1.00	ug/kg	1	3550	09/03/2025 21:50	TTN	8081A
Toxaphene	ND		2.50	12.5	ug/kg	1	3550	09/03/2025 21:50	TTN	8081A
Chlordane (total)	ND		0.233	2.00	ug/kg	1	3550	09/03/2025 21:50	TTN	8081A
			% Recovery		Acceptance Limits					
Surrogate: TCMX			*89.9 %*		*30-150*		3550	09/03/2025 21:50	TTN	*8081A*
Surrogate: DCBP			*58.6 %*		*30-150*		3550	09/03/2025 21:50	TTN	*8081A*

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Analytical Results

Client Sample ID: SB8-0.5

Laboratory Sample ID: 2508433-03 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Wet Chemistry										
Moisture Content	**5.9**				% wet	1	ASTM D2216	09/04/2025 11:22	AP	ASTM D2216
Solids Content	**94.1**				% wet	1	ASTM D2216	09/04/2025 11:22	AP	ASTM D2216
8270 PAH SIM				Batch ID: BI50024			Prepared: 09/03/2025 09:30			
Acenaphthene	ND		6.90	25.0	ug/kg	5	3550B	09/04/2025 10:56	TTN	EPA 8270C SIM
Acenaphthylene	ND		6.90	25.0	ug/kg	5	3550B	09/04/2025 10:56	TTN	EPA 8270C SIM
Anthracene	ND		6.20	25.0	ug/kg	5	3550B	09/04/2025 10:56	TTN	EPA 8270C SIM
Benzo(a)anthracene	ND		4.24	25.0	ug/kg	5	3550B	09/04/2025 10:56	TTN	EPA 8270C SIM
Benzo[a]pyrene	ND		11.5	25.0	ug/kg	5	3550B	09/04/2025 10:56	TTN	EPA 8270C SIM
Benzo[b]fluoranthene	ND		11.6	25.0	ug/kg	5	3550B	09/04/2025 10:56	TTN	EPA 8270C SIM
Benzo(ghi)perylene	ND		25.0	25.0	ug/kg	5	3550B	09/04/2025 10:56	TTN	EPA 8270C SIM
Benzo[k]fluoranthene	ND		12.2	25.0	ug/kg	5	3550B	09/04/2025 10:56	TTN	EPA 8270C SIM
Chrysene	ND		7.10	25.0	ug/kg	5	3550B	09/04/2025 10:56	TTN	EPA 8270C SIM
Dibenz(a,h)anthracene	ND		23.6	25.0	ug/kg	5	3550B	09/04/2025 10:56	TTN	EPA 8270C SIM
Fluoranthene	ND		5.20	25.0	ug/kg	5	3550B	09/04/2025 10:56	TTN	EPA 8270C SIM
Fluorene	ND		6.25	25.0	ug/kg	5	3550B	09/04/2025 10:56	TTN	EPA 8270C SIM
Indeno (1,2,3-cd) pyrene	ND		22.1	25.0	ug/kg	5	3550B	09/04/2025 10:56	TTN	EPA 8270C SIM
Naphthalene	ND		7.90	25.0	ug/kg	5	3550B	09/04/2025 10:56	TTN	EPA 8270C SIM
Phenanthrene	ND		7.25	25.0	ug/kg	5	3550B	09/04/2025 10:56	TTN	EPA 8270C SIM
Pyrene	ND		5.15	25.0	ug/kg	5	3550B	09/04/2025 10:56	TTN	EPA 8270C SIM
2-Methylnaphthalene	ND		3.00	25.0	ug/kg	5	3550B	09/04/2025 10:56	TTN	EPA 8270C SIM
			% Recovery	Acceptance Limits						
Surrogate: Nitrobenzene-d5			*109 %*	*25-130*			3550B	09/04/2025 10:56	TTN	*EPA 8270C SIM*

Analytical Results

Client Sample ID: SB7-0.5

Laboratory Sample ID: 2508433-05 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Total Mercury (CVAA)				Batch ID: BI50029			Prepared: 09/03/2025 12:00			
Mercury	**0.0252**	J	0.00464	0.200	mg/kg	1	7471A	09/03/2025 16:05	NK	EPA 7471A
Total Metals by ICP				Batch ID: BI50047			Prepared: 09/03/2025 11:20			
Antimony	ND		2.64	15.0	mg/kg	5	EPA 3050B	09/04/2025 11:26	LE	EPA 6010B
Barium	**113**		1.20	2.50	mg/kg	5	EPA 3050B	09/04/2025 11:26	LE	EPA 6010B
Beryllium	ND		1.86	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:26	LE	EPA 6010B
Cadmium	ND		1.62	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:26	LE	EPA 6010B
Chromium	**23.9**		0.555	2.50	mg/kg	5	EPA 3050B	09/04/2025 11:26	LE	EPA 6010B
Cobalt	ND		2.16	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:26	LE	EPA 6010B
Copper	**31.0**		2.16	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:26	LE	EPA 6010B
Lead	**22.7**		2.21	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:26	LE	EPA 6010B

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Analytical Results

Client Sample ID: SB7-0.5

Laboratory Sample ID: 2508433-05 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Total Metals by ICP					Batch ID: BI50047		Prepared: 09/03/2025 11:20			
Molybdenum	**3.08**	J	2.54	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:26	LE	EPA 6010B
Nickel	**20.0**		1.32	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:26	LE	EPA 6010B
Selenium	ND		1.00	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:26	LE	EPA 6010B
Silver	ND		3.00	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:26	LE	EPA 6010B
Thallium	ND		0.750	10.0	mg/kg	5	EPA 3050B	09/04/2025 11:26	LE	EPA 6010B
Vanadium	**41.3**		2.78	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:26	LE	EPA 6010B
Zinc	**119**		2.86	15.0	mg/kg	5	EPA 3050B	09/04/2025 11:26	LE	EPA 6010B
Chromium, Hexavalent By Ion Chromatography					Batch ID: BI50072		Prepared: 09/02/2025 11:40			
Chromium, Hexavalent	ND		11.2	25.0	ug/kg	1	EPA 3060A	09/03/2025 15:19	AGS	7199
Organochlorine Pesticides					Batch ID: BI50025		Prepared: 09/03/2025 09:34			
Aldrin	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:04	TTN	8081A
alpha-BHC	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:04	TTN	8081A
beta-BHC	ND		0.200	1.00	ug/kg	1	3550	09/03/2025 22:04	TTN	8081A
gamma-Chlordane	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:04	TTN	8081A
alpha-Chlordane	ND		0.133	1.00	ug/kg	1	3550	09/03/2025 22:04	TTN	8081A
4,4´-DDD	ND		0.121	1.00	ug/kg	1	3550	09/03/2025 22:04	TTN	8081A
4,4´-DDE	ND		0.150	1.00	ug/kg	1	3550	09/03/2025 22:04	TTN	8081A
4,4´-DDT	ND		0.108	1.00	ug/kg	1	3550	09/03/2025 22:04	TTN	8081A
delta-BHC	ND		0.164	1.00	ug/kg	1	3550	09/03/2025 22:04	TTN	8081A
Dieldrin	ND		0.120	1.00	ug/kg	1	3550	09/03/2025 22:04	TTN	8081A
Endosulfan I	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:04	TTN	8081A
Endosulfan II	ND		0.124	1.00	ug/kg	1	3550	09/03/2025 22:04	TTN	8081A
Endosulfan sulfate	ND		0.126	1.00	ug/kg	1	3550	09/03/2025 22:04	TTN	8081A
Endrin	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:04	TTN	8081A
Endrin aldehyde	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:04	TTN	8081A
Endrin ketone	ND		0.367	2.00	ug/kg	1	3550	09/03/2025 22:04	TTN	8081A
gamma-BHC, Lindane	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:04	TTN	8081A
Heptachlor	ND		0.156	1.00	ug/kg	1	3550	09/03/2025 22:04	TTN	8081A
Heptachlor Epoxide	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:04	TTN	8081A
Methoxychlor	ND		0.182	1.00	ug/kg	1	3550	09/03/2025 22:04	TTN	8081A
Toxaphene	ND		2.50	12.5	ug/kg	1	3550	09/03/2025 22:04	TTN	8081A
Chlordane (total)	ND		0.233	2.00	ug/kg	1	3550	09/03/2025 22:04	TTN	8081A
			% Recovery		Acceptance Limits					
Surrogate: TCMX			*86.8 %*		*30-150*		3550	09/03/2025 22:04	TTN	*8081A*
Surrogate: DCBP			*58.2 %*		*30-150*		3550	09/03/2025 22:04	TTN	*8081A*

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Analytical Results

Client Sample ID: SB7-0.5

Laboratory Sample ID: 2508433-05 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Wet Chemistry										
Moisture Content	**17.3**				% wet	1	ASTM D2216	09/04/2025 11:22	AP	ASTM D2216
Solids Content	**82.7**				% wet	1	ASTM D2216	09/04/2025 11:22	AP	ASTM D2216
8270 PAH SIM				Batch ID: BI50024			Prepared: 09/03/2025 09:30			
Acenaphthene	ND		6.90	25.0	ug/kg	5	3550B	09/04/2025 11:22	TTN	EPA 8270C SIM
Acenaphthylene	ND		6.90	25.0	ug/kg	5	3550B	09/04/2025 11:22	TTN	EPA 8270C SIM
Anthracene	ND		6.20	25.0	ug/kg	5	3550B	09/04/2025 11:22	TTN	EPA 8270C SIM
Benzo(a)anthracene	ND		4.24	25.0	ug/kg	5	3550B	09/04/2025 11:22	TTN	EPA 8270C SIM
Benzo[a]pyrene	ND		11.5	25.0	ug/kg	5	3550B	09/04/2025 11:22	TTN	EPA 8270C SIM
Benzo[b]fluoranthene	ND		11.6	25.0	ug/kg	5	3550B	09/04/2025 11:22	TTN	EPA 8270C SIM
Benzo(ghi)perylene	ND		25.0	25.0	ug/kg	5	3550B	09/04/2025 11:22	TTN	EPA 8270C SIM
Benzo[k]fluoranthene	ND		12.2	25.0	ug/kg	5	3550B	09/04/2025 11:22	TTN	EPA 8270C SIM
Chrysene	ND		7.10	25.0	ug/kg	5	3550B	09/04/2025 11:22	TTN	EPA 8270C SIM
Dibenz(a,h)anthracene	ND		23.6	25.0	ug/kg	5	3550B	09/04/2025 11:22	TTN	EPA 8270C SIM
Fluoranthene	ND		5.20	25.0	ug/kg	5	3550B	09/04/2025 11:22	TTN	EPA 8270C SIM
Fluorene	ND		6.25	25.0	ug/kg	5	3550B	09/04/2025 11:22	TTN	EPA 8270C SIM
Indeno (1,2,3-cd) pyrene	ND		22.1	25.0	ug/kg	5	3550B	09/04/2025 11:22	TTN	EPA 8270C SIM
Naphthalene	ND		7.90	25.0	ug/kg	5	3550B	09/04/2025 11:22	TTN	EPA 8270C SIM
Phenanthrene	ND		7.25	25.0	ug/kg	5	3550B	09/04/2025 11:22	TTN	EPA 8270C SIM
Pyrene	ND		5.15	25.0	ug/kg	5	3550B	09/04/2025 11:22	TTN	EPA 8270C SIM
2-Methylnaphthalene	ND		3.00	25.0	ug/kg	5	3550B	09/04/2025 11:22	TTN	EPA 8270C SIM
			% Recovery	Acceptance Limits						
Surrogate: Nitrobenzene-d5			*101 %*	*25-130*			3550B	09/04/2025 11:22	TTN	*EPA 8270C SIM*

Analytical Results

Client Sample ID: SB10-0.5

Laboratory Sample ID: 2508433-08 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Total Mercury (CVAA)				Batch ID: BI50029			Prepared: 09/03/2025 12:00			
Mercury	**0.0288**	J	0.00464	0.200	mg/kg	1	7471A	09/03/2025 16:07	NK	EPA 7471A
Total Metals by ICP				Batch ID: BI50047			Prepared: 09/03/2025 11:20			
Antimony	ND		2.64	15.0	mg/kg	5	EPA 3050B	09/04/2025 11:29	LE	EPA 6010B
Barium	**134**		1.20	2.50	mg/kg	5	EPA 3050B	09/04/2025 11:29	LE	EPA 6010B
Beryllium	ND		1.86	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:29	LE	EPA 6010B
Cadmium	ND		1.62	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:29	LE	EPA 6010B
Chromium	**27.4**		0.555	2.50	mg/kg	5	EPA 3050B	09/04/2025 11:29	LE	EPA 6010B
Cobalt	ND		2.16	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:29	LE	EPA 6010B
Copper	**37.8**		2.16	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:29	LE	EPA 6010B
Lead	**31.5**		2.21	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:29	LE	EPA 6010B

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Analytical Results

Client Sample ID: SB10-0.5

Laboratory Sample ID: 2508433-08 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Total Metals by ICP				Batch ID: BI50047			Prepared: 09/03/2025 11:20			
Molybdenum	**3.65**	J	2.54	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:29	LE	EPA 6010B
Nickel	**24.2**		1.32	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:29	LE	EPA 6010B
Selenium	ND		1.00	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:29	LE	EPA 6010B
Silver	ND		3.00	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:29	LE	EPA 6010B
Thallium	ND		0.750	10.0	mg/kg	5	EPA 3050B	09/04/2025 11:29	LE	EPA 6010B
Vanadium	**45.0**		2.78	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:29	LE	EPA 6010B
Zinc	**109**		2.86	15.0	mg/kg	5	EPA 3050B	09/04/2025 11:29	LE	EPA 6010B
Chromium, Hexavalent By Ion Chromatography				Batch ID: BI50072			Prepared: 09/02/2025 11:40			
Chromium, Hexavalent	ND		11.2	25.0	ug/kg	1	EPA 3060A	09/03/2025 15:37	AGS	7199
Organochlorine Pesticides				Batch ID: BI50025			Prepared: 09/03/2025 09:34			
Aldrin	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:17	TTN	8081A
alpha-BHC	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:17	TTN	8081A
beta-BHC	ND		0.200	1.00	ug/kg	1	3550	09/03/2025 22:17	TTN	8081A
gamma-Chlordane	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:17	TTN	8081A
alpha-Chlordane	ND		0.133	1.00	ug/kg	1	3550	09/03/2025 22:17	TTN	8081A
4,4´-DDD	ND		0.121	1.00	ug/kg	1	3550	09/03/2025 22:17	TTN	8081A
4,4´-DDE	ND		0.150	1.00	ug/kg	1	3550	09/03/2025 22:17	TTN	8081A
4,4´-DDT	**4.38**		0.108	1.00	ug/kg	1	3550	09/03/2025 22:17	TTN	8081A
delta-BHC	ND		0.164	1.00	ug/kg	1	3550	09/03/2025 22:17	TTN	8081A
Dieldrin	ND		0.120	1.00	ug/kg	1	3550	09/03/2025 22:17	TTN	8081A
Endosulfan I	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:17	TTN	8081A
Endosulfan II	ND		0.124	1.00	ug/kg	1	3550	09/03/2025 22:17	TTN	8081A
Endosulfan sulfate	ND		0.126	1.00	ug/kg	1	3550	09/03/2025 22:17	TTN	8081A
Endrin	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:17	TTN	8081A
Endrin aldehyde	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:17	TTN	8081A
Endrin ketone	ND		0.367	2.00	ug/kg	1	3550	09/03/2025 22:17	TTN	8081A
gamma-BHC, Lindane	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:17	TTN	8081A
Heptachlor	ND		0.156	1.00	ug/kg	1	3550	09/03/2025 22:17	TTN	8081A
Heptachlor Epoxide	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:17	TTN	8081A
Methoxychlor	ND		0.182	1.00	ug/kg	1	3550	09/03/2025 22:17	TTN	8081A
Toxaphene	ND		2.50	12.5	ug/kg	1	3550	09/03/2025 22:17	TTN	8081A
Chlordane (total)	ND		0.233	2.00	ug/kg	1	3550	09/03/2025 22:17	TTN	8081A
			% Recovery	Acceptance Limits						
Surrogate: TCMX			*86.0 %*	*30-150*			3550	09/03/2025 22:17	TTN	*8081A*
Surrogate: DCBP			*61.6 %*	*30-150*			3550	09/03/2025 22:17	TTN	*8081A*

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Analytical Results

Client Sample ID: SB10-0.5

Laboratory Sample ID: 2508433-08 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Wet Chemistry										
Moisture Content	**10.3**				% wet	1	ASTM D2216	09/04/2025 11:22	AP	ASTM D2216
Solids Content	**89.7**				% wet	1	ASTM D2216	09/04/2025 11:22	AP	ASTM D2216
8270 PAH SIM				Batch ID: BI50024			Prepared: 09/03/2025 09:30			
Acenaphthene	ND		6.90	25.0	ug/kg	5	3550B	09/04/2025 11:48	TTN	EPA 8270C SIM
Acenaphthylene	ND		6.90	25.0	ug/kg	5	3550B	09/04/2025 11:48	TTN	EPA 8270C SIM
Anthracene	ND		6.20	25.0	ug/kg	5	3550B	09/04/2025 11:48	TTN	EPA 8270C SIM
Benzo(a)anthracene	ND		4.24	25.0	ug/kg	5	3550B	09/04/2025 11:48	TTN	EPA 8270C SIM
Benzo[a]pyrene	ND		11.5	25.0	ug/kg	5	3550B	09/04/2025 11:48	TTN	EPA 8270C SIM
Benzo[b]fluoranthene	ND		11.6	25.0	ug/kg	5	3550B	09/04/2025 11:48	TTN	EPA 8270C SIM
Benzo(ghi)perylene	ND		25.0	25.0	ug/kg	5	3550B	09/04/2025 11:48	TTN	EPA 8270C SIM
Benzo[k]fluoranthene	ND		12.2	25.0	ug/kg	5	3550B	09/04/2025 11:48	TTN	EPA 8270C SIM
Chrysene	ND		7.10	25.0	ug/kg	5	3550B	09/04/2025 11:48	TTN	EPA 8270C SIM
Dibenz(a,h)anthracene	ND		23.6	25.0	ug/kg	5	3550B	09/04/2025 11:48	TTN	EPA 8270C SIM
Fluoranthene	ND		5.20	25.0	ug/kg	5	3550B	09/04/2025 11:48	TTN	EPA 8270C SIM
Fluorene	ND		6.25	25.0	ug/kg	5	3550B	09/04/2025 11:48	TTN	EPA 8270C SIM
Indeno (1,2,3-cd) pyrene	ND		22.1	25.0	ug/kg	5	3550B	09/04/2025 11:48	TTN	EPA 8270C SIM
Naphthalene	ND		7.90	25.0	ug/kg	5	3550B	09/04/2025 11:48	TTN	EPA 8270C SIM
Phenanthrene	ND		7.25	25.0	ug/kg	5	3550B	09/04/2025 11:48	TTN	EPA 8270C SIM
Pyrene	ND		5.15	25.0	ug/kg	5	3550B	09/04/2025 11:48	TTN	EPA 8270C SIM
2-Methylnaphthalene	ND		3.00	25.0	ug/kg	5	3550B	09/04/2025 11:48	TTN	EPA 8270C SIM
			% Recovery	Acceptance Limits						
Surrogate: Nitrobenzene-d5			*101 %*	*25-130*			3550B	09/04/2025 11:48	TTN	*EPA 8270C SIM*

Analytical Results

Client Sample ID: SB3-0.5

Laboratory Sample ID: 2508433-10 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Total Mercury (CVAA)				Batch ID: BI50029			Prepared: 09/03/2025 12:00			
Mercury	**0.0193**	J	0.00464	0.200	mg/kg	1	7471A	09/03/2025 16:09	NK	EPA 7471A
Total Metals by ICP				Batch ID: BI50047			Prepared: 09/03/2025 11:20			
Antimony	**3.42**	J	2.64	15.0	mg/kg	5	EPA 3050B	09/04/2025 11:32	LE	EPA 6010B
Barium	**147**		1.20	2.50	mg/kg	5	EPA 3050B	09/04/2025 11:32	LE	EPA 6010B
Beryllium	ND		1.86	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:32	LE	EPA 6010B
Cadmium	ND		1.62	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:32	LE	EPA 6010B
Chromium	**26.0**		0.555	2.50	mg/kg	5	EPA 3050B	09/04/2025 11:32	LE	EPA 6010B
Cobalt	ND		2.16	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:32	LE	EPA 6010B
Copper	**22.4**		2.16	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:32	LE	EPA 6010B
Lead	**18.1**		2.21	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:32	LE	EPA 6010B

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Analytical Results

Client Sample ID: SB3-0.5

Laboratory Sample ID: 2508433-10 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Total Metals by ICP					Batch ID: BI50047		Prepared: 09/03/2025 11:20			
Molybdenum	**2.85**	J	2.54	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:32	LE	EPA 6010B
Nickel	**24.2**		1.32	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:32	LE	EPA 6010B
Selenium	ND		1.00	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:32	LE	EPA 6010B
Silver	ND		3.00	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:32	LE	EPA 6010B
Thallium	ND		0.750	10.0	mg/kg	5	EPA 3050B	09/04/2025 11:32	LE	EPA 6010B
Vanadium	**46.5**		2.78	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:32	LE	EPA 6010B
Zinc	**94.6**		2.86	15.0	mg/kg	5	EPA 3050B	09/04/2025 11:32	LE	EPA 6010B
Chromium, Hexavalent By Ion Chromatography					Batch ID: BI50072		Prepared: 09/02/2025 11:40			
Chromium, Hexavalent	ND		11.2	25.0	ug/kg	1	EPA 3060A	09/03/2025 15:55	AGS	7199
Organochlorine Pesticides					Batch ID: BI50025		Prepared: 09/03/2025 09:34			
Aldrin	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:30	TTN	8081A
alpha-BHC	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:30	TTN	8081A
beta-BHC	ND		0.200	1.00	ug/kg	1	3550	09/03/2025 22:30	TTN	8081A
gamma-Chlordane	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:30	TTN	8081A
alpha-Chlordane	ND		0.133	1.00	ug/kg	1	3550	09/03/2025 22:30	TTN	8081A
4,4´-DDD	ND		0.121	1.00	ug/kg	1	3550	09/03/2025 22:30	TTN	8081A
4,4´-DDE	ND		0.150	1.00	ug/kg	1	3550	09/03/2025 22:30	TTN	8081A
4,4´-DDT	**5.30**		0.108	1.00	ug/kg	1	3550	09/03/2025 22:30	TTN	8081A
delta-BHC	ND		0.164	1.00	ug/kg	1	3550	09/03/2025 22:30	TTN	8081A
Dieldrin	ND		0.120	1.00	ug/kg	1	3550	09/03/2025 22:30	TTN	8081A
Endosulfan I	**9.28**		0.100	1.00	ug/kg	1	3550	09/03/2025 22:30	TTN	8081A
Endosulfan II	ND		0.124	1.00	ug/kg	1	3550	09/03/2025 22:30	TTN	8081A
Endosulfan sulfate	ND		0.126	1.00	ug/kg	1	3550	09/03/2025 22:30	TTN	8081A
Endrin	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:30	TTN	8081A
Endrin aldehyde	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:30	TTN	8081A
Endrin ketone	ND		0.367	2.00	ug/kg	1	3550	09/03/2025 22:30	TTN	8081A
gamma-BHC, Lindane	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:30	TTN	8081A
Heptachlor	ND		0.156	1.00	ug/kg	1	3550	09/03/2025 22:30	TTN	8081A
Heptachlor Epoxide	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:30	TTN	8081A
Methoxychlor	ND		0.182	1.00	ug/kg	1	3550	09/03/2025 22:30	TTN	8081A
Toxaphene	ND		2.50	12.5	ug/kg	1	3550	09/03/2025 22:30	TTN	8081A
Chlordane (total)	ND		0.233	2.00	ug/kg	1	3550	09/03/2025 22:30	TTN	8081A
			% Recovery		Acceptance Limits					
Surrogate: TCMX			*95.9 %*		*30-150*		3550	09/03/2025 22:30	TTN	*8081A*
Surrogate: DCBP			*67.7 %*		*30-150*		3550	09/03/2025 22:30	TTN	*8081A*

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Analytical Results

Client Sample ID: SB3-0.5

Laboratory Sample ID: 2508433-10 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Wet Chemistry										
Moisture Content	**12.0**				% wet	1	ASTM D2216	09/04/2025 11:22	AP	ASTM D2216
Solids Content	**88.0**				% wet	1	ASTM D2216	09/04/2025 11:22	AP	ASTM D2216
8270 PAH SIM				Batch ID: BI50024			Prepared: 09/03/2025 09:30			
Acenaphthene	ND		6.90	25.0	ug/kg	5	3550B	09/04/2025 12:14	TTN	EPA 8270C SIM
Acenaphthylene	ND		6.90	25.0	ug/kg	5	3550B	09/04/2025 12:14	TTN	EPA 8270C SIM
Anthracene	ND		6.20	25.0	ug/kg	5	3550B	09/04/2025 12:14	TTN	EPA 8270C SIM
Benzo(a)anthracene	ND		4.24	25.0	ug/kg	5	3550B	09/04/2025 12:14	TTN	EPA 8270C SIM
Benzo[a]pyrene	ND		11.5	25.0	ug/kg	5	3550B	09/04/2025 12:14	TTN	EPA 8270C SIM
Benzo[b]fluoranthene	ND		11.6	25.0	ug/kg	5	3550B	09/04/2025 12:14	TTN	EPA 8270C SIM
Benzo(ghi)perylene	ND		25.0	25.0	ug/kg	5	3550B	09/04/2025 12:14	TTN	EPA 8270C SIM
Benzo[k]fluoranthene	ND		12.2	25.0	ug/kg	5	3550B	09/04/2025 12:14	TTN	EPA 8270C SIM
Chrysene	ND		7.10	25.0	ug/kg	5	3550B	09/04/2025 12:14	TTN	EPA 8270C SIM
Dibenz(a,h)anthracene	ND		23.6	25.0	ug/kg	5	3550B	09/04/2025 12:14	TTN	EPA 8270C SIM
Fluoranthene	ND		5.20	25.0	ug/kg	5	3550B	09/04/2025 12:14	TTN	EPA 8270C SIM
Fluorene	ND		6.25	25.0	ug/kg	5	3550B	09/04/2025 12:14	TTN	EPA 8270C SIM
Indeno (1,2,3-cd) pyrene	ND		22.1	25.0	ug/kg	5	3550B	09/04/2025 12:14	TTN	EPA 8270C SIM
Naphthalene	ND		7.90	25.0	ug/kg	5	3550B	09/04/2025 12:14	TTN	EPA 8270C SIM
Phenanthrene	ND		7.25	25.0	ug/kg	5	3550B	09/04/2025 12:14	TTN	EPA 8270C SIM
Pyrene	ND		5.15	25.0	ug/kg	5	3550B	09/04/2025 12:14	TTN	EPA 8270C SIM
2-Methylnaphthalene	ND		3.00	25.0	ug/kg	5	3550B	09/04/2025 12:14	TTN	EPA 8270C SIM
			% Recovery	Acceptance Limits						
Surrogate: Nitrobenzene-d5			*99.5 %*	*25-130*			3550B	09/04/2025 12:14	TTN	*EPA 8270C SIM*

Analytical Results

Client Sample ID: SB2-0.5

Laboratory Sample ID: 2508433-12 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Total Mercury (CVAA)				Batch ID: BI50029			Prepared: 09/03/2025 12:00			
Mercury	**0.0718**	J	0.00464	0.200	mg/kg	1	7471A	09/03/2025 16:11	NK	EPA 7471A
Total Metals by ICP				Batch ID: BI50047			Prepared: 09/03/2025 11:20			
Antimony	**3.18**	J	2.64	15.0	mg/kg	5	EPA 3050B	09/04/2025 11:34	LE	EPA 6010B
Barium	**160**		1.20	2.50	mg/kg	5	EPA 3050B	09/04/2025 11:34	LE	EPA 6010B
Beryllium	ND		1.86	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:34	LE	EPA 6010B
Cadmium	ND		1.62	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:34	LE	EPA 6010B
Chromium	**26.9**		0.555	2.50	mg/kg	5	EPA 3050B	09/04/2025 11:34	LE	EPA 6010B
Cobalt	ND		2.16	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:34	LE	EPA 6010B
Copper	**27.2**		2.16	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:34	LE	EPA 6010B
Lead	**33.5**		2.21	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:34	LE	EPA 6010B

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Analytical Results

Client Sample ID: SB2-0.5

Laboratory Sample ID: 2508433-12 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Total Metals by ICP					Batch ID: BI50047		Prepared: 09/03/2025 11:20			
Molybdenum	**2.82**	J	2.54	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:34	LE	EPA 6010B
Nickel	**23.6**		1.32	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:34	LE	EPA 6010B
Selenium	ND		1.00	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:34	LE	EPA 6010B
Silver	ND		3.00	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:34	LE	EPA 6010B
Thallium	ND		0.750	10.0	mg/kg	5	EPA 3050B	09/04/2025 11:34	LE	EPA 6010B
Vanadium	**46.0**		2.78	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:34	LE	EPA 6010B
Zinc	**123**		2.86	15.0	mg/kg	5	EPA 3050B	09/04/2025 11:34	LE	EPA 6010B
Chromium, Hexavalent By Ion Chromatography					Batch ID: BI50072		Prepared: 09/02/2025 11:40			
Chromium, Hexavalent	ND		11.2	25.0	ug/kg	1	EPA 3060A	09/03/2025 16:13	AGS	7199
Organochlorine Pesticides					Batch ID: BI50025		Prepared: 09/03/2025 09:34			
Aldrin	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:44	TTN	8081A
alpha-BHC	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:44	TTN	8081A
beta-BHC	ND		0.200	1.00	ug/kg	1	3550	09/03/2025 22:44	TTN	8081A
gamma-Chlordane	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:44	TTN	8081A
alpha-Chlordane	ND		0.133	1.00	ug/kg	1	3550	09/03/2025 22:44	TTN	8081A
4,4´-DDD	ND		0.121	1.00	ug/kg	1	3550	09/03/2025 22:44	TTN	8081A
4,4´-DDE	ND		0.150	1.00	ug/kg	1	3550	09/03/2025 22:44	TTN	8081A
4,4´-DDT	ND		0.108	1.00	ug/kg	1	3550	09/03/2025 22:44	TTN	8081A
delta-BHC	ND		0.164	1.00	ug/kg	1	3550	09/03/2025 22:44	TTN	8081A
Dieldrin	ND		0.120	1.00	ug/kg	1	3550	09/03/2025 22:44	TTN	8081A
Endosulfan I	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:44	TTN	8081A
Endosulfan II	ND		0.124	1.00	ug/kg	1	3550	09/03/2025 22:44	TTN	8081A
Endosulfan sulfate	ND		0.126	1.00	ug/kg	1	3550	09/03/2025 22:44	TTN	8081A
Endrin	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:44	TTN	8081A
Endrin aldehyde	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:44	TTN	8081A
Endrin ketone	ND		0.367	2.00	ug/kg	1	3550	09/03/2025 22:44	TTN	8081A
gamma-BHC, Lindane	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:44	TTN	8081A
Heptachlor	ND		0.156	1.00	ug/kg	1	3550	09/03/2025 22:44	TTN	8081A
Heptachlor Epoxide	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 22:44	TTN	8081A
Methoxychlor	ND		0.182	1.00	ug/kg	1	3550	09/03/2025 22:44	TTN	8081A
Toxaphene	ND		2.50	12.5	ug/kg	1	3550	09/03/2025 22:44	TTN	8081A
Chlordane (total)	ND		0.233	2.00	ug/kg	1	3550	09/03/2025 22:44	TTN	8081A
			% Recovery		Acceptance Limits					
Surrogate: TCMX		*S-04*	*197 %*		*30-150*		3550	09/03/2025 22:44	TTN	*8081A*
Surrogate: DCBP			*123 %*		*30-150*		3550	09/03/2025 22:44	TTN	*8081A*

1 Laboratories

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Analytical Results

Client Sample ID: SB2-0.5

Laboratory Sample ID: 2508433-12 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Wet Chemistry										
Moisture Content	**13.1**				% wet	1	ASTM D2216	09/04/2025 11:22	AP	ASTM D2216
Solids Content	**86.9**				% wet	1	ASTM D2216	09/04/2025 11:22	AP	ASTM D2216
8270 PAH SIM				Batch ID: BI50024			Prepared: 09/03/2025 09:30			
Acenaphthene	ND		6.90	25.0	ug/kg	5	3550B	09/04/2025 12:40	TTN	EPA 8270C SIM
Acenaphthylene	ND		6.90	25.0	ug/kg	5	3550B	09/04/2025 12:40	TTN	EPA 8270C SIM
Anthracene	ND		6.20	25.0	ug/kg	5	3550B	09/04/2025 12:40	TTN	EPA 8270C SIM
Benzo(a)anthracene	ND		4.24	25.0	ug/kg	5	3550B	09/04/2025 12:40	TTN	EPA 8270C SIM
Benzo[a]pyrene	ND		11.5	25.0	ug/kg	5	3550B	09/04/2025 12:40	TTN	EPA 8270C SIM
Benzo[b]fluoranthene	ND		11.6	25.0	ug/kg	5	3550B	09/04/2025 12:40	TTN	EPA 8270C SIM
Benzo(ghi)perylene	ND		25.0	25.0	ug/kg	5	3550B	09/04/2025 12:40	TTN	EPA 8270C SIM
Benzo[k]fluoranthene	ND		12.2	25.0	ug/kg	5	3550B	09/04/2025 12:40	TTN	EPA 8270C SIM
Chrysene	ND		7.10	25.0	ug/kg	5	3550B	09/04/2025 12:40	TTN	EPA 8270C SIM
Dibenz(a,h)anthracene	ND		23.6	25.0	ug/kg	5	3550B	09/04/2025 12:40	TTN	EPA 8270C SIM
Fluoranthene	ND		5.20	25.0	ug/kg	5	3550B	09/04/2025 12:40	TTN	EPA 8270C SIM
Fluorene	ND		6.25	25.0	ug/kg	5	3550B	09/04/2025 12:40	TTN	EPA 8270C SIM
Indeno (1,2,3-cd) pyrene	ND		22.1	25.0	ug/kg	5	3550B	09/04/2025 12:40	TTN	EPA 8270C SIM
Naphthalene	ND		7.90	25.0	ug/kg	5	3550B	09/04/2025 12:40	TTN	EPA 8270C SIM
Phenanthrene	ND		7.25	25.0	ug/kg	5	3550B	09/04/2025 12:40	TTN	EPA 8270C SIM
Pyrene	ND		5.15	25.0	ug/kg	5	3550B	09/04/2025 12:40	TTN	EPA 8270C SIM
2-Methylnaphthalene	ND		3.00	25.0	ug/kg	5	3550B	09/04/2025 12:40	TTN	EPA 8270C SIM
			% Recovery	Acceptance Limits						
Surrogate: Nitrobenzene-d5			*122 %*	*25-130*			3550B	09/04/2025 12:40	TTN	*EPA 8270C SIM*

Analytical Results

Client Sample ID: SB1-0.5

Laboratory Sample ID: 2508433-14 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Total Mercury (CVAA)				Batch ID: BI50029			Prepared: 09/03/2025 12:00			
Mercury	**0.0793**	J	0.00464	0.200	mg/kg	1	7471A	09/03/2025 16:14	NK	EPA 7471A
Total Metals by ICP				Batch ID: BI50047			Prepared: 09/03/2025 11:20			
Antimony	ND		2.64	15.0	mg/kg	5	EPA 3050B	09/04/2025 11:37	LE	EPA 6010B
Barium	**133**		1.20	2.50	mg/kg	5	EPA 3050B	09/04/2025 11:37	LE	EPA 6010B
Beryllium	ND		1.86	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:37	LE	EPA 6010B
Cadmium	ND		1.62	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:37	LE	EPA 6010B
Chromium	**29.6**		0.555	2.50	mg/kg	5	EPA 3050B	09/04/2025 11:37	LE	EPA 6010B
Cobalt	ND		2.16	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:37	LE	EPA 6010B
Copper	**26.2**		2.16	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:37	LE	EPA 6010B
Lead	**39.0**		2.21	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:37	LE	EPA 6010B

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Analytical Results

Client Sample ID: SB1-0.5

Laboratory Sample ID: 2508433-14 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Total Metals by ICP				Batch ID: BI50047			Prepared: 09/03/2025 11:20			
Molybdenum	ND		2.54	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:37	LE	EPA 6010B
Nickel	**24.2**		1.32	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:37	LE	EPA 6010B
Selenium	ND		1.00	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:37	LE	EPA 6010B
Silver	ND		3.00	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:37	LE	EPA 6010B
Thallium	ND		0.750	10.0	mg/kg	5	EPA 3050B	09/04/2025 11:37	LE	EPA 6010B
Vanadium	**51.4**		2.78	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:37	LE	EPA 6010B
Zinc	**78.3**		2.86	15.0	mg/kg	5	EPA 3050B	09/04/2025 11:37	LE	EPA 6010B
Chromium, Hexavalent By Ion Chromatography				Batch ID: BI50072			Prepared: 09/02/2025 11:40			
Chromium, Hexavalent	ND		11.2	25.0	ug/kg	1	EPA 3060A	09/03/2025 17:07	AGS	7199
Organochlorine Pesticides				Batch ID: BI50025			Prepared: 09/03/2025 09:34			
Aldrin	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 20:56	TTN	8081A
alpha-BHC	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 20:56	TTN	8081A
beta-BHC	ND		0.200	1.00	ug/kg	1	3550	09/03/2025 20:56	TTN	8081A
gamma-Chlordane	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 20:56	TTN	8081A
alpha-Chlordane	ND		0.133	1.00	ug/kg	1	3550	09/03/2025 20:56	TTN	8081A
4,4´-DDD	ND		0.121	1.00	ug/kg	1	3550	09/03/2025 20:56	TTN	8081A
4,4´-DDE	ND		0.150	1.00	ug/kg	1	3550	09/03/2025 20:56	TTN	8081A
4,4´-DDT	**72.7**		0.108	1.00	ug/kg	1	3550	09/03/2025 20:56	TTN	8081A
delta-BHC	ND		0.164	1.00	ug/kg	1	3550	09/03/2025 20:56	TTN	8081A
Dieldrin	ND		0.120	1.00	ug/kg	1	3550	09/03/2025 20:56	TTN	8081A
Endosulfan I	**52.1**		0.100	1.00	ug/kg	1	3550	09/03/2025 20:56	TTN	8081A
Endosulfan II	ND		0.124	1.00	ug/kg	1	3550	09/03/2025 20:56	TTN	8081A
Endosulfan sulfate	ND		0.126	1.00	ug/kg	1	3550	09/03/2025 20:56	TTN	8081A
Endrin	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 20:56	TTN	8081A
Endrin aldehyde	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 20:56	TTN	8081A
Endrin ketone	ND		0.367	2.00	ug/kg	1	3550	09/03/2025 20:56	TTN	8081A
gamma-BHC, Lindane	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 20:56	TTN	8081A
Heptachlor	ND		0.156	1.00	ug/kg	1	3550	09/03/2025 20:56	TTN	8081A
Heptachlor Epoxide	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 20:56	TTN	8081A
Methoxychlor	ND		0.182	1.00	ug/kg	1	3550	09/03/2025 20:56	TTN	8081A
Toxaphene	ND		2.50	12.5	ug/kg	1	3550	09/03/2025 20:56	TTN	8081A
Chlordane (total)	ND		0.233	2.00	ug/kg	1	3550	09/03/2025 20:56	TTN	8081A
			% Recovery	Acceptance Limits						
Surrogate: TCMX			*75.7 %*	*30-150*			3550	09/03/2025 20:56	TTN	*8081A*
Surrogate: DCBP			*58.1 %*	*30-150*			3550	09/03/2025 20:56	TTN	*8081A*

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Analytical Results

Client Sample ID: SB1-0.5

Laboratory Sample ID: 2508433-14 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Wet Chemistry										
Moisture Content	**8.7**				% wet	1	ASTM D2216	09/04/2025 11:22	AP	ASTM D2216
Solids Content	**91.3**				% wet	1	ASTM D2216	09/04/2025 11:22	AP	ASTM D2216
8270 PAH SIM				Batch ID: BI50024			Prepared: 09/03/2025 09:30			
Acenaphthene	ND		6.90	25.0	ug/kg	5	3550B	09/04/2025 13:06	TTN	EPA 8270C SIM
Acenaphthylene	ND		6.90	25.0	ug/kg	5	3550B	09/04/2025 13:06	TTN	EPA 8270C SIM
Anthracene	ND		6.20	25.0	ug/kg	5	3550B	09/04/2025 13:06	TTN	EPA 8270C SIM
Benzo(a)anthracene	ND		4.24	25.0	ug/kg	5	3550B	09/04/2025 13:06	TTN	EPA 8270C SIM
Benzo[a]pyrene	ND		11.5	25.0	ug/kg	5	3550B	09/04/2025 13:06	TTN	EPA 8270C SIM
Benzo[b]fluoranthene	ND		11.6	25.0	ug/kg	5	3550B	09/04/2025 13:06	TTN	EPA 8270C SIM
Benzo(ghi)perylene	ND		25.0	25.0	ug/kg	5	3550B	09/04/2025 13:06	TTN	EPA 8270C SIM
Benzo[k]fluoranthene	ND		12.2	25.0	ug/kg	5	3550B	09/04/2025 13:06	TTN	EPA 8270C SIM
Chrysene	ND		7.10	25.0	ug/kg	5	3550B	09/04/2025 13:06	TTN	EPA 8270C SIM
Dibenz(a,h)anthracene	ND		23.6	25.0	ug/kg	5	3550B	09/04/2025 13:06	TTN	EPA 8270C SIM
Fluoranthene	ND		5.20	25.0	ug/kg	5	3550B	09/04/2025 13:06	TTN	EPA 8270C SIM
Fluorene	ND		6.25	25.0	ug/kg	5	3550B	09/04/2025 13:06	TTN	EPA 8270C SIM
Indeno (1,2,3-cd) pyrene	ND		22.1	25.0	ug/kg	5	3550B	09/04/2025 13:06	TTN	EPA 8270C SIM
Naphthalene	ND		7.90	25.0	ug/kg	5	3550B	09/04/2025 13:06	TTN	EPA 8270C SIM
Phenanthrene	ND		7.25	25.0	ug/kg	5	3550B	09/04/2025 13:06	TTN	EPA 8270C SIM
Pyrene	ND		5.15	25.0	ug/kg	5	3550B	09/04/2025 13:06	TTN	EPA 8270C SIM
2-Methylnaphthalene	ND		3.00	25.0	ug/kg	5	3550B	09/04/2025 13:06	TTN	EPA 8270C SIM
			% Recovery	Acceptance Limits						
Surrogate: Nitrobenzene-d5			*103 %*	*25-130*			3550B	09/04/2025 13:06	TTN	*EPA 8270C SIM*

Analytical Results

Client Sample ID: SB4-0.5

Laboratory Sample ID: 2508433-16 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Total Mercury (CVAA)				Batch ID: BI50029			Prepared: 09/03/2025 12:00			
Mercury	**0.0218**	J	0.00464	0.200	mg/kg	1	7471A	09/03/2025 16:20	NK	EPA 7471A
Total Metals by ICP				Batch ID: BI50047			Prepared: 09/03/2025 11:20			
Antimony	**4.10**	J	2.64	15.0	mg/kg	5	EPA 3050B	09/04/2025 11:40	LE	EPA 6010B
Barium	**129**		1.20	2.50	mg/kg	5	EPA 3050B	09/04/2025 11:40	LE	EPA 6010B
Beryllium	ND		1.86	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:40	LE	EPA 6010B
Cadmium	ND		1.62	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:40	LE	EPA 6010B
Chromium	**29.0**		0.555	2.50	mg/kg	5	EPA 3050B	09/04/2025 11:40	LE	EPA 6010B
Cobalt	ND		2.16	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:40	LE	EPA 6010B
Copper	**21.2**		2.16	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:40	LE	EPA 6010B
Lead	**5.58**		2.21	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:40	LE	EPA 6010B

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Analytical Results

Client Sample ID: SB4-0.5

Laboratory Sample ID: 2508433-16 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Total Metals by ICP					Batch ID: BI50047		Prepared: 09/03/2025 11:20			
Molybdenum	ND		2.54	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:40	LE	EPA 6010B
Nickel	**24.2**		1.32	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:40	LE	EPA 6010B
Selenium	ND		1.00	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:40	LE	EPA 6010B
Silver	ND		3.00	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:40	LE	EPA 6010B
Thallium	ND		0.750	10.0	mg/kg	5	EPA 3050B	09/04/2025 11:40	LE	EPA 6010B
Vanadium	**55.9**		2.78	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:40	LE	EPA 6010B
Zinc	**59.3**		2.86	15.0	mg/kg	5	EPA 3050B	09/04/2025 11:40	LE	EPA 6010B
Chromium, Hexavalent By Ion Chromatography					Batch ID: BI50072		Prepared: 09/02/2025 11:40			
Chromium, Hexavalent	ND		11.2	25.0	ug/kg	1	EPA 3060A	09/03/2025 17:25	AGS	7199
Total Petroleum Hydrocarbons(TPH-g)					Batch ID: BI50001		Prepared: 09/02/2025 10:43			
TPH GROs (C4-C12)	ND		0.500	10.0	mg/kg	1	5030B	09/02/2025 14:04	tri	EPA 8015B
			% Recovery		Acceptance Limits					
Surrogate: 4-Bromofluorobenzene			*104 %*		*70-120*		5030B	09/02/2025 14:04	tri	*EPA 8015B*
Total Petroleum Hydrocarbons(TPH DRO/ORO)					Batch ID: BI50014		Prepared: 09/02/2025 15:50			
TPH DROs (C13-C22)	**39.4**		3.63	10.0	mg/kg	1	3550B	09/04/2025 14:27	TP	EPA 8015B
TPH OROs (C23-40)	**12.4**		3.63	10.0	mg/kg	1	3550B	09/04/2025 14:27	TP	EPA 8015B
			% Recovery		Acceptance Limits					
Surrogate: o-Terphenyl			*68.7 %*		*60-125*		3550B	09/04/2025 14:27	TP	*EPA 8015B*
Organochlorine Pesticides					Batch ID: BI50025		Prepared: 09/03/2025 09:34			
Aldrin	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:10	TTN	8081A
alpha-BHC	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:10	TTN	8081A
beta-BHC	ND		0.200	1.00	ug/kg	1	3550	09/03/2025 21:10	TTN	8081A
gamma-Chlordane	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:10	TTN	8081A
alpha-Chlordane	ND		0.133	1.00	ug/kg	1	3550	09/03/2025 21:10	TTN	8081A
4,4´-DDD	ND		0.121	1.00	ug/kg	1	3550	09/03/2025 21:10	TTN	8081A
4,4´-DDE	ND		0.150	1.00	ug/kg	1	3550	09/03/2025 21:10	TTN	8081A
4,4´-DDT	**3.83**		0.108	1.00	ug/kg	1	3550	09/03/2025 21:10	TTN	8081A
delta-BHC	ND		0.164	1.00	ug/kg	1	3550	09/03/2025 21:10	TTN	8081A
Dieldrin	ND		0.120	1.00	ug/kg	1	3550	09/03/2025 21:10	TTN	8081A
Endosulfan I	**3.39**		0.100	1.00	ug/kg	1	3550	09/03/2025 21:10	TTN	8081A
Endosulfan II	ND		0.124	1.00	ug/kg	1	3550	09/03/2025 21:10	TTN	8081A
Endosulfan sulfate	ND		0.126	1.00	ug/kg	1	3550	09/03/2025 21:10	TTN	8081A
Endrin	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:10	TTN	8081A
Endrin aldehyde	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:10	TTN	8081A
Endrin ketone	ND		0.367	2.00	ug/kg	1	3550	09/03/2025 21:10	TTN	8081A
gamma-BHC, Lindane	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:10	TTN	8081A
Heptachlor	ND		0.156	1.00	ug/kg	1	3550	09/03/2025 21:10	TTN	8081A

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Analytical Results

Client Sample ID: SB4-0.5

Laboratory Sample ID: 2508433-16 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Organochlorine Pesticides				Batch ID: BI50025			Prepared: 09/03/2025 09:34			
Heptachlor Epoxide	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:10	TTN	8081A
Methoxychlor	ND		0.182	1.00	ug/kg	1	3550	09/03/2025 21:10	TTN	8081A
Toxaphene	ND		2.50	12.5	ug/kg	1	3550	09/03/2025 21:10	TTN	8081A
Chlordane (total)	ND		0.233	2.00	ug/kg	1	3550	09/03/2025 21:10	TTN	8081A
			% Recovery	Acceptance Limits						
Surrogate: TCMX			*87.3 %*	*30-150*			3550	09/03/2025 21:10	TTN	*8081A*
Surrogate: DCBP			*70.6 %*	*30-150*			3550	09/03/2025 21:10	TTN	*8081A*
Volatile Organic Compounds				Batch ID: BI50002			Prepared: 09/02/2025 11:02			
1,2,4- Trimethylbenzene	ND		0.404	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
2-Butanone (MEK)	ND		2.73	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Acetone	ND		49.6	100	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Benzene	ND		0.233	1.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Bromobenzene	ND		0.407	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Bromochloromethane	ND		0.255	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Bromodichloromethane	ND		0.399	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Bromoform	ND		0.544	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Bromomethane	ND		0.530	1.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
n-Butylbenzene	ND		0.339	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
sec-Butylbenzene	ND		0.461	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
tert-Butylbenzene	ND		0.472	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Carbon disulfide	ND		0.721	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Carbon tetrachloride	ND		0.265	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Chlorobenzene	ND		0.379	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Chloroethane	ND		0.166	1.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Chloroform	ND		0.486	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Chloromethane	ND		0.131	1.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
4-Chlorotoluene	ND		0.402	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
2-Chlorotoluene	ND		0.462	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
1,2-Dibromo-3-chloropropane	ND		1.67	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Dibromochloromethane	ND		0.437	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
1,2-Dibromoethane	ND		0.530	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Dibromomethane	ND		0.183	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
1,2-Dichlorobenzene	ND		0.409	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
1,3-Dichlorobenzene	ND		0.329	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
1,4-Dichlorobenzene	ND		0.383	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Dichlorodifluoromethane	ND		0.104	1.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
1,1-Dichloroethane	ND		0.243	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
1,2-Dichloroethane	ND		0.265	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
1,1-Dichloroethene	ND		0.167	1.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Analytical Results

Client Sample ID: SB4-0.5

Laboratory Sample ID: 2508433-16 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Volatile Organic Compounds				Batch ID: BI50002			Prepared: 09/02/2025 11:02			
cis-1,2-Dichloroethene	ND		0.257	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
trans-1,2-Dichloroethene	ND		0.245	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
1,1-Dichloropropene	ND		0.301	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
1,2-Dichloropropane	ND		0.880	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
1,3-Dichloropropane	ND		0.614	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
2,2-Dichloropropane	ND		0.408	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
cis-1,3-Dichloropropene	ND		0.312	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
trans-1,3-Dichloropropene	ND		0.318	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Ethylbenzene	ND		0.357	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Hexachlorobutadiene	ND		0.327	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
2-Hexanone	ND		1.62	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Isopropylbenzene	ND		0.397	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
p-Isopropyltoluene	ND		0.450	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Methyl tert-Butyl Ether (MTBE)	ND		0.499	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
4-Methyl-2-pentanone (MIBK)	ND		0.124	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Methylene chloride	ND		1.03	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Naphthalene	ND		5.08	10.0	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
n-Propylbenzene	ND		0.398	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Styrene	ND		0.354	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
1,1,1,2-Tetrachloroethane	ND		0.460	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
1,1,2,2-Tetrachloroethane	ND		0.739	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Tetrachloroethene	ND		0.331	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Toluene	ND		0.254	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
1,2,3-Trichlorobenzene	ND		0.585	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
1,2,4-Trichlorobenzene	ND		0.416	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
1,1,1-Trichloroethane	ND		0.276	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
1,1,2-Trichloroethane	ND		0.350	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Trichloroethene	ND		0.324	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Trichlorofluoromethane	ND		0.204	1.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
1,2,3-Trichloropropane	ND		3.57	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
1,3,5- Trimethylbenzene	ND		0.371	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Vinyl acetate	ND		0.520	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
Vinyl chloride	ND		0.267	1.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
m,p-Xylenes	ND		0.805	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
o-Xylene	ND		0.862	5.00	ug/kg	1	5030B	09/02/2025 14:11	CZ	EPA 8260B VOC
			% Recovery	Acceptance Limits						
Surrogate: 4-Bromofluorobenzene			*91.0 %*	*75-125*			5030B	09/02/2025 14:11	CZ	*EPA 8260B VOC*
Surrogate: Dibromofluoromethane			*106 %*	*75-125*			5030B	09/02/2025 14:11	CZ	*EPA 8260B VOC*
Surrogate: Toluene-d8			*101 %*	*75-125*			5030B	09/02/2025 14:11	CZ	*EPA 8260B VOC*

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Analytical Results

Client Sample ID: SB4-0.5

Laboratory Sample ID: 2508433-16 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Wet Chemistry										
Moisture Content	**10.4**				% wet	1	ASTM D2216	09/04/2025 11:22	AP	ASTM D2216
Solids Content	**89.6**				% wet	1	ASTM D2216	09/04/2025 11:22	AP	ASTM D2216
8270 PAH SIM				Batch ID: BI50024			Prepared: 09/03/2025 09:30			
Acenaphthene	ND		6.90	25.0	ug/kg	5	3550B	09/04/2025 13:32	TTN	EPA 8270C SIM
Acenaphthylene	ND		6.90	25.0	ug/kg	5	3550B	09/04/2025 13:32	TTN	EPA 8270C SIM
Anthracene	ND		6.20	25.0	ug/kg	5	3550B	09/04/2025 13:32	TTN	EPA 8270C SIM
Benzo(a)anthracene	ND		4.24	25.0	ug/kg	5	3550B	09/04/2025 13:32	TTN	EPA 8270C SIM
Benzo[a]pyrene	ND		11.5	25.0	ug/kg	5	3550B	09/04/2025 13:32	TTN	EPA 8270C SIM
Benzo[b]fluoranthene	ND		11.6	25.0	ug/kg	5	3550B	09/04/2025 13:32	TTN	EPA 8270C SIM
Benzo(ghi)perylene	ND		25.0	25.0	ug/kg	5	3550B	09/04/2025 13:32	TTN	EPA 8270C SIM
Benzo[k]fluoranthene	ND		12.2	25.0	ug/kg	5	3550B	09/04/2025 13:32	TTN	EPA 8270C SIM
Chrysene	ND		7.10	25.0	ug/kg	5	3550B	09/04/2025 13:32	TTN	EPA 8270C SIM
Dibenz(a,h)anthracene	ND		23.6	25.0	ug/kg	5	3550B	09/04/2025 13:32	TTN	EPA 8270C SIM
Fluoranthene	ND		5.20	25.0	ug/kg	5	3550B	09/04/2025 13:32	TTN	EPA 8270C SIM
Fluorene	ND		6.25	25.0	ug/kg	5	3550B	09/04/2025 13:32	TTN	EPA 8270C SIM
Indeno (1,2,3-cd) pyrene	ND		22.1	25.0	ug/kg	5	3550B	09/04/2025 13:32	TTN	EPA 8270C SIM
Naphthalene	ND		7.90	25.0	ug/kg	5	3550B	09/04/2025 13:32	TTN	EPA 8270C SIM
Phenanthrene	ND		7.25	25.0	ug/kg	5	3550B	09/04/2025 13:32	TTN	EPA 8270C SIM
Pyrene	ND		5.15	25.0	ug/kg	5	3550B	09/04/2025 13:32	TTN	EPA 8270C SIM
2-Methylnaphthalene	ND		3.00	25.0	ug/kg	5	3550B	09/04/2025 13:32	TTN	EPA 8270C SIM
			% Recovery	Acceptance Limits						
Surrogate: Nitrobenzene-d5			*98.4 %*	*25-130*			3550B	09/04/2025 13:32	TTN	*EPA 8270C SIM*

Analytical Results

Client Sample ID: SB5-0.5

Laboratory Sample ID: 2508433-18 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Total Mercury (CVAA)				Batch ID: BI50029			Prepared: 09/03/2025 12:00			
Mercury	**0.0388**	J	0.00464	0.200	mg/kg	1	7471A	09/03/2025 16:22	NK	EPA 7471A
Total Metals by ICP				Batch ID: BI50047			Prepared: 09/03/2025 11:20			
Antimony	ND		2.64	15.0	mg/kg	5	EPA 3050B	09/04/2025 11:43	LE	EPA 6010B
Barium	**149**		1.20	2.50	mg/kg	5	EPA 3050B	09/04/2025 11:43	LE	EPA 6010B
Beryllium	ND		1.86	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:43	LE	EPA 6010B
Cadmium	ND		1.62	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:43	LE	EPA 6010B
Chromium	**34.7**		0.555	2.50	mg/kg	5	EPA 3050B	09/04/2025 11:43	LE	EPA 6010B
Cobalt	ND		2.16	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:43	LE	EPA 6010B
Copper	**25.1**		2.16	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:43	LE	EPA 6010B
Lead	**41.2**		2.21	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:43	LE	EPA 6010B

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Analytical Results

Client Sample ID: SB5-0.5

Laboratory Sample ID: 2508433-18 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Total Metals by ICP					Batch ID: BI50047		Prepared: 09/03/2025 11:20			
Molybdenum	**3.08**	J	2.54	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:43	LE	EPA 6010B
Nickel	**25.2**		1.32	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:43	LE	EPA 6010B
Selenium	ND		1.00	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:43	LE	EPA 6010B
Silver	ND		3.00	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:43	LE	EPA 6010B
Thallium	ND		0.750	10.0	mg/kg	5	EPA 3050B	09/04/2025 11:43	LE	EPA 6010B
Vanadium	**55.2**		2.78	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:43	LE	EPA 6010B
Zinc	**137**		2.86	15.0	mg/kg	5	EPA 3050B	09/04/2025 11:43	LE	EPA 6010B
Chromium, Hexavalent By Ion Chromatography					Batch ID: BI50072		Prepared: 09/02/2025 11:40			
Chromium, Hexavalent	ND		11.2	25.0	ug/kg	1	EPA 3060A	09/03/2025 17:43	AGS	7199
Organochlorine Pesticides					Batch ID: BI50025		Prepared: 09/03/2025 09:34			
Aldrin	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:23	TTN	8081A
alpha-BHC	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:23	TTN	8081A
beta-BHC	ND		0.200	1.00	ug/kg	1	3550	09/03/2025 21:23	TTN	8081A
gamma-Chlordane	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:23	TTN	8081A
alpha-Chlordane	ND		0.133	1.00	ug/kg	1	3550	09/03/2025 21:23	TTN	8081A
4,4´-DDD	ND		0.121	1.00	ug/kg	1	3550	09/03/2025 21:23	TTN	8081A
4,4´-DDE	ND		0.150	1.00	ug/kg	1	3550	09/03/2025 21:23	TTN	8081A
4,4´-DDT	**59.5**		0.108	1.00	ug/kg	1	3550	09/03/2025 21:23	TTN	8081A
delta-BHC	ND		0.164	1.00	ug/kg	1	3550	09/03/2025 21:23	TTN	8081A
Dieldrin	ND		0.120	1.00	ug/kg	1	3550	09/03/2025 21:23	TTN	8081A
Endosulfan I	**46.9**		0.100	1.00	ug/kg	1	3550	09/03/2025 21:23	TTN	8081A
Endosulfan II	ND		0.124	1.00	ug/kg	1	3550	09/03/2025 21:23	TTN	8081A
Endosulfan sulfate	ND		0.126	1.00	ug/kg	1	3550	09/03/2025 21:23	TTN	8081A
Endrin	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:23	TTN	8081A
Endrin aldehyde	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:23	TTN	8081A
Endrin ketone	ND		0.367	2.00	ug/kg	1	3550	09/03/2025 21:23	TTN	8081A
gamma-BHC, Lindane	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:23	TTN	8081A
Heptachlor	ND		0.156	1.00	ug/kg	1	3550	09/03/2025 21:23	TTN	8081A
Heptachlor Epoxide	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:23	TTN	8081A
Methoxychlor	ND		0.182	1.00	ug/kg	1	3550	09/03/2025 21:23	TTN	8081A
Toxaphene	ND		2.50	12.5	ug/kg	1	3550	09/03/2025 21:23	TTN	8081A
Chlordane (total)	ND		0.233	2.00	ug/kg	1	3550	09/03/2025 21:23	TTN	8081A
			% Recovery		Acceptance Limits					
Surrogate: TCMX			*96.5 %*		*30-150*		3550	09/03/2025 21:23	TTN	*8081A*
Surrogate: DCBP			*67.8 %*		*30-150*		3550	09/03/2025 21:23	TTN	*8081A*

1 Laboratories

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Analytical Results

Client Sample ID: SB5-0.5

Laboratory Sample ID: 2508433-18 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Wet Chemistry										
Moisture Content	**7.0**				% wet	1	ASTM D2216	09/04/2025 11:22	AP	ASTM D2216
Solids Content	**93.0**				% wet	1	ASTM D2216	09/04/2025 11:22	AP	ASTM D2216
8270 PAH SIM				Batch ID: BI50024			Prepared: 09/03/2025 09:30			
Acenaphthene	ND		27.6	100	ug/kg	20	3550B	09/04/2025 13:57	TTN	EPA 8270C SIM
Acenaphthylene	ND		27.6	100	ug/kg	20	3550B	09/04/2025 13:57	TTN	EPA 8270C SIM
Anthracene	ND		24.8	100	ug/kg	20	3550B	09/04/2025 13:57	TTN	EPA 8270C SIM
Benzo(a)anthracene	ND		17.0	100	ug/kg	20	3550B	09/04/2025 13:57	TTN	EPA 8270C SIM
Benzo[a]pyrene	ND		46.0	100	ug/kg	20	3550B	09/04/2025 13:57	TTN	EPA 8270C SIM
Benzo[b]fluoranthene	ND		46.2	100	ug/kg	20	3550B	09/04/2025 13:57	TTN	EPA 8270C SIM
Benzo(ghi)perylene	ND		100	100	ug/kg	20	3550B	09/04/2025 13:57	TTN	EPA 8270C SIM
Benzo[k]fluoranthene	ND		48.6	100	ug/kg	20	3550B	09/04/2025 13:57	TTN	EPA 8270C SIM
Chrysene	ND		28.4	100	ug/kg	20	3550B	09/04/2025 13:57	TTN	EPA 8270C SIM
Dibenz(a,h)anthracene	ND		94.6	100	ug/kg	20	3550B	09/04/2025 13:57	TTN	EPA 8270C SIM
Fluoranthene	ND		20.8	100	ug/kg	20	3550B	09/04/2025 13:57	TTN	EPA 8270C SIM
Fluorene	ND		25.0	100	ug/kg	20	3550B	09/04/2025 13:57	TTN	EPA 8270C SIM
Indeno (1,2,3-cd) pyrene	ND		88.4	100	ug/kg	20	3550B	09/04/2025 13:57	TTN	EPA 8270C SIM
Naphthalene	ND		31.6	100	ug/kg	20	3550B	09/04/2025 13:57	TTN	EPA 8270C SIM
Phenanthrene	ND		29.0	100	ug/kg	20	3550B	09/04/2025 13:57	TTN	EPA 8270C SIM
Pyrene	ND		20.6	100	ug/kg	20	3550B	09/04/2025 13:57	TTN	EPA 8270C SIM
2-Methylnaphthalene	ND		12.0	100	ug/kg	20	3550B	09/04/2025 13:57	TTN	EPA 8270C SIM
			% Recovery	Acceptance Limits						
Surrogate: Nitrobenzene-d5			*26.1 %*	*25-130*			3550B	09/04/2025 13:57	TTN	*EPA 8270C SIM*

Analytical Results

Client Sample ID: SB6-0.5

Laboratory Sample ID: 2508433-20 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Total Mercury (CVAA)				Batch ID: BI50029			Prepared: 09/03/2025 12:00			
Mercury	**0.0498**	J	0.00464	0.200	mg/kg	1	7471A	09/03/2025 16:24	NK	EPA 7471A
Total Metals by ICP				Batch ID: BI50047			Prepared: 09/03/2025 11:20			
Antimony	ND		2.64	15.0	mg/kg	5	EPA 3050B	09/04/2025 11:45	LE	EPA 6010B
Barium	**119**		1.20	2.50	mg/kg	5	EPA 3050B	09/04/2025 11:45	LE	EPA 6010B
Beryllium	ND		1.86	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:45	LE	EPA 6010B
Cadmium	ND		1.62	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:45	LE	EPA 6010B
Chromium	**33.1**		0.555	2.50	mg/kg	5	EPA 3050B	09/04/2025 11:45	LE	EPA 6010B
Cobalt	ND		2.16	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:45	LE	EPA 6010B
Copper	**30.4**		2.16	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:45	LE	EPA 6010B
Lead	**19.2**		2.21	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:45	LE	EPA 6010B

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Analytical Results

Client Sample ID: SB6-0.5

Laboratory Sample ID: 2508433-20 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Total Metals by ICP				Batch ID: BI50047			Prepared: 09/03/2025 11:20			
Molybdenum	ND		2.54	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:45	LE	EPA 6010B
Nickel	**22.7**		1.32	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:45	LE	EPA 6010B
Selenium	ND		1.00	5.00	mg/kg	5	EPA 3050B	09/04/2025 11:45	LE	EPA 6010B
Silver	ND		3.00	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:45	LE	EPA 6010B
Thallium	ND		0.750	10.0	mg/kg	5	EPA 3050B	09/04/2025 11:45	LE	EPA 6010B
Vanadium	**42.9**		2.78	12.5	mg/kg	5	EPA 3050B	09/04/2025 11:45	LE	EPA 6010B
Zinc	**98.6**		2.86	15.0	mg/kg	5	EPA 3050B	09/04/2025 11:45	LE	EPA 6010B
Chromium, Hexavalent By Ion Chromatography				Batch ID: BI50072			Prepared: 09/02/2025 11:40			
Chromium, Hexavalent	ND		11.2	25.0	ug/kg	1	EPA 3060A	09/03/2025 18:01	AGS	7199
Organochlorine Pesticides				Batch ID: BI50025			Prepared: 09/03/2025 09:34			
Aldrin	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:37	TTN	8081A
alpha-BHC	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:37	TTN	8081A
beta-BHC	ND		0.200	1.00	ug/kg	1	3550	09/03/2025 21:37	TTN	8081A
gamma-Chlordane	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:37	TTN	8081A
alpha-Chlordane	ND		0.133	1.00	ug/kg	1	3550	09/03/2025 21:37	TTN	8081A
4,4´-DDD	ND		0.121	1.00	ug/kg	1	3550	09/03/2025 21:37	TTN	8081A
4,4´-DDE	ND		0.150	1.00	ug/kg	1	3550	09/03/2025 21:37	TTN	8081A
4,4´-DDT	ND		0.108	1.00	ug/kg	1	3550	09/03/2025 21:37	TTN	8081A
delta-BHC	ND		0.164	1.00	ug/kg	1	3550	09/03/2025 21:37	TTN	8081A
Dieldrin	ND		0.120	1.00	ug/kg	1	3550	09/03/2025 21:37	TTN	8081A
Endosulfan I	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:37	TTN	8081A
Endosulfan II	ND		0.124	1.00	ug/kg	1	3550	09/03/2025 21:37	TTN	8081A
Endosulfan sulfate	ND		0.126	1.00	ug/kg	1	3550	09/03/2025 21:37	TTN	8081A
Endrin	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:37	TTN	8081A
Endrin aldehyde	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:37	TTN	8081A
Endrin ketone	ND		0.367	2.00	ug/kg	1	3550	09/03/2025 21:37	TTN	8081A
gamma-BHC, Lindane	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:37	TTN	8081A
Heptachlor	ND		0.156	1.00	ug/kg	1	3550	09/03/2025 21:37	TTN	8081A
Heptachlor Epoxide	ND		0.100	1.00	ug/kg	1	3550	09/03/2025 21:37	TTN	8081A
Methoxychlor	ND		0.182	1.00	ug/kg	1	3550	09/03/2025 21:37	TTN	8081A
Toxaphene	ND		2.50	12.5	ug/kg	1	3550	09/03/2025 21:37	TTN	8081A
Chlordane (total)	ND		0.233	2.00	ug/kg	1	3550	09/03/2025 21:37	TTN	8081A
			% Recovery	Acceptance Limits						
Surrogate: TCMX			*89.8 %*	*30-150*			3550	09/03/2025 21:37	TTN	*8081A*
Surrogate: DCBP			*62.5 %*	*30-150*			3550	09/03/2025 21:37	TTN	*8081A*

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Analytical Results

Client Sample ID: SB6-0.5

Laboratory Sample ID: 2508433-20 (Soil)

Analyte	Result	Qualifier	MDL	PQL	Units	Dilution	Prep Method	Analyzed	Analyst	Method
Wet Chemistry										
Moisture Content	**11.0**				% wet	1	ASTM D2216	09/04/2025 11:22	AP	ASTM D2216
Solids Content	**89.0**				% wet	1	ASTM D2216	09/04/2025 11:22	AP	ASTM D2216
8270 PAH SIM				Batch ID: BI50024			Prepared: 09/03/2025 09:30			
Acenaphthene	ND		6.90	25.0	ug/kg	5	3550B	09/04/2025 16:56	TTN	EPA 8270C SIM
Acenaphthylene	ND		6.90	25.0	ug/kg	5	3550B	09/04/2025 16:56	TTN	EPA 8270C SIM
Anthracene	ND		6.20	25.0	ug/kg	5	3550B	09/04/2025 16:56	TTN	EPA 8270C SIM
Benzo(a)anthracene	ND		4.24	25.0	ug/kg	5	3550B	09/04/2025 16:56	TTN	EPA 8270C SIM
Benzo[a]pyrene	ND		11.5	25.0	ug/kg	5	3550B	09/04/2025 16:56	TTN	EPA 8270C SIM
Benzo[b]fluoranthene	ND		11.6	25.0	ug/kg	5	3550B	09/04/2025 16:56	TTN	EPA 8270C SIM
Benzo(ghi)perylene	ND		25.0	25.0	ug/kg	5	3550B	09/04/2025 16:56	TTN	EPA 8270C SIM
Benzo[k]fluoranthene	ND		12.2	25.0	ug/kg	5	3550B	09/04/2025 16:56	TTN	EPA 8270C SIM
Chrysene	ND		7.10	25.0	ug/kg	5	3550B	09/04/2025 16:56	TTN	EPA 8270C SIM
Dibenz(a,h)anthracene	ND		23.6	25.0	ug/kg	5	3550B	09/04/2025 16:56	TTN	EPA 8270C SIM
Fluoranthene	ND		5.20	25.0	ug/kg	5	3550B	09/04/2025 16:56	TTN	EPA 8270C SIM
Fluorene	ND		6.25	25.0	ug/kg	5	3550B	09/04/2025 16:56	TTN	EPA 8270C SIM
Indeno (1,2,3-cd) pyrene	ND		22.1	25.0	ug/kg	5	3550B	09/04/2025 16:56	TTN	EPA 8270C SIM
Naphthalene	ND		7.90	25.0	ug/kg	5	3550B	09/04/2025 16:56	TTN	EPA 8270C SIM
Phenanthrene	ND		7.25	25.0	ug/kg	5	3550B	09/04/2025 16:56	TTN	EPA 8270C SIM
Pyrene	ND		5.15	25.0	ug/kg	5	3550B	09/04/2025 16:56	TTN	EPA 8270C SIM
2-Methylnaphthalene	ND		3.00	25.0	ug/kg	5	3550B	09/04/2025 16:56	TTN	EPA 8270C SIM
			% Recovery	Acceptance Limits						
Surrogate: Nitrobenzene-d5		*S-04*	*148 %*	*25-130*			3550B	09/04/2025 16:56	TTN	*EPA 8270C SIM*

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Total Mercury (CVAA) - Quality Control Report

Analyte	Result	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BI50029 - 7471A - EPA 7471A											
Blank (BI50029-BLK1)					Prepared & Analyzed: 09/03/202						
Mercury	ND	0.00464	0.200	mg/kg							
LCS (BI50029-BS1)					Prepared & Analyzed: 09/03/202						
Mercury	0.168	0.00464	0.200	mg/kg	0.167		101	80-120			J
LCS Dup (BI50029-BSD1)					Prepared & Analyzed: 09/03/202						
Mercury	0.170	0.00464	0.200	mg/kg	0.167		102	80-120	0.985	20	J
Duplicate (BI50029-DUP1)		**Source: 2509037-01**			Prepared & Analyzed: 09/03/202						
Mercury	0.00733	0.00464	0.200	mg/kg		0.00817			10.8	20	J
Matrix Spike (BI50029-MS1)		**Source: 2509037-01**			Prepared & Analyzed: 09/03/202						
Mercury	0.180	0.00464	0.200	mg/kg	0.167	0.00817	103	70-130			J
Matrix Spike Dup (BI50029-MSD1)		**Source: 2509037-01**			Prepared & Analyzed: 09/03/202						
Mercury	0.182	0.00464	0.200	mg/kg	0.167	0.00817	104	70-130	0.922	30	J

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Total Metals by ICP - Quality Control Report

Analyte	Result	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BI50047 - EPA 3050B - EPA 6010B											
Blank (BI50047-BLK1)					Prepared: 09/03/202 Analyzed: 09/04/202						
Antimony	ND	0.527	3.00	mg/kg							
Barium	ND	0.241	0.500	"							
Beryllium	ND	0.371	2.50	"							
Cadmium	ND	0.325	2.50	"							
Chromium	ND	0.111	0.500	"							
Cobalt	ND	0.432	2.50	"							
Copper	ND	0.432	2.50	"							
Lead	ND	0.442	1.00	"							
Molybdenum	ND	0.509	2.50	"							
Nickel	ND	0.263	1.00	"							
Selenium	ND	0.200	1.00	"							
Silver	0.595	0.270	2.50	"							J
Thallium	ND	0.150	2.00	"							
Vanadium	ND	0.555	2.50	"							
Zinc	ND	0.573	3.00	"							
LCS (BI50047-BS1)					Prepared: 09/03/202 Analyzed: 09/04/202						
Antimony	59.2	0.527	3.00	mg/kg	50.0		118	80-120			
Barium	50.3	0.241	0.500	"	50.0		101	80-120			
Beryllium	51.9	0.371	2.50	"	50.0		104	80-120			
Cadmium	50.5	0.325	2.50	"	50.0		101	80-120			
Chromium	56.9	0.111	0.500	"	50.0		114	80-120			
Cobalt	50.4	0.432	2.50	"	50.0		101	80-120			
Copper	54.9	0.432	2.50	"	50.0		110	80-120			
Lead	49.8	0.442	1.00	"	50.0		99.6	80-120			
Molybdenum	51.3	0.509	2.50	"	50.0		103	80-120			
Nickel	52.5	0.263	1.00	"	50.0		105	80-120			
Selenium	47.8	0.200	1.00	"	50.0		95.5	80-120			
Silver	57.8	0.270	2.50	"	50.0		116	80-120			
Thallium	52.1	0.150	2.00	"	50.0		104	80-120			
Vanadium	55.6	0.555	2.50	"	50.0		111	80-120			
Zinc	52.8	0.573	3.00	"	50.0		106	80-120			

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Total Metals by ICP - Quality Control Report

Analyte	Result	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BI50047 - EPA 3050B - EPA 6010B											
LCS Dup (BI50047-BSD1)					Prepared: 09/03/202 Analyzed: 09/04/202						
Antimony	55.8	0.527	3.00	mg/kg	50.0		112	80-120	5.81	20	
Barium	49.9	0.241	0.500	"	50.0		99.8	80-120	0.898	20	
Beryllium	51.4	0.371	2.50	"	50.0		103	80-120	0.891	20	
Cadmium	52.0	0.325	2.50	"	50.0		104	80-120	3.02	20	
Chromium	54.4	0.111	0.500	"	50.0		109	80-120	4.54	20	
Cobalt	52.9	0.432	2.50	"	50.0		106	80-120	4.85	20	
Copper	50.7	0.432	2.50	"	50.0		101	80-120	8.08	20	
Lead	49.6	0.442	1.00	"	50.0		99.3	80-120	0.292	20	
Molybdenum	53.8	0.509	2.50	"	50.0		108	80-120	4.70	20	
Nickel	55.2	0.263	1.00	"	50.0		110	80-120	4.90	20	
Selenium	47.8	0.200	1.00	"	50.0		95.5	80-120	0.0105	20	
Silver	57.2	0.270	2.50	"	50.0		114	80-120	1.12	20	
Thallium	55.0	0.150	2.00	"	50.0		110	80-120	5.36	30	
Vanadium	51.6	0.555	2.50	"	50.0		103	80-120	7.42	20	
Zinc	52.1	0.573	3.00	"	50.0		104	80-120	1.32	20	
Duplicate (BI50047-DUP1)		**Source: 2508433-01**			Prepared: 09/03/202 Analyzed: 09/04/202						
Antimony	ND	2.64	15.0	mg/kg		ND				20	
Barium	163	1.20	2.50	"		163			0.0459	20	
Beryllium	ND	1.86	12.5	"		ND				20	
Cadmium	ND	1.62	12.5	"		ND				20	
Chromium	27.1	0.555	2.50	"		27.2			0.184	20	
Cobalt	ND	2.16	12.5	"		ND				20	
Copper	27.0	2.16	12.5	"		26.5			1.87	20	
Lead	17.6	2.21	5.00	"		17.6			0.426	20	
Molybdenum	3.22	2.54	12.5	"		3.15			2.35	20	J
Nickel	24.9	1.32	5.00	"		23.9			4.20	20	
Selenium	ND	1.00	5.00	"		ND				20	
Silver	1.85	1.35	12.5	"		1.35				20	J
Thallium	ND	0.750	10.0	"		ND				20	
Vanadium	46.9	2.78	12.5	"		46.5			0.856	20	
Zinc	151	2.86	15.0	"		144			4.45	20	

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Total Metals by ICP - Quality Control Report

Analyte	Result	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BI50047 - EPA 3050B - EPA 6010B											
Matrix Spike (BI50047-MS1)		**Source: 2508433-01**			Prepared: 09/03/202 Analyzed: 09/04/202						
Antimony	23.6	2.64	15.0	mg/kg	50.0	ND	47.2	70-130			
Barium	213	1.20	2.50	"	50.0	163	100	70-130			
Beryllium	57.2	1.86	12.5	"	50.0	ND	114	70-130			
Cadmium	56.0	1.62	12.5	"	50.0	ND	112	70-130			
Chromium	78.0	0.555	2.50	"	50.0	27.2	102	70-130			
Cobalt	47.4	2.16	12.5	"	50.0	ND	94.7	70-130			
Copper	81.4	2.16	12.5	"	50.0	26.5	110	70-130			
Lead	75.3	2.21	5.00	"	50.0	17.6	116	70-130			
Molybdenum	51.2	2.54	12.5	"	50.0	3.15	96.2	70-130			
Nickel	78.9	1.32	5.00	"	50.0	23.9	110	70-130			
Selenium	49.9	1.00	5.00	"	50.0	ND	99.8	70-130			
Silver	62.7	1.35	12.5	"	50.0	1.35	123	70-130			
Thallium	53.1	0.750	10.0	"	50.0	ND	106	70-130			
Vanadium	93.6	2.78	12.5	"	50.0	46.5	94.0	70-130			
Zinc	201	2.86	15.0	"	50.0	144	114	70-130			
Matrix Spike Dup (BI50047-MSD1)		**Source: 2508433-01**			Prepared: 09/03/202 Analyzed: 09/04/202						
Antimony	22.2	2.64	15.0	mg/kg	50.0	ND	44.5	70-130	5.89	30	
Barium	203	1.20	2.50	"	50.0	163	79.2	70-130	5.08	30	
Beryllium	53.0	1.86	12.5	"	50.0	ND	106	70-130	7.58	30	
Cadmium	52.3	1.62	12.5	"	50.0	ND	105	70-130	6.83	30	
Chromium	71.8	0.555	2.50	"	50.0	27.2	89.2	70-130	8.25	30	
Cobalt	44.5	2.16	12.5	"	50.0	ND	89.0	70-130	6.21	30	
Copper	74.4	2.16	12.5	"	50.0	26.5	95.9	70-130	8.89	30	
Lead	68.4	2.21	5.00	"	50.0	17.6	102	70-130	9.64	30	
Molybdenum	48.0	2.54	12.5	"	50.0	3.15	89.8	70-130	6.40	30	
Nickel	73.2	1.32	5.00	"	50.0	23.9	98.6	70-130	7.53	30	
Selenium	48.2	1.00	5.00	"	50.0	ND	96.3	70-130	3.62	30	
Silver	58.0	1.35	12.5	"	50.0	1.35	113	70-130	7.79	30	
Thallium	52.8	0.750	10.0	"	50.0	ND	106	70-130	0.661	30	
Vanadium	86.0	2.78	12.5	"	50.0	46.5	78.9	70-130	8.44	30	
Zinc	175	2.86	15.0	"	50.0	144	61.2	70-130	14.0	30	

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Chromium, Hexavalent By Ion Chromatography - Quality Control Report

Analyte	Result	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BI50072 - EPA 3060A - 7199											
Blank (BI50072-BLK1)					Prepared: 09/02/202 Analyzed: 09/03/202						
Chromium, Hexavalent	ND	11.2	25.0	ug/kg							
LCS (BI50072-BS1)					Prepared: 09/02/202 Analyzed: 09/03/202						
Chromium, Hexavalent	3910	11.2	25.0	ug/kg	4000		97.7	80-120			
LCS Dup (BI50072-BSD1)					Prepared: 09/02/202 Analyzed: 09/03/202						
Chromium, Hexavalent	3520	11.2	25.0	ug/kg	4000		88.0	80-120	10.4	20	
Duplicate (BI50072-DUP1)		**Source: 2508433-01**			Prepared: 09/02/202 Analyzed: 09/03/202						
Chromium, Hexavalent	520	11.2	25.0	ug/kg		ND				200	
Matrix Spike (BI50072-MS1)		**Source: 2508433-01**			Prepared: 09/02/202 Analyzed: 09/03/202						
Chromium, Hexavalent	2220	11.2	25.0	ug/kg	4000	ND	55.6	70-130			QM-07
Matrix Spike Dup (BI50072-MSD1)		**Source: 2508433-01**			Prepared: 09/02/202 Analyzed: 09/03/202						
Chromium, Hexavalent	2060	11.2	25.0	ug/kg	4000	ND	51.4	70-130	7.85	30	QM-07

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Total Petroleum Hydrocarbons(TPH-g) - Quality Control Report

Analyte	Result	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BI50001 - 5030B - EPA 8015B											
Blank (BI50001-BLK1)					Prepared & Analyzed: 09/02/202						
TPH GROs (C4-C12)	ND	0.500	10.0	mg/kg							
Surrogate: 4-Bromofluorobenzene	*0.00839*			*"*	*0.0100*		*83.9*	*70-120*			
LCS (BI50001-BS1)					Prepared & Analyzed: 09/02/202						
TPH GROs (C4-C12)	2.44	0.500	10.0	mg/kg	2.50		97.5	75-120			J
Surrogate: 4-Bromofluorobenzene	*0.151*			*"*	*0.0100*		*NR*	*70-120*			*S-08*
LCS Dup (BI50001-BSD1)					Prepared & Analyzed: 09/02/202						
TPH GROs (C4-C12)	2.41	0.500	10.0	mg/kg	2.50		96.3	75-120	1.24	15	J
Surrogate: 4-Bromofluorobenzene	*0.149*			*"*	*0.0100*		*NR*	*70-120*			*S-08*
Matrix Spike (BI50001-MS1)		**Source: 2508433-01**			Prepared & Analyzed: 09/02/202						
TPH GROs (C4-C12)	0.903	0.500	10.0	mg/kg	2.50	ND	36.1	75-120			QM-05, J
Surrogate: 4-Bromofluorobenzene	*0.0703*			*"*	*0.0100*		*703*	*70-120*			*S-08*
Matrix Spike Dup (BI50001-MSD1)		**Source: 2508433-01**			Prepared & Analyzed: 09/02/202						
TPH GROs (C4-C12)	1.22	0.500	10.0	mg/kg	2.50	ND	48.6	75-120	29.5	15	QM-05, J
Surrogate: 4-Bromofluorobenzene	*0.0967*			*"*	*0.0100*		*967*	*70-120*			*S-08*

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Total Petroleum Hydrocarbons(TPH DRO/ORO) - Quality Control Report

Analyte	Result	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BI50014 - 3550B - EPA 8015B											
Blank (BI50014-BLK1)					Prepared: 09/02/202 Analyzed: 09/04/202						
TPH DROs (C13-C22)	ND	3.63	10.0	mg/kg							
TPH OROs (C23-40)	ND	3.63	10.0	"							
Surrogate: o-Terphenyl	*40.7*			*"*	*50.0*		*81.4*	*60-125*			
LCS (BI50014-BS1)					Prepared: 09/02/202 Analyzed: 09/04/202						
TPH DROs (C13-C22)	456	3.63	10.0	mg/kg	500		91.1	75-125			
Surrogate: o-Terphenyl	*33.4*			*"*	*50.0*		*66.8*	*60-125*			
LCS Dup (BI50014-BSD1)					Prepared: 09/02/202 Analyzed: 09/04/202						
TPH DROs (C13-C22)	474	3.63	10.0	mg/kg	500		94.8	75-125	3.96	25	
Surrogate: o-Terphenyl	*33.9*			*"*	*50.0*		*67.8*	*60-125*			

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Organochlorine Pesticides - Quality Control Report

Analyte	Result	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BI50025 - 3550 - 8081A											
Blank (BI50025-BLK1)					Prepared & Analyzed: 09/03/202						
Aldrin	ND	0.100	1.00	ug/kg							
alpha-BHC	ND	0.100	1.00	"							
beta-BHC	ND	0.200	1.00	"							
gamma-Chlordane	ND	0.100	1.00	"							
alpha-Chlordane	ND	0.133	1.00	"							
4,4´-DDD	ND	0.121	1.00	"							
4,4´-DDE	ND	0.150	1.00	"							
4,4´-DDT	ND	0.108	1.00	"							
delta-BHC	ND	0.164	1.00	"							
Dieldrin	ND	0.120	1.00	"							
Endosulfan I	ND	0.100	1.00	"							
Endosulfan II	ND	0.124	1.00	"							
Endosulfan sulfate	ND	0.126	1.00	"							
Endrin	ND	0.100	1.00	"							
Endrin aldehyde	ND	0.100	1.00	"							
Endrin ketone	ND	0.367	2.00	"							
gamma-BHC, Lindane	ND	0.100	1.00	"							
Heptachlor	ND	0.156	1.00	"							
Heptachlor Epoxide	ND	0.100	1.00	"							
Methoxychlor	ND	0.182	1.00	"							
Toxaphene	ND	2.50	12.5	"							
Chlordane (total)	ND	0.233	2.00	"							
Surrogate: TCMX	*58.0*			*"*	*50.0*		*116*	*30-150*			
Surrogate: DCBP	*46.6*			*"*	*50.0*		*93.3*	*30-150*			
LCS (BI50025-BS1)					Prepared & Analyzed: 09/03/202						
Aldrin	60.7	0.100	1.00	ug/kg	55.0		110	50-150			
alpha-BHC	64.6	0.100	1.00	"	55.0		117	50-150			
beta-BHC	74.9	0.200	1.00	"	55.0		136	50-150			
gamma-Chlordane	57.8	0.100	1.00	"	55.0		105	50-150			
alpha-Chlordane	62.8	0.133	1.00	"	55.0		114	50-150			
4,4´-DDD	55.2	0.121	1.00	"	55.0		100	50-150			
4,4´-DDE	61.9	0.150	1.00	"	55.0		113	50-150			
4,4´-DDT	64.5	0.108	1.00	"	55.0		117	50-150			
delta-BHC	65.4	0.164	1.00	"	55.0		119	50-150			
Dieldrin	57.4	0.120	1.00	"	55.0		104	50-150			
Endosulfan I	64.0	0.100	1.00	"	55.0		116	50-150			
Endosulfan II	55.5	0.124	1.00	"	55.0		101	50-150			
Endosulfan sulfate	62.4	0.126	1.00	"	55.0		113	50-150			
Endrin	61.3	0.100	1.00	"	55.0		112	50-150			
Endrin aldehyde	68.2	0.100	1.00	"	55.0		124	50-150			
Endrin ketone	59.1	0.367	2.00	"	55.0		107	50-150			
gamma-BHC, Lindane	63.2	0.100	1.00	"	55.0		115	50-150			
Heptachlor	73.3	0.156	1.00	"	55.0		133	50-150			
Heptachlor Epoxide	61.4	0.100	1.00	"	55.0		112	50-150			
Methoxychlor	71.8	0.182	1.00	"	55.0		131	50-150			

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Organochlorine Pesticides - Quality Control Report

Analyte	Result	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BI50025 - 3550 - 8081A											
LCS (BI50025-BS1)					Prepared & Analyzed: 09/03/202						
Surrogate: TCMX	*54.1*			*ug/kg*	*50.0*		*108*	*30-150*			
Surrogate: DCBP	*40.0*			*"*	*50.0*		*80.0*	*30-150*			
LCS Dup (BI50025-BSD1)					Prepared & Analyzed: 09/03/202						
Aldrin	55.5	0.100	1.00	ug/kg	55.0		101	50-150	9.08	40	
alpha-BHC	58.9	0.100	1.00	"	55.0		107	50-150	9.09	40	
beta-BHC	69.2	0.200	1.00	"	55.0		126	50-150	7.84	40	
gamma-Chlordane	62.8	0.100	1.00	"	55.0		114	50-150	8.20	40	
alpha-Chlordane	57.8	0.133	1.00	"	55.0		105	50-150	8.20	40	
4,4´-DDD	51.8	0.121	1.00	"	55.0		94.2	50-150	6.37	40	
4,4´-DDE	58.3	0.150	1.00	"	55.0		106	50-150	6.07	40	
4,4´-DDT	61.1	0.108	1.00	"	55.0		111	50-150	5.32	40	
delta-BHC	58.0	0.164	1.00	"	55.0		105	50-150	11.9	40	
Dieldrin	53.4	0.120	1.00	"	55.0		97.1	50-150	7.22	40	
Endosulfan I	58.0	0.100	1.00	"	55.0		106	50-150	9.75	40	
Endosulfan II	53.1	0.124	1.00	"	55.0		96.5	50-150	4.54	40	
Endosulfan sulfate	59.9	0.126	1.00	"	55.0		109	50-150	3.99	40	
Endrin	57.5	0.100	1.00	"	55.0		104	50-150	6.52	40	
Endrin aldehyde	65.0	0.100	1.00	"	55.0		118	50-150	4.82	40	
Endrin ketone	57.6	0.367	2.00	"	55.0		105	50-150	2.57	40	
gamma-BHC, Lindane	57.6	0.100	1.00	"	55.0		105	50-150	9.28	40	
Heptachlor	67.4	0.156	1.00	"	55.0		123	50-150	8.31	40	
Heptachlor Epoxide	56.6	0.100	1.00	"	55.0		103	50-150	8.21	40	
Methoxychlor	70.0	0.182	1.00	"	55.0		127	50-150	2.61	40	
Surrogate: TCMX	*50.9*			*"*	*50.0*		*102*	*30-150*			
Surrogate: DCBP	*40.2*			*"*	*50.0*		*80.3*	*30-150*			

1 Laboratories

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Volatile Organic Compounds - Quality Control Report

Analyte	Result	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BI50002 - 5030B - EPA 8260B VOC											
Blank (BI50002-BLK1)					Prepared & Analyzed: 09/02/202						
1,2,4- Trimethylbenzene	ND	0.404	5.00	ug/kg							
2-Butanone (MEK)	ND	2.73	5.00	"							
Acetone	ND	49.6	100	"							
Benzene	ND	0.233	1.00	"							
Bromobenzene	ND	0.407	5.00	"							
Bromochloromethane	ND	0.255	5.00	"							
Bromodichloromethane	ND	0.399	5.00	"							
Bromoform	ND	0.544	5.00	"							
Bromomethane	ND	0.530	1.00	"							
n-Butylbenzene	ND	0.339	5.00	"							
sec-Butylbenzene	ND	0.461	5.00	"							
tert-Butylbenzene	ND	0.472	5.00	"							
Carbon disulfide	ND	0.721	5.00	"							
Carbon tetrachloride	ND	0.265	5.00	"							
Chlorobenzene	ND	0.379	5.00	"							
Chloroethane	ND	0.166	1.00	"							
Chloroform	ND	0.486	5.00	"							
Chloromethane	ND	0.131	1.00	"							
4-Chlorotoluene	ND	0.402	5.00	"							
2-Chlorotoluene	ND	0.462	5.00	"							
1,2-Dibromo-3-chloropropane	ND	1.67	5.00	"							
Dibromochloromethane	ND	0.437	5.00	"							
1,2-Dibromoethane	ND	0.530	5.00	"							
Dibromomethane	ND	0.183	5.00	"							
1,2-Dichlorobenzene	ND	0.409	5.00	"							
1,3-Dichlorobenzene	ND	0.329	5.00	"							
1,4-Dichlorobenzene	ND	0.383	5.00	"							
Dichlorodifluoromethane	ND	0.104	1.00	"							
1,1-Dichloroethane	ND	0.243	5.00	"							
1,2-Dichloroethane	ND	0.265	5.00	"							
1,1-Dichloroethene	ND	0.167	1.00	"							
cis-1,2-Dichloroethene	ND	0.257	5.00	"							
trans-1,2-Dichloroethene	ND	0.245	5.00	"							
1,1-Dichloropropene	ND	0.301	5.00	"							
1,2-Dichloropropane	ND	0.880	5.00	"							
1,3-Dichloropropane	ND	0.614	5.00	"							
2,2-Dichloropropane	ND	0.408	5.00	"							
cis-1,3-Dichloropropene	ND	0.312	5.00	"							
trans-1,3-Dichloropropene	ND	0.318	5.00	"							
Ethylbenzene	ND	0.357	5.00	"							
Hexachlorobutadiene	ND	0.327	5.00	"							
2-Hexanone	ND	1.62	5.00	"							
Isopropylbenzene	ND	0.397	5.00	"							
p-Isopropyltoluene	ND	0.450	5.00	"							
Methyl tert-Butyl Ether (MTBE)	ND	0.499	5.00	"							
4-Methyl-2-pentanone (MIBK)	ND	0.124	5.00	"							

1 Laboratories

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Volatile Organic Compounds - Quality Control Report

Analyte	Result	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BI50002 - 5030B - EPA 8260B VOC											
Blank (BI50002-BLK1)					Prepared & Analyzed: 09/02/202						
Methylene chloride	ND	1.03	5.00	"							
Naphthalene	ND	5.08	10.0	"							
n-Propylbenzene	ND	0.398	5.00	"							
Styrene	ND	0.354	5.00	"							
1,1,1,2-Tetrachloroethane	ND	0.460	5.00	"							
1,1,2,2-Tetrachloroethane	ND	0.739	5.00	"							
Tetrachloroethene	ND	0.331	5.00	"							
Toluene	ND	0.254	5.00	"							
1,2,3-Trichlorobenzene	ND	0.585	5.00	"							
1,2,4-Trichlorobenzene	ND	0.416	5.00	"							
1,1,1-Trichloroethane	ND	0.276	5.00	"							
1,1,2-Trichloroethane	ND	0.350	5.00	"							
Trichloroethene	ND	0.324	5.00	"							
Trichlorofluoromethane	ND	0.204	1.00	"							
1,2,3-Trichloropropane	ND	3.57	5.00	"							
1,3,5- Trimethylbenzene	ND	0.371	5.00	"							
Vinyl acetate	ND	0.520	5.00	"							
Vinyl chloride	ND	0.267	1.00	"							
m,p-Xylenes	ND	0.805	5.00	"							
o-Xylene	ND	0.862	5.00	"							
LCS (BI50002-BS1)					Prepared & Analyzed: 09/02/202						
1,2,4- Trimethylbenzene	26.2	0.404	5.00	ug/kg	25.0		105	70-130			
2-Butanone (MEK)	140	2.73	5.00	"	125		112	70-130			
Acetone	137	49.6	100	"	125		110	70-130			
Benzene	27.2	0.233	1.00	"	25.0		109	70-130			
Bromobenzene	29.1	0.407	5.00	"	25.0		116	70-130			
Bromochloromethane	32.0	0.255	5.00	"	25.0		128	70-130			
Bromodichloromethane	31.6	0.399	5.00	"	25.0		127	70-130			
Bromoform	29.6	0.544	5.00	"	25.0		118	70-130			
Bromomethane	30.8	0.530	1.00	"	25.0		123	70-130			
n-Butylbenzene	25.6	0.339	5.00	"	25.0		102	70-130			
sec-Butylbenzene	26.4	0.461	5.00	"	25.0		105	70-130			
tert-Butylbenzene	26.6	0.472	5.00	"	25.0		106	70-130			
Carbon disulfide	28.8	0.721	5.00	"	25.0		115	70-130			
Carbon tetrachloride	30.3	0.265	5.00	"	25.0		121	70-130			
Chlorobenzene	29.0	0.379	5.00	"	25.0		116	70-130			
Chloroethane	31.7	0.166	1.00	"	25.0		127	70-130			
Chloroform	31.4	0.486	5.00	"	25.0		126	70-130			
Chloromethane	27.1	0.131	1.00	"	25.0		109	70-130			
4-Chlorotoluene	27.3	0.402	5.00	"	25.0		109	70-130			
2-Chlorotoluene	26.6	0.462	5.00	"	25.0		106	70-130			
1,2-Dibromo-3-chloropropane	26.8	1.67	5.00	"	25.0		107	70-130			
Dibromochloromethane	33.3	0.437	5.00	"	25.0		133	70-130			QM-11
1,2-Dibromoethane	29.8	0.530	5.00	"	25.0		119	70-130			
Dibromomethane	33.4	0.183	5.00	"	25.0		134	70-130			QM-11

1 Laboratories

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Volatile Organic Compounds - Quality Control Report

Analyte	Result	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BI50002 - 5030B - EPA 8260B VOC											
LCS (BI50002-BS1)					Prepared & Analyzed: 09/02/202						
1,2-Dichlorobenzene	26.9	0.409	5.00	ug/kg	25.0		108	70-130			
1,3-Dichlorobenzene	27.4	0.329	5.00	"	25.0		109	70-130			
1,4-Dichlorobenzene	27.3	0.383	5.00	"	25.0		109	70-130			
Dichlorodifluoromethane	27.9	0.104	1.00	"	25.0		111	70-130			
1,1-Dichloroethane	27.0	0.243	5.00	"	25.0		108	70-130			
1,2-Dichloroethane	32.2	0.265	5.00	"	25.0		129	70-130			
1,1-Dichloroethene	28.0	0.167	1.00	"	25.0		112	70-130			
cis-1,2-Dichloroethene	28.8	0.257	5.00	"	25.0		115	70-130			
trans-1,2-Dichloroethene	28.2	0.245	5.00	"	25.0		113	70-130			
1,1-Dichloropropene	28.1	0.301	5.00	"	25.0		112	70-130			
1,2-Dichloropropane	28.0	0.880	5.00	"	25.0		112	70-130			
1,3-Dichloropropane	29.0	0.614	5.00	"	25.0		116	70-130			
2,2-Dichloropropane	33.0	0.408	5.00	"	25.0		132	70-130			QM-11
cis-1,3-Dichloropropene	30.4	0.312	5.00	"	25.0		121	70-130			
trans-1,3-Dichloropropene	31.9	0.318	5.00	"	25.0		128	70-130			
Ethylbenzene	28.4	0.357	5.00	"	25.0		114	70-130			
Hexachlorobutadiene	28.4	0.327	5.00	"	25.0		114	70-130			
2-Hexanone	137	1.62	5.00	"	125		110	70-130			
Isopropylbenzene	27.0	0.397	5.00	"	25.0		108	70-130			
p-Isopropyltoluene	26.2	0.450	5.00	"	25.0		105	70-130			
Methyl tert-Butyl Ether (MTBE)	31.0	0.499	5.00	"	25.0		124	70-130			
4-Methyl-2-pentanone (MIBK)	142	0.124	5.00	"	125		114	70-130			
Methylene chloride	27.6	1.03	5.00	"	25.0		111	70-130			
Naphthalene	26.2	5.08	10.0	"	25.0		105	70-130			
n-Propylbenzene	26.4	0.398	5.00	"	25.0		106	70-130			
Styrene	28.8	0.354	5.00	"	25.0		115	70-130			
1,1,1,2-Tetrachloroethane	30.1	0.460	5.00	"	25.0		120	70-130			
1,1,2,2-Tetrachloroethane	25.8	0.739	5.00	"	25.0		103	70-130			
Tetrachloroethene	28.9	0.331	5.00	"	25.0		115	70-130			
Toluene	27.4	0.254	5.00	"	25.0		110	70-130			
1,2,3-Trichlorobenzene	28.9	0.585	5.00	"	25.0		115	70-130			
1,2,4-Trichlorobenzene	29.1	0.416	5.00	"	25.0		116	70-130			
1,1,1-Trichloroethane	30.3	0.276	5.00	"	25.0		121	70-130			
1,1,2-Trichloroethane	29.7	0.350	5.00	"	25.0		119	70-130			
Trichloroethene	28.9	0.324	5.00	"	25.0		115	70-130			
Trichlorofluoromethane	29.2	0.204	1.00	"	25.0		117	70-130			
1,2,3-Trichloropropane	25.4	3.57	5.00	"	25.0		102	70-130			
1,3,5- Trimethylbenzene	27.1	0.371	5.00	"	25.0		108	70-130			
Vinyl acetate	28.7	0.520	5.00	"	25.0		115	70-130			
Vinyl chloride	25.4	0.267	1.00	"	25.0		102	70-130			
m,p-Xylenes	56.4	0.805	5.00	"	50.0		113	70-130			
o-Xylene	28.8	0.862	5.00	"	25.0		115	70-130			

1 Laboratories

2520 N. San Fernando Road, Unit A, Los Angeles, CA 90065

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Volatile Organic Compounds - Quality Control Report

Analyte	Result	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BI50002 - 5030B - EPA 8260B VOC											
LCS Dup (BI50002-BSD1)					Prepared & Analyzed: 09/02/202						
1,2,4- Trimethylbenzene	24.5	0.404	5.00	ug/kg	25.0		98.1	70-130	6.55	25	
2-Butanone (MEK)	129	2.73	5.00	"	125		103	70-130	8.51	25	
Acetone	129	49.6	100	"	125		103	70-130	6.32	25	
Benzene	25.8	0.233	1.00	"	25.0		103	70-130	5.13	25	
Bromobenzene	28.3	0.407	5.00	"	25.0		113	70-130	2.79	25	
Bromochloromethane	30.0	0.255	5.00	"	25.0		120	70-130	6.55	25	
Bromodichloromethane	30.8	0.399	5.00	"	25.0		123	70-130	2.72	25	
Bromoform	28.1	0.544	5.00	"	25.0		112	70-130	5.17	25	
Bromomethane	28.5	0.530	1.00	"	25.0		114	70-130	7.55	25	
n-Butylbenzene	24.4	0.339	5.00	"	25.0		97.6	70-130	4.76	25	
sec-Butylbenzene	24.8	0.461	5.00	"	25.0		99.1	70-130	6.26	25	
tert-Butylbenzene	25.0	0.472	5.00	"	25.0		100	70-130	5.97	25	
Carbon disulfide	27.6	0.721	5.00	"	25.0		110	70-130	4.26	25	
Carbon tetrachloride	28.6	0.265	5.00	"	25.0		115	70-130	5.63	25	
Chlorobenzene	27.3	0.379	5.00	"	25.0		109	70-130	5.97	25	
Chloroethane	30.8	0.166	1.00	"	25.0		123	70-130	2.66	25	
Chloroform	30.1	0.486	5.00	"	25.0		120	70-130	4.30	25	
Chloromethane	26.3	0.131	1.00	"	25.0		105	70-130	3.03	25	
4-Chlorotoluene	25.1	0.402	5.00	"	25.0		100	70-130	8.58	25	
2-Chlorotoluene	24.7	0.462	5.00	"	25.0		98.6	70-130	7.46	25	
1,2-Dibromo-3-chloropropane	23.3	1.67	5.00	"	25.0		93.3	70-130	13.8	25	
Dibromochloromethane	32.2	0.437	5.00	"	25.0		129	70-130	3.45	25	
1,2-Dibromoethane	28.9	0.530	5.00	"	25.0		116	70-130	3.00	25	
Dibromomethane	31.1	0.183	5.00	"	25.0		125	70-130	7.01	25	
1,2-Dichlorobenzene	25.5	0.409	5.00	"	25.0		102	70-130	5.45	25	
1,3-Dichlorobenzene	26.1	0.329	5.00	"	25.0		104	70-130	4.64	25	
1,4-Dichlorobenzene	25.5	0.383	5.00	"	25.0		102	70-130	6.93	25	
Dichlorodifluoromethane	26.8	0.104	1.00	"	25.0		107	70-130	3.84	25	
1,1-Dichloroethane	25.2	0.243	5.00	"	25.0		101	70-130	7.00	25	
1,2-Dichloroethane	30.6	0.265	5.00	"	25.0		122	70-130	5.15	25	
1,1-Dichloroethene	27.4	0.167	1.00	"	25.0		110	70-130	2.16	25	
cis-1,2-Dichloroethene	27.2	0.257	5.00	"	25.0		109	70-130	5.81	25	
trans-1,2-Dichloroethene	26.5	0.245	5.00	"	25.0		106	70-130	6.14	25	
1,1-Dichloropropene	26.2	0.301	5.00	"	25.0		105	70-130	6.89	25	
1,2-Dichloropropane	27.3	0.880	5.00	"	25.0		109	70-130	2.75	25	
1,3-Dichloropropane	27.7	0.614	5.00	"	25.0		111	70-130	4.63	25	
2,2-Dichloropropane	31.0	0.408	5.00	"	25.0		124	70-130	6.15	25	
cis-1,3-Dichloropropene	29.8	0.312	5.00	"	25.0		119	70-130	1.83	25	
trans-1,3-Dichloropropene	31.3	0.318	5.00	"	25.0		125	70-130	2.09	25	
Ethylbenzene	27.2	0.357	5.00	"	25.0		109	70-130	4.64	25	
Hexachlorobutadiene	26.2	0.327	5.00	"	25.0		105	70-130	8.06	25	
2-Hexanone	127	1.62	5.00	"	125		101	70-130	7.99	25	
Isopropylbenzene	25.1	0.397	5.00	"	25.0		101	70-130	7.06	25	
p-Isopropyltoluene	24.8	0.450	5.00	"	25.0		99.1	70-130	5.61	25	
Methyl tert-Butyl Ether (MTBE)	28.5	0.499	5.00	"	25.0		114	70-130	8.20	25	
4-Methyl-2-pentanone (MIBK)	136	0.124	5.00	"	125		109	70-130	4.36	25	

1 Laboratories

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Volatile Organic Compounds - Quality Control Report

Analyte	Result	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BI50002 - 5030B - EPA 8260B VOC											
LCS Dup (BI50002-BSD1)					Prepared & Analyzed: 09/02/202						
Methylene chloride	25.3	1.03	5.00	"	25.0		101	70-130	8.84	25	
Naphthalene	23.6	5.08	10.0	"	25.0		94.6	70-130	10.2	25	
n-Propylbenzene	24.7	0.398	5.00	"	25.0		98.9	70-130	6.69	25	
Styrene	27.4	0.354	5.00	"	25.0		110	70-130	5.12	25	
1,1,1,2-Tetrachloroethane	28.0	0.460	5.00	"	25.0		112	70-130	7.24	25	
1,1,2,2-Tetrachloroethane	24.0	0.739	5.00	"	25.0		96.2	70-130	7.02	25	
Tetrachloroethene	27.1	0.331	5.00	"	25.0		108	70-130	6.32	25	
Toluene	26.3	0.254	5.00	"	25.0		105	70-130	4.28	25	
1,2,3-Trichlorobenzene	26.9	0.585	5.00	"	25.0		108	70-130	6.99	25	
1,2,4-Trichlorobenzene	27.4	0.416	5.00	"	25.0		110	70-130	5.84	25	
1,1,1-Trichloroethane	28.4	0.276	5.00	"	25.0		113	70-130	6.58	25	
1,1,2-Trichloroethane	29.7	0.350	5.00	"	25.0		119	70-130	0.0337	25	
Trichloroethene	27.6	0.324	5.00	"	25.0		110	70-130	4.53	25	
Trichlorofluoromethane	27.7	0.204	1.00	"	25.0		111	70-130	5.24	25	
1,2,3-Trichloropropane	25.4	3.57	5.00	"	25.0		102	70-130	0.118	25	
1,3,5- Trimethylbenzene	25.4	0.371	5.00	"	25.0		102	70-130	6.33	25	
Vinyl acetate	26.7	0.520	5.00	"	25.0		107	70-130	7.19	25	
Vinyl chloride	24.6	0.267	1.00	"	25.0		98.6	70-130	3.12	25	
m,p-Xylenes	54.4	0.805	5.00	"	50.0		109	70-130	3.66	25	
o-Xylene	27.5	0.862	5.00	"	25.0		110	70-130	4.48	25	
Matrix Spike (BI50002-MS1)		**Source: 2508433-16**			Prepared & Analyzed: 09/02/202						
1,2,4- Trimethylbenzene	19.2	0.404	5.00	ug/kg	25.0	ND	76.7	70-130			
2-Butanone (MEK)	142	2.73	5.00	"	125	ND	114	70-130			
Acetone	152	49.6	100	"	125	ND	122	70-130			
Benzene	22.6	0.233	1.00	"	25.0	ND	90.5	70-130			
Bromobenzene	22.8	0.407	5.00	"	25.0	ND	91.0	70-130			
Bromochloromethane	25.8	0.255	5.00	"	25.0	ND	103	70-130			
Bromodichloromethane	25.2	0.399	5.00	"	25.0	ND	101	70-130			
Bromoform	25.2	0.544	5.00	"	25.0	ND	101	70-130			
Bromomethane	23.2	0.530	1.00	"	25.0	ND	92.8	70-130			
n-Butylbenzene	19.1	0.339	5.00	"	25.0	ND	76.2	70-130			
sec-Butylbenzene	20.2	0.461	5.00	"	25.0	ND	80.6	70-130			
tert-Butylbenzene	20.5	0.472	5.00	"	25.0	ND	82.0	70-130			
Carbon disulfide	25.2	0.721	5.00	"	25.0	ND	101	70-130			
Carbon tetrachloride	25.6	0.265	5.00	"	25.0	ND	102	70-130			
Chlorobenzene	21.6	0.379	5.00	"	25.0	ND	86.3	70-130			
Chloroethane	26.0	0.166	1.00	"	25.0	ND	104	70-130			
Chloroform	25.5	0.486	5.00	"	25.0	ND	102	70-130			
Chloromethane	23.9	0.131	1.00	"	25.0	ND	95.7	70-130			
4-Chlorotoluene	19.6	0.402	5.00	"	25.0	ND	78.6	70-130			
2-Chlorotoluene	19.5	0.462	5.00	"	25.0	ND	77.9	70-130			
1,2-Dibromo-3-chloropropane	23.4	1.67	5.00	"	25.0	ND	93.5	70-130			
Dibromochloromethane	26.9	0.437	5.00	"	25.0	ND	108	70-130			
1,2-Dibromoethane	24.8	0.530	5.00	"	25.0	ND	99.0	70-130			
Dibromomethane	26.8	0.183	5.00	"	25.0	ND	107	70-130			

1 Laboratories

2520 N. San Fernando Road, Unit A, Los Angeles, CA 90065

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Volatile Organic Compounds - Quality Control Report

Analyte	Result	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BI50002 - 5030B - EPA 8260B VOC											
Matrix Spike (BI50002-MS1)		**Source: 2508433-16**			Prepared & Analyzed: 09/02/202						
1,2-Dichlorobenzene	19.6	0.409	5.00	ug/kg	25.0	ND	78.6	70-130			
1,3-Dichlorobenzene	19.4	0.329	5.00	"	25.0	ND	77.4	70-130			
1,4-Dichlorobenzene	19.4	0.383	5.00	"	25.0	ND	77.6	70-130			
Dichlorodifluoromethane	23.3	0.104	1.00	"	25.0	ND	93.4	70-130			
1,1-Dichloroethane	22.8	0.243	5.00	"	25.0	ND	91.2	70-130			
1,2-Dichloroethane	26.6	0.265	5.00	"	25.0	ND	106	70-130			
1,1-Dichloroethene	25.2	0.167	1.00	"	25.0	ND	101	70-130			
cis-1,2-Dichloroethene	23.7	0.257	5.00	"	25.0	ND	94.8	70-130			
trans-1,2-Dichloroethene	24.0	0.245	5.00	"	25.0	ND	96.2	70-130			
1,1-Dichloropropene	24.4	0.301	5.00	"	25.0	ND	97.5	70-130			
1,2-Dichloropropane	22.8	0.880	5.00	"	25.0	ND	91.3	70-130			
1,3-Dichloropropane	23.6	0.614	5.00	"	25.0	ND	94.2	70-130			
2,2-Dichloropropane	27.7	0.408	5.00	"	25.0	ND	111	70-130			
cis-1,3-Dichloropropene	23.4	0.312	5.00	"	25.0	ND	93.5	70-130			
trans-1,3-Dichloropropene	25.9	0.318	5.00	"	25.0	ND	103	70-130			
Ethylbenzene	21.8	0.357	5.00	"	25.0	ND	87.4	70-130			
Hexachlorobutadiene	19.1	0.327	5.00	"	25.0	ND	76.5	70-130			
2-Hexanone	137	1.62	5.00	"	125	ND	110	70-130			
Isopropylbenzene	19.9	0.397	5.00	"	25.0	ND	79.8	70-130			
p-Isopropyltoluene	19.9	0.450	5.00	"	25.0	ND	79.4	70-130			
Methyl tert-Butyl Ether (MTBE)	26.1	0.499	5.00	"	25.0	ND	104	70-130			
4-Methyl-2-pentanone (MIBK)	147	0.124	5.00	"	125	ND	117	70-130			
Methylene chloride	26.1	1.03	5.00	"	25.0	ND	104	70-130			
Naphthalene	18.8	5.08	10.0	"	25.0	ND	75.2	70-130			
n-Propylbenzene	19.8	0.398	5.00	"	25.0	ND	79.0	70-130			
Styrene	20.2	0.354	5.00	"	25.0	ND	80.9	70-130			
1,1,1,2-Tetrachloroethane	23.2	0.460	5.00	"	25.0	ND	92.7	70-130			
1,1,2,2-Tetrachloroethane	23.4	0.739	5.00	"	25.0	ND	93.6	70-130			
Tetrachloroethene	21.6	0.331	5.00	"	25.0	ND	86.4	70-130			
Toluene	21.3	0.254	5.00	"	25.0	ND	85.4	70-130			
1,2,3-Trichlorobenzene	18.2	0.585	5.00	"	25.0	ND	72.9	70-130			
1,2,4-Trichlorobenzene	17.4	0.416	5.00	"	25.0	ND	69.8	70-130			QM-05
1,1,1-Trichloroethane	25.7	0.276	5.00	"	25.0	ND	103	70-130			
1,1,2-Trichloroethane	26.0	0.350	5.00	"	25.0	ND	104	70-130			
Trichloroethene	23.8	0.324	5.00	"	25.0	ND	95.0	70-130			
Trichlorofluoromethane	25.4	0.204	1.00	"	25.0	ND	102	70-130			
1,2,3-Trichloropropane	24.1	3.57	5.00	"	25.0	ND	96.5	70-130			
1,3,5- Trimethylbenzene	20.0	0.371	5.00	"	25.0	ND	80.2	70-130			
Vinyl acetate	23.8	0.520	5.00	"	25.0	ND	95.4	70-130			
Vinyl chloride	23.0	0.267	1.00	"	25.0	ND	92.2	70-130			
m,p-Xylenes	42.4	0.805	5.00	"	50.0	ND	84.8	70-130			
o-Xylene	21.6	0.862	5.00	"	25.0	ND	86.3	70-130			

1 Laboratories

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Volatile Organic Compounds - Quality Control Report

Analyte	Result	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BI50002 - 5030B - EPA 8260B VOC											
Matrix Spike Dup (BI50002-MSD1)		**Source: 2508433-16**			Prepared & Analyzed: 09/02/202						
1,2,4- Trimethylbenzene	15.8	0.404	5.00	ug/kg	25.0	ND	63.3	70-130	19.1	25	
2-Butanone (MEK)	119	2.73	5.00	"	125	ND	95.3	70-130	17.5	25	
Acetone	127	49.6	100	"	125	ND	102	70-130	17.7	25	
Benzene	19.7	0.233	1.00	"	25.0	ND	78.9	70-130	13.6	25	
Bromobenzene	18.6	0.407	5.00	"	25.0	ND	74.3	70-130	20.2	25	
Bromochloromethane	22.6	0.255	5.00	"	25.0	ND	90.2	70-130	13.4	25	
Bromodichloromethane	21.8	0.399	5.00	"	25.0	ND	87.2	70-130	14.5	25	
Bromoform	20.8	0.544	5.00	"	25.0	ND	83.2	70-130	19.0	25	
Bromomethane	22.8	0.530	1.00	"	25.0	ND	91.3	70-130	1.65	25	
n-Butylbenzene	15.3	0.339	5.00	"	25.0	ND	61.3	70-130	21.8	25	
sec-Butylbenzene	16.3	0.461	5.00	"	25.0	ND	65.1	70-130	21.3	25	
tert-Butylbenzene	17.1	0.472	5.00	"	25.0	ND	68.2	70-130	18.3	25	
Carbon disulfide	22.5	0.721	5.00	"	25.0	ND	89.9	70-130	11.3	25	
Carbon tetrachloride	22.4	0.265	5.00	"	25.0	ND	89.6	70-130	13.3	25	
Chlorobenzene	18.7	0.379	5.00	"	25.0	ND	74.7	70-130	14.5	25	
Chloroethane	23.6	0.166	1.00	"	25.0	ND	94.4	70-130	9.83	25	
Chloroform	22.7	0.486	5.00	"	25.0	ND	90.6	70-130	12.0	25	
Chloromethane	21.1	0.131	1.00	"	25.0	ND	84.6	70-130	12.3	25	
4-Chlorotoluene	16.2	0.402	5.00	"	25.0	ND	64.9	70-130	19.0	25	
2-Chlorotoluene	16.4	0.462	5.00	"	25.0	ND	65.5	70-130	17.4	25	
1,2-Dibromo-3-chloropropane	19.3	1.67	5.00	"	25.0	ND	77.1	70-130	19.3	25	
Dibromochloromethane	22.4	0.437	5.00	"	25.0	ND	89.4	70-130	18.6	25	
1,2-Dibromoethane	21.7	0.530	5.00	"	25.0	ND	86.9	70-130	13.0	25	
Dibromomethane	24.0	0.183	5.00	"	25.0	ND	96.1	70-130	10.9	25	
1,2-Dichlorobenzene	15.8	0.409	5.00	"	25.0	ND	63.2	70-130	21.6	25	
1,3-Dichlorobenzene	16.1	0.329	5.00	"	25.0	ND	64.4	70-130	18.4	25	
1,4-Dichlorobenzene	15.9	0.383	5.00	"	25.0	ND	63.7	70-130	19.7	25	
Dichlorodifluoromethane	22.2	0.104	1.00	"	25.0	ND	88.8	70-130	5.01	25	
1,1-Dichloroethane	21.1	0.243	5.00	"	25.0	ND	84.4	70-130	7.79	25	
1,2-Dichloroethane	22.7	0.265	5.00	"	25.0	ND	90.8	70-130	15.8	25	
1,1-Dichloroethene	22.9	0.167	1.00	"	25.0	ND	91.6	70-130	9.60	25	
cis-1,2-Dichloroethene	21.6	0.257	5.00	"	25.0	ND	86.5	70-130	9.22	25	
trans-1,2-Dichloroethene	22.0	0.245	5.00	"	25.0	ND	88.1	70-130	8.77	25	
1,1-Dichloropropene	21.6	0.301	5.00	"	25.0	ND	86.3	70-130	12.2	25	
1,2-Dichloropropane	19.4	0.880	5.00	"	25.0	ND	77.6	70-130	16.2	25	
1,3-Dichloropropane	21.1	0.614	5.00	"	25.0	ND	84.3	70-130	11.1	25	
2,2-Dichloropropane	24.6	0.408	5.00	"	25.0	ND	98.5	70-130	11.8	25	
cis-1,3-Dichloropropene	20.8	0.312	5.00	"	25.0	ND	83.2	70-130	11.6	25	
trans-1,3-Dichloropropene	22.6	0.318	5.00	"	25.0	ND	90.6	70-130	13.3	25	
Ethylbenzene	18.3	0.357	5.00	"	25.0	ND	73.2	70-130	17.6	25	
Hexachlorobutadiene	15.6	0.327	5.00	"	25.0	ND	62.5	70-130	20.1	25	
2-Hexanone	116	1.62	5.00	"	125	ND	93.2	70-130	16.4	25	
Isopropylbenzene	17.2	0.397	5.00	"	25.0	ND	68.6	70-130	15.0	25	
p-Isopropyltoluene	16.0	0.450	5.00	"	25.0	ND	63.8	70-130	21.8	25	
Methyl tert-Butyl Ether (MTBE)	23.2	0.499	5.00	"	25.0	ND	92.8	70-130	11.6	25	
4-Methyl-2-pentanone (MIBK)	124	0.124	5.00	"	125	ND	99.2	70-130	16.7	25	

1 Laboratories

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Volatile Organic Compounds - Quality Control Report

Analyte	Result	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BI50002 - 5030B - EPA 8260B VOC											
Matrix Spike Dup (BI50002-MSD1)		**Source: 2508433-16**			Prepared & Analyzed: 09/02/202						
Methylene chloride	23.1	1.03	5.00	"	25.0	ND	92.3	70-130	12.3	25	
Naphthalene	15.3	5.08	10.0	"	25.0	ND	61.2	70-130	20.5	25	
n-Propylbenzene	16.4	0.398	5.00	"	25.0	ND	65.7	70-130	18.5	25	
Styrene	16.7	0.354	5.00	"	25.0	ND	66.9	70-130	18.9	25	
1,1,1,2-Tetrachloroethane	19.2	0.460	5.00	"	25.0	ND	76.6	70-130	19.0	25	
1,1,2,2-Tetrachloroethane	19.8	0.739	5.00	"	25.0	ND	79.4	70-130	16.4	25	
Tetrachloroethene	19.0	0.331	5.00	"	25.0	ND	76.1	70-130	12.7	25	
Toluene	18.9	0.254	5.00	"	25.0	ND	75.6	70-130	12.1	25	
1,2,3-Trichlorobenzene	14.3	0.585	5.00	"	25.0	ND	57.3	70-130	24.0	25	
1,2,4-Trichlorobenzene	14.0	0.416	5.00	"	25.0	ND	56.0	70-130	21.8	25	
1,1,1-Trichloroethane	23.6	0.276	5.00	"	25.0	ND	94.3	70-130	8.61	25	
1,1,2-Trichloroethane	21.5	0.350	5.00	"	25.0	ND	86.0	70-130	18.9	25	
Trichloroethene	20.4	0.324	5.00	"	25.0	ND	81.8	70-130	15.0	25	
Trichlorofluoromethane	23.6	0.204	1.00	"	25.0	ND	94.3	70-130	7.43	25	
1,2,3-Trichloropropane	19.4	3.57	5.00	"	25.0	ND	77.7	70-130	21.6	25	
1,3,5- Trimethylbenzene	16.9	0.371	5.00	"	25.0	ND	67.6	70-130	16.9	25	
Vinyl acetate	21.8	0.520	5.00	"	25.0	ND	87.4	70-130	8.75	25	
Vinyl chloride	20.6	0.267	1.00	"	25.0	ND	82.2	70-130	11.4	25	
m,p-Xylenes	37.1	0.805	5.00	"	50.0	ND	74.2	70-130	13.3	25	
o-Xylene	18.6	0.862	5.00	"	25.0	ND	74.4	70-130	14.8	25	

1 Laboratories

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Wet Chemistry - Quality Control Report

Analyte	Result	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BI50042 - ASTM D2216											
Duplicate (BI50042-DUP1)		**Source: 2508433-14**		Prepared: 09/02/202 Analyzed: 09/04/202							
Moisture Content	9.32			%		8.71			6.77	200	
Solids Content	90.7			"		91.3			0.670	200	

1 Laboratories

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

8270 PAH SIM - Quality Control Report

Analyte	Result	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BI50024 - 3550B - EPA 8270C SIM											
Blank (BI50024-BLK1)					Prepared: 09/03/202 Analyzed: 09/04/202						
Acenaphthene	ND	1.38	5.00	ug/kg							
Acenaphthylene	ND	1.38	5.00	"							
Anthracene	ND	1.24	5.00	"							
Benzo(a)anthracene	ND	0.849	5.00	"							
Benzo[a]pyrene	ND	2.30	5.00	"							
Benzo[b]fluoranthene	ND	2.31	5.00	"							
Benzo(ghi)perylene	ND	5.00	5.00	"							
Benzo[k]fluoranthene	ND	2.43	5.00	"							
Chrysene	ND	1.42	5.00	"							
Dibenz(a,h)anthracene	ND	4.73	5.00	"							
Fluoranthene	ND	1.04	5.00	"							
Fluorene	ND	1.25	5.00	"							
Indeno (1,2,3-cd) pyrene	ND	4.42	5.00	"							
Naphthalene	ND	1.58	5.00	"							
Phenanthrene	ND	1.45	5.00	"							
Pyrene	ND	1.03	5.00	"							
2-Methylnaphthalene	ND	0.600	5.00	"							
Surrogate: Nitrobenzene-d5	*249*			*"*	*250*		*99.5*	*25-130*			
LCS (BI50024-BS1)					Prepared & Analyzed: 09/03/202						
Acenaphthene	283	1.38	5.00	ug/kg	250		113	43-160			
Acenaphthylene	287	1.38	5.00	"	250		115	43-160			
Anthracene	245	1.24	5.00	"	250		98.0	43-160			
Benzo(a)anthracene	166	0.849	5.00	"	250		66.2	43-160			
Benzo[a]pyrene	317	2.30	5.00	"	250		127	43-160			
Benzo(ghi)perylene	287	5.00	5.00	"	250		115	43-160			
Benzo[k]fluoranthene	272	2.43	5.00	"	250		109	43-160			
Chrysene	337	1.42	5.00	"	250		135	43-160			
Dibenz(a,h)anthracene	211	4.73	5.00	"	250		84.5	43-160			
Fluoranthene	336	1.04	5.00	"	250		135	43-160			
Fluorene	297	1.25	5.00	"	250		119	43-160			
Indeno (1,2,3-cd) pyrene	285	4.42	5.00	"	250		114	43-160			
Naphthalene	364	1.58	5.00	"	250		146	43-160			
Phenanthrene	333	1.45	5.00	"	250		133	43-160			
Pyrene	355	1.03	5.00	"	250		142	43-160			
2-Methylnaphthalene	333	0.600	5.00	"	250		133	43-160			
Surrogate: Nitrobenzene-d5	*341*			*"*	*250*		*136*	*25-130*			*S-08*

1 Laboratories

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

8270 PAH SIM - Quality Control Report

Analyte	Result	MDL	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BI50024 - 3550B - EPA 8270C SIM											
Matrix Spike (BI50024-MS1)		**Source: 2508433-20**			Prepared: 09/03/202 Analyzed: 09/04/202						
Acenaphthene	47.0	1.38	5.00	ug/kg	50.0	ND	94.0	40-160			
Acenaphthylene	52.8	1.38	5.00	"	50.0	ND	106	40-160			
Anthracene	41.0	1.24	5.00	"	50.0	ND	81.9	40-160			
Benzo(a)anthracene	62.5	0.849	5.00	"	50.0	ND	125	40-160			
Benzo[a]pyrene	47.2	2.30	5.00	"	50.0	ND	94.4	40-160			
Benzo[b]fluoranthene	66.7	2.31	5.00	"	50.0	ND	133	40-160			
Benzo(ghi)perylene	45.3	5.00	5.00	"	50.0	ND	90.6	40-160			
Benzo[k]fluoranthene	43.5	2.43	5.00	"	50.0	10.6	65.8	40-160			
Chrysene	42.7	1.42	5.00	"	50.0	ND	85.5	40-160			
Dibenz(a,h)anthracene	65.2	4.73	5.00	"	50.0	ND	130	40-160			
Fluoranthene	67.0	1.04	5.00	"	50.0	ND	134	40-160			QM-01
Fluorene	52.4	1.25	5.00	"	50.0	ND	105	40-160			
Indeno (1,2,3-cd) pyrene	42.4	4.42	5.00	"	50.0	ND	84.7	40-160			
Naphthalene	70.3	1.58	5.00	"	50.0	3.10	134	40-160			
Phenanthrene	64.6	1.45	5.00	"	50.0	5.16	119	40-160			
Pyrene	63.8	1.03	5.00	"	50.0	ND	128	40-160			
2-Methylnaphthalene	48.5	0.600	5.00	"	50.0	ND	97.1	40-160			
Surrogate: Nitrobenzene-d5	*59.5*			*"*	*50.0*		*119*	*25-130*			
Matrix Spike Dup (BI50024-MSD1)		**Source: 2508433-20**			Prepared: 09/03/202 Analyzed: 09/04/202						
Acenaphthene	52.6	1.38	5.00	ug/kg	50.0	ND	105	40-160	11.2	30	
Acenaphthylene	53.6	1.38	5.00	"	50.0	ND	107	40-160	1.41	30	
Anthracene	50.9	1.24	5.00	"	50.0	ND	102	40-160	21.6	30	
Benzo(a)anthracene	73.3	0.849	5.00	"	50.0	ND	147	40-160	16.0	30	
Benzo[a]pyrene	55.4	2.30	5.00	"	50.0	ND	111	40-160	15.9	30	
Benzo[b]fluoranthene	69.5	2.31	5.00	"	50.0	ND	139	40-160	4.04	30	
Benzo(ghi)perylene	47.2	5.00	5.00	"	50.0	ND	94.4	40-160	4.15	30	
Benzo[k]fluoranthene	43.9	2.43	5.00	"	50.0	10.6	66.7	40-160	1.01	30	
Chrysene	47.1	1.42	5.00	"	50.0	ND	94.2	40-160	9.70	30	
Dibenz(a,h)anthracene	69.1	4.73	5.00	"	50.0	ND	138	40-160	5.78	30	
Fluoranthene	49.7	1.04	5.00	"	50.0	ND	99.3	40-160	29.7	30	QM-01
Fluorene	56.6	1.25	5.00	"	50.0	ND	113	40-160	7.68	30	
Indeno (1,2,3-cd) pyrene	44.7	4.42	5.00	"	50.0	ND	89.3	40-160	5.27	30	
Naphthalene	68.0	1.58	5.00	"	50.0	3.10	130	40-160	3.28	30	
Phenanthrene	64.3	1.45	5.00	"	50.0	5.16	118	40-160	0.465	30	
Pyrene	41.0	1.03	5.00	"	50.0	ND	82.1	40-160	43.4	30	QM-07
2-Methylnaphthalene	54.5	0.600	5.00	"	50.0	ND	109	40-160	11.5	30	
Surrogate: Nitrobenzene-d5	*60.7*			*"*	*50.0*		*121*	*25-130*			

1 Laboratories

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Parsons	Project Name:	454555	1 LabsWorkorder No: 2508433
100 W. Walnut St.	Project Number:	[none]	**Reported:**
Pasadena CA, 91124	Project Manager:	Justin King	09/30/2025 17:00
	Project Location:	Sylvan Park Early Education Center	

Qualifiers and Definitions

Item	Qualifiers
J	The analyte was positively identified and the associated numerical value is an approximate and estimated concentration reported between the MDL and PQL.
QM-01	The spike recovery for this QC sample is outside of established control limits due to sample matrix interference.
QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
QM-11	The spike recovery was outside acceptance limits for the LCS and/or LCSD. The batch was accepted based on samples results are ND. No reanalyis required.
S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
S-08	The surrogate recovery is outside the control limits but LCS revocery is within limits. Data is accepted based on LCS recovery.

Item	Definitions
%REC	Percent Recovery
Dup	Duplicate
EPA	Environmental Protection Agency
ICP	Inductively Coupled Plasma
ID	Identification
LCS	Laboratory Control Sample
MDL	Method Detection Limit
mg/Kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
ND	Non-detect is less than or at MDL
ng/m3	Nanogram per Cubic meter
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
STLC	Soluble Threshold Limit Concentration
TAT	Turnaround Time
TCLP	Toxicity Characteristic Leaching Procedure
ug/100cm	Micrograms per 100 centimeter squared
ug/ft²	Micrograms per square foot
ug/Kg	Micrograms per Kilogram
ug/m3	Micrograms per Cubic Meter
ug/wipe	Micrograms per Wipe
WET	Waste Extraction Test

AIH LABORATORY
2556 W Woodland Dr Anaheim, CA 92801

BULK ASBESTOS FIBER ANALYSIS
BY POLARIZED LIGHT MICROSCOPY

NVLAP TESTING
NVLAP LAB CODE 500079-0
Phone:(562) 860-2201
www.aihlab.com

Client Name: 1 Laboratories, Inc. - LA
Project Manager: Joe Sevrean
Client Address: 2520 North San Fernando Road, Unit A, Los Angeles, CA 90065
Project Number: 2508433
Project Location: Sylvan Park Early Education Center

Lab Batch Number: 2520029
Samples Submitted: 10
Samples Analyzed: 10
Analysis Method: EPA 600/R-93-116 & EPA 600/M4-82-020

Lab ID: 252002901 **Client ID:** 2508433-01

Layer	Layer Description	Asbestos Type %	Other Fibrous Material %	Other Non Fibrous Material
1.	Brown loose sandy material	**None Detected**	None Detected	Binder/Filler, Mineral Grains

Comments: Qualitative analysis was conducted to determine presence of asbestos fibers

Lab ID: 252002902 **Client ID:** 2508433-03

Layer	Layer Description	Asbestos Type %	Other Fibrous Material %	Other Non Fibrous Material
1.	Brown loose sandy material with debris	**None Detected**	None Detected	Binder/Filler, Mineral Grains

Comments: Qualitative analysis was conducted to determine presence of asbestos fibers

Lab ID: 252002903 **Client ID:** 2508433-05

Layer	Layer Description	Asbestos Type %	Other Fibrous Material %	Other Non Fibrous Material
1.	Brown loose sandy material with debris	**None Detected**	None Detected	Binder/Filler, Mineral Grains

Comments: Qualitative analysis was conducted to determine presence of asbestos fibers

Lab ID: 252002904 **Client ID:** 2508433-08

Layer	Layer Description	Asbestos Type %	Other Fibrous Material %	Other Non Fibrous Material
1.	Brown loose sandy material with debris	**None Detected**	None Detected	Binder/Filler, Mineral Grains

Comments: Qualitative analysis was conducted to determine presence of asbestos fibers

Lab ID: 252002905 **Client ID:** 2508433-10

Layer	Layer Description	Asbestos Type %	Other Fibrous Material %	Other Non Fibrous Material
1.	Brown loose sandy material with debris	**None Detected**	None Detected	Binder/Filler, Mineral Grains

Comments: Qualitative analysis was conducted to determine presence of asbestos fibers

Lab ID: 252002906 **Client ID:** 2508433-12

Layer	Layer Description	Asbestos Type %	Other Fibrous Material %	Other Non Fibrous Material
1.	Brown loose sandy material with debris	**None Detected**	None Detected	Binder/Filler, Mineral Grains

Comments: Qualitative analysis was conducted to determine presence of asbestos fibers

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Phone:(562) 860-2201
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Client Name: 1 Laboratories, Inc. - LA
Project Manager: Joe Sevrean
Client Address: 2520 North San Fernando Road, Unit A, Los Angeles, CA 90065
Project Number: 2508433
Project Location: Sylvan Park Early Education Center

Lab Batch Number: 2520029
Samples Submitted: 10
Samples Analyzed: 10
Analysis Method: EPA 600/R-93-116 & EPA 600/M4-82-020

Lab ID: 252002907 **Client ID:** 2508433-14

Layer	Layer Description	Asbestos Type %	Other Fibrous Material %	Other Non Fibrous Material
1.	Brown/tan loose sandy material	**None Detected**	None Detected	Binder/Filler, Mineral Grains

Comments: Qualitative analysis was conducted to determine presence of asbestos fibers

Lab ID: 252002908 **Client ID:** 2508433-16

Layer	Layer Description	Asbestos Type %	Other Fibrous Material %	Other Non Fibrous Material
1.	Brown/tan loose sandy material with debris	**None Detected**	None Detected	Binder/Filler, Mineral Grains

Comments: Qualitative analysis was conducted to determine presence of asbestos fibers

Lab ID: 252002909 **Client ID:** 2508433-18

Layer	Layer Description	Asbestos Type %	Other Fibrous Material %	Other Non Fibrous Material
1.	Brown/tan loose sandy material	**None Detected**	None Detected	Binder/Filler, Mineral Grains

Comments: Qualitative analysis was conducted to determine presence of asbestos fibers

Lab ID: 252002910 **Client ID:** 2508433-20

Layer	Layer Description	Asbestos Type %	Other Fibrous Material %	Other Non Fibrous Material
1.	Brown/tan loose sandy material with debris	**None Detected**	None Detected	Binder/Filler, Mineral Grains

Comments: Qualitative analysis was conducted to determine presence of asbestos fibers

AIH LABORATORY
2556 W Woodland Dr Anaheim, CA 92801

BULK ASBESTOS FIBER ANALYSIS

BY POLARIZED LIGHT MICROSCOPY

NVLAP TESTING
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Phone:(562) 860-2201
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Client Name: 1 Laboratories, Inc. - LA
Project Manager: Joe Sevrean
Client Address: 2520 North San Fernando Road, Unit A, Los Angeles, CA 90065
Project Number: 2508433
Project Location: Sylvan Park Early Education Center

Lab Batch Number: 2520029
Samples Submitted: 10
Samples Analyzed: 10
Analysis Method: EPA 600/R-93-116 & EPA 600/M4-82-020

Analyzed by: Brian Tran **Signature:** **Date:** 09-10-2025

Reviewed by: Zubair Ahmed **Signature:** **Date:** 09-10-2025

Reporting limit is 1%. If the sample was not collected by AIH Laboratory then the accuracy of the results is limited by the methodology and experience of the sample collector. Clients can verify specific reporting limit requirement from local regulatory agencies. Liability limited to cost of samples analysis. This report shall not be reproduced except in full, without written approval of AIH Laboratory. It shall not be used to claim product endorsement by NVLAP or any other agency of the government. Reported results relate only to the samples tested and may not be the representative of the sample area. AIH Laboratory shall dispose of the Customer's samples 14 days after receiving the samples unless instructed to store them for an alternate period of time in writing.

2520029

AIH LABORATORY — CHAIN OF CUSTODY FORM

2556 W Woodland Dr Anaheim, CA 92801
Phone:(562) 860-2201
www.aihlab.com

Lab Batch Number:		Number of Samples:	10
Client Name:	1 Laboratories, Inc.	Project Number:	2508433
Client Address:	2520 N. San Fernando Rd, Unit A Los Angeles, CA 90065	Project Location:	Sylvan Park Early Education Center due 9/10/25
Project Manager:	Joe Sevrean	Turnaround Time:	☐ 1 hour ☐ 2 hours ☐ 4 hours ☐ 8 hours ☑ 24 hours ☐ 2 days ☐ 3 days ☐ 5 days ☐ Rush
Main Phone:	323-254-7700 Ext:		
Cell Phone:			
Email:	joe@1labsinc.com	Delivery:	Ref#:
Fax:		Reporting Method:	☑ Email ☑ Call Main Phone ☑ Fax
Special Instructions:			

Analysis Type:

Asbestos Air PCM: ☐ NIOSH 7400 ☐ NIOSH 7400 B Rules (Fiber Glass)

Asbestos Bulk: ☑ **PLM(EPA 600/R-93-116) <----Check this for asbestos testing**

Asbestos Bulk Point Count: ☐ PLM(EPA 600/R-93-116) Counts: ☐ 400 ☐ 1000 ☐ Other:_____

Rotameters: ☐ Lead ☐ PCM

Seq#	Client Sample ID	A/R	Description / Location / Comments
1	2508433-01	A	
2	2508433-03		
3	2508433-05		
4	2508433-08		
5	2508433-10		
6	2508433-12		
7	2508433-14		
8	2508433-16		
9	2508433-18		
10	2508433-20		
11			
12			
13			
14			
15			

	Print Name	Signature	Company	Date	Time
Sampled by:					
Relinquished by:	Yumiko Hutton	Y. Hutton	1 Labs	09/09/25	

(----------For Lab Use Only----------)

	Print Name	Signature	Company	Date	Time
Received by:	Chan Hashimoto	Ch	AIH Laboratory	09/09/25	3:00PM
Analyzed by:			AIH Laboratory		
Reported by:			AIH Laboratory		

V14-1A

POSITIVE
LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

September 05, 2025

Joe Sevrean
1 Laboratories, Inc.
2520 N. San Fernando Rd., Unit A
Los Angeles, CA 90065

Report No.: 2508234
Project Name: Analytical Testing - 2508433

Dear Joe Sevrean,

This report contains the analytical results for the sample(s) received under chain of custody(s) by Positive Lab Service on August 29, 2025.

The test results in this report are performed in compliance with ELAP accreditation requirements for the certified parameters. Analytes flagged ANC are not offered by ELAP for certification. Analytes flagged ANA are offered by ELAP; however, they are not PLS certified.

The laboratory report may not be reproduced, except in full, without the written approval of the laboratory. The issuance of the final Certificate of Analysis takes precedence over any previous Preliminary Report. Preliminary data should not be used for regulatory purposes. Authorized signature(s) are provided on the final report only.

If you have any questions in reference to this report, please contact your Positive Lab Service coordinator.

Project Manager

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

File #:75945
Report Date: 09/05/25
Submitted: 08/29/25
PLS Report No.: 2508234

1 Laboratories, Inc.
2520 N. San Fernando Rd., Unit A
Los Angeles, CA 90065

Attn: Joe Sevrean Phone: (323) 254-7700 FAX:

Project: Analytical Testing - 2508433

Sample ID: 2508433-01 Soil (2508234-01) Sampled: 08/29/25 07:50 Received: 08/29/25

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aroclor-1016	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1221	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1232	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1242	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1248	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1254	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1260	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*79.5 %*			*25-130*		*EPA 3550C*	*EPA 8082*	*09/02/25*	*09/03/25*	*kf*	*BI50207*
Surrogate: Decachlorobiphenyl	*118 %*			*25-152*		*EPA 3550C*	*EPA 8082*	*09/02/25*	*09/03/25*	*kf*	*BI50207*

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	**8.09**		1	mg/kg	2.00	EPA 3050B	EPA 6020	09/03/25	09/04/25	jks	BI50419

Sample ID: 2508433-03 Soil (2508234-02) Sampled: 08/29/25 08:04 Received: 08/29/25

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aroclor-1016	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1221	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1232	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1242	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1248	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1254	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1260	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*78.3 %*			*25-130*		*EPA 3550C*	*EPA 8082*	*09/02/25*	*09/03/25*	*kf*	*BI50207*
Surrogate: Decachlorobiphenyl	*121 %*			*25-152*		*EPA 3550C*	*EPA 8082*	*09/02/25*	*09/03/25*	*kf*	*BI50207*

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	**3.29**		1	mg/kg	2.00	EPA 3050B	EPA 6020	09/03/25	09/04/25	jks	BI50419

Sample ID: 2508433-05 Soil (2508234-03) Sampled: 08/29/25 08:15 Received: 08/29/25

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aroclor-1016	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1221	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1232	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1242	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1248	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1254	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1260	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*83.3 %*			*25-130*		*EPA 3550C*	*EPA 8082*	*09/02/25*	*09/03/25*	*kf*	*BI50207*
Surrogate: Decachlorobiphenyl	*147 %*			*25-152*		*EPA 3550C*	*EPA 8082*	*09/02/25*	*09/03/25*	*kf*	*BI50207*

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	**3.80**		1	mg/kg	2.00	EPA 3050B	EPA 6020	09/03/25	09/04/25	jks	BI50419

Sample ID: 2508433-08 Soil (2508234-04) Sampled: 08/29/25 08:58 Received: 08/29/25

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aroclor-1016	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1221	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1232	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

File #:75945
Report Date: 09/05/25
Submitted: 08/29/25
PLS Report No.: 2508234

1 Laboratories, Inc.
2520 N. San Fernando Rd., Unit A
Los Angeles, CA 90065

Attn: Joe Sevrean Phone: (323) 254-7700 FAX:

Project: Analytical Testing - 2508433

Sample ID: 2508433-08 Soil (2508234-04) Sampled: 08/29/25 08:58 Received: 08/29/25

Aroclor-1242	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1248	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1254	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1260	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Surrogate: 2,4,5,6 Tetrachloro-m-xyler	*82.8 %*			*25-130*		*EPA 3550C*	*EPA 8082*	*09/02/25*	*09/03/25*	*kf*	*BI50207*
Surrogate: Decachlorobiphenyl	*159 %*			*25-152*		*EPA 3550C*	*EPA 8082*	*09/02/25*	*09/03/25*	*kf*	*BI50207*

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	**5.05**		1	mg/kg	2.00	EPA 3050B	EPA 6020	09/03/25	09/04/25	jks	BI50419

Sample ID: 2508433-10 Soil (2508234-05) Sampled: 08/29/25 09:25 Received: 08/29/25

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aroclor-1016	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1221	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1232	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1242	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1248	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1254	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1260	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Surrogate: 2,4,5,6 Tetrachloro-m-xyler	*88.6 %*			*25-130*		*EPA 3550C*	*EPA 8082*	*09/02/25*	*09/03/25*	*kf*	*BI50207*
Surrogate: Decachlorobiphenyl	*136 %*			*25-152*		*EPA 3550C*	*EPA 8082*	*09/02/25*	*09/03/25*	*kf*	*BI50207*

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	**2.14**		1	mg/kg	2.00	EPA 3050B	EPA 6020	09/03/25	09/04/25	jks	BI50419

Sample ID: 2508433-12 Soil (2508234-06) Sampled: 08/29/25 09:35 Received: 08/29/25

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aroclor-1016	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1221	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1232	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1242	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1248	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1254	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1260	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Surrogate: 2,4,5,6 Tetrachloro-m-xyler	*91.2 %*			*25-130*		*EPA 3550C*	*EPA 8082*	*09/02/25*	*09/03/25*	*kf*	*BI50207*
Surrogate: Decachlorobiphenyl	*136 %*			*25-152*		*EPA 3550C*	*EPA 8082*	*09/02/25*	*09/03/25*	*kf*	*BI50207*

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	**3.65**		1	mg/kg	2.00	EPA 3050B	EPA 6020	09/03/25	09/04/25	jks	BI50419

Sample ID: 2508433-14 Soil (2508234-07) Sampled: 08/29/25 09:40 Received: 08/29/25

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aroclor-1016	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1221	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1232	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1242	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1248	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1254	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1260	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

File #:75945
Report Date: 09/05/25
Submitted: 08/29/25
PLS Report No.: 2508234

1 Laboratories, Inc.
2520 N. San Fernando Rd., Unit A
Los Angeles, CA 90065

Attn: Joe Sevrean Phone: (323) 254-7700 FAX:

Project: Analytical Testing - 2508433

Sample ID: 2508433-14 Soil (2508234-07) Sampled: 08/29/25 09:40 Received: 08/29/25

Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*77.9 %*			*25-130*		*EPA 3550C*	*EPA 8082*	*09/02/25*	*09/03/25*	*kf*	*BI50207*
Surrogate: Decachlorobiphenyl	*110 %*			*25-152*		*EPA 3550C*	*EPA 8082*	*09/02/25*	*09/03/25*	*kf*	*BI50207*
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	**5.34**		1	mg/kg	2.00	EPA 3050B	EPA 6020	09/03/25	09/04/25	jks	BI50419

Sample ID: 2508433-16 Soil (2508234-08) Sampled: 08/29/25 09:55 Received: 08/29/25

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aroclor-1016	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1221	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1232	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1242	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1248	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1254	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1260	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*93.8 %*			*25-130*		*EPA 3550C*	*EPA 8082*	*09/02/25*	*09/03/25*	*kf*	*BI50207*
Surrogate: Decachlorobiphenyl	*117 %*			*25-152*		*EPA 3550C*	*EPA 8082*	*09/02/25*	*09/03/25*	*kf*	*BI50207*
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	**2.14**		1	mg/kg	2.00	EPA 3050B	EPA 6020	09/03/25	09/04/25	jks	BI50419

Sample ID: 2508433-18 Soil (2508234-09) Sampled: 08/29/25 10:15 Received: 08/29/25

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aroclor-1016	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1221	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1232	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1242	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1248	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1254	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1260	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*81.8 %*			*25-130*		*EPA 3550C*	*EPA 8082*	*09/02/25*	*09/03/25*	*kf*	*BI50207*
Surrogate: Decachlorobiphenyl	*136 %*			*25-152*		*EPA 3550C*	*EPA 8082*	*09/02/25*	*09/03/25*	*kf*	*BI50207*
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	**9.07**		1	mg/kg	2.00	EPA 3050B	EPA 6020	09/03/25	09/04/25	jks	BI50419

Sample ID: 2508433-20 Soil (2508234-10) Sampled: 08/29/25 10:22 Received: 08/29/25

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aroclor-1016	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1221	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1232	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1242	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1248	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1254	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Aroclor-1260	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	09/02/25	09/03/25	kf	BI50207
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	*80.3 %*			*25-130*		*EPA 3550C*	*EPA 8082*	*09/02/25*	*09/03/25*	*kf*	*BI50207*
Surrogate: Decachlorobiphenyl	*115 %*			*25-152*		*EPA 3550C*	*EPA 8082*	*09/02/25*	*09/03/25*	*kf*	*BI50207*
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	**3.44**		1	mg/kg	2.00	EPA 3050B	EPA 6020	09/03/25	09/04/25	jks	BI50419

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

1 Laboratories, Inc.
2520 N. San Fernando Rd., Unit A
Los Angeles, CA 90065

Attn: Joe Sevrean Phone: (323) 254-7700 FAX:

File #:75945
Report Date: 09/05/25
Submitted: 08/29/25
PLS Report No.: 2508234

Project: Analytical Testing - 2508433

Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BI50207 - EPA 3550C										
Blank	**Prepared & Analyzed: 09/02/25**									
Aroclor-1016	ND	50.0	ug/kg							
Aroclor-1221	ND	50.0	ug/kg							
Aroclor-1232	ND	50.0	ug/kg							
Aroclor-1242	ND	50.0	ug/kg							
Aroclor-1248	ND	50.0	ug/kg							
Aroclor-1254	ND	50.0	ug/kg							
Aroclor-1260	ND	50.0	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*11.1*		ug/kg	*12.5*		*88.8*	*25-130*			
Surrogate: Decachlorobiphenyl	*15.6*		ug/kg	*12.5*		*125*	*25-152*			
LCS	**Prepared & Analyzed: 09/02/25**									
Aroclor-1260	274	50.0	ug/kg	312		87.7	47-135			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*10.0*		ug/kg	*12.5*		*80.4*	*34-123*			
Surrogate: Decachlorobiphenyl	*15.6*		ug/kg	*12.5*		*125*	*39-150*			
LCS Dup	**Prepared & Analyzed: 09/02/25**									
Aroclor-1260	299	50.0	ug/kg	312		95.7	47-135	8.77	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	*11.7*		ug/kg	*12.5*		*93.3*	*34-123*			
Surrogate: Decachlorobiphenyl	*16.0*		ug/kg	*12.5*		*128*	*39-150*			
Batch BI50419 - EPA 3050B										
Blank	**Prepared: 09/03/25 Analyzed: 09/04/25**									
Arsenic	ND	2.00	mg/kg							
LCS	**Prepared: 09/03/25 Analyzed: 09/04/25**									
Arsenic	9.52	2.00	mg/kg	10.0		95.2	80-120			
LCS Dup	**Prepared: 09/03/25 Analyzed: 09/04/25**									
Arsenic	9.72	2.00	mg/kg	10.0		97.2	80-120	2.10	25	
Duplicate **Source: 2508234-02**	**Prepared: 09/03/25 Analyzed: 09/04/25**									
Arsenic	3.37	2.00	mg/kg		3.29			2.49	30	
Matrix Spike **Source: 2508234-02**	**Prepared: 09/03/25 Analyzed: 09/04/25**									
Arsenic	8.26	2.00	mg/kg	10.0	3.29	49.7	75-125			V-2
Matrix Spike Dup **Source: 2508234-02**	**Prepared: 09/03/25 Analyzed: 09/04/25**									
Arsenic	8.22	2.00	mg/kg	10.0	3.29	49.3	75-125	0.932	30	V-2

POSITIVE LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021
(213) 745-5312 FAX (213) 745-6372

Certificate of Analysis

1 Laboratories, Inc.
2520 N. San Fernando Rd., Unit A
Los Angeles, CA 90065

Attn: Joe Sevrean Phone: (323) 254-7700 FAX:

File #:75945
Report Date: 09/05/25
Submitted: 08/29/25
PLS Report No.: 2508234

Project: Analytical Testing - 2508433

Notes and Definitions

V-2	Out-of-Range recovery was due to sample Heterogeneity.
NA	Not Applicable
ND	Analyte NOT DETECTED at or above the reported limit(s)
NR	Not Reported
MDL	Method Detection Limit
PQL	Practical Quantitation Limit

Environmental Laboratory Accreditation Program Certificate No. 1131, LACSD No. 10138

Rick Owen Parker

Authorized Signature(s)

POSITIVE LAB SERVICE

Chain of Custody And Analysis Request

781 East Washington Blvd. Los Angeles, CA 90021
Tel: (213) 745-5312 Fax: (213) 745-6372

DATE: 8/29/25 PAGE: 1 OF 1

FILE NO.: LAB NO.: 2508234

CLIENT NAME: 1 Laboratories, Inc PROJECT NAME/NO. 2508433 P.O.NO. AIRBILL NO:

ADDRESS: 2520 N. San Fernando Rd, Unit A, Los Angeles, CA 90065

PROJECT MANAGER: Joe Sevrean PHONE NO: 323-254-7700 FAX NO:

SAMPLER NAME: SIGNATURE:

TAT (Turn-Around-Time): 0=Same Day; 1 = 1 Day; 2 = 2 Days, 3 = 3 Days, N = Normal (5-7 Working Days) 4 days

CONTAINER TYPES: B=Brass; E=Encore/Easy Draw; P=Plastic; G=Glass; V=VOA Vial; O=Other

UST PROJECT: Y N GLOBAL ID#: --- --- --- --- --- --- --- --- --- ---

ANALYSES REQUESTED

COOLER TEMP: _____

<----PRESERVATION *

REMARKS: _____

SAMPLE ID	DATE D	TIME D	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER		PCB 8082	Arsenic 6020						SAMPLE CONDITIONS/ CONTAINER/COMMENTS
				WATER	SOIL	SLUDGE	R		#	TYPE								
	8/29/25	0750	2508433-01		✓				1		✓	✓						
		0804	2508433-03		✓				1		✓	✓						
		0815	2508433-05		✓				1		✓	✓						
		0858	2508433-08		✓				1		✓	✓						
		0925	2508433-10		✓				1		✓	✓						
		0935	2508433-12		✓				1		✓	✓						
		0940	2508433-14		✓				1		✓	✓						
		0955	2508433-16		✓				1		✓	✓						
		1015	2508433-18		✓				1		✓	✓						
		1022	2508433-20		✓				1		✓	✓						

Relinquished by (Signature& Name): Armando Cervantes Received by (Signature & Name): Date: 8/29/25 Time: 3:23

Relinquished by (Signature& Name): Received by (Signature & Name): Date: Time:

Relinquished by (Signature& Name): Received by (Signature & Name): Date: Time:

SAMPLE DISPOSITION

1. Samples returned to client? Yes No
2. Samples will not be stored over 30 days, unless additional storage time is requested
3. Storage time requested: _____days,

By: _____ Date: _____

SPECIAL INSTRUCTION:

OBSERV. TEMP: 1.2 °C
CORREC. TEMP: 0.2 °C
THERMO ID: 62 BY: 14

* PRESERVATION: 1-HNO_3, 2-H_2SO_4, 3-HCL, 4-Zinc Acetate, 5-NaOH, 6-NH_4 Buffer, 7-Other

SECTION 01 4525

TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 – GENERAL

1.01 SUMMARY

A. SECTION INCLUDES

1. This Section specifies the requirements for test and balance of HVAC and related systems.

B. RELATED REQUIREMENTS

1. Section 01 1100: Summary of Work.
2. Section 01 3113: Project Coordination.
3. Section 01 3213: Construction Schedule.
4. Section 01 3300: Submittal Procedures.
5. Section 01 7700: Contract Closeout.
6. Section 23 0500: Common Work Results for HVAC.
7. Section 23 0513: Basic HVAC Materials and Methods.
8. Section 23 0548: HVAC Sound, Vibration and Seismic Control.
9. Section 23 0900: HVAC Instrumentation and Controls.
10. Section 23 0923: Environmental Control and Energy Management Systems (Only include when DDC Energy Management and Control Systems are provided).
11. Section 23 2013: HVAC Piping.
12. Section 23 3000: Air Distribution.
13. Section 23 3813: Kitchen Ventilation System.
14. Section 23 5000: Central Heating Equipment
15. Section 23 6416: Oil Lubricated Centrifugal Water Chillers.
16. Section 23 6418: Oil Free Centrifugal Water Chillers.

17. Section 23 6423: Scroll Water Chillers.

18. Section 23 6426: Rotary-Screw Water Chillers.

19. Section 23 6428: Air-Cooled Rotary Screw Chillers.

20. Section 23 6500: Cooling Towers.

21. Section 23 8000: Heating, Ventilating and Air Conditioning Equipment.

22. Section 28 3149: Carbon Monoxide Detection and Alarm Systems.

PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION

3.01 DEFINITIONS AND APPLICABLE PUBLICATIONS

A. For the purposes of this Section definitions are as indicated in applicable publications of AABC, NEBB, TABB, ASHRAE, ANSI and SMACNA.

1. TAB: Testing, Adjusting and Balancing.

2. TABB: Testing, Adjusting and Balancing Bureau.

3. AABC: Associated Air Balance Council.

4. NEBB: National Environmental Balancing Bureau.

5. ASHRAE: American Society of Heating, Refrigerating and Air-Conditioning Engineers.

6. ANSI: American National Standards Institute.

7. SMACNA: Sheet Metal and Air Conditioning Contractors' National Association.

8. OAR: OWNER'S Authorized Representative

3.02 QUALITY ASSURANCE

A. The General Contractor shall contract directly with the test and balance agency. Tests performed by testing agencies contracted with the system's subcontractor will not be accepted. The qualifications of the agency shall comply with Article 3.02, Quality Assurance. The agency shall be responsible for furnishing labor, instruments, and tools required to test, adjust, and balance the heating, ventilating, and air conditioning (HVAC) systems and related plumbing systems, as described and/or as indicated in the Contract Documents.

B. CONTRACTOR shall obtain services of an independent, qualified testing agency acceptable to Architect to perform testing and balancing Work as specified and as follows:

1. Agency shall be currently certified by either the Associated Air Balance Council (AABC), the National Environmental Balancing Bureau (NEBB), or the Testing, Adjusting and Balancing Bureau (TABB). NEBB or TABB certification shall be for Air and Hydronic Testing, Adjusting and Balancing and Sound and Vibration Measurement.

2. Work shall be in accordance with the latest edition of the AABC, NEBB, or TABB National Standards. Where the requirements of the two standards are different, the more stringent requirements shall prevail. Also, if the Contract Documents impose a more stringent standard, then the Contract Documents shall prevail.

C. Performance Criteria: Work of this Section shall be performed in accordance with approved Testing, Adjusting, and Balancing agenda.

D. Test Equipment Criteria: Basic instrumentation requirements and accuracy/calibration required by Section Two of the AABC, Section II of the NEBB, or TABB Procedural Standards for Testing, Adjusting and Balancing of Environmental Systems.

E. Verification: The Test and Balance Agency shall recheck 10 percent (minimum 10) of the measurements listed in the report. The locations shall be selected by PROJECT INSPECTOR or OAR. The recheck will be witnessed by PROJECT INSPECTOR or OAR. If 20 percent of the measurements that are retested differ from the report and are also out of the specified range, an additional 10 percent will be tested. If 20 percent fall outside the specified range, the report will be considered invalid and all test and balance work shall be repeated.

F. Due to more stringent acoustical requirements in the educational environment, the Test and Balance Agency shall recheck the air systems where the sound level is higher than the specified requirements and demonstrate compliance with the methodology specified in this document with emphasis on fan speed adjustment and balancing for optimum acoustical performance. The recheck will be witnessed by PROJECT INSPECTOR or OAR. When there are multiple air systems, a system selected by PROJECT INSPECTOR or OAR shall be rechecked. If this system is found to be not in compliance, a second system shall be checked. If the second system if also found to be not in compliance, the report will be considered invalid, and all test and balance work shall be repeated.

3.03 SUBMITTALS

A. Submit name of agency to perform the Work. Include in the submittal the certified qualifications of all persons responsible for supervising and performing actual Work of this Section. Agency shall submit a minimum of five commercial or industrial HVAC system TAB projects of similar type, size, and degree of difficulty completed within

the last two years. Agency shall provide name and telephone number of contact person for each listed project.

B. Submit, for approval, 6 copies of the Agenda as indicated in Article 3.06 to test and balance all mechanical and relevant plumbing systems.

C. Preliminary Report: Review the Contract Documents, examine Work installations and submit a written report to ARCHITECT, PROJECT INSPECTOR and OAR indicating deficiencies in Work precluding proper testing and balancing of the Work.

D. Final TAB Report: Submit the final TAB report for review by ARCHITECT, PROJECT INSPECTOR, and OAR outlining the conditions and Work completed on each HVAC system. All outlets, devices, HVAC equipment, etc. shall be identified, along with a numbering system corresponding to report unit identification.

E. Submit an AABC "National Project Performance Guaranty" or "NEBB Quality Assurance Certification", assuring the Project systems were tested, adjusted, and balanced in accordance with the Specifications and AABC, NEBB, or TABB National Standards.

F. CAD drawings: Submit single line, multi-color CAD drawings indicating outside return and supply air, volume control boxes, each outlet and inlet, room numbers, duct sizes at traverse locations, temperatures and pressures, systems balanced, components changed, and CONTRACTOR installed access points. In addition, drawings shall identify controls, equipment settings, including manual damper quadrant positions, manual valve indicators, fan speed control levers, and similar controls, and devices shall be marked on the drawings to show final settings. CAD files shall be submitted on CD-ROM upon final submittal of TAB report. Reports shall identify discrepancies between completed Work and the Contract Documents affecting the performance and longevity of the system.

3.04 GENERAL SCOPE OF WORK

A. The general scope of Work shall include but not be limited to the following:

1. Measure airflow rates of HVAC systems and make adjustments to achieve design airflow rates, tabulate results, and submit reports.

2. Measure water-flow rates of HVAC systems and make adjustments to achieve design water flow rates, tabulate results, and submit reports.

3. Measure flow velocities, temperatures, static pressures or head, rotational speed, and electrical power demand of fans, pumps, and other related HVAC system components, tabulate results, and submit reports.

4. Measure sound levels in each conditioned space, tabulate results, and submit reports.

5. Measure ambient sound levels of outdoor HVAC units and system components such as chillers and cooling towers, tabulate results, and submit reports.

6. Reports shall contain sufficient data for the system designer to evaluate system performance and solve installation problems such as system pressure profiles and pressure drops across system components

3.05 SPECIFIC SCOPE OF WORK

A. The specific scope of Work shall include the following HVAC system components as indicated on the Drawings:

1. Air Handling Units.

2. Air Conditioning Units.

3. Heating and Ventilating Units.

4. Heating and Cooling Coils.

5. Supply, Return, Relief and Exhaust Fans.

6. Outside Air and Return Air Plenums.

7. Outside Air Intakes.

8. All Supply and Return Ductwork.

9. All associated Air Terminal Devices, i.e. Supply Diffusers, Return Registers, etc.

12. Exhaust Duct Systems.

13. Fire and Fire/Smoke Dampers.

3.06 TESTING, ADJUSTING, AND BALANCING AGENDA

A. Provide proposed materials, methods, procedures, forms, diagrams, and reports for test and balance Work.

B. Agenda to be completed by the test and balance agency and submitted to ARCHITECT, PROJECT INSPECTOR, and OAR for review and approval.

C. Agenda shall include one complete set of AABC, NEBB, or TABB publications listed in Sub-paragraph 3.02.B.2, applicable publications, or, in case of other test and balance agencies and or organizations, comparable publications to establish an approved, systematic, and uniform set of procedures.

D. Agenda shall also include the following detailed narrative procedures, system diagrams, and forms for test results:

1. Specific standard procedures required and proposed for each system of the Work.

2. Specified test forms for recording each procedure and for recording sound and vibration measurements.

3. Systems diagrams for each air, water, and steam system. Diagrams may be single line.

E. In addition to information recorded for standard AABC, NEBB, or TABB procedures, the following information is required:

1. Fan data.

2. System number, location, manufacturer, model, and serial number.

3. Fan wheel type and size.

4. Motor horse power, type, and rpm.

5. Sheave size, type, number of grooves, and open turns on Variable Pitch Sheave.

6. Number and size of belts, motor and fan shaft sizes, center-to-center of shafts in inches, and adjustment available motor data, including nameplate data, actual amps, rated, and actual motor rpm, volts, phase, hp, kW, starter heater size, and capacity.

7. Fan design airflow and service (supply, return, outdoor air or exhaust).

8. Fan static pressure, suction/discharge, static profile, and static control point.

F. The following traverse data is required:

1. Traverse location, size of duct (inside dimensions), and area of duct in square feet.

2. Column for each hole traversed/lines for each reading.

3. Barometric pressure.

4. Temperature/Static pressure in the duct.

5. Actual CFM corrected to SCFM.

6. Notes.

G. The following air distribution data is required:

1. Room identification.

2. Outlet or intake balance sequence number.

3. Size of outlet or inlet.

4. AK Factor.

5. Design and Actual FPM and CFM.

6. Notes.

H. The following hydronic coil data is required:

1. Air flow through the coil in CFM.

2. Dry bulb and wet bulb temperatures entering/leaving coil.

3. Enthalpy or total heat differences in BTU/pound.

4. Capacity in BTU/hour at time of test.

5. Water temperature and pressure entering/leaving coil.

6. Flow (in GPM) through coil.

7. Air pressure drop across coil.

8. Water head drop across coil.

9. Notes.

I. The following DX coil data is required:

1. Air flow through the coil in CFM.

2. Dry and wet bulb temperatures entering/leaving coil.

3. Enthalpy or total heat difference across coil in BTU/ pound.

4. Capacity in BTU/hour at time of test.

5. Air pressure drop across coil.

6. Notes.

J. The following data is required for steam to water heat exchangers for heat and/or domestic generation:

1. Exchanger identification number.

2. Nameplate data; manufacturer, model, and serial number.

3. Temperature entering/leaving unit.

4. Flow through unit in GPM.

5. Pressure drop through unit.

6. Entering steam pressure.

7. Notes.

K. The following electric heating coil data is required:

1. Heating coil identification number.

2. Nameplate data; manufacturer, model and serial number.

3. Amperage/Voltage on each phase.

4. Phase, kW, and Stages.

5. Safety device installed.

6. Air pressure drop across coil.

7. Notes.

L. The following water-cooled chiller data is required:

1. Identification number.

2. Nameplate data; manufacturer, model and serial number.

3. Chilled water flow through evaporator in GPM.

4. Water temperature entering/leaving evaporator.

5. Pressure drop through evaporator.

6. Condenser water flow through.

7. Pressure drop through condenser.

8. Water temperature entering/leaving condenser.

9. Motor data, amps, volts, rpm, starter type, overload protection type, phase, hertz, nameplate, and actual measured kW input.

10. Type of refrigerant.

11. Notes.

M. The following cooling tower data is required:

1. Identification number.
2. Nameplate data; manufacturer, model and serial number.
3. Performance test results for rated capacity.
4. Water flow through the tower in GPM.
5. Water temperature entering/leaving tower.
6. Outside Air dry and wet bulb temperatures.
7. Motor data, amps, volts, phase, hertz, and kW input.
8. Starter size and type and heater size and capacity.
9. Water droplets leaving tower - yes/no.
10. Water balanced across tower pans and basins.
11. Airflow across the tower within design rating according to fan curves.
12. Notes.

N. The following boiler and domestic water heater data is required:

1. Performance test results for rated capacity.
2. Boiler identification number.
3. Nameplate data; manufacturer, model, and serial number.
4. Water temperature entering/leaving the boiler.
5. Outside conditions: temperature, humidity, general cloud cover.
6. Barometric pressure.

O. The following air-cooled split system condensing unit data is required:

1. Performance test results for rated capacity.
2. Unit identification number.
3. Nameplate data, manufacturer, model, and serial number.
4. Compressor nameplate and actual amps, volts, phase, and hertz.
5. RPM of motors, where applicable.

6. Refrigerant type.

7. Suction/Discharge pressure when gage installed.

8. Number of stages.

9. Low-pressure/High-pressure control setting.

10. Condenser fan sequence stages.

11. Crankcase heater watts (nameplate).

12. Hot gas bypass installed - yes/no.

13. SCFM Air Flow Measurement vs. Design CFM.

P. The following air-cooled split system heat pump data is required:

1. Performance test results for rated heating and cooling capacities.

2. Unit identification number.

3. Nameplate data, manufacturer, model, and serial number.

4. Compressor nameplate and actual amps, volts, phase, and hertz.

5. RPM of motors, where applicable.

6. Refrigerant type.

7. Suction/Discharge pressure for both heating and cooling modes when gage installed.

8. Number of stages.

9. Low-pressure/High-pressure control setting.

10. Condenser fan sequence stages.

11. Crankcase heater watts (nameplate).

12. Hot gas bypass installed - yes/no.

13. SCFM Air Flow Measurement vs. Design CFM.

Q. The following sound test data is required:

1. Area or location.

2. Sound level in dB(A) as specified in Article 3.19.

3. Sound level at the center band frequencies of eight non-weighted octaves with equipment on and off for 5 rooms selected by the OAR/PROJECT INSPECTOR.

4. Plot of corrected sound-level reading on Noise Criteria (NC) curve for the measurements in Q 3 above.

R. The following vibration test data is required:

1. Equipment identification number.

2. Vibration levels at all accessible bearings, motors, fans, pumps, casings, and isolators.

3. Measurements in mils deflection and velocity in inches per second.

4. Each measurement taken in horizontal, vertical, and axial planes as accessible.

S. The following mixing damper leakage test data is required:

1. Equipment identification number (unit, box, zone, etc.).

2. Dry bulb temperature in the cold/hot (or bypass) deck.

3. Dry bulb temperature in the mixed air stream.

4. Calculated percent leakage.

5. Data above taken in the full cool and full heat (or bypass) mode.

6. Notes.

T. The following airflow station data is required:

1. Station identification number.

2. Nameplate data including effective area.

3. Differential test pressure or velocity.

4. Calculated CFM.

5. Actual CFM (from Pitot-tube traverse form).

6. Read out CFM.

7. Notes

U. The following unit heater data is required:

1. Equipment identification number.

2. Nameplate data; manufacturer, model, and serial number.

3. Test CFM (use manufacturer rated CFM if not ducted).

4. Heat test data per applicable procedure (hot water, electric, etc.).

5. Notes.

V. The following fan coil and unit ventilator data is required:

1. Equipment identification number.

2. Nameplate data; manufacturer, model, and serial number.

3. Tested supply CFM or manufacturer rated CFM if not ducted.

4. Tested outside air in CFM.

5. Motor data and actual amps and volts.

6. Cooling/Heating test data.

7. Static pressure.

8. Notes.

W. The following kitchen hood data is required:

1. Hood identification number.

2. Nameplate data; manufacturer, model, and serial number.

3. Pitot-tube traverse total air flow.

4. Exhaust and supply (when part of hood) CFM.

5. Exhaust and supply (when part of hood) test velocities shown on hood face diagram.

6. Face velocities.

7. Hood opening dimensions.

8. Notes (turbulence and flow patterns at the face and inside the hood).

X. The following laboratory hood data is required:

1. Hood identification number.

2. Nameplate data; manufacturer, model, and serial number.

3. Pitot-tube traverse total air flow.

4. Exhaust and supply (when part of hood) CFM.

5. Exhaust and supply (when part of hood) test velocities shown on hood face diagram.

6. Face velocities.

7. Hood opening dimensions.

8. Notes (turbulence and flow patterns at the face and inside the hood).

Y The following data for water-to-water heat exchangers for domestic and/or heating is required:

1. Exchanger identification number.

2. Nameplate data; manufacturer, model, and serial number.

3. GPM and Pressure drop through each side.

4. Capacity of each side.

5. Notes.

Z. The following pump data, including but not limited to, chilled water, heating hot water, cooling tower water, boiler feed, domestic hot water booster, domestic hot water circulation, sewage ejectors, sump pumps and domestic hot water booster is required:

1. Pump number.

2. Nameplate data; manufacturer, model, and serial number.

3. Motor data including nameplate data, actual amps, volts, RPM, horsepower, starter heater size, and capacity.

4. Pump discharge and suction pressure along with total dynamic head in the following modes.

5. Shut-off head FT, Wide open Head FT, and Final operating Head FT.

6. Final GPM Test plotted on a pump curve.

7. Notes.

AA. The following water flow station data is required:

1. Station identification number.

2. Nameplate data; manufacturer, model, and serial number.

3. Design and actual GPM.

4. Differential test pressure.

5. Setting (open turns, degree, etc.) if required GPM.

6. Notes.

BB. The following terminal box data is required:

1. Box identification number.

2. Node, address, or designation on system.

3. Box size.

4. Cooling CFM.

5. Minimum CFM (if applicable).

6. Heating CFM (if applicable).

7. Box fan amps and volts (if applicable).

8. For DDC controlled boxes, record computer readout maximum, minimum, and heat, along with box correction factor for calibrating to true CFM.

9. Notes.

3.07 PROCEDURES

A. Schedule the Work of this Section in order for test and balance activities to be completed prior to the date of Substantial Completion. CONTRACTOR shall place all heating, ventilating, and air conditioning equipment into operation during each day and until all HVAC adjusting, balancing, testing, demonstrations, and instructions on systems are completed. Agency shall prepare and submit reports within ten (10) days from completion of the Work of this Section to allow sufficient time for corrective measures to be completed before Substantial Completion of the Work. When an individual building or portion thereof is ready for occupancy, all equipment relative to such portion of Work shall be put into service, tested, and balanced.

B. Prior to the date of Substantial Completion, and upon completion of test and balance Work, place all exhaust fans in operation, force all air handling units, and air conditioning units into a 100 percent outdoor air economizer mode with heating and cooling locked out and flush the building continuously for a period of fourteen (14) days.

C. Coordinate test and balance procedures with any phased Project requirements so test and balance procedures on each phased portion of the Work will be completed prior to completion of said designated phase.

3.08 FIELD EXAMINATION

A. Before the commencement of test and balance Work, CONTRACTOR shall ascertain that following conditions are fulfilled:

1. Ensure that all water heating and water cooling systems have been flushed, cleaned, and filled and high points vented.

2. Boilers (steam and hot water) are filled.

3. Refrigerant systems are fully charged with specified refrigerant.

4. Over-voltage and current protection have been provided for motors.

5. Equipment has been labeled as required.

6. Curves and descriptive data on each piece of equipment to be tested and adjusted are available as required.

7. Operations and maintenance manuals have been supplied.

8. Controls manufacturer and boiler-burner representatives shall be available for consultation and supervision of adjustments during tests.

9. Verify that heating and cooling coil fins are cleaned, combed and air filters clean, and installed.

10. Verify that duct systems are clean of debris and leakage is minimized, access doors are closed and duct end caps are in place, and fire and volume dampers are in place and open.

11. Automatic control systems are completed and operating.

12. Start up and initial commissioning of all HVAC equipment except fans shall be by the manufacturer.

B. In addition to the above, CONTRACTOR shall establish a specific, coordinated plan which details how each area of existing building will be balanced during the various phases of the Work. The evaluation shall address, at a minimum, the following concerns:

1. OWNER operations.

2. Building safety and security policies. Prior to any fire safety or security systems shutdown at any time during the Work, CONTRACTOR shall first

advise and coordinate with OWNER to ensure all concerned parties are notified.

3. Protecting furniture, computers, photocopiers, and other office equipment.

4. Protecting classroom fixtures and equipment.

5. Concerns specific and unique to building related issues.

6. Downtime required for each Air Handling Unit including projected time to return each portion of the building back to its normal occupancy temperature and humidity.

7. Shutdown and reactivation of the fire alarm system to avoid accidental alarms during test and balance and related Work.

3.09 TEST AND BALANCE

A. For each heating, ventilating, or air conditioning system the following shall be performed, recorded, and submitted in an approved format for review. Make, type, and model of unit, and location of each piece of equipment shall be included in the report. Readings shall include but not be limited to following:

1. Air Systems**:**

a. General

1) Verify all ductwork, dampers, grilles, registers, and diffusers have been installed per design and set in the full open position. Agency shall perform the following TAB procedures in accordance with AABC or NEBB National Standards. Where the requirements of the two standards are different, the more stringent requirements shall prevail. Also, if the Contract Documents impose a more stringent standard then the Contract Documents shall prevail.

b. Zone, Branch, and Main Ducts:

1) Adjust ducts to within design CFM requirements by means of Pitot-tube duct traverse.

c. Supply Fans:

1) Fan Speeds: Test and adjust fan RPM to achieve maximum or design CFM. CONTRACTOR shall provide new belt pulleys when required.

2) Current and Voltage: Test and record motor voltage and amperage, and compare data with the nameplate limits. Ensure

fan motor is not in or above the service factor as published by the motor manufacturer.

3) Pitot-Tube Traverse: Perform a Pitot-tube traverse of main supply and return ducts, record total CFM.

4) Outside Air: Test and adjust the outside air using Pitot-tube traverse.

5) Static Pressure: Test and record system static profile of each supply fan.

6) Current and Voltage: Test and record motor voltage and amperage, and compare data with the nameplate limits. Ensure fan motor is not in or above the service factor as published by the motor manufacturer.

d. Return, Relief, and Exhaust Fans:

1) Fan Speeds: Test and adjust fan RPM to achieve maximum or design CFM. CONTRACTOR shall provide new belt pulleys where required.

2) Pitot-Tube Traverse: Perform a Pitot-tube traverse of the main return ducts to obtain total CFM.

3. Static Pressure: Test and record system static profile of each fan.

e. VAV Systems:

1) Set volume regulators on all terminal boxes to meet design maximum and minimum CFM requirements.

2) Identification: Identify the type, location, and size of each terminal box. This information shall be recorded on terminal box data sheets.

f. Diffusers, Registers and Grilles:

1) Tolerances: Test and balance each diffuser, grille, and register to within 5 percent of design requirements.

2) Identification: Identify the type, location, and size of each grille, diffuser, and register. This information shall be recorded on air outlet data sheets.

g. Coils: Air Temperature: Once airflow is set to acceptable limits, agency shall take wet bulb and dry bulb air temperatures on the entering and

leaving side of each cooling coil. Dry-bulb temperature shall be taken on the entering and leaving side of each heating coil.

h. Duct Leakage Testing:

1) On existing ductwork, agency shall calculate duct leakage by traversing the unit and reading associated diffusers.

2) On new installations each and every section of the entire air distribution system (all supply, return, exhaust, and relief ductwork) shall be tested at 1.5 times design static pressure. All ducts shall demonstrate 5 percent leakage maximum (per CBC).

i. Air Handling Units:

1) Prepare pressure profile and show design and actual CFM (outside air, return air, and supply air).

2) Measure and record each mode (minimum OA and 100 percent OA) where economizer cycle is specified.

3) Record pressure drops of all components (coils, filters, sound attenuators, louvers, dampers, and fans) and compare with design values.

4) Pressure profile and component pressure drops are performance indicators and are not to be used for flow measurements.

j. System Pressure Profiles:

1) Prepare pressure profiles from fan (supply, return, and exhaust) or air handling unit to extremities of system.

2) As a minimum, show pressure at each floor, main branch, and airflow measuring device.

3) Make pitot-tube traverses of all trunk lines and major branch lines where required for analysis of distribution system. Airflow measuring devices installed in ductwork, if available, may be utilized.

4) Record residual pressures at inlets of volume controlled terminals at ends of system.

5) Show actual pressures at all static pressure control points utilized for constant or variable flow systems.

k. Fan speed adjustments and balancing for optimum acoustical performance:

1) As the very first step, the speed of all fans (supply, return, and exhaust inside packaged equipment or air handling units) shall be adjusted to deliver the required fan total air quantity with all volume dampers and other flow rate control devices fully open. Adjustments shall be made with the outdoor air intake dampers, return air dampers, and relief air dampers in the minimum outdoor air position. The adjustments shall be made again in the 100 percent outdoor air position in systems with 100 percent outdoor air economizers.

2) The above adjustment shall be done with wet cooling coils, where cooling coils are provided.

3) The airflow rates at each branch duct shall be adjusted as the second step with air with all volume dampers and other flow rate control devices fully open.

4) The airflow rates at each air inlet and outlet shall be adjusted as the final step. The volume damper in the branch duct shall be used for balancing. Opposed blade dampers at air inlets and outlets where provided shall only be used for fine adjustments and shall not be closed beyond 60 percent open or when the dampers start to generate audible noise.

5) CONTRACTOR shall provide the labor and materials for all dampers, pulleys, and belt changes required for balancing. The design documents indicate the worst-case scenario with safety factors in fan static pressures for contingency. Properly coordinated and installed air systems may require a lower static pressure and a reduction in fan speed.

2. Water Systems: CONTRACTOR shall confirm all equipment, piping, and coils have been filled and purged, strainers are clean, and all balancing valves (except bypass valves) are set full open. Agency shall perform the following TAB procedures in accordance with the AABC, TABB, or NEBB National Standards:

B. Pumps:

1. Test and adjust chilled water, hot water, and condenser water pumps to achieve maximum or design GPM.

2. Measure and record suction and discharge pressures.

3. Check pumps for proper operation. Pumps shall be free of vibration and cavitation.

4. Current and Voltage: Agency shall test and record motor voltage and amperage and compare data with the nameplate limits. Ensure pump motor is not in or above the service factor as published by the motor manufacturer.

5. Adjust pump flow by adjusting and setting balancing valves to obtain amperage reading on a clamp-on ammeter that corresponds to amperage indicated on pump's curves for required flow.

6. Verify that the motor is not drawing more current than indicated on motor plate rating. When actual flows of primary pumps are found by test to vary more than 5 percent from specified amount, system shall be re-balanced to regulate flow within this tolerance. When a flow indicating device(s) is in circuit, it shall be used to verify pump flows.

7. When testing is completed, a pump capacity chart with pump number and location indicated shall be marked indicating operating point of pump on the curve. Chart shall then be included in the report.

C. Cooling Towers:

1. Test and balance water flows, balance tower cells, and flows between towers.

2. Test and record temperature profiles for water and airside operation.

3. Outside Climatic Conditions: Outside air dry bulb (DB) temperature, wet bulb (WB) temperature, and atmospheric conditions, during temperature profile runs.

D. Chillers: (Start-up and initial commissioning by manufacturer only.)

1. Test and balance chiller water flows to achieve maximum or design GPM.

2. Current and Voltage: Test and record motor voltage and amperage, and compare data with the nameplate limits. Ensure compressor motor is not in or above the service factor as published by the motor manufacturer.

3. Test and record temperature and pressure profiles of chillers.

a. Inlet and outlet water temperature.

b. Inlet and outlet water pressure.

c. Evaporator temperature.

d. Condensing temperature pressure.

e. Purge pressure.

f. Oil temperature and pressure.

4. Outside Climatic Conditions: Outside air DB temperature, WB temperature, and atmospheric conditions, during temperature profile runs.

E. Boilers: (Start-up and initial commissioning by manufacturer only.) Test and balance boilers only after test and balance of pumps have been completed. Boilers shall not be initially operated or tests performed with students or faculty on the Project site. Boilers shall be tested for the following:

1. Heating Hot Water Boilers and Domestic Hot Water Boilers:

a. Current and Voltage: Test and record motor voltage and amperage, and compare data with the nameplate limits. Ensure motor is not in or above the service factor.

b. Test and balance water flow through water boilers.

c. Test and record temperature and pressure profiles of water and/or steam boilers.

d. Upon completion of tests, controls and devices shall be returned to their normal operating condition and boiler shall remain in service.

2. Steam Boilers: Start-up and initial commissioning by manufacturer only.

F. Heat Exchangers:

1. Steam to Hot Water Heat Exchanger: Steam pressure, entering and leaving hot water temperatures, gpm flow, pressure drop, and control set point.

2. Water to Water Heat Exchanger:

a. Primary Heating Water: Entering and leaving hot water temperatures, gpm flow, and pressure drop.

b. Secondary Heated Water: Entering and leaving hot water temperatures, gpm flow, pressure drop, and control set point.

G. Coils:

1. Tolerances: Test and balance all chilled-water and hot-water coils within 5 percent of design requirements.

2. Verify the type, location, final pressure drop, and GPM of each coil.

H. System Mains and Branches including chilled water, heating hot water, cooling tower water, domestic hot water and domestic cold water:

1. Balance water flow in pipes to achieve maximum or design GPM.

I. Steam Heating Systems:

1. Heating Coils: Steam pressure at coils, cfm, coil pressure drop, entering and leaving air dry bulb temperatures.

2. Boilers:

    a. Steam pressure, temperature, and quantity of feed-water (see Testing and Adjusting procedures).

    b. Make, type, serial number, and rated capacity.

    c. Flue gas temperature at boiler outlet ahead of back-draft diverter.

    d. Percent carbon dioxide in flue gas.

    e. Condensate quantities and temperatures.

3. Air Conditioning Units: (Start-up and initial commissioning by manufacturer only.)

    a. Suction pressure and temperature.

    b. Discharge pressure and temperature.

    c. Amps and volts.

    d. Make, type, and model of unit, capacity rating.

    e. Ambient temperature: WB, DB.

    f. Supply, return, relief, and exhaust fans shall be balanced as indicated in Section 3.09, A, 1, Air Systems.

    g. Proper operation of controls: Temperature controllers and safety devices shall be tested during operating tests, with all other controls and devices, except one under test, being by-passed.

    h. Upon completion of tests, controls and devices shall be returned to their normal operating condition and boiler shall remain in service.

4. Condensing and Refrigerating Units: (Start-up and initial commissioning by manufacturer only.)

    a. Suction pressure and temperature.

    b. Discharge pressure and temperature.

    c. Amps and volts.

    d. Make, type, and model of unit, capacity rating.

e. Ambient temperature: WB, DB.

f. Proper operation of controls: Temperature controllers and safety devices shall be tested during operating tests, with all other controls and devices, except one under test, being by-passed.

g. Upon completion of tests, controls and devices shall be returned to their normal operating condition and boiler shall remain in service.

5. Split System Heat Pump Units: (Start-up and initial commissioning by manufacturer only.)

a. Suction pressure and temperature.

b. Discharge pressure and temperature.

c. Amps and volts.

d. Make, type, and model of unit, capacity rating.

e. Ambient temperature: WB, DB.

f. Supply, return, relief and exhaust fans shall be balanced as indicated in Sub-paragraph 3.09.A.1, Air Systems.

g. Proper operation of controls: Temperature controllers and safety devices shall be tested during operating tests, with all other controls and devices, (except one under test) being by-passed.

h. Upon completion of tests, controls and devices shall be returned to their normal operating condition and boiler shall remain in service.

6. MISCELLANEOUS:

a. Electric Heaters:

1. Amperage.

2. Voltage.

3. Make, type, model, and name plate capacity rating.

3.10 VERIFICATION OF HVAC CONTROLS

A. Agency shall verify in conjunction with CONTRACTOR all control components are installed in accordance with the intent of the Contract Documents and are functioning according to the design intent, including all electrical interlocks, damper sequences, air and water resets, fire stats, and other safety devices.

B. CONTRACTOR shall verify all control components are calibrated and set for design operating conditions and intent.

3.11 TEMPERATURE TESTING

A. To verify system control and operation, agency shall perform a series of three temperature tests taken at approximately two hour intervals in each separately controlled zone. The resulting temperatures shall not vary more than two degrees Fahrenheit from the thermostat or control set point during the tests. Outside temperature and humidity shall also be recorded during the testing periods.

3.12 KITCHEN HOOD TESTING

A. Agency shall test and adjust hood total airflow by duct Pitot-tube traverse. If a Pitot-tube traverse is not practical, an explanation of why a traverse was not made must be made in writing to Architect and subsequently appear on the appropriate data sheet. Face velocities shall be tested under design operating conditions using a maximum of a one square foot grid pattern across the entire open face. CONTRACTOR shall set sash height on hoods to obtain face velocities within 20 percent of 100 feet per minute unless specified otherwise. Agency shall test and adjust exhaust airflows and make-up air flows to maintain design hood pressures and face velocities and design room pressurization. Agency shall test for turbulence and proper air flow patterns at the face and inside the hoods using a hand-held smoke puffer or other approved smoke-emitting device.

3.13 FUME HOOD TESTING

A. Agency shall test and adjust fume hood total airflow by duct Pitot-tube traverse. If a Pitot-tube traverse is not practical, an explanation of why a traverse was not made must be made in writing to Architect and subsequently appear on the appropriate data sheet. Face velocities shall be tested under design operating conditions using a maximum of a one square foot grid pattern across the entire open face. CONTRACTOR shall set sash height on hoods to obtain face velocities within 20 percent of 100 feet per minute unless specified otherwise. Agency shall test and adjust VAV controllers to obtain design exhaust airflows and make-up air flows to maintain design hood pressures and face velocities and design room pressurization. Agency shall test for turbulence and proper air flow patterns at the face and inside the hoods using a hand-held smoke puffer or other approved smoke-emitting device.

3.14 BUILDING/ZONE PRESSURIZATION

A. Agency shall test and adjust building/zone pressurization by setting the design flows to meet the required flow direction and pressure differentials. Positive/Negative area(s) supply air shall be set to design flow and exhaust air rates adjusted to obtain the required pressure differential(s).

3.15 FIRE AND SMOKE DAMPER TESTING

A. This work is to be performed by OWNER and State Fire Marshall. Do not include in agency scope of work.

3.16 LIFE SAFETY CONTROLS TESTING

A. This work is to be performed by OWNER and State Fire Marshall. Do not include in agency scope of Work.

3.17 FINAL TABULATION

A. After heating, ventilating, and air conditioning components are satisfactorily tested and balanced, entire system shall be put into operation and all pressures, temperatures, gpm, cfm, velocities, etc., shall be recorded and checked against design schedules. Design requirements shall be listed on reports and final tabulation shall be within a tolerance of plus or minus five percent of design requirements.

B. Readings at various locations as described herein will be made every hour for four (4) hours, during normal working hours for three (3) days. Boilers, forced air furnaces, and chillers shall be started up far enough in advance to meet design conditions during period of testing.

3.18 VIBRATION TESTING

A. Furnish instruments and perform vibration measurements if specified in Division 23. Provide measurements for all rotating HVAC equipment half horsepower and larger, including reciprocating/centrifugal/screw/scroll compressors, pumps, fans, and motors.

B. Record initial and final measurements for each unit of equipment on test forms. Where vibration readings exceed allowable tolerance and efforts to make corrections have proved unsuccessful, forward a separate report to ARCHITECT.

3.19 SOUND TESTING

A. Perform and record sound measurements as specified in this Section and in Section 23 0548: HVAC Sound, Vibration and Seismic Control. Take additional readings if required by ARCHITECT.

B. Measuring equipment and methods shall comply with the current requirements of the AABC, NEBB, TABB and ANSI S12.60. Take measurements with a calibrated Type 1 sound level meter and octave band analyzer.

C. Sound reference levels, formulae, and coefficients shall be according to ASHRAE Handbook: HVAC Applications, Chapter on Sound and Vibration Control.

D. Where sound pressure levels are specified as noise criteria or room criteria in Section 23 0548: HVAC Sound, Vibration and Seismic Control determine compliance with the Contract Documents as follows:

1. Reduce background noise as much as possible by shutting off unrelated audible equipment.

2. Measure octave band sound pressure levels with specified equipment "off".

3. Measure octave band sound pressure levels with specified equipment "on".

4. Use difference in corresponding readings to determine sound pressure due to equipment. Sound pressure level, due to equipment equals sound pressure level with equipment "on" minus factor.

DIFF.:	0	1	2	3	4	5	9-10 or More
FACTOR:	10	7	4	3	2	1	0

5. Plot octave bands of sound pressure level due to equipment for typical rooms, on a graph, which also shows, noise criteria (NC) curves.

E. Where sound levels are required in dbA, measure sound levels using the A-frequency-weighting of meter. Single value readings will be used instead of octave band analysis.

F. Measure sound levels at each octave band as NC or RC (room criteria) if indicated in the Drawings or other Spec Sections. Where measured sound levels exceed specified level, CONTRACTOR shall take all remedial action and necessary sound tests shall be repeated. Sound tests after remedial action shall be in octave band in NC or RC for the room and also at each diffuser, grille, or register in occupied areas. Sound levels shall be measured approximately five feet above floor on a line approximately 45 degrees to center of opening, on the A- and C-frequency-weighting of the measuring instrument.

G. Measure and record sound levels in decibels for each room per current ANSI S12.60.

H. Report shall include ambient sound levels, taken without air-handling equipment operating, of rooms in which above openings are located. A report shall also be made of any noise caused by mechanical vibration.

END OF SECTION

SECTION 01 5000

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Temporary utilities, construction facilities and temporary controls to be provided, maintained, relocated, and removed by CONTRACTOR.

B. Temporary office furnishings and office equipment.

C. Project signage.

1.02 QUALITY ASSURANCE

A. CONTRACTOR shall comply with applicable laws and regulations of authorities having jurisdiction including, but not limited to, the following:

1. Building Code requirements.

2. Division of the State Architect.

3. Health and safety regulations.

4. Utility company regulations.

5. Police, fire department and rescue squad requirements.

6. Environmental protection regulations.

B. CONTRACTOR shall arrange for the inspection and testing of each temporary utility prior to use. Obtain required certifications and permits and transmit to OAR.

C. CONTRACTOR provided facilities are to be in place and available for OWNER use and occupancy within **30** calendar days following the date of issue of the Notice to Proceed and shall remain in place and available for OWNER use and occupancy throughout the full term of the Contract.

1.03 SUBMITTALS

A. Temporary Utilities: Submit to OAR reports of tests, inspections, meter readings, certifications, permits and similar procedures performed on temporary utilities.

B. Project Signage / Banner: Submit to OAR for review and approval.

1. Shop Drawings: Elevation showing the text, OWNER sign and color of project signage, jointing, fittings and location of grommets.

2. Certification: Submit certification attesting fabric is certified as flame retardant, in accordance to NFPA 701, Standard Methods of Fire Tests for Flame Propagation of Textiles and Films.

A. No other signs shall be displayed without approval of OAR. At CONTRACTOR'S expense and without limitation remove and/or relocate Project signage and related facilities as rapidly as required in order to provide for progress of the Work.

B. CONTRACTOR shall remove Project Identification Signage at Substantial Completion of the Work.

1.05 TEMPORARY UTILITIES

A. CONTRACTOR shall coordinate with the appropriate utility company to install temporary services. Where the utility company provides only partial service, CONTRACTOR shall provide and install the remainder with matching compatible materials and equipment.

1. If available, CONTRACTOR shall also coordinate with M&O for use of nearby electrical panelboard.

B. CONTRACTOR shall furnish, install and pay for all necessary permits, inspections, move ins/out, temporary lines, connections and fees, extensions and distribution, metering devices and use charges, deliveries/pickups, rentals, storage, transportation, taxes, labor, insurance, bonds, material, equipment and all other miscellaneous items for the temporary utility systems. CONTRACTOR shall pay to utility companies for the consumption of the following temporary utility services:

1. Temporary Water service.

2. Temporary Electrical service.

3. Temporary Gas service.

4. Temporary Telephone and Data.

C. Maintain, extend and/or relocate temporary utility systems as rapidly as required in order to provide for progress of the Work.

1. Water distribution piping and outlet devices shall be of the size and required flow rates in order to provide service to all areas of the Project site.

2. Furnish, install, maintain, extend and distribute temporary electric area distribution boxes, so located that individual trades can obtain adequate power and artificial lighting, at all points required for the Work, for inspection and for safety.

   a. Provide 20 foot candles minimum lighting levels inside building(s) and 5 foot candles outside for safety and security.

   b. Ensure welding equipment is supplied by electrical generators.

3. Provide temporary Heating, Ventilation and Air Conditioning. OWNER will not accept utilization of the permanent HVAC system for temporary HVAC until Substantial Completion. CONTRACTOR shall maintain manufacturer required levels of room and/or space temperature, humidity and ventilation necessary to install products, materials and/or systems, cure materials, disperse humidity, remove fumes, and prevent accumulation of dust, irritants, or gases.

4. Provide temporary phone, data service and distribution to Project site temporary offices.

D. Upon Substantial Completion of the Work, remove temporary systems, devices and appurtenances.

1.06 TEMPORARY OFFICES

A. CONTRACTOR shall provide Project Site temporary office facilities for his own use, and in addition shall provide and maintain a minimum of one **12x44 in good condition** construction trailer on the Project site for use by OWNER for the duration of the Work. Construction trailer shall be accessible by OWNER and/or INSPECTOR on a 7 day a week 24-hour basis. CONTRACTOR shall provide the necessary materials and labor to provide the trailer with access for disabled persons on request by the OAR. Trailer shall include, at a minimum, the following:

1. Conference room with a table and adequate seating for twelve.

2. An open work area with devising partitions as required by OWNER.

3. Two enclosed, separate offices with windows and lockable doors.

B. Trailer shall be furnished with two exterior entrance doors with one located in a separate office. Each door shall be furnished with ‘Smart Key’ technology on

both the dead bolt and cylinder lock. Provide six keys for each locking device. Exterior doors and windows shall be provided with exterior mounted burglar bars. Windows shall be provided with operable window shades. Security of trailer and contents is a continuous obligation of CONTRACTOR and shall be equipped with local sounding security system.

C. Trailer shall have ample headroom, 8-foot minimum, and shall be lighted, heated, ventilated, and air-conditioned. Provide an electrically chilled bottled water fountain of 5-gallon capacity. Purified water shall be supplied in 5-gallon containers, delivered weekly, with four spares on hand after each re-supply visit. As an option, CONTRACTOR may maintain a minimum of two 24 500ml bottles cases of purified water in owner trailer throughout the duration of the project.

D. The separate offices shall each be approximately 120 square feet in size and shall be furnished with a minimum of four 120 volt single phase convenience outlets with one 4' long multi-outlet power strip (such as Legrand Model #PM48C) at each outlet location as well as one telephone jack and one data/LAN outlet. The conference room shall be approximately 200 square feet in size and shall be furnished with a minimum of eight 120 Volt single phase convenience outlets with one telephone jack and one data/LAN outlet.

E. CONTRACTOR shall coordinate floor plan and location of electrical, telephone, data outlets with OAR prior to ordering and delivering the trailer.

F. At CONTRACTOR'S expense and without limitation remove and/or relocate temporary office(s) and related facilities as rapidly as required in order to provide for progress of the Work.

G. CONTRACTOR shall remove waste bin trash from OAR'S trailer, vacuum OAR'S trailer floors and/or mop OAR'S trailer floors once per week. Provide trailer with bathroom paper goods, soap, broom, mop and doormats.

H. Trailer shall remain property of CONTRACTOR. CONTRACTOR shall remove such property upon Substantial Completion of Work or as otherwise determined in writing by OAR.

1.07 FURNISHINGS

A. CONTRACTOR shall provide **new** furnishings in the following quantities, shall set in rooms and shall position as directed by OAR upon delivery:

1. **4 {four}** rolling mid-back task chairs, with arms, Allseating Inertia Mesh Back Basic Synchro Tilt 77089-T2-FM-NSBL-LH-BKN-OG17 Gray Mesh, Gray Matters Enviroleather, warranty 24/7 lifetime, or equal, shall be provided new and shall remain as CONTRACTOR's property.

2. **8 {eight}** padded meeting chairs, Allseating 77054-NA-GM-FM-NGRY-FV-ARIVR, Gray Matters Enviroleather, warranty 24/7 lifetime, or equal shall be provided new and shall remain as CONTRACTOR's property.

3. **4 {four}** desks, 30 by 66 by 30 inches: Haworth Adaptables WURA-3066-LJSC H-AE Graphite worksurface, Haworth Reside Adjustable Hoop Leg ZKH2-3000-PNFD TR-J Graphite (2 per desk), Haworth X Series Pedestal JPMH-24-SJ B/B/F TR-J Graphite (2 per desk), lifetime warranty, or equal, shall be provided new and shall remain as CONTRACTOR's property.

4. **1 {one}** metal bookcases, three shelf, 41 by 34 by 12 inches; HON Brigade or equal (Similar to Staples Cat.# 793638; Item: 1598509/ Model: HS42ABCL).

5. **2 {two}** resin folding tables, 29 by 30 by 72 National Public Seating BT3072, 10 year warranty, or equal, shall be provided new and shall remain as CONTRACTOR's property.

6. **2 {two}** resin folding tables, 29 by 30 by 48 National Public Seating TGT3048, 10 year warranty, or equal, shall be provided new and shall remain as CONTRACTOR's property.

7. **2 {two}** two drawer, legal size lateral filing cabinet. HON 320 series or equal. (Similar to Staples Item: 904583/Model: HH324CPP) and shall remain as CONTRACTOR's property.

8. **1 {one}** five (5) shelf storage/supply cabinet of approximately 78-inch high by 36-inch wide by 24-inch deep, furnished with locking doors, Sandusky or equal. (Similar to Staples Cat. # 880049/Model: SA4R362478-07) and shall remain as CONTRACTOR's property.

9. Provide and install **2 {two}** combination tack/white boards, 36 by 48 inches, one in each office, Quartet or equal. (Similar to Staples Cat. # 518886/Model: S554) and shall remain as CONTRACTOR's property.

10. One (1) hard copy and One (1) CD of each of the most current version of the following publications shall be provided. Provide publications updates annually within 14 days of their commercial availability and shall remain the DISTRICT's property.

    a. RS Means Building and Renovation Schools

    b. RS Means Facilities Construction Cost Data

B. Unless otherwise noted in this Section, all furniture shall remain property of CONTRACTOR. CONTRACTOR shall remove such property upon Substantial Completion of Work or as otherwise determined in writing by OAR.

1.08 TELEPHONE & DATA AND TRANSMISSION LINES

A. Provide business class Broadband data service. Broadband data service is defined as a minimum of 200 Mbps download, 50 Mbps upload.

B. Provide, install, and maintain the following specified equipment:

1. Cisco ISR 4331 capable of providing wireless Internet access. Smartnet will be provided for the entirety of the project to cover the networking equipment.

2. Cisco Small Business unmanaged switch with enough capacity to provide a wired Ethernet connection to each device in the office capable of using one.

C. Provide, install, configure and maintain **2** {two} laptop docking station.

D. Provide 3 {three} 34" widescreen computer monitors (Model: 34WQ5000 or equal) and 1 {one} 43" Monitor (LG 4K UHD Monitor 43SQ700S or Equivalent)

E. Printer/Copier/Scanner: Provide, install, configure and maintain for network connectivity one **HP Office Jet Pro 7740** (or latest HP equivalent model at time of bid) with the following features and accessories:

1. B/W and Color.

2. Speed:

a. Copy: 46 ppm.

b. Scan: 70 ppm.

c. Print: 46 ppm.

3. Network capable.

4. Finisher with collation and one position stapling (minimum A2W80A HP LaserJet Stapler/Stacker).

5. Three paper trays integral with the equipment including 8 ½ by 11, 8 ½ by 14 and 11 by 17.

6. Additional 3500 sheet paper feed pedestal or drawer.

7. 2 GB Image Memory, 160 GB hard disk drive.

8. 600 by 600 dpi.

9. Zoom, Reduction and enlargement from 25 percent to 400 percent.

10. Embedded Print Controller with minimum 166 Mhz processor and 10/100 BaseT Network Interface Card.

11. Maintenance: CONTRACTOR shall repair and service machine as necessary. Repair calls shall be responded to within 24 hours of placement.

12. Supplies: CONTRACTOR shall provide the following:

    a. All toner supplies and consumables, including enough supplies to maintain two spares of each color toner.

    b. All staples and other printer-related consumables, including enough supplies to maintain one spare staple cartridge.

F. CONTRACTOR shall be responsible for maintaining all transmission lines, equipment and related devices. If equipment and/or transmission equipment becomes inoperable and downtime exceeds two days, CONTRACTOR shall replace and/or provide equivalent interim equipment.

G. CONTRACTOR shall employ an experienced and qualified MCSE certified Network Administrator, who shall be responsible to set up and service the LAN equipment and appurtenances provided in OWNER trailer, so as to maintain the equipment in continuous operation. Service response shall be within one day of incident.

H. Electronic/office equipment shall be new at the commencement of the project.

1.09 TEMPORARY STORAGE UNITS

A. CONTRACTOR shall provide secure and waterproof storage units for the temporary storage of furniture, equipment and other items requiring protection.

B. Walls, roof and doors shall be a minimum of 16-gauge steel with floors of 1 inch tongue and groove hardwood or ¾ inch minimum exterior type plywood. The undercarriage shall be designed to accommodate forklift blades 42-inch to 60-inch long. There shall be doublewide swing out lockable doors at one end equipped with waterproof gaskets.

C. CONTRACTOR shall be responsible for delivery charges and will install the storage unit in an appropriate area.

D. CONTRACTOR shall remove the storage unit from the Project site when the storage unit is no longer required for the Work or upon Substantial Completion of the Work.

E. CONTRACTOR shall at their expense and without limitation remove and/ or relocate storage units as rapidly as required in order to provide for progress of the Work.

1.10 TEMPORARY SANITARY FACILITIES

A. CONTRACTOR shall provide portable chemical toilet facilities. Quantity of portable chemical toilet facilities shall be based on total number of workers and shall be in accordance with CAL/OSHA standards.

B. CONTRACTOR shall provide two (2) additional portable, lockable chemical toilet facilities for use solely by the OAR team and inspection team, in addition to 1.10 A. It shall be solar-powered and include capability to have lights for use at night.

C. Portable chemical toilet facilities shall be maintained with adequate supplies and in a clean and sanitary condition and shall be removed from the Project site upon Substantial Completion of the Work. CONTRACTOR shall keep both OWNER chemical toilet facilities and OWNER trailer restroom clean and operational at all times.

D. CONTRACTOR employees shall not use school toilet facilities.

E. At CONTRACTOR'S expense and without limitation remove and/or relocate portable chemical toilet facilities as rapidly as required in order to provide for progress of the Work.

F. CONTRACTOR will contain their breaks and lunch periods to the areas designated by OAR or any public area outside the Project site. CONTRACTOR shall provide a suitable container within the break/lunch area for the placement of trash. Areas used for break/lunch must be maintained clean and orderly. Once finish flooring has been installed in a particular area, no food or beverages will be permitted in that area.

1.11 TEMPORARY SECURITY FENCE / BARRICADE

A. CONTRACTOR shall install temporary Project site security barricade(s) indicated on Drawings or as required for safety and as specified herein. New or used material may be furnished. Security of Project site and contents is a continuous obligation of CONTRACTOR.

B. Unless otherwise indicated or specified, security fence shall be constructed of **6-foot high chain link fencing with an 6-foot high windscreen.** Space posts not

to exceed ten feet on centers. Posts shall be of following nominal pipe dimensions: terminal, corner, and gatepost 2 ½-inch, line posts 2-inch. Chain link fence shall be not less than #13 gauge, 2-inch mesh, and in one width. Posts, fence and accessories shall be galvanized and as follows:

1. Shall be set in the earth a depth of 24-inch with soil firmly compacted around post, unless required otherwise in writing by OAR.

2. Fence fabric shall be attached to posts with #14 gauge tie wire at 16 inches on center. A #6 gauge steel tension wire with turnbuckles shall be installed at top and bottom of barricade fencing. Wire tie fabric to tension wires at 18" centers.

3. Windscreen shall be attached to fence fabric and steel tension wires at 18-inch centers with a minimum of #14 gauge tie wire. Windscreen shall be maintained and all rips, tears, missing sections shall be corrected upon notification by OAR.

4. Chain link fencing shall be free from barbs, icicles or other projections resulting from galvanizing process. Fence having such defects will be replaced even if it has been installed.

5. Gates shall be fabricated of steel pipe with welded corners and bracing as required. Fence and fabric to be attached to frame at 12-inch centers. Provide all gate hardware of a strength and quality to perform satisfactorily until barricade is removed upon Substantial Completion of the Work. Each gate shall have a chain and padlock. Provide two gate keys to OAR. At Substantial Completion of the Work, remove barricade from Project site, backfill and compact fence footing holes. Existing surface paving that is cut into or removed shall be patched and sealed to match surrounding areas.

6. At CONTRACTOR'S expense and without limitation remove or relocate fencing, fabric and barricades or other security and protection facilities as rapidly as required in order to provide for progress of the Work.

1.12 OTHER TEMPORARY ENCLOSURES AND BARRICADES

A. Provide lockable, temporary weather-tight enclosures at openings in exterior walls to create acceptable working conditions, to allow for temporary heating and for security.

B. Provide protective barriers around trees, plants and other improvements designated to remain.

C. Temporary partitions shall be installed at all openings where additions connect to existing buildings, and where to protect areas, spaces, property, personnel,

students and faculty and to separate and control dust, debris, noise, access, sight, fire areas, safety and security. Temporary partitions shall be as designated on the Drawings or as specified by ARCHITECT. At CONTRACTOR'S expense and without limitation remove and/or relocate enclosures, barriers and temporary partitions as rapidly as required in order to provide for progress of the Work.

D. Since the Work of this Project may be immediately adjacent to existing occupied structures and vehicular and pedestrian right of ways, CONTRACTOR shall, in his sole judgment and in accordance with applicable safety standards, provide temporary facilities, additional barricades, protection and care to protect existing structures, occupants, property, pedestrians and vehicular traffic. CONTRACTOR is responsible for any damage, which may occur to the property and occupants of the property of OWNER or adjacent private or public properties which in any way results from the acts or neglect of CONTRACTOR.

E. CONTRACTOR shall be responsible for cleaning up all areas adjacent to the construction site which have been affected by the construction; and for restoring them to at least their original condition- including landscaping; planting of trees, sod, and shrubs damaged by construction; and raking and disposal of debris such as roofing shingles, paper, nails, glass sheet metal, bricks, and waste concrete. Construction debris shall be removed and properly disposed of. Culverts and drainage ditches with sediment from the construction area shall be cleared routinely to maintain proper drainage and re-cleaned prior to completion of the contract.

F. CONTRACTOR shall ensure sediment does not block storm drains. CONTRACTOR shall be responsible for cleaning storm drains blocked due to erosion or sediment from the work area.

1.13 TEMPORARY STORAGE YARDS

A. CONTRACTOR shall fence and maintain storage yards in an orderly manner.

B. Provide storage units for materials that cannot be stored outside.

C. At CONTRACTOR'S expense and without limitation remove and/or relocate storage yards and units as rapidly as required in order to provide for progress of the Work.

1.14 TEMPORARY DE-WATERING FACILITIES AND DRAINAGE

A. For temporary drainage and de-watering facilities and operations not directly associated with construction activities included under individual sections, comply with de-watering requirements of applicable Division 01 sections. CONTRACTOR shall maintain the Work, Project site and related areas free of water.

B. For temporary drainage and de-watering facilities and operations directly associated with new buildings, additions or other construction activities, comply with Divisions 01 and 33 Sections. CONTRACTOR shall be responsible for, but not limited to, de-watering of excavations, trenches and below grade areas of buildings, structures, the Project site and related areas.

1.15 TEMPORARY PROTECTION FACILITIES INSTALLATION

A. CONTRACTOR shall not change over from using temporary facilities and controls to permanent facilities until Substantial Completion, except as permitted by OAR.

B. Until permanent fire protection needs are supplied and approved by authorities having jurisdiction, CONTRACTOR shall provide, install and maintain temporary fire protection facilities of the types needed in order to adequately protect against fire loss. CONTRACTOR shall adequately supervise welding operations, combustion type temporary heating and similar sources of fire ignition.

C. CONTRACTOR shall provide, install and maintain substantial temporary enclosures of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security. Where materials, tools and equipment are stored within the Work area, CONTRACTOR shall provide secure lock up to protect against vandalism, theft and similar violations of security. OWNER accepts no financial responsibility for loss, damage, vandalism or theft.

D. CONTRACTOR operations shall not block, hinder, impede or otherwise inhibit the use of required exits and/or emergency exits to the public way, except as approved by OAR. CONTACTOR shall maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for firefighting equipment and/or personnel.

E. With approval of OAR and at the earliest feasible date in each area of the Work, complete installation of the permanent fire protection facilities including connected services and place into operation and use. Instruct OWNER personnel in use of permanent fire protection facilities.

F. In the event of an emergency drill or an actual emergency, designated by the sounding of the fire alarm and/or other sounding device, all construction activities must cease. CONTRACTOR shall evacuate the Work area and remain outside the Work area until permitted to return. No Work shall be conducted during the evacuation of a building or during an emergency.

1.16 TEMPORARY SECURITY AND SAFETY MEASURES

A. During performance of the Work in existing facilities and/or on a Project Site occupied by students, CONTRACTOR shall provide, install and maintain

substantial temporary barriers and/or partitions separating all Work areas from areas occupied by students, faculty and/or administrative staff.

B. During performance of the Work in existing facilities or on a Project site occupied by students and where temporary barriers or partitions are not physically feasible, CONTRACTOR shall provide an employee meeting the requirements of Education Code Section 45125.2.(2) to continually supervise and monitor all employees of CONTRACTOR and Subcontractor. For the purposes of this Section, CONTRACTOR employee shall be someone whom the Department of Justice has ascertained has not been convicted of a violent or serious felony as listed in Penal Code Section 667.5(c) and/or Penal Code Section 1192.7(c). To comply with this Section, CONTRACTOR shall have his employee submit his or her fingerprints to the Department of Justice pursuant to Education Code Section 45125.1(a).

C. Penal Code Sections 290 and 290.4 commonly known as "Megan's Law", require, among other things, individuals convicted of sexually oriented crimes, to register with the chief of police where the convicted individual resides or with a county sheriff or other law enforcement officials. CONTRACTOR shall check its own employees and require each Subcontractor to check its employees and report to CONTRACTOR if any such employees are registered sex offenders. CONTRACTOR shall check monthly during the life of the Contract to ascertain this information and report same to OAR. Before starting the Work, and monthly thereafter during the life of Contract, CONTRACTOR shall notify OWNER in writing if any of its employees and/or if any Subcontractor's employees is a registered sex offender. If so, CONTRACTOR shall proceed in accordance with paragraph B above.

D. CONTRACTOR shall employ and maintain sufficient security and safety measures to effectively prevent vandalism, vagrancy, theft, arson, and all other such negative impacts to the Work. Any impacts to the progress of the Work of CONTRACTOR, OWNER, or OWNER'S forces, due to loss from inadequate security, will be the responsibility of CONTRACTOR.

E. Until Substantial Completion of the Work, CONTRACTOR shall employ appropriate means to remove all graffiti from buildings, equipment, fences and all other temporary and/or permanent improvements on the Project site within twenty-four (24) hours from the date of report or forty-eight (48) hours of each occurrence.

1.17 TEMPORARY ACCESS ROADS AND STAGING AREAS

A. Due to the limited amount of on and off Project site space for the parking of staff and school visitor's vehicles there will be no parking of CONTRACTOR vehicles in areas designated for school use only. CONTRACTOR shall provide legal access to and maintain CONTRACTOR designated areas for the legal parking, loading, off-loading and delivery of all vehicles associated with the Work.

CONTRACTOR shall be solely responsible for providing and maintaining these requirements whether on or off the Project site. CONTRACTOR shall provide and maintain ample on-site parking spaces designated for the exclusive use of OWNER. CONTRACTOR shall erect signs as required by OWNER each of these spaces and prevent all unauthorized vehicles from parking in the OWNER-reserved spaces.

B. Temporary access roads are to be installed and maintained by CONTRACTOR to all areas of the Project site.

C. CONTRACTOR will be permitted to utilize existing facility campus roads as designated by OAR. CONTRACTOR shall only utilize those entrances and exits as designated by OAR and CONTRACTOR shall observe all traffic regulations of OWNER.

D. CONTRACTOR shall maintain roads and walkways in a clean condition including removal of debris and/or other deleterious material on a daily basis.

1.18 DIRECTIONAL SIGNAGE AND ADVERTISEMENT POSTING

A. CONTRACTOR shall provide and install signage to provide directional, identification, and contact information to construction personnel and visitors as follows and as reviewed by OAR.

1. For construction traffic control/flow at entrances/exits, and as designated by OAR.

2. To direct visitors.

3. For construction parking.

4. To direct deliveries.

5. For Warning Signs as required.

6. In accordance with CAL/OSHA standards as necessary.

7. For trailer identification and Project site address.

8. For “No Smoking” safe work site at designated locations.

9. Emergency contact information and phone number of CONTRACTOR.

10. Emergency contact information and phone number of local police, fire, and emergency personnel.

11. For Labor Compliance Program (LCP) as required under the General Conditions (Prevailing wage rates and Notice of LCP)

12. Employee benefits payments paid to trust funds are required under the General Conditions.

B. OWNER has established a program authorizing vendors to post advertisements and billboards along the perimeter of project site. CONTRACTOR shall provide access and shall allow advertising signage to be placed on top of temporary, perimeter, security barricade and/or fences.

1.19 TRENCHES

A. Open trenches for installation of utility lines (water, gas, electrical and similar utilities) and open pits outside barricaded working areas shall be barricaded at all times in a legal manner determined by CONTRACTOR. Trenches shall be backfilled and patch-paved within twenty-four (24) hours after approval of installation by authorities having jurisdiction or shall have "trench plates" installed. Required access to buildings shall be provided and maintained. CONTRACTOR shall comply with all applicable statutes, codes and regulations regarding trenching and trenching operations. Open trenches deeper than 3'-6", and not located within a public street access, shall be enclosed within an 8'-0" high chain-link fence.

1.20 DUST CONTROL

A. CONTRACTOR is responsible for dust control on and off the Project site. When Work operations produce dust the Project site and/or streets shall be sprinkled with water to minimize the generation of dust. CONTRACTOR shall clean all soils and debris from construction vehicles and cover both earth and debris loads prior to leaving the Project site. CONTRACTOR shall, on a daily basis, clean all streets and/or public improvements within the right of way of any and all debris, dirt, mud and/or other materials attributable to operations of CONTRACTOR.

1.21 WASH OUT

A. CONTRACTOR shall provide and maintain a minimum of four (4) wash out boxes of sufficient size and strength to provide for concrete mixer wash out. CONTRACTOR shall locate and relocate both the wash out boxes and wash out areas in order to accommodate the progression of the Work. The wash out area shall be located as to minimize the amount of potential run off onto adjacent private and/or public property. CONTRACTOR shall legally dispose of the contents of the wash out boxes and area on an as needed basis or as required by OAR.

1.22 WASTE DISPOSAL

A. CONTRACTOR shall provide and maintain trash bins on the Project site. Trash bins shall be serviced on an as needed basis and CONTRACTOR is responsible for the transportation of and the legal disposal of all contents.

1.23 ADVERSE WEATHER CONDITIONS

A. Should warnings of adverse weather conditions such as heavy rain and/or high winds be forecasted, CONTRACTOR shall provide every practical precaution to prevent damage to the Work, Project site and adjacent property. CONTRACTOR precautions shall include, but not be limited to, enclosing all openings, removing and/or securing loose materials, tools, equipment and scaffolding.

B. CONTRACTOR shall provide and maintain drainage away from buildings and structures.

C. CONTRACTOR shall implement all required storm water mitigation measures as required under related Division 01 Sections.

1.24 DAILY AND MONTHLY REPORTS

A. CONTRACTOR shall provide and maintain in the Project site office of CONTRACTOR, a daily sign in sheet for use by all employees of CONTRACTOR and all Subcontractors at whatever tier. At the beginning of each workday, the foreman, project manager, superintendent of CONTRACTOR and/or Subcontractors shall visit the site office of CONTRACTOR and shall enter onto the daily sign in sheet: all employee names; trade classification; and represented company. The completed sign in sheet shall serve as the basis of and shall be submitted with the daily construction report as set forth in Paragraph B below.

B. By the end of each workday, CONTRACTOR shall submit to OAR and IOR a daily construction report denoting the daily manpower counts and a brief description/location of the workday activities. Manpower shall be broken down by trade classification such as foreman, journeyman or apprentice. The report shall also note the date, day of the week, weather conditions, deliveries, equipment on the Project site whether active and/or idle, visitors, inspections, accidents and unusual events, meetings, stoppages, losses, delays, shortages, strikes, orders and requests of governing agencies, Construction Directive and/or Change Orders received and implemented, services disconnected and/or connected, equipment start up or tests and partial use and/or occupancies. CONTRACTOR shall also include on the daily construction report the above information for all Subcontractors at whatever tier.

C. CONTRACTOR shall submit on a monthly basis the forms found in Sections 01 3229 and 01 7416 certifying CEQA Mitigations and Storm Water Pollution Prevention (SWPP) compliances.

1.25 FIELD OFFICE SUPPLIES

A. CONTRACTOR shall provide the initial supply of field office supplies to OAR in the quantities listed as set forth below in Table A. If specified in Section 01 2100 – Allowances, CONTRACTOR shall provide additional supplies as required by OAR. CONTRACTOR shall not deduct the costs of the Initial Field Office Supplies (as shown in Table A) from the Allowance for the monthly replenishment of OWNER field office supplies listed in Section 01 2100 – Allowances. CONTRACTOR shall deliver all of the initial field office supplies to OWNER Field Offices within fourteen days from the date established in the Notice to Proceed.

B. CONTRACTOR may utilize different suppliers as the specified information is only to establish the required quantities and minimum levels of quality.

C. Replenishment of Field Office Supplies: If an Allowance is identified in Section 01 2100 – Allowances for the periodic replenishment of OWNER field office supplies. OWNER shall submit requests for replenishment of field office supplies to CONTRACTOR from those listed in Table 'A' below. CONTRACTOR shall provide a monthly accounting of items being requested, cumulative cost of replenishment of Field Office supplies previously ordered, and balance of allowance remaining. Upon Substantial Completion of the Work, CONTRACTOR shall file a Change Order Proposal crediting OWNER for any remaining balance or unspent portion of the Allowance. This Allowance specifically excludes the initial supplies listed in Table 'A' below and is to be used exclusively for the monthly replenishment of OWNER field office supplies. Supplies are to be delivered to OWNER'S trailer within twenty-four hours of OWNER'S request.

D. Postage and Delivery Costs: CONTRACTOR shall provide postage and delivery services for OWNER generated materials in quantities and/or frequencies as requested by OWNER. The cost for these services shall be deducted from the Allowance identified in Section 01 2100 – Allowances for the periodic replenishment of OWNER field office supplies. This allowance is for the OWNER'S use only. Postage and delivery costs for CONTRACTOR generated materials are the responsibility of the CONTRACTOR and shall not be charged to this allowance, regardless of whether the postage and/or delivery of CONTRACTOR generated materials resulted from a request and/or direction from OWNER.

E. Other expendable field office support items specified elsewhere, including, but not limited to, furnishing toner cartridges, equipment maintenance, and bottled water, are to be supplied and paid for by CONTRACTOR. These costs are not to be deducted from the Allowance for the periodic replenishment of OWNER field office supplies identified in Section 01 2100.

Table A				
ITEM	DESCRIPTION	UNIT	QUANTITY	SUPPLIER/ITEM NUMBER
Three Ring Binders – 3-inch	N/A	6/pack	**2**	Staples / Item #: 358177| Model #: 23743/21691
Three Hole Punch	N/A	Each	**1**	Staples / 893844
Flash Drive	2 GB	2	**1**	SDCZ48-064G-GAM462
Wastebasket	N/A	Each	**4**	Staples / 125039-54
Surge Suppressors	N/A	Each	**5**	Staples / IM1RA1696
Margin Tabs	N/A	24/pack	**2**	Staples / Item #: 1706847 Model #: 74768
8-inch Cast Iron Shears	N/A	Each	**1**	Staples / Item #: 24380499| Model #: TR55045
First Aid Kit	N/A	Each	**1**	Staples / 503979-54
Pens (blue, green and red)	N/A	12/Lot	**2 each color**	Staples / 441884-64
Mouse Pad	N/A	Each	**4**	Staples / 382955-64
Markers	N/A	12/Lot	**1**	Staples / 932675
Legal Pad	N/A	12/Lot	**1**	Staples / 163865-64
Highlighters	N/A	12/Lot	**1**	Staples / Model #25145
Push Pins	N/A	Each	**1**	Staples / 480118-54
Binder Clip – Medium	N/A	24/Lot	**1**	Staples / 831602-54
Binder Clip - Large	N/A	12/Lot	**1**	Staples / 831610-54
Stapler	818	Each	**1**	Staples / 504308
Poster Kit - State	CA	Each	**1**	Staples / 1183148
Poster Kit - Federal	US	Each	**1**	Staples / 935983-54
Broom	N/A	Each	**1**	Staples / 256600
Fire Extinguisher	First Alert	Each	**1**	Staples / 238774-54
Copy Paper	8-1/2 x 11	5000/Case	**2**	Staples / 122374-69
Copy Paper	8-1/2 x 14	500/Ream	**2**	Staples / 122598-69
Copy Paper	11 x 17	500/Ream	**4**	Staples / 238105-69
Hardhats	White	Each	**4**	Fiber Metal Model E-2 Ratchet knob full range size adjustment
Safety Glasses	Clear and/or Tinted	Each	**4**	Crews Storm Series
Safety Vests, Zipper Front	Hi Vis Lime Yellow	Each	**4**	Aramak Wearguard Item DEF-1085

PART 2 – PRODUCTS – Not Used

PART 3 – EXUTION – Not Used

END OF SECTION

SECTION 01 5719
CEQA MITIGATIONS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Mitigation procedures to minimize environmental impact.

1.02 RELATED SECTIONS

A. Section 01 3546 – Indoor Air Quality Procedures.

B. Section 01 3591 – Preservation Restoration and Conservation Procedures.

C. Section 01 3592 – Mitigation and Monitoring Procedures for Archaeological and Historical Findings.

D. Section 01 7416 – Storm Water Pollution Prevention Plan.

E. Section 01 4524 – Environmental Import / Export Materials Testing.

F. Section 01 5000 - Construction Facilities and Temporary Controls.

G. Section 01 7419 - Construction Demolition and Waste Management.

1.03 SUBMITTALS

A. CONTRACTOR shall submit on a monthly basis the form “Certification of Compliance with CEQA Mitigations”, found in Section 01 3229, certifying compliance to CEQA mitigations.

1.04 CEQA MITIGATIONS

A. SC-AE-7: Following installation of exterior lighting CONTRACTOR shall adjust light fixtures to reduce the lighting intensity from the new sources on adjacent residences to no more than two foot-candles, measured at the property line.

B. SC-AQ.2: CONTRACTOR shall ensure that construction equipment is properly tuned and maintained in accordance with manufacturer’s specifications, to ensure that excessive emissions are not generated by unmaintained equipment.

C. SC-AQ.3: CONTRACTOR shall comply with the following requirements:

1. Maintain slow speeds with all vehicles.

2. Load impacted soil directly into transportation trucks to minimize soil handling.

3. Water/mist soil as it is being excavated and loaded onto the transportation trucks.

4. Water/mist and/or apply surfactants to soil placed in transportation trucks prior to exiting the site.

5. Minimize soil drop height into transportation trucks or stockpiles during dumping.

6. During transport, cover or enclose trucks transporting soils, increase freeboard requirements, and repair trucks exhibiting spillage due to leaks.

7. Cover the bottom of the excavated area with polyethylene sheeting when work is not being performed.

8. Place stockpiled soil on polyethylene sheeting and cover with similar material.

9. Place stockpiled soil in areas shielded from prevailing winds.

D. SC-AQ.4: When using large, heavy or noisy construction equipment CONTRACTOR shall implement all feasible measures to reduce air emissions below the South Coast Air Quality Management District's (SCAQMD) regional and localized significance thresholds

1. Exhaust Emissions:

a. Schedule construction activities that affect traffic flow to off-peak hours (e.g. between 10:00 AM and 3:00 PM).

b. Consolidate truck deliveries and/or limit the number of haul trips per day.

c. Route construction trucks off congested streets.

d. Employ high pressure fuel injection systems or engine timing retardation.

e. Utilize ultra-low sulfur diesel fuel, containing 15 ppm sulfur or less (ULSD) in all diesel construction equipment.

f. Use construction equipment rated by the United States Environmental Protection Agency as having Tier 3 (model year 2006 or newer) or Tier 4 (model year 2008 or newer) emission limits for engines between 50 and 750 horsepower.

g. Restrict non-essential diesel engine idle time, to not more than five consecutive minutes.

h. Utilize electrical power rather than internal combustion engine power generators as soon as feasible during construction.

i. Utilize electric or alternatively fueled equipment, if feasible.

j. Utilize construction equipment with the minimum practical engine size.

k. Utilize low-emission on-road construction fleet vehicles.

l. Ensure construction equipment is properly serviced and maintained to the manufacturer's standards.

2. Fugitive Dust:

    a. Apply non-toxic soil stabilizers according to manufacturers' specification to all inactive construction areas (previously graded areas inactive for ten days or more).

    b. Replace ground cover in disturbed areas as quickly as possible.

    c. Sweep streets at the end of the day if visible soil material is carried onto adjacent public paved roads (recommend water sweepers with reclaimed water).

    d. Install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off trucks and any equipment leaving the site each trip.

    e. Pave construction roads that have a traffic volume of more than 50 daily trips by construction equipment, and/or 150 daily trips for all vehicles.

    f. Pave all construction access roads for at least 100 feet from the main road to the project site.

    g. Water the disturbed areas of the active construction site at least three times per day, except during periods of rainfall.

    h. Enclose, cover, water twice daily, or apply non-toxic soil binders according to manufacturers' specifications to exposed piles (i.e., gravel, dirt, and sand) with a five percent or greater silt content.

    i. Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 miles per hour (mph).

    j. Apply water at least three times daily, except during periods of rainfall, to all unpaved road surfaces.

    k. Limit traffic speeds on unpaved road to 15 mph or less.

    l. Prohibit high emission causing fugitive dust activities on days where violations of the ambient air quality standard have been forecast by SCAQMD.

    m. Tarp and/or maintain a minimum of 24 inches of freeboard on trucks hauling dirt, sand, soil, or other loose materials.

    n. Limit the amount of daily soil and/or demolition debris loaded and hauled per day.

3. General Construction:

    a. Utilize ultra-low VOC or zero-VOC surface coatings.

    b. Phase construction activities to minimize maximum daily emissions.

c. Configure construction parking to minimize traffic interference.

d. Provide temporary traffic control during construction activities to improve traffic flow (e.g., flag person).

e. Develop a trip reduction plan for construction employees.

f. Implement a shuttle service to and from retail services and food establishments during lunch hours.

g. Increase distance between emission sources to reduce near-field emission impacts.

h. Require construction contractors to document compliance with the identified mitigation measures.

E. SC-N-5: CONTRACTOR shall consult and coordinate with the OAR and school principal, prior to construction to schedule high noise or vibration producing activities to minimize disruption. Coordination shall continue on an as-needed basis throughout the construction phase of the project to reduce school and other noise sensitive land use disruptions.

F. SC-N-6: CONTRACTOR shall minimize blasting for all construction and demolition activities, where feasible. If demolition is necessary adjacent to residential uses or fragile structures, the OAR will require the CONTRACTOR to avoid using impact tools. Alternatives that shall be considered include mechanical methods using hydraulic crushers or deconstruction techniques.

G. SC-N-7: Where pile driving activities are required within 150 feet of a structure, a detailed vibration assessment shall be provided by an acoustical engineer to analyze potential impacts related to vibration to nearby structures and to determine feasible mitigation measures to eliminate potential risk of architectural damage.

H. SC-N-9: Specific noise reduction measures include, but are not limited to, those listed below.

1. Source Controls:

a. Time Constraints: It is prohibited work during nighttime hours.

b. Scheduling: Perform noisy work during less sensitive time periods (on operating campus: delay the loudest noise generation until class instruction at the nearest classrooms has ended; residential: only between 7:00 AM and 7:00 PM).

c. Equipment Restrictions: Restrict the type of equipment used.

d. Noise Restrictions: Specifying stringent noise limits.

e. Substitute Methods: Use quieter methods and/or equipment.

f. Exhaust Mufflers: Ensure equipment have quality mufflers installed.

g. Lubrication & Maintenance: Well-maintained equipment is quieter.

h. Reduced Power Operation: Use only necessary size and power.

i. Limit Equipment On-Site: Only have necessary equipment on-site.

j. Noise Compliance Monitoring: Technician on site shall ensure compliance.

k. Quieter Backup Alarms: Manually-adjustable or ambient sensitive types.

2. Path Controls:

a. Noise Barriers: Semi-permanent or portable wooden or concrete barriers.

b. Noise Curtains: Flexible intervening curtain systems hung from supports.

c. Enclosures: Encase localized and stationary noise sources.

d. Increased Distance: Perform noisy activities farther away from receptors, including operation of portable equipment, storage and maintenance of equipment.

3. Receptor Controls:

a. Window Treatments: Reinforce the building's noise reduction capability.

b. Community Participation – open dialog to involve affected residents

c. Noise Complaint Process: CONTRACTOR shall log and respond to noise complaints. Advance notice of the start of construction shall be delivered to all noise sensitive receptors adjacent to the project area. The notice shall state specifically where and when construction activities will occur, and provide contact information for filing noise complaints with the CONTRACTOR and the OWNER. In the event of noise complaints, the OWNER will monitor noise from the construction activity to ensure that construction noise does not exceed limits specified in the noise ordinance.

d. Temporary Relocation: In extreme otherwise un-mitigatable cases, temporarily move residents or students to facilities away from the construction activity.

I. SC-T-4: Construction Equipment for Use on Public Roadways: CONTRACTOR shall submit a construction worksite traffic control plan to the LADOT for review prior to construction. The plan shall show the location of haul routes, hours of operation, protective devices, warning signs, and access to abutting properties OWNER encourages CONTRACTOR to limit construction-related trucks to off-peak commute periods. As required by Caltrans, applicable transportation related safety measures shall be implemented during construction.

PART 2 – PRODUCTS – Not Used

PART 3 – EXECUTION – Not Used

END OF SECTION

SECTION 01 6000

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section includes administrative and procedural requirements governing selection of products for incorporation into the Work.

1.02 RELATED REQUIREMENTS

A. Section 01 3229 - Project Forms.

B. Section 01 3113 - Project Coordination.

C. Section 01 3300 - Submittal Procedures.

D. Section 01 3213 - Construction Schedule.

E. Section 01 4523 - Testing and Inspection.

F. Section 01 2513 - Product Substitution Procedures.

G. Section 01 7836 - Warranties.

1.03 DEFINITIONS

A. Definitions used in this Section are not intended to change the meaning of other terms used in the Contract Documents, such as “specialties,” “systems,” “structure,” “finishes,” “accessories,” and other similar terms. Such terms are self-explanatory and have well-recognized meanings in the construction industry.

1. “Products” are items purchased for incorporation into the Work, whether purchased for the Work or taken from previously purchased stock. The term “product” includes the terms “material” and “equipment” and terms of similar intent.

a. “Named Products,” are items identified by the manufacturer’s product name, including make, model number or other designation, shown or listed in the manufacturer’s published product literature, current as of the date of the Contract.

b. “Foreign Products,” as distinguished from “domestic products,” are items substantially manufactured (50 percent or more of value) outside the United States and its possessions. Products produced

or supplied by entities substantially owned (more than 50 percent) by persons who are not citizens of, nor living within, the United States and its possessions are also considered to be foreign products.

2. "Materials," are products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.

3. "Equipment," is a product with operational parts, whether motorized or manually operated, that requires service connections, such as wiring or piping.

4. Basis of Design as required by the latest LAUSD School Design Guide requirements.

1.04 SUBMITTALS

A. Material list: Prepare a list in tabular form acceptable to ARCHITECT and/or OAR showing proposed products. Include generic names. Include the manufacturer's name and proprietary names for each item listed.

1. Coordinate material list with the Construction Schedule and the submittal schedule.

2. Form: Prepare material list with information on each item tabulated under the following column headings.

a. Related Specification Section number.

b. Generic name used in Contract Documents.

c. Proprietary name, model number, and similar designations.

d. Manufacturer's name and address.

e. Supplier's name and address.

f. Installer's name and address.

g. Projected delivery date or time span of delivery period.

3. Initial Submittal: Within ten days after execution of each subcontract agreement, as set forth in General Conditions Article 6.23, submit three copies of an initial material list to the ARCHITECT with a copy to the OAR. Provide a written explanation for omissions of data and for known variations from the Contract Documents.

4. ARCHITECT Action: ARCHITECT will respond in writing to OAR within fourteen (14) days and OAR will forward response to CONTRACTOR within sixteen days of receipt of the completed material list. No response outside this period constitutes no objection to listed items but does not constitute a waiver of the requirement that selected items comply with the Contract Documents. ARCHITECT response will include a list of unacceptable item selections, containing a brief explanation of reasons for this action.

1.05 QUALITY ASSURANCE

A. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source.

1. CONTRACTOR is to verify necessary lead times for all materials; however, when specified products are available only from sources that do not, or cannot, produce a quality adequate to complete Work in a timely manner, consult with the ARCHITECT to determine the most important product qualities before proceeding. Qualities may include attributes, such as visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources producing these qualities, to the fullest extent possible.

B. Compatibility of Options: When the CONTRACTOR is given the option of selecting between two or more products for use in the Work, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

C. Foreign Product Limitations: Except under one or more of the following conditions, provide domestic products, not foreign products, for inclusion into the Work:

1. No available domestic product complies with the Contract Documents.

2. Domestic products that comply with the Contract Documents are available only at prices or terms substantially higher than foreign products that comply with the Contract Documents.

D. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturers or producer's nameplates or trademarks on exposed surfaces of products that will be exposed in view in occupied spaces or on the exterior.

1. Labels: Locate required product labels and stamps on concealed surfaces or, where required for observation after installation, on accessible surfaces that are not conspicuous.

2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface that is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:

    a. Name of product and manufacturer.

    b. Model and serial number.

    c. Capacity.

    d. Speed.

    e. Ratings.

1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.

1. Schedule delivery to minimize long-term storage at the Project site and to prevent overcrowding of Work spaces.

2. Coordinate delivery with installation time to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

3. Deliver products to the Project site in an undamaged condition in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

4. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

5. Store products at the Project site in a manner that will facilitate inspection and measurement of quantity or counting of units.

6. Store heavy materials away from structures in a manner that will not endanger the structure's supporting construction.

7. Store products subject to damage by the elements above ground, under cover in a weather-tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MATERIAL SELECTION

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation.

1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.

2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other Projects.

B. Product Selection Procedures: The Contract Documents and governing regulations govern product selection. Procedures governing product selection include the following:

1. Proprietary Specification Requirements: Where Specifications name only a single material or manufacturer, provide the product indicated. No substitutions will be permitted.

2. Semi-proprietary Specification Requirements: Where Specifications name two or more products or manufacturers, provide one of the products indicated. No substitutions will be permitted.

a. Where Specifications specify products or manufacturers by name, accompanied by the term “or equal” comply with General Conditions Article 6.14 to obtain approval for use of an unnamed product.

3. Descriptive Specification Requirements: Where Specifications describe a product or assembly, list exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with the Contract Documents.

4. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by the manufacturer for the application indicated.

a. Manufacturer’s recommendations may be contained in published material literature or by the manufacturer’s certification of performance.

5. Compliance with Basis of Design requirements for comparison of comparable products.

6. Compliance with Standards, Codes, and Regulations: Where Specifications only require compliance with an imposed code, standard or regulation, select a product that complies with the standards, codes, or regulations specified.

7. Visual Matching: Where Specifications require matching an established Sample, decision of the ARCHITECT will be final on whether a proposed product matches satisfactorily.

8. Visual Selection: Where specified product requirements include the phrase "… as selected from manufacturer's standard or premium colors, patterns, textures…" or a similar phrase, select a product and manufacturer that complies with other specified requirements. The ARCHITECT will select the color, pattern, and texture from the product line selected.

9. "Or Equal" / Comparable Products: Product comparison shall be based on the District's approved Basis of Design that includes the architectural design descriptions and the proposed engineering systems, construction types, and materials, including the following:

    a. Significant qualities including attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.

    b. Warranty requirements.

    c. List of similar installations for completed projects.

    d. Samples, as specified.

PART 3 - EXECUTION

3.01 INSTALLATION OF PRODUCTS

A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located, and aligned with other Work.

B. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration until Substantial Completion.

END OF SECTION

SECTION 01 7123

FIELD ENGINEERING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Layout of the work

2. Verification of work

a. OWNER reserves the right to verify any work that INSPECTOR deems necessary.

b. Other sections that require Surveyor to verify or measure installed work and related item. Surveyor shall perform such verifications or measurements at CONTRACTOR'S expense. CONTRACTOR shall furnish a certification, signed by both Surveyor and CONTRACTOR, to INSPECTOR.

B. Related Requirements:

1. Section 01 1100 - Summary of Work.

2. Section 01 3113 - Project Coordination.

3. Section 01 3213 - Construction Schedule.

4. Section 01 3300 - Submittal Procedures.

5. Section 01 7700 - Contract Closeout.

1.02 SURVEY CONTROLS

A. Vertical Control shall use same benchmark used in the preparation of topographic survey. When Work consists of both on-site and off-site and benchmarks differ, an equation shall be indicated on Drawings.

B. Horizontal control for existing structures shall be the property line.

1.03 LAYOUT OF WORK

A. All work related to staking shall be by a Land Surveyor, or Civil engineer, registered with the State of California to perform land surveying and employed by CONTRACTOR.

B. Before commencement of Work, surveyor shall locate all reference points and benchmarks to be used for vertical and horizontal control.

C. Surveyor shall lay out entire Work, set grades, lines, levels, control points, elevations, grids and positions.

1.04 RECORD DOCUMENTS

A. Maintain complete and accurate log of all control and survey documentation as work progresses.

B. Record, by coordinates, all utilities onsite with top of pipe elevations, at major grade and alignment changes, rim, grate or top of curb and flow line elevations of all drainage structures and sewer manholes.

C. Indicate reference and control points on record drawings. The basis of elevation shall be one of the established benchmarks.

D. Upon Substantial Completion, obtain and pay for reproducible plans. Deliver plans to OAR. Clearly indicate all differences between original drawings and completed work within specified tolerances.

1.05 SUBMITTALS

A. Surveyor: Shall submit name, address and license number to OWNER, including any changes as they occur.

B. Field notes: Upon request by OAR, submit copies of cut sheets, coordinate plots, data collector printouts, marked-up construction staking plans and other documentation as available to verify accuracy of field engineering work during and at completion of project. Submittals to OWNER must be signed and sealed by Surveyor and counter-signed by CONTRACTOR

C. Statement of Compliance: CONTRACTOR shall submit a statement of certification signed and sealed by Surveyor, counter-signed by CONTRACTOR indicating compliance with grades and alignment of construction plans at rough grade, fine grade and top of rock stages. INSPECTOR shall approve survey submittals for each stage of construction prior to proceeding with work

D. Upon Substantial Completion, CONTRACTOR shall obtain and pay for reproducible survey drawings (or “As Built”).

E. Completed record drawings shall be signed and certified as correct and within specified tolerances by licensed surveyor. Originals and two sets of blueprints shall be submitted to OWNER.

PART 2-PRODUCTS – NOT USED

PART 3-EXECUTION

3.01 PREPARATION

A. Pre-mark areas of excavation in accordance with the requirements of "Dig-Alert". Request locators 2 days before commencing excavation.

B. Before commencing Work, establish all horizontal and vertical reference points used in Contract Documents according to existing field conditions.

C. Preserve established reference lines and benchmarks.

D. Differentiate school and city datum as applicable.

E. Relocate bench marks that may interfere with Work.

F. Reset and re-establish reference marks damaged or lost during construction.

3.02 SURVEY REQUIREMENTS GENERAL

A. Establish a minimum of two permanent horizontal and vertical control points on Project site, remote from construction area, referenced to data established by control points.

B. Indicate reference points, relative to benchmark elevation, on record drawings.

C. Provide grade stakes and elevations to construct over excavation and re-compaction, rough and final grades, paved areas, curbs, gutters, sidewalks, building pads, landscaped areas, and other areas as required.

D. Calculate and layout proposed finished elevations and intermediate controls as required to provide smooth transitions between spot elevations indicated on Drawings.

E. Provide stakes and elevations for grading, fill, and topsoil placement.

F. Provide adequate horizontal and vertical control to locate utility lines, including but not limited to, storm, sewers, water mains, gas, electric and signal and provide vertical control in proportion to the slope of the line as required for accurate construction. Dry utilities will be based upon adequate horizontal and vertical control layout. Prior to trench closure, survey and record invert and flow line elevations. Survey and record

top of curb and flow line elevations on finished concrete or asphaltic concrete (AC) surfaces at key locations such as beginning-of-curve (BC), end-of-curve (EC), grade breaks, corners or angle points in sufficient number to demonstrate the Work complies with the intent of the Contract Documents.

G. Provide horizontal and vertical control for batter boards for drainage, utility, and other on-site structures as required.

H. Furnish building corner offsets as required to adequately locate building pads. Provide cut and fill stakes within the building pad perimeter adequate to control both over excavation and re-compaction and the final sub-grade elevation of the building pad.

I. Submit a certification signed by the surveyor confirming the elevations and locations of improvements are in conformance with the Contract Documents. The statement shall include survey notes for the finish floor and building pad, showing the actual measured elevations on the completed sub-grade, recorded to the nearest 0.01 of a foot. Building pad tolerance will be plus or minus 0.1 of a foot.

J. Establish a minimum of two permanent horizontal and vertical control points on Project site, remote from building area, referenced to data established by survey control points.

K. Mark boundaries for rights-of-way dedications and easements for utilities prior to making location of buildings and utilities.

L. Layout all lines, elevations and measurements needed for construction or installation of buildings, grading, paving utilities according to the following:

1. Identify site boundary, property lines.

2. Provide working benchmarks.

3. Set stakes for Bottom of Excavated Plane (B.E.P.).

4. Set gridlines, radii, working points etcetera, for foundation.

5. Set and verify building pad elevations.

6. Set finish floor elevations.

7. Stake location and elevations for exterior ramps and stairs.

8. Set gridlines, radii, working points, etcetera, for all floors of multi-story buildings.

9. Set storm drain and sanitary sewer inverts and other utilities as needed at 5-foot off-set from building lines.

10. For new facilities, establish permanent onsite Benchmark with 2-inch diameter brass disk. Location of Benchmark to be determined by OWNER.

3.03 SURVEY REQUIREMENTS FOR GRADING

A. Provide grade stakes and elevations as follows:

1. Removal limits (cut lines).

2. Rough grade staking: 60-foot maximum grid plus additional stakes at grade changes and pertinent locations. Flag all grade changes including ridges, flow lines and grade breaks.

3. Fine grade for top of dirt: 30-foot maximum grid plus additional stakes at grade changes and pertinent locations. Flag all grade changes including ridges, flow lines and grade breaks.

4. Verify fine grade for top of rock: 30-foot maximum grid plus additional stakes at grade changes and pertinent locations. Flag all grade changes including ridges, flow lines and grade breaks.

5. Finish grade marks on all buildings, structures and at pertinent locations

6. Finish grades and offsets for all concrete work, utilities, landscape areas, and structures.

7. Provide controls and baselines for playground striping.

8. Offsite improvements: set grades and provide grade sheets as required by local authorities.

B. Provide a minimum of two permanent horizontal and vertical control points onsite, remote from building area, referenced to data established by survey control points.

3.04 SURVEY REQUIREMENTS FOR UTILITIES

A. Locate “wet” utility lines and provide vertical control proportionate to slope of line as required for accurate construction. “Dry” utilities shall have adequate horizontal and vertical control layout supplied by others.

B. Prior to back-filling trench, survey and record invert and flow line elevations. Survey and record top of curb and flow line elevations on finished surfaces at key locations (such as Back of Curbs, grade breaks, corners or angle points) in sufficient number to demonstrate Work complies with intent of Contract Documents.

C. Provide horizontal and vertical control for batter boards for drainage, utility, and other on-site structures as required.

1. Set grades for vaults one inch higher than adjacent surrounding design grades, unless noted otherwise.

D. Leave all trenches open until required inspection is completed.

3.05 SURVEY REQUIREMENTS FOR STRUCTURES

A. Furnish building corner offsets as required to adequately locate building pads. Provide cut and fill stakes within building pad perimeter adequate to control both over excavation and re-compaction and final sub-grade elevation of building pad.

B. Submit a certification signed by surveyor confirming elevations and locations of improvements are in conformance with Contract Documents. Statement shall include survey notes for finish floor and building pad, showing actual measured elevations on completed sub-grade, recorded to nearest 0.01 of a foot. Building pad tolerance will be plus or minus 0.1 of a foot.

END OF SECTION

SECTION 01 7329

CUTTING AND PATCHING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section specifies procedural requirements for cutting and patching.

1.02 RELATED REQUIREMENTS

A. Section 01 2973 - Schedule of Values.

B. Section 01 3113 - Project Coordination.

C. Section 01 3119 - Project Meetings.

D. Section 01 3213 - Construction Schedule.

E. Section 01 3300 - Submittal Procedures.

F. Section 01 7123 - Field Engineering.

G. Section 01 7419 – Construction and Demolition Waste Management

H. Section 01 7836 - Warranties.

I. Section 01 4525 - Testing, Adjusting, and Balancing of HVAC.

1.03 DEFINITIONS

A. Cutting. The word “cutting” as used in the Contract Documents includes, but is not limited to, cutting, drilling, chopping, and other similar operations and the word “patching” includes, but is not limited to, patching, rebuilding, reinforcing, repairing, refurbishing, restoring, replacing, or other similar operations.

1.04 SUBMITTALS

A. Cutting and Patching Proposal: CONTRACTOR shall submit a proposal to DSA as is required, describing procedures well in advance of the time cutting and patching will be performed if the Contract Documents requires approval of these

procedures before proceeding. Include the following information, as applicable, in the proposal:

1. Describe the extent of cutting and patching required. Denote how it will be performed and indicate why it cannot be avoided.

2. Describe anticipated results in terms of changes to existing construction. Include changes to structural elements and operating components as well as changes in the building's appearance or other significant visual elements.

3. List products to be used and firms or entities that will perform this Work.

4. Indicate dates when cutting and patching will be performed.

5. Utilities: List utilities that cutting and patching operations will disturb or affect. List utilities to be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.

6. Where cutting and patching involves adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with the original structure.

7. Review by ARCHITECT and DSA prior to proceeding with cutting and patching does not waive ARCHITECT right to later require complete removal and replacement of defective Work. Cutting and patching shall be reviewed by the ARCHITECT and DSA if a structural elements are to remain.

1.05 QUALITY ASSURANCE

A. Requirements for structural Work: Do not cut and patch structural elements in a manner that would change their load-carrying capacity or load-deflection ratio. If the load carrying member is meant to be supported as part of the new Work, then the supporting members should be part of the DSA approved design. If shoring of a structural element is required to be cut and patched, then the CONTRACTOR is required to provide a DSA approved design.

1. Obtain approval from ARCHITECT and DSA of the cutting and patching proposal before cutting and patching the following structural elements:

a. Foundation construction.

b. Bearing and retaining walls.

c. Structural concrete.

d. Structural steel.

e. Lintels.

f. Timber and primary wood framing.

g. Structural decking.

h. Stair systems.

i. Miscellaneous structural metals.

j. Exterior curtain-wall construction.

k. Equipment supports.

l. Structural systems of special construction in Division 13 Sections.

B. Operational Limitations: Do not cut and patch operating elements or related components in a manner that would result in reducing their capacity to perform as intended. Do not cut and patch operating elements or related components in a manner that would result in increased maintenance or decreased operational life or safely.

1. Obtain review of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:

a. Primary operational systems and equipment.

b. Air or smoke barriers.

c. Water, moisture, or vapor barriers.

d. Membranes and flashings.

e. Fire protection systems.

f. Noise and vibration control elements and systems.

g. Control systems.

h. Communication and/or data systems.

i. Conveying systems.

j. Electrical wiring systems.

k. Operating systems of special construction in Division 13 Sections.

C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the opinion of ARCHITECT, reduce the building's aesthetic qualities. Do not cut and patch construction in a manner that would result in visual evidence of cutting and patching. Remove and replace Work cut and patched in a visually unsatisfactory manner.

1.06 WARRANTY

A. Existing Warranties: Replace, patch, and repair material and surfaces cut or damaged by methods and with materials in such a manner as not to void any warranties required or existing.

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION

3.01 INSPECTION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed before cutting. If unsafe or unsatisfactory conditions are encountered, take corrective action before proceeding.

1. Before proceeding, meet at the Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

3.02 PREPARATION

A. Temporary support: Provide adequate temporary support of existing improvements or Work to be cut.

B. Protection: Protect existing improvements and Work during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of existing improvements or Work that might be exposed during cutting and patching operations.

C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Where the Work requires sandblasting of existing surfaces in order to receive new materials secured by cementitious, adhesive or chemical bond, completely remove existing finishes, stains, oil, grease, bitumen, mastic and adhesives or other substances deleterious to the new bonding or fastening of new Work. Utilize wet

sand blasting for interior surfaces and for exterior surfaces where necessary to prevent objectionable production of dust.

3.03 PERFORMANCE

A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay. Carefully remove existing Work to be salvaged and/or reinstalled. Protect and store for reuse into the Work. Verify compatibility and suitability of existing substrates before starting the Work.

B. Cutting: Cut existing construction using methods least likely to damage elements retained or adjoining Work. Where possible, review proposed procedures with the original installer; comply with the original installer's recommendations.

1. In general, where cutting, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.

3. Cut through concrete and masonry using a cutting machine, such as a carborundum saw or a diamond-core drill. Saw cut reinforcing bars and paint ends with bituminous paint except where bonded into new concrete or masonry.

4. Comply with requirements of applicable Sections of Divisions 31, 32, and 33 where cutting and patching requires excavating, backfill, and recompaction.

5. Woodwork: Cut and or remove to a panel or joint line.

6. Sheet Metal: Remove back to joint, lap, or connection. Secure loose or unfastened ends or edges and seal watertight.

7. Glass: Remove cracked, broken, or damaged glass and clean rebates and stops of setting materials.

8. Plaster: Cut back to sound plaster on straight lines, and back bevel edges of remaining plaster. Trim existing lath and prepare for new lath.

9. Gypsum Wallboard: Cut back on straight lines to undamaged surfaces with at least two opposite cut edges centered on supports.

10. Acoustical ceilings: Remove hanger wires and related appurtenances where ceilings are not scheduled to be installed.

11. Tile: Cut back to sound tile and backing on joint lines.

12. Flooring: Completely remove flooring and clean backing of prior adhesive. Carefully remove wood flooring for patching and repairing of existing wood flooring scheduled to remain.

C. Patching: Patch with durable seams that are as invisible as possible. Comply with required tolerances.

1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation. Verify conditions of existing substrates prior to executing Work.

2. Restore exposed finishes of patched areas and extend finish restoration into retaining adjoining construction in a manner that will eliminate all evidence of patching and refinishing.

3. Concrete: Maintain cut edges in a moist condition for twenty-four hours prior to the placement of new concrete. In lieu of this an epoxy adhesive may be provided. Finish placed concrete to match existing unless noted otherwise. Concrete shall have a compressive strength of 3,000 psi where installed to repair and match existing improvements, unless noted otherwise.

4. Metal Fabrications: Items to remain exposed shall have their edges cut and ground smooth and rounded.

5. Sheet Metal: Replace removed or damaged sheet metal items for new Work.

6. Glass: Install matching glass and re-seal exterior window assemblies.

7. Lath and Plaster: Install new lath materials to match existing and fasten to supports at 6-inch centers. Provide a 6-inch lap where new lath to adjoins existing lath. Fasten new lath as required for new Work. Restore paper backings as required. Apply a bonding agent on cut edges of existing plaster. Apply three coat plaster of the type, thickness, finish, texture, and color to match existing.

8. Gypsum Wallboard: Fasten cut edges of wallboard. Install patches with at least two opposite edges centered on supports and secure at 6-inch centers. Tape and finish joints and fastener heads. Patching shall be non-apparent when painted or finished.

9. Acoustical Ceilings: Comply with the requirements for new Work specified in related sections of the Contract Documents.

10. Resilient Flooring: Completely remove flooring and prepare substrate for new material.

11. Painting: Prepare areas to be patched, patch and paint as specified under related sections of the Contract Documents.

3.04 CLEANING

A. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar items. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged coverings to their original condition.

B. Comply with waste disposal requirements in Section 01 7419 “Construction and Demolition Waste Management.

END OF SECTION

SECTION 01 7418
WATER POLLUTION CONTROL
FOR PROJECTS WITH LAND DISTURBANCE OF LESS THAN ONE ACRE OR WAIVER

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Control runoff and pollutants from the site during construction activities.
2. Preparation, implementation, and maintenance of construction BMPs.

B. Related Requirements:

1. Division 01 – General Requirements.

1.02 ACRONYMS AND DEFINITIONS

BMP	Best Management Practice.
CAN	Corrective Action Notice.
CASQA	California Stormwater Quality Association.
CGP	NPDES General Permit for Storm Water Discharges Associated with Construction Activities.
DWQ	Division of Water Quality.
LARWQCB	Los Angeles Regional Water Quality Control Board.
NPDES	National Pollutant Discharge Elimination System.
OEHS	LAUSD Office of Environmental Health and Safety.
SWPPP	Storm Water Pollution Prevention.
SWRCB	State Water Resources Control Board.
WPCD	Water Pollution Control Drawing.

1.03 REQUIREMENTS

A. CONTRACTOR shall:

1. Implement, install and maintain BMPs. Ensure that BMPs are designed to protect all exposed portions of the site, including:
    a. Erosion, Sediment, Tracking, and Wind Erosion Control BMPs.
    b. Preservation of natural features, vegetation, soil, and buffers around surface waters.

c. Drainage swales or lined ditches to control stormwater flow.

d. Mulching or hydroseeding to stabilize disturbed soils.

e. Erosion control to protect slopes.

f. Protection of storm drain inlets (gravel bags or catch basin inserts).

g. Perimeter sediment control (perimeter silt fence, fiber rolls).

h. Sediment trap or sediment basin to retain sediment on site.

i. Stabilized construction exits.

2. Implement Good Site Management "Housekeeping" BMPs to manage construction equipment, materials, non-stormwater discharges, and wastes. BMPs that should be considered for implementation as appropriate for each project include, but are not limited to, the following:

a. Dewatering activities.

b. Material handling and waste management.

c. Building materials stockpile management.

d. Management of washout areas (concrete, paints, stucco, etc.).

e. Control of vehicle/equipment fueling to staging area.

f. Vehicle and equipment cleaning performed off site.

g. Spill prevention and control.

3. Incorporate BMP activities into the Project Schedule. Schedule construction activity during dry weather, when possible.

4. Inform CONTRACTOR and Subcontractors personnel on the BMP procedures to prevent pollutants from entering the storm drain system, before the start of construction activities. Keep personnel informed of the BMP implementation process and of changes to the procedures. Provide record to OAR of stormwater topics discussed.

5. Conduct site inspections, at least weekly, of pollution prevention controls and repair or provide additional BMPs as required.

6. Pay fines and penalties from regulatory agencies against OWNER due to CONTRACTOR’S non-compliance with stormwater regulations. OWNER shall recover costs of fines and penalties by appropriate OWNER assessment. Review of the BMPs by OAR shall not relieve CONTRACTOR from liabilities arising from non-compliance of storm water pollution regulations.

B. Project Inspector will conduct inspection and examination of site storm water regulation compliance.

C. At substantial completion, conduct post-construction BMP training of OWNER personnel and submit any post-construction BMP maintenance information.

1.04 SUBMITTALS

A. BMP material quality, grade, type as specified in the CASCA BMP Handbook.

B. Water Pollution Control Drawing (WPCD).

C. BMP Implementation Schedule.

1.05 QUALITY ASSURANCE

A. Comply with the following regulatory requirements:

1. National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Lands Disturbance Activities; ORDER NO. 2022-0057-DWQ; NPDES NO. CAS000002, adopted by the State Water Resources Control Board.

2. Regulations of the California Environmental Protection Agency, State Water Resources Control Board; Los Angeles Regional Water Control Board, and local ordinances.

3. CASQA Stormwater Best Management Practice Handbook for Construction Activity (BMP Handbook) current adopted edition.

4. Local jurisdiction stormwater management (SWPPP) and erosion control ordinances.

1.06 STORAGE AND PROTECTION

A. Provide proper storage of materials and equipment to prevent rain and storm water runoff to come in contact with pollutants, such as soil stabilizers, paint or fluids from vehicles.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Provide quality, grade and type of materials as specified in CASQA Stormwater Best Management Practice, Handbook.

PART 3 – EXECUTION

3.01 IMPLEMENTATION

A. Install perimeter controls prior to starting Work at the Project site.

B. Contain on-site stormwater on the Project site. Provide storm drain inlet protection. Do not drain on-site water directly into the storm drain without proper BMP in place.

C. Prevent pollutant discharges into the storm drain system. Prevent stormwater from coming into contact with pollutants, such as sediment, material spills, or leakage from

storage tanks, waste containers or transfer areas. In the event contamination is found CONTRACTOR shall immediately notify OAR who will contact the OEHS.

D. Protect exposed dirt, such as stockpiles, landscaping areas, and hillsides.

E. Properly manage non-stormwater discharges such as ground water, broken utility lines and fire hydrant testing.

F. Adjust BMP's locations and layouts in accordance to construction progress to assure compliance to regulations.

G. Conduct inspections of pollution prevention controls and provide Site Monitoring Report to OAR immediately if pollutants are discharged into the site runoff. CONTRACTOR shall remediate contaminated water.

H. Upon Substantial Completion: Maintain and leave post-construction stormwater pollution prevention controls in place and remove those that are not needed as determined by the OAR.

3.02 CLOSEOUT

A. Verify the following prior to Substantial Completion:

1. Final stabilization of site has been demonstrated.
2. There is no potential for construction related stormwater pollutants to be discharged into site runoff.
3. Construction related equipment and temporary BMP have been removed from site.
4. Rubbish, debris, and waste materials have been removed and legally disposed of off the Project site.
5. OEHS CAN items have been closed and signed-off.
6. Post-Construction BMP Maintenance Plan has been established.

END OF SECTION

SECTION 01 7419

CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Preparation and implementation, including reporting and documentation, of a Waste Management Plan for reusing, recycling, salvage or disposal of non-hazardous waste materials generated during demolition and new construction (Construction and Demolition (C&D) Waste), to foster material recovery and re-use and to minimize disposal in land fills.

B. Related Requirements

1. Section 01 3300 - Submittal Procedures.

2. Section 01 5000 - Construction Facilities and Temporary Controls.

3. Section 01 7700 - Contract Closeout.

1.02 REFERENCES

A. California Integrated Waste Management Act of 1989 (AB 939).

B. California Code of Regulations Title 14, Section 18700 et seq.

C. California Green Building Standards Code.

1.03 SYSTEM DESCRIPTION

A. Collection and separation of all C&D waste materials generated on-site, reuse or recycling on-site, transportation to approved recyclers or reuse organizations, or transportation to legally designated landfills, for the purpose of recycling salvaging and reusing a minimum of 75 percent of the C&D waste generated.

1.04 SUBMITTALS

A. C&D Waste Management Plan (Exhibit 1): Within 10 calendar days after the Notice to Proceed and prior to any waste removal, submit the following to the OAR for review and approval. Update quarterly. Include:

1. Materials to be recycled, reused, or salvaged, either onsite or offsite.

2. Estimates of C&D waste quantity (in tons) by type of material. (If waste is measured by volume, give factors for conversion to weight in tons.)

3. Procedures for recycling and reuse program.

4. Permit or license and location of Project waste-disposal areas.

5. Site plan for placement of waste containers.

B. C&D Waste Management Monthly Progress Report (Exhibit 2): Summary of waste generated by Project, monthly with Application for Payment. Include:

1. Firms accepting the recovered or waste materials.

2. Type and location of accepting facilities (landfill, recovery facility, used materials yard, etcetera). If materials are reused or recycled on the Project site, location should be designated as “on-site reuse and recycling”.

3. Type of materials and net weight (tons) of each.

4. Value of the materials or disposal fee paid.

5. Attach weigh bills and other documentation confirming amount and disposal location of waste materials.

C. C&D Waste Management Final Compliance Report: Final update of Waste Management Plan to provide summary of total waste generated by Project.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.01 IMPLEMENTATION

A. Implement approved Waste Management Plan including collecting, segregating, storing, transporting and documenting each type of waste material generated, recycled or reused, or disposed in landfills.

B. Designate an on-site person to be responsible for instructing workers and overseeing the sorting and recording of waste/ recyclable materials.

C. Include waste management and recycling in worker orientation and as an agenda item for regular Project meetings.

D. Recyclable and waste bin areas shall be limited to areas approved on the Waste Management Plan. Keep recycling and waste bins neat and clearly marked to avoid contamination of materials.

3.02 ATTACHMENTS

A. Exhibit 1: Waste Management Plan

B. Exhibit 2: Waste Management Monthly Progress Report.

EXHIBIT 1

WASTE MANAGEMENT PLAN
CONSTRUCTION/ MAINTENANCE/ALTERATION & DEMOLITION PROJECTS

PROJECT NAME: **«PROJECTTITLE» «CONTRACTTITLE»**
PROJECT NO: **«Project Number»**
NAME OF COMPANY:
CONTACT PERSON:
TELEPHONE:
PROJECT SITE LOCATION:
PROJECT TYPE: ☐ NEW CONSTRUCTION ☐ DEMOLITION
☐ MAINTENANCE/ALTERATION PROJECTS
PROJECT SIZE (SQ. FT.):
DATE & ESTIMATED PERIOD

(1) Material Type	(2) Tons Estimated Recycle	(3) Tons Estimated Reuse	(4) Tons Estimated Salvage	(5) Tons Estimated Landfill	(6) Proposed Disposal or Recycling Facility (e.g., Onsite, Name of Facility)
Total					
Diversion Rate: Columns [(2)+(3)+(4)] / [(2)+(3)+(4)+(5)]					=

Signature	Title	Date

Column 1 "Material Types" – Enter type of materials targeted for recycling, reuse, and/or salvage, either on- or off-site, and include a category for waste materials requiring disposal.

Columns 2 thru 4 "Estimated Generation" - Enter estimated quantities (tons) of recyclable, reusable, or salvageable waste materials anticipated to be generated and state number of salvageable items.

Column 5 "Estimated Landfill" - Enter quantities (tons) of materials to be disposed in landfill.

Column 4 "Disposal Location" - Enter end-destination of recycled, salvaged, and disposed materials.

General : (1) Attach proposed Recycling and Waste Bin Location Plan.

(2) Attach name and contact data for each recycling or disposal destination to be used.

EXHIBIT 2

WASTE MANAGEMENT PROGRESS REPORT
CONSTRUCTION/ MAINTENANCE/ALTERATION & DEMOLITION PROJECTS

PROJECT NAME: **«PROJECTTITLE» «CONTRACTTITLE»**
PROJECT NO: **«Project Number»**
NAME OF COMPANY:
CONTACT PERSON:
TELEPHONE:
PROJECT SITE LOCATION:
PROJECT TYPE: ☐ NEW CONSTRUCTION ☐ DEMOLITION
☐ MAINTENANCE/ALTERATION PROJECTS
PROJECT SIZE (SQ. FT.):
PERIOD to

(1) Material Type	(2) Tons Actual Recycle	(3) Tons Actual Reuse	(4) Tons Actual Salvage	(5) Tons Actual Landfill	(6) Disposal or Recycling Facility (e.g., Onsite, Name of Facility)
Total					
Diversion Rate: Columns [(2)+(3)+(4)] / [(2)+(3)+(4)+(5)]					=

Signature	Title	Date

Column 1 "Material Types" – Enter type of materials targeted for recycling, reuse, and/or salvage, either on- or off-site, and include a category for waste materials requiring disposal.

Columns 2 thru 4 "Estimated Generation" - Enter estimated quantities (tons) of recyclable, reusable, or salvageable waste materials anticipated to be generated and state number of salvageable items.

Column 5 "Estimated Landfill" - Enter quantities (tons) of materials disposed.

Column 4 "Disposal Location" - Enter end-destination of recycled, salvaged, and disposed materials.

General : (1) Attach proposed Recycling and Waste Bin Location Plan.

(2) Attach name and contact data for each recycling or disposal destination to be used.

END OF SECTION

SECTION 01 7700

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section includes administrative and procedural requirements for Contract Closeout, including but not limited to, the following:

1. Inspection procedures.
2. Project record documents submittal.
3. Operation and maintenance manual submittal.
4. OWNER orientation and instruction.
5. Final cleaning.

1.02 RELATED REQUIREMENTS:

1. Section 01 2976 - Progress Payment Procedures.
2. Section 01 3213 - Construction Schedule.
3. Section 01 3229 - Project Forms.
4. Section 01 3300 - Submittal Procedures.
5. Section 01 4525- Testing, Adjusting, and Balancing of HVAC.
6. Section 01 5000 - Construction Facilities and Temporary Controls.
7. Section 01 7836 - Warranties.
8. Section 01 7900 – Maintenance and Operations Staff Demonstration and Training

PART 2 – PRODUCTS (Not used)

PART 3 - EXECUTION

3.01 SUBSTANTIAL COMPLETION

A. Inspection Procedures: On receipt of the Request For Certificate of Substantial Completion, OAR will authorize commencement of inspection. INSPECTOR, OAR, CONTRACTOR and ARCHITECT will inspect the Work.

1. If after inspection of the Work, OAR does not consider the Work substantially complete, OAR will notify CONTRACTOR.

2. If after inspection, OAR considers the Work substantially complete, INSPECTOR shall prepare a comprehensive Punch List of items to be corrected.

a. INSPECTOR may repeat inspection to assure the Work is corrected.

b. Results of the completed inspection will form a partial basis of the requirements for Release of Retention.

3.02 ADMINISTRATIVE CLOSEOUT

A. Re-inspection Procedures: INSPECTOR, OAR, CONTRACTOR and ARCHITECT may inspect the Work upon notice, including final inspection of Punch List items from earlier inspections, which have been corrected, except for items whose completion is delayed under circumstances acceptable to OAR.

1. OWNER has the right to preclude CONTRACTOR from Punch List correction and documents submittals after the Contract Completion date; unless OWNER elects to authorize CONTRACTOR to extend Administrative Contract duration. CONTRACTOR will be assessed actual cost for the unsettled items. Withholds amounts exceeding actual costs to correct or to obtain deliverable will be released.

2. If allowed by the OAR, re-inspection will be repeated, but may be assessed against CONTRACTOR if OWNER is subject to additional professional service and additional costs of inspection.

3.03 PROJECT RECORD DOCUMENT SUBMITTAL

A. General: Do not use project record documents for construction purposes Provide access to record documents for ARCHITECT, INSPECTOR and OAR reference during normal working hours. Project record documents shall be updated on a weekly basis. Prior to submitting each application for payment, secure INSPECTOR and ARCHITECT approval of project record documents.

B. Record Drawings: Maintain a clean, undamaged set in the native format (CADD or REVIT) and PDF. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark the Drawing that is most capable of showing conditions fully and accurately. Where

Shop Drawings are used, record a cross-reference at the corresponding location on the Drawings. Provide detailed and accurate field dimensions for concealed elements that would be difficult to measure and record at a later date.

1. A shared file location with a direct link to both As-builts PDFs and complete As-Built CADD files is acceptable (Dropbox or Onedrive)

2. Refer to Exhibit A for the Final As-built Record Submittal (FA-BRS) for the authorized signatures that can be digitized.

3. Mark record sets with red lines using the CADD or REVIT application. PDF formats shall use redlines. Use other colors to distinguish between variations in separate categories of the Work. Date and number entries in the same format as submitted. Call attention to entry by a "cloud" around the affected areas.

4. Mark new information important to OWNER but was not shown on Drawings or Shop Drawings.

5. Utility location and depth below finished grade and above ceilings and attic spaces shall be fully dimensioned and indicated on record drawings. Dimensions shall be measured from building lines or permanent landmarks and shall be triangulated to those features.

6. Note related Change Order or Construction Directive numbers where applicable. RFC submissions shall be referenced on each affected sheet, Drawing and Shop Drawing.

7. Organize record drawing sheets into manageable sets with cover sheets; suitable titles, dates, and other identification on the cover of each set.

8. Prior to Contract Completion of the Work, review of the project record drawings by ARCHITECT; the native electronic format either CAD or REVIT and one set of pdfs.

C. Record Specifications: Maintain two complete electronic copies of the Specifications, including Addenda. Include with the Specifications electronic two copies of other written Contract Documents, such as Change Orders or Construction Directives issued during construction.

1. Mark these record documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.

2. Give particular attention to substitutions and selection of options and information on concealed Work that cannot otherwise be readily discerned later by direct observation.

3. Note related record document information with Product Data.

4. Prior to Contract Completion of the Work, submit record Specifications to ARCHITECT for review and approval prior to submittal for OWNER records.

D. Record Product Data: Maintain electronic copies of each Product Data submittal. Note related Change Orders and Construction Directives and mark-up of record drawings and Specifications.

1. Mark these documents to illustrate significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the Project site and from the manufacturer's installation instructions and recommendations.

2. Provide detailed and accurate information regarding concealed products and portions of Work that cannot otherwise be readily discerned later by direct observation.

3. Prior to Contract Completion, submit complete annotated PDF electronic set of record Product Data to ARCHITECT for OWNER records.

E. Record Samples: Immediately prior to Substantial Completion, CONTRACTOR shall meet with ARCHITECT and OAR at the Project site to determine which Samples are to be transmitted to OWNER for record purposes. Comply with OAR instructions regarding delivery to OWNER storage area.

F. Miscellaneous Records: Refer to other Specification sections for requirements of miscellaneous record keeping and submittals in connection with actual performance of the Work. Prior to the date of Contract Completion, complete and compile miscellaneous records and place in good order. Identify miscellaneous records properly and bind or file, ready for continued use and reference. Submit annotated PDF electronic files to Architect for review and approval prior to submittal to the OWNER.

G. Operation and Maintenance Manuals: Prior to Substantial Completion, organize electronic document tree of the operation and maintenance documents based on CSI specification breakdown. Submit to ARCHITECT for review and approval prior to submittal to the OWNER for the record. Include the following types of information.

1. Emergency instructions.

2. Spare parts list.

3. Copies of warranties.

4. Wiring diagrams.

5. Recommended “turn-around” cycles.

6. Inspection procedures.

7. Shop Drawings and Product Data.

8. Fixture lamping schedule.

H. Verified Reports: Construction progress of the Work shall be reported to DSA via a duly verified report as per Title 24, Part 1, Sections 4-336 and 4-343.c of the California Building Standards Commission’s, California Administrative Code.

3.04 OPERATION AND MAINTENANCE INSTRUCTIONS:

A. Operation and Maintenance Instructions: Prior to Substantial Completion, arrange for each installer of equipment that requires regular operation and maintenance to meet with designated OWNER personnel to provide instruction in proper operation and maintenance. Provide instruction by manufacturer’s representatives if installers are not experienced in operation and maintenance procedures. Include a detailed review of the following items:

1. Maintenance manuals.

2. Spare parts and materials.

3. Tools.

4. Lubricants.

5. Fuels.

6. Identification systems.

7. Control sequences.

8. Hazards.

9. Cleaning.

10. Warranties and bonds.

11. Maintenance agreements and similar continuing commitments.

B. As part of instruction for operating equipment, demonstrate the following procedures:

1. Start-up.

2. Shutdown.

3. Emergency operations.

4. Noise and vibration adjustments.

5. Safety procedures.

6. Economy and efficiency adjustments.

7. Effective energy utilization.

C. Notice Of Termination: Refer to Section 01 7900 Maintenance Demonstration and Training.

3.05 FINAL CLEANING

A. General: Related sections of the Contract Documents specify general cleaning during performance of the Work. General cleaning is included in Division 01 Section “Construction Facilities and Temporary Controls”.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer’s instructions.

1. Complete the following cleaning operations before requesting inspection for a certificate of Substantial Completion.

a. Remove labels that are not permanent labels.

b. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.

c. Clean exposed exterior and interior hard-surfaced finished to a dust-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.

d. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.

e. Clean the Project site, including landscape development areas, of rubbish, litter, and other foreign substances. Sweep paved areas broom clean; remove stains, spills, and other foreign deposits. Rake grounds that are neither paved nor planted to a smooth, even-textured surface.

END OF SECTION

SECTION 01 7836

WARRANTIES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section includes administrative and procedural requirements for warranties, including manufacturers and installer's standard warranties on products and special product warranties.

1. Refer to the General Conditions for terms of the guarantee period for the Work.

1.02 RELATED REQUIREMENTS

A. Section 01 6000 - Product Requirements.

B. Section 01 7329 - Cutting and Patching.

C. Section 01 7700 - Contract Closeout.

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION

3.01 WARRANTY REQUIREMENTS

A. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties shall not relieve CONTACTOR of the warranty of the Work incorporating such materials, products, and equipment. Manufacturer's disclaimers and limitations on warranties do not relieve suppliers, manufacturers, installers, and Subcontractors of the requirement to countersign special warranties with CONTRACTOR.

B. Standard warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to OWNER.

C. Special warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for OWNER.

D. Related Damages and Losses: When correcting failed or defective warranted Work, remove and replace Work that has been damaged as a result of such failure or which must be removed and replaced to provide access for correction of warranted Work.

E. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement with the reinstated warranty equal to the original warranty.

F. Replacement Cost: Upon determination the Work covered by a warranty has failed and/or is defective, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. CONTRACTOR is responsible for the cost of replacing or rebuilding defective Work regardless of whether OWNER has benefited from use of the Work through a portion of its anticipated useful service life.

G. OWNER Recourse: Expressed warranties made to OWNER are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which OWNER can enforce such other duties, obligations, rights, or remedies.

H. Rejection of Warranties: OAR reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

I. Where the Contract Documents require a special warranty, or similar commitment on the Work or part of the Work, OAR reserves the right to refuse to accept the Work until CONTRACTOR presents evidence the entities required to countersign such commitments have done so.

3.02 SUBMITTALS

A. Submit written preliminary warranties prior to Substantial Completion and final warranties prior to Contract Completion. If the certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, submit written warranties as set forth in the certificate of Substantial Completion.

1. When a designated portion of the Work is partially used and/or occupied by OWNER, submit properly executed warranties to ARCHITECT within fifteen days of the Partial Use or Occupancy of the designated portion of the Work.

B. When the Contract Documents require CONTRACTOR, or CONTRACTOR and a Subcontractor, installer, supplier or manufacturer to execute a special warranty,

prepare a written document containing appropriate terms and identification, ready for execution by the required parties. Submit a draft to OAR, through the ARCHITECT, for approval prior to final execution.

1. Refer to Divisions 02 through 49 for specific content requirements and particular requirements for submitting special warranties.

C. Form of Submittal: Prior to Contract Completion, compile two copies of each required final warranty properly executed by CONTRACTOR, or by CONTRACTOR and Subcontractor, installer, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the Specifications.

D. Bind warranties and bonds in heavy-duty, commercial-quality, durable three ring, vinyl-covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8½ by 11 paper.

1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the item or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address, and telephone number of the installer.

2. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project title and/or name, and name of CONTRACTOR.

3. When warranted Work requires operation and maintenance manuals, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

END OF SECTION

SECTION 01 7900

MAINTENANCE AND OPERATIONS STAFF DEMONSTRATION AND TRAINING

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Administrative and procedural requirements for training OWNER's personnel.

1. Demonstration of operations of systems, subsystems and equipment.

2. Training in operation and maintenance of systems, subsystems, and equipment.

1.02 RELATED REQUIREMENTS

A. Project Commissioning Plan (CxP).

B. CHPS Best Practices Manual.

C. CAL/OSHA Minimum Ventilation Standard, Title 8, Section 5142.

D. California Building Code, Chapter 12.

E. Division 01 - General Requirements.

F. Division 22 - Plumbing.

G. Division 23 – Heating Ventilating and Air Conditioning.

H. Division 26 - Electrical.

I. Division 27 – Communications.

1.03 SUBMITTALS

A. Submittals, including training modules, require the Commissioning Services Provider's (CxSP) review and OAR acceptance prior to implementation.

B. Instruction Program:

1. Ninety days prior to Startup and Testing, submit a draft outline of the instructional program for demonstration and training, including the training module objectives and outline for each training module, schedule of proposed training dates, training times, length of instruction time and instructors' names for each training module. Submittal(s) shall be on a CD-ROM in a MS Word

current verision format file. CxSP, OAR and Project Inspector will review and OAR accept, based on their recommendation, CONTRACTOR's proposed Instruction Program or comment and return to CONTRACTOR for revision and incorporation of comments within 30 days of receipt.

2. Revise and resubmit finalized Instruction Program 45 days prior to Startup and Testing. CxSP, OAR and Project Inspector will review CONTRACTOR's revised Instruction Program and OAR, based on their recommendation, accept or return for further revision and incorporation of unaddressed revisions and/or comments or unacceptable revisions within five days of receipt.

3. Revise and incorporate comments and resubmit to OAR within five days of receipt. CxSP, OAR and Project Inspector will review CONTRACTOR's revised Instruction Program and OAR, based on their recommendation, accept the revised Instruction Program within five days of receipt or require CONTRACTOR to meet with OAR and CxSP within five days of receipt to revise and incorporate unaddressed revisions and/or comments. CONTRACTOR shall be assessed reasonable fees and expenses incurred by CxSP for these meetings.

C. Upon completion of training, submit two complete training manuals for OWNER's use and one CD-ROM including materials in the complete training manual in the Adobe PDF format. Each manual shall contain specific training and instruction manuals and hand-outs for the following designated end-users:

1. School Faculty and Administration.

2. School Plant Manager.

3. OWNER Maintenance and Operations (M&O) Personnel.

D. Qualification Data: Three weeks prior to start of training, CONTRACTOR shall submit Letters of Qualifications and Project Lists for persons and firms providing instruction including:

1. Training Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel and end-users in training program similar to that required for this Project, and who has a record of successful training performance.

2. Training Instructor Qualifications: Instructor shall be factory-authorized service representative, experienced in operation and maintenance procedures and training for each system, subsystem or piece of equipment.

3. References: The name of owner and the name and telephone number of the plant manager and maintenance supervisor on three similar projects for reference.

E. Attendance Record: For each training module, submit the proposed list of participants, sign in sheets and length of instruction time a minimum of 15 days prior to start of training of the module.

F. Evaluations: For each participant and for each training module, submit results and documentation of performance-based tests a minimum of seven days following completion of training of each module.

G. Demonstration and Training Video: CONTRACTOR shall video record each classroom training and demonstration session and submit a copy on CD-ROM or DVD in a format compatible with MS Windows Media Player at end of each training module. CONTRACTOR shall include a copy of manufacturer training video materials presented during training and demonstration session.

1.04 COORDINATION

A. Coordinate instruction schedule with the OAR, CxSP, and OWNER's M&O personnel. Adjust schedule as required to reasonably accommodate the schedules of participants and to minimize disrupting OWNER operations.

B. Coordinate with instructors, including providing notification of scheduled dates, times, length of instruction time and course content.

C. Coordinate content of training modules with content of approved Emergency Manual and Operations and Maintenance Manual. Do not submit instruction program until manual has been reviewed and accepted by the OAR.

1.05 INSTRUCTION PROGRAM

A. Program Structure: Develop instruction program that includes individual demonstration and training modules for the operation, maintenance, minor repair (completion in under two hours) and calibration of systems and components in the system as required by Section 01 9113, Divisions 22, 23 and Division 26 and as specified in Part 3 of this Section, "DEMONSTRATION AND TRAINING".

B. Training Modules: Develop learning objective and teaching outline for each module, specific and as applicable, for the following OWNER personnel:

1. School Faculty and Administration.

2. School Plant Manager.

3. Operations and Maintenance.

C. Include description of specific skills and knowledge that participant is expected to master.

D. For each module, include instruction for the following:

1. Basis of System Design (for OWNER Operations and Maintenance Personnel), Operational Requirements and Criteria, including, but not limited to:

    a. System, subsystem and equipment descriptions.

    b. Performance and design criteria if CONTRACTOR is delegated design responsibility.

    c. Operating standards.

    d. Regulatory requirements.

    e. Equipment function.

    f. Operating characteristics.

    g. Limiting conditions.

    h. Performance curves.

2. Documentation (for OWNER Operations and Maintenance Personnel and School Plant Manager): Review in detail the following documentation:

    a. Operations manuals.

    b. Maintenance manuals.

    c. Project Record Documents.

    d. Identification systems.

    e. Warranties.

    f. Maintenance service agreements and similar continuing commitments.

3. Emergencies (for OWNER Operations and Maintenance Personnel and School Plant Manager): Review, without limitation, the following, as applicable:

    a. Instructions on meaning of warnings, trouble indications, and error messages.

    b. Instructions on stopping.

    c. Shutdown instructions for each type of emergency.

    d. Operating instructions for conditions outside of normal operating limits.

    e. Sequences for electric or electronic systems.

f. Special operating instructions and procedures.

4. Operations (for OWNER Operations and Maintenance Personnel and School Plant Manager): Review, without limitation, the following as applicable:

a. Startup procedures.

b. Equipment or system break-in procedures.

c. Routine and normal operating instructions.

d. Regulation and control procedures.

e. Control sequences.

f. Safety procedures.

g. Instructions on stopping.

h. Normal shutdown instructions.

i. Operating procedures for system, subsystem or equipment failure.

j. Seasonal and weekend operating instructions.

k. Required sequences for electric or electronic systems.

l. Special operating instructions and procedures.

5. Adjustments (for OWNER M&O Personnel): Review, without limitation, the following as applicable:

a. Alignments.

b. Checking adjustments.

c. Noise and vibration adjustments.

d. Economy and efficiency adjustments.

6. Troubleshooting (for OWNER M&O Personnel): Review, without limitation, the following as applicable:

a. Diagnostic instructions.

b. Test and inspection procedures.

7. Maintenance (for OWNER M&O Personnel and Plant Manager): Review, without limitation, the following, as applicable:

a. Inspection procedures.

b. Types of cleaning agents to be used and methods of cleaning.

c. List of cleaning agents and methods of cleaning detrimental to product.

d. Procedures for routine cleaning.

e. Procedures for preventative maintenance.

f. Procedures for routine maintenance.

g. Instruction on use of special tools.

8. Repairs (for OWNER M&O Personnel): Review, without limitation, the following as applicable:

a. Diagnostic instructions.

b. Repair instructions.

c. Disassembly; component removal, repair and replacement and reassembly instructions.

d. Instructions for identifying parts and components.

e. Review of parts needed for operation and maintenance.

9. Faculty Member Training:

a. Manual for the basic operation/control of the HVAC room sensor/thermostat and lighting controls.

b. Organizational chart structure, to be completed by OWNER, for repair or emergency requests for the systems including contact information of the Plant Manager.

1.06 PREPARATION

A. Training Facilitator: Engage qualified training facilitator no later than 120 days prior to start of training to prepare instruction program and training modules, to coordinate instructors, and to coordinate between CONTRACTOR, OAR and CxSP for number of participants, instruction times and location.

B. Training Instructor: Engage qualified training instructors to instruct OWNER's personnel to adjust, operate and maintain systems, subsystems and equipment not part of a system no later than 30 days prior to start of training of assigned modules.

C. Scheduling: Provide instruction at mutually agreed on times.

1. Schedule training with OWNER, through OAR, with at least two weeks advance notice.

2. Schedule training to conform to personnel availability at Site.

3. Conduct training(s) after the execution of commissioning Pre-functional and Functional Tests are completed.

4. Base duration of training on hours specified in the applicable specifications or minimums defined in Article 1.08.

D. Demonstration and Training Video: Record each training module separately. Include classroom instructions and demonstrations, board diagrams and other visual aids, excluding attendee practice or testing.

1. Make demonstration and testing videos at Site to ensure video is representative of installed system. As part of training, devote one lesson plan to reviewing of video to allow new employees to view the video recordings at their own convenience and be able to operate the video system without need for instructor attendance.

E. Familiarize OWNER staff regarding CAL/OSHA Title 8, section 5142 Requirements.

F. Cleanup: Collect excess copies of educational materials and give to OAR. Remove instruction equipment. Restore systems and equipment to condition existing just before commencing training.

1.07 OPERATIONS AND MAINTENANCE MANUALS

A. CONTRACTOR shall direct Subcontractors to compile and prepare O&M Manuals and other required documentation for the equipment and systems that are provided and/or installed per their scope of work for submittal to OAR prior to project closeout.

B. The OAR shall receive a copy of the Operations and Maintenance manuals prior to initiation of demonstration and training for review. and acceptance or rejection.

1. Operations and Maintenance manuals shall meet the respective requirements of Divisions 22,23 and Division 26, and Section 01 7700; and organize electronic document tree of the operation and maintenance data documents based on the CSI specification breakdown.

2. Contents: There shall be a title page and table of contents at the beginning of each folder. The table of contents shall be an outline that identifies the equipment or systems documentation included in the folder and references the specification sections relating to the equipment and systems that are being included in each part of the folder. Each part of the folder shall contain the information described below, in the following order.

a. The first page shall contain the name, address, and telephone number of the manufacturer and installing CONTRACTOR, as well as the 24-hour number for emergency service for each piece of equipment identified in this section.

b. Preventive Maintenance Instructions. This section shall list the location of preventative maintenance instructions. The list shall show the piece of equipment, the Operations and Maintenance document name, and the O&M document page number that contains the instructions.

c. Submittal and Product Data. This section shall include product data not covered by manufacturer's Operations and Maintenance instructions and associated shop drawings.

d. Warranty and Service Contracts. This section shall include the following for each piece of equipment, as applicable:

1) Copy of the equipment warranty information provided as part of Section 01 7836.

2) Additional Warranties in accordance with Warranty requirements in DIVISIONS 02 to 49, as applicable. Equipment Warranties shall clearly list requirements to maintain the Warranty in effect, conditions or acts that would invalidate or void the Warranty, and Warranty expiration date.

3) Service contracts issued. Contracts shall clearly indicate contract dates and scope of work included.

e. Operation and Maintenance Instructions. These shall be the written manufacturer's maintenance and operating instructions with the model number and features of the installed equipment or system clearly identified. This section shall include applicable data on the following:

1) Installation, startup, and break-in instructions.

2) Starting, normal shutdown, emergency shutdown, manual operation, seasonal changeover and normal operating procedures and data, including any special limitations.

3) Operations and Maintenance and installation instructions that were shipped with the unit.

4) Preventative maintenance and service procedures and schedules.

5) Troubleshooting procedures.

6) A parts list, edited to omit reference to items which do not apply to this installation.

7) A list of any special tools required to service or maintain the equipment.

8) Performance data, ratings, and curves.

f. Control Drawings. This section contains controls drawings and the final sequence of operations, set points, and schedules as set during the Commissioning Process. If shop drawings, portions of the project manual, or record drawings clearly show this information, a copy of this information may be inserted. Otherwise, original drawings shall be generated and included in this section.

g. Electronic pdf file of same documents noted above.

C. Division 23 Special Water and Air Balance Documentation. The Balancing Subcontractor will compile and submit the following with other documentation that may be specified elsewhere in the Project Specifications.

1. Final report containing an explanation of the methodology, assumptions, test conditions, and the results in a clear format with designations of all uncommon abbreviations and column headings.

2. The Balancing Subcontractor shall mark on the drawings where all traverse and other critical measurements were taken and cross reference the location in the Test and Balance report.

1.08 DEMONSTRATION AND TRAINING SCHEDULE

A. The following applies to the minimum duration of demonstration and training provided District Maintenance and Operations Personnel, including, but not limited to:

1. Heat Generation:

a. Boilers: Minimum six hours demonstration and training

b. Feedwater Equipment: Minimum four hours

c. Pumps: Minimum four hours

d. Steam Distribution Piping: Minimum two hours

2. Water Distribution Piping: Minimum two hours Refrigerant Systems:

a. Chillers: Minimum six hours

b. Cooling Towers: Minimum six hours

c. Condensers: Minimum four hours

d. Pumps: Minimum four hours

3. Distribution Piping: Minimum two hours HVAC Systems:

a. Air-handling Equipment: Minimum six hours

b. Air Distribution Systems: Minimum four hours

4. Terminal Equipment and Devices: Minimum six hours

5. HVAC Instrumentation and Controls: Minimum sixteen hours

6. Lighting Systems and Controls: Minimum four hours

7. Elevators: Minimum four hours

8. Fire Alarm Systems: Minimum four hours

9. Chairlifts: Minimum four hours

10. Irrigation Controls: Minimum four hours

11. Low Voltage Controls: Minimum four hours

12. Public Address Systems: Minimum four hours

13. Clock Systems: Minimum four hours

14. Audio Visual Controls: Minimum four hours

15. Stage Curtains: Minimum four hours PART 2 – PRODUCTS – N/A

PART 3 – EXECUTION – N/A

END OF SECTION

SECTION 01 9113

GENERAL COMMISSIONING REQUIREMENTS

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. This Section defines the Contractor's responsibilities with respect to Commissioning. The Contractor shall include this scope in the bid. This includes administrative and procedural requirements as well as a detailed execution of Commissioning. This Section supplements Section 01 4523 – Testing and Inspection, Section -01 4525 Testing, Adjusting, and Balancing for HVAC, as well as the Divisions 22 - Plumbing, Division 23 – Mechanical, and Division 26 – Electrical sections which specify testing procedures. This Section also defines the systems and equipment to be commissioned. For projects that have Specification Section 01 4516 or 01 4519, Contractor Construction Quality Control, the Commissioning schedule and activities as defined in the approved Commissioning Plan shall be incorporated by Contractor into the Construction Quality Control (CQC) plan. The Commissioning Services Provider will be part of the Owner's Quality Assurance (QA) Team and participate in the review and execution of the Project Construction Quality Control (CQC) plan, along with the Contractor, Owner's Authorized Representative (OAR), Project Inspector (PI), and Architect of Record (AOR).

1.02 DEFINITIONS

A. Commissioning (Cx): A systematic process which verifies that the building systems perform according to the Owner's Design Intent/Basis of Design (ODI/BOD). Commissioning includes system documentation, equipment startup, control system calibration, Testing, Adjusting and Balancing (TAB) verification, performance testing, and training.

B. Commissioning Services Provider (CxSP): A District appointed entity that plans and coordinates all activities which implement Commissioning as outlined by the Owner's Design Intent/Basis of Design (ODI/BOD). The CxSP has overall responsibility for planning and coordinating Commissioning. Commissioning activities that take place during construction shall be based on the Contractor's construction schedule.

C. Commissioning Plan (CxP): A contract document that identifies the project Commissioning goals, Owner's Design Intent/Basis of Design, commissioning milestones, coordination requirements, and project specific Pre-functional Equipment Checklists and Functional Performance Test Checklists. The CxP shall be incorporated by Contractor into the Construction Quality Control Plan.

D. Pre-functional Equipment Checklist (PEC): A form for each piece of equipment referenced in '1.08 SYSTEMS TO BE COMMISSIONED' that must be completed by the Contractor as a prerequisite to the equipment's Functional Performance Test

(FPT). Sample checklists and PEC forms are included in the CxP. The checklists and forms are completed by the Contractor and verified by the CxSP.

E. Functional Performance Test (FPT): A documented test designed by the Commissioning Services Provider to verifies the dynamic functioning and operation of equipment and systems with the goal of verifying that the Owners' Design Intent, Owner's Project Requirements, and Basis of Design (BOD) are met. Sample testing requirements and forms are included in the CxP. Test procedures are performed by the Contractor and witnessed by the INSPECTOR and CxSP.

F. Acceptance - A formal action, taken by a person with appropriate authorization, to declare that some aspect of the project meets defined requirements – thereby permitting subsequent activities to proceed.

G. Checklists - Documents that are developed and used during all phases of commissioning to verify that the Owner's intent is being achieved. This includes checklists for general verification, testing, training, and other specific requirements. Various checklists are prepared by the CxSP and the contractor to document completion of testing and/or commissioning of equipment and systems.

I. Coordination Drawings - Drawings showing the work of all trades to illustrate that equipment can be installed in the space allocated without compromising equipment function or access for maintenance and replacement. These drawings graphically illustrate and dimension manufacturers' recommended maintenance clearances.

K. Control system – A component of an environmental, HVAC, electrical, lighting, or energy management system for the reporting, monitoring and/or issuing of commands to and/or from field devices.

L. Data logging -The monitoring and recording of flows, currents, status, pressures, etc., of equipment using stand-alone data recorders separate from the installed control system or the trending capabilities of those control systems.

M. Deficiency - A condition that is not in compliance with the contract documents relative to the installation or function of a component, piece of equipment, or system.

N. Factory Testing - Testing of equipment at the factory or on-site by factory personnel with, or without, an owner's representative present.

O. Issues Log - A formal and ongoing record of problems or concerns – and their resolution – that have been raised by members of the commissioning team during the course of commissioning.

P. Seasonal Performance Tests - Tests that are performed when weather conditions are comparable to the design conditions based or the design conditions can be simulated.

R. Simulated Condition - Condition that is created for the purpose of testing the response of a system (for example: raising/lowering the set point of a thermostat to see the response in a VAV box).

S. Startup - The initial starting or activating of dynamic equipment.

T. Systems Manual - A system-focused composite document that includes the operation manual, maintenance manual, manufacturer's technical diagrams and additional information of use to the owner during facility occupancy and operation.

U. Test Procedure - A written protocol that defines methods, procedures, personnel, and expected outcomes for tests conducted on components, equipment, assemblies, systems, and interfaces among systems. The test procedures are specified in the Commissioning Plan and Technical Specifications sections of the contract documents and the CxP.

V. Training Plan - A written document that details the expectations, schedule, budget, and deliverables of commissioning activities related to the training of facility operating and maintenance personnel, users, and occupants.

X. Verification - The process by which specific documents, components, equipment, assemblies, systems, and interfaces among systems are confirmed to comply with the criteria described in the Owner's Design Intent/Basis of Design. Verification testing is performed per the prescribed test procedure(s) by the contractor and witnessed by the INSPECTOR and CxSP.

Y, Trending – The analysis of system performance gathered over a period of time by a building management system or other electronic data gathering equipment.

1.03 RELATED REQUIREMENTS

A. Section 00 7300 – Supplementary Conditions.

B. Section 01 1216 – Phasing of the Work.

C. Section 01 2100 – Allowances.

D. Section 01 2513 – Product Substitution Procedures.

E. Section 01 3113 – Project Coordination.

F. Section 01 3119 – Project Meetings.

G. Section 01 3213 – Construction Schedule.

H. Section 01 3300 - Submittal Procedures.

I. Section 01 4516 or 01 4519 – Contractor Construction Quality Control.

J. Section 01 4523 - Testing and Inspection.

K. Section 01 4525 - Testing, Adjusting, and Balancing for HVAC.

L. Section 01 5000 – Construction Facilities and Temporary Controls.

M. Section 01 7700 – Contract Close-Out.

N. Section 01 7836 – Warranties.

O. Section 01 7900 – Maintenance & Operation Staff Demonstration and Training.

P. Section 23 0800 – HVAC Systems Commissioning.

Q. Section 23 0813 – Environmental Controls and Energy Management Systems Commissioning.

R. Section 26 0800 – Electrical Systems Commissioning.

1.04 REFERENCES

A. Guideline 1.1-2007 -- HVAC&R Technical Requirements for the Commissioning Process.

B. Associated Air Balance Council Commissioning Guidelines.

C. CHPS Best Practices Manual, Volume V: Commissioning.

D. Sample Commissioning Plan Documentation.

1.05 COORDINATION

A. Items listed below require coordination between the Contractor, OAR, INSPECTOR, and CxSP. Details regarding each item are provided through out this Section and/or Sections 01 7900, 23 0800, 23 0813 and 26 0800.

1. Cx Schedule and Meeting Venue.

2. Commissioning Meeting Attendance.

3. Completion of Pre-functional Equipment Checklists (PEC).

4. Functional Performance Testing (FPT).

5. Operations & Maintenance Manual Submittal and Training.

6. Documentation of Pre-functional Equipment Checklists (PEC) & Functional Performance Testing (FPT) Inspections.

B. For projects using Specification Section 01 4516 or 01 4519, the CxSP shall coordinate with the Contractor’s designated Quality Control representative, OAR and INSPECTOR.

1.06 SUBMITTALS

A. Submittal documentation required for the commissioning work will be identified by the CxSP and integrated into the normal submittal process and protocol of the construction team. At minimum, the CxSP's documentation request will identify the manufacturer and model number, the manufacturer's printed installation and detailed startup procedures, full sequences of operation, O&M data, performance data, any performance test procedures, control drawings and details of owner contracted tests. In addition, the installation and checkout materials that are actually shipped inside the equipment and the actual field checkout sheet forms to be used by the factory or field technicians shall be submitted. All such documentation will be included by subcontractors in their O&M manual submittals.

B. The CxSP will review and recommend acceptance or any required revision to the OAR for all submittals related to the commissioned equipment for conformance with the contract documents as they relate to commissioning, performance of the equipment, and their adequacy of test procedures. This review is intended primarily to aid in the development of performance procedures and only secondarily to verify compliance with equipment specifications. The CxSP will notify the OAR of items missing or areas that are not in conformance with contract documents and which require resubmission.
Submittal of O&M manual documentation does not constitute compliance. The CxSP will review all such document submittals and recommend to OAR their acceptance or any required revisions.

C. Submittal documentation specified in Specifications 23 0800, 23 0813 and 26 0800.

1.07 CONTRACTOR RESPONSIBILITIES

A. The general responsibilities of Contractor and Subcontractors in commissioning are defined in this section. The specific responsibilities are in the Division 22 and 23 and Division 26 Technical Specifications. All parties shall:

1. Follow the Commissioning Plan.

2. Attend commissioning meetings.

B. Contractor, its design team, subcontractors and vendors shall assign representatives with expertise and authority to act on their behalf and schedule them to participate in and perform required commissioning activities including, but not limited to, providing all tools, or the use of tools, to start, check-out and test equipment and systems, except for specified testing with portable data recorders which shall be supplied and installed by the CxSP. Contractor and subcontractors shall:

1. Facilitate coordination of Commissioning.

2. Incorporate Commissioning activities (the CxP) into the Project Schedule.

3. Coordinate and direct Commissioning activities in a logical, sequential and efficient manner using consistent protocols and forms, centralized documentation, clear and regular communications and consultations with all necessary parties, frequently updated timelines and schedules and technical expertise.

4. Participate in up to three meetings specifically for Commissioning-related items as scheduled by the OAR.

5. Review and accept construction checklists developed by the CxSP.

6. Provide information required to perform commissioning tasks, including O&M materials, contractor startup and checkout lists.

7. No later than 60 days prior to startup of the first piece of major equipment, meet with the CxSP and OAR to finalize the detailed commissioning procedures and schedule.

8. Before startup, provide detailed startup procedures including current control sequences and interlocks to comply with the detailed functional test plans.

9. Provide one additional copy of all submittals required in Section 01 3300 for all systems being commissioned for review of compliance with commissioning needs by the CxSP.

10. Develop and coordinate a startup and initial systems checkout plan with subcontractors and ensure that all subcontractors and vendors execute their commissioning responsibilities according to the contract documents.

11. Review TAB execution plan.

12. Oversee sufficient testing of the control system before TAB is executed.

13. Evaluate performance deficiencies identified in test reports and, in collaboration with entity responsible for system and equipment installation, recommend corrective action.

14. Coordinate retesting as necessary until satisfactory performance is achieved

15. Complete checklists as work is completed and provide to OAR on a weekly basis.

16. Review equipment warranties to ensure that the owner’s responsibilities to keep warranties in force are clearly defined.

17. Oversee and coordinate the training of the owner’s personnel.

18. Review and approve the preparation of the O&M manuals including clarifying and updating of original sequences of operation to as-built/as-tested conditions.

19. Coordinate development of a systems manual

1.08 SYSTEMS TO BE COMMISSIONED

A. Systems to be commissioned for this project include, but are not limited to, those for which Specifications are included in Contract Documents and as listed in:

1. Section 23 0800, Article 1.06 - Equipment And Systems To Be Commissioned.

2. Section 23 0813.

3. Section 26 0800, Paragraph 3.01.B.

PART 2 – PRODUCTS

2.01 TEST EQUIPMENT

A. Standard testing equipment required to perform startup and initial checkout and required performance testing shall be provided by the contractor for the equipment being tested. This includes, but is not limited to, two-way radios and meters, etc. Testing specified as requiring portable data recorders will be performed with data recorders supplied and installed by the CxSP.

B. Testing equipment shall be of sufficient quality and accuracy to test and/or measure system performance within the tolerances specified in the specifications. If not otherwise noted, the following minimum requirements apply: Temperature sensors and digital thermometers shall have a current certified calibration to an accuracy of 0.5 degree F and a resolution of plus or minus 0.1 degree F. Pressure sensors shall have an accuracy of plus or minus 2.0 percent of the value range being measured (not full range of meter) and have been calibrated within the last year. All equipment shall be calibrated according to the manufacturer's recommended intervals and when dropped or damaged. Calibration tags shall be affixed or certificates readily available.

PART 3 – EXECUTION

3.01 MEETINGS

A. Commissioning Kick-off Meeting: Within 15 days following issuance of Notice-to-Proceed 1 (NTP 1), the OAR will schedule a Construction Quality Control kick-off meeting. The INSPECTOR, Cx team and Contractor Quality Control representative will be in attendance. CxSP shall prepare and distribute a list of commissioning topics to be placed on the meeting agenda. Attendance at this meeting and participation in the Commissioning topics is mandatory for the following Contractor personnel:

1. Contractor's Quality Control Engineer and Commissioning Representative.

2. Contractor's Project Scheduling personnel.

3. Mechanical Subcontractors.

4. Electrical Subcontractors.

5. TAB Subcontractor.

6. Controls Subcontractors.

B. Other Commissioning Meetings. Other Cx meetings will routinely be scheduled and generally be conducted in conjunction with regularly scheduled site meetings as the Construction progresses. The Commissioning portion of meetings will cover upcoming implementation and coordination of the CxP, deficiency resolution, and planning issues with particular subcontractors.

3.02 STARTUP, CONSTRUCTION CHECKLISTS, AND INITIAL CHECKOUT

A. The following procedures apply to all equipment/systems to be commissioned:

1. General: Contractor shall use PECs to verify that the equipment and systems are fully connected and operational. PECs for a given system must be successfully completed and accepted prior to startup and formal performance testing of equipment or subsystems of the given system.

2. Startup and Checkout Plan: The CxSP will assist the project commissioning team members responsible for startup of any equipment. The primary role of the CxSP in this process is to ensure that there is written documentation and that each of the manufacturer-recommended procedures has been completed. The CxSP shall provide all the required pre-functional checklists and forms to be completed by Contractor in the CxP. The CxSP will ensure that the INSPECTOR and/or District Special Inspectors are informed as to the planned and scheduled startup and checkout procedures.

a. Sample Pre-Functional checklists are provided as an attachment to the CxP. These checklists indicate required procedures to be executed prior to equipment startup.

b. Contractor shall determine which trade is responsible for executing and documenting each of the line item tasks and transmit the checklists to the responsible subcontractors. Each form may have more than one trade responsible for its execution.

c. The contractor/subcontractor responsible for the purchase and/or installation of the equipment shall develop a comprehensive startup plan (with assistance from the CxSP) by combining the manufacturer's detailed startup and checkout procedures and the pre-functional checklists.

d. The contractor/subcontractor shall submit the full startup plan to the CxSP for review and approval.

e. INSPECTOR will review and accept, based on CxSP recommendation, the procedures and the documentation format for reporting. The CxSP will return the procedures and the documentation format to Contractor through the OAR.

f. Contractor shall transmit the full startup plan to the subcontractors for their review and use.

B. Sensor and Actuator Calibration. All field-installed temperature, relative humidity, CO, CO_2, refrigerant, O_2, and/or pressure sensors and gages, and all actuators (dampers and valves) on all equipment shall be calibrated. Verify that all locations are appropriate and away from causes of erratic operation. Submit to the CxSP through the OAR the calibration methods and results. All test instruments shall have had a current certified calibration record. Sensors installed in the unit at the factory with calibration certification provided need not be field calibrated. Contractor to field verify all installed sensors.

1. Sensor Calibration Methods:

a. All Sensors: Verify that all sensor locations are appropriate and away from causes of erratic operation. Verify that sensors with shielded cable are grounded only at one end. For sensor pairs that are used to determine a temperature or pressure difference, make sure they are reading within 0.2 degrees F of each other for temperature and within a tolerance equal to 2 percent of the reading of each other for pressure.

b. Sensors Without Transmitters: Standard Application. Make a reading with a calibrated test instrument within 6 inches of the site sensor. Verify that the sensor reading (via the permanent thermostat, gage or building automation system (BAS)) is within the tolerances in the table below of the instrument-measured value. If not, install offset in BAS, calibrate or replace sensor.

c. Sensors With Transmitters: Standard Application. Make a reading with a calibrated test instrument within 6 inches of the site sensor. Verify that the sensor reading (via the permanent thermostat, gage or building automation system (BAS)) is within the tolerances in the table below of the instrument-measured value. If not, install offset in BAS and calibrate or replace sensor.

2. Tolerances, Standard Applications:

Sensor	Required Tolerance (+/-)
Cooling coil, chilled and condenser water temps	0.4F

AHU wet bulb or dew point	2.0F
Hot water coil and boiler water temp	1.5F
Outside air, space air, duct air temps	0.4F
Watthour, voltage & amperage	1 percent of design
Pressures, air, water and gas	3 percent of design
Flow rates, air, water	10 percent of design
Flow rates, water Relative humidity	4 percent of design
Combustion flue temps	5.0F
Oxygen or CO_2 monitor	0.1 percent pts
CO monitor	0.01 percent pts
Natural gas and oil flow rate	1 percent of design
Barometric pressure	0.1 inch of Hg

3. Valve and Damper Stroke Setup and Check EMS Readout: For all valve and damper actuator positions checked, verify the actual position against the BAS readout. Set pumps or fans to normal operating mode. With the command calve and damper closed, visually verify that the command valve or damper is closed and adjust output zero signal as required. With the command valve or damper open, visually verify that the position is full open and adjust output signal as required. Set command valve or damper to a few intermediate positions. If actual valve or damper position doesn't reasonably correspond, repair or replace actuator.

4. Closure for heating coil valves (NO): Set heating set point 20 degrees F above room temperature. Visually observe valve open. Set heating set point to 20 degrees F below room temperature. Visually observe the valve close. Restore to normal.

5. Closure for cooling coil valves (NC): Set cooling set point 20 degrees F above room temperature. Visually observe the valve close. Set cooling set point to 20°F below room temperature. Visually observe valve open. Restore to normal.

C. Execution of Construction Checklists and Startup:

1. Four weeks prior to the scheduled startup, Contractor shall coordinate startup and checkout with the INSPECTOR and CxSP. The execution and approval of the PECs, startup, and checkout shall be directed and performed by Contractor, subcontractor or vendor. Signatures are required of the applicable subcontractors for verification of completion of their work.

2. The INSPECTOR shall observe, as a minimum, the procedures performed for each piece of primary equipment, unless there are multiple units; in which case a sampling strategy may be used. The CxSP shall observe all testing.

3. For lower-level components of equipment, (e.g., sensors, controllers), the CxSP shall observe a sampling of the startup procedures.

4. Pre-functional checklist documentation, identified in the CxP, is to be used by the sub-contractor to document that equipment is ready for startup.

5. The subcontractors and vendors shall execute startup and provide the CxSP, through the OAR, with a signed and dated copy of the completed startup and construction checklists.

6. Only individuals of the contractor or sub-contractor (technicians, engineers, manufacturer's representatives/vendors, supervisors, etc.) who have direct knowledge and have witnessed that a line item task on the construction checklist was actually performed shall check off that item.

D. Deficiencies, Non-Conformance, and Approval in Checklists and Startup (Issues Log):

1. The contractor shall ensure that the subcontractors clearly list any outstanding items of the initial startup and construction checklist procedures that were not completed successfully, on an attached sheet. The form and any outstanding deficiencies shall be provided, through the INSPECTOR, to the CxSP within two days of test completion.

2. The CxSP will review the report and issue either a non-compliance report or acceptance form, through the INSPECTOR, to Contractor. The installing subcontractors or vendors shall correct all areas that are deficient or incomplete in the checklists and tests in a timely manner, shall notify the INSPECTOR as soon as outstanding items have been corrected, and resubmit an updated startup report with a Statement of Correction on the original non-compliance report. When satisfactorily completed, the CxSP will recommend approval of the execution of the checklists and startup of each system.

3. Items left incomplete, which later cause deficiencies or delays during performance testing, may result in assessments to Contractor. Refer to Paragraph 3.05, herein, for details.

3.03 GENERAL REQUIREMENTS FOR TESTING

A. Complete the following at least two weeks prior to Functional Performance Testing:

1. Arrange for Commissioning observations to be performed by the CxSP.

2. Completion and acceptance of the Start-up Plan by the CxSP.

3. Correction of deficiencies identified during start-up.

4. Recording of pretest set points.

3.04 FUNCTIONAL PERFORMANCE TESTING (FTP)

A. Undertake functional testing after the testing requirements listed in Paragraph 3.02 are completed.

B. Equipment: Refer to Part 2 of this Section for test equipment requirements.

C. Perform FPT under the observation of the CxSP who will verify the results of the functional test procedures documented by Contractor.

D. Perform all specified tests according to approved testing procedures / plan.

1. Verify and test performance using actual conditions whenever possible.

2. Simulate conditions when it is not practical to test under actual conditions or when required seasonal testing conditions are not present. The procedure to be used shall be submitted to the OAR for INSPECTOR and CxSP review and acceptance at least one week before simulated testing is to occur. After test, return settings to normal operating conditions.

3. Alter set points when simulating conditions is not practical and when written approval to do so is received from OAR.

4. Override sensor values with a signal generator when actual or simulated conditions and altering set points are not practical. Do not use the sensor to act as the signal generator to simulate conditions or override values.

E. Functional Performance Testing (FPT) Documentation: This Section specifies the general description of the minimum Divisions 22, 23 and 26 Functional Performance Testing documentation requirements that the Contractor shall provide. The CxSP will develop testing procedures in accordance to the requirements of this Section and incorporate into the Cx Plan that Contractor must follow and document. The testing documentation must include the following information:

1. Test number.

2. Date and time of the test.

3. Indication of whether the record is for a first test or retest following correction of a problem or issue.

4. Identification of the system, subsystem, assembly, or equipment.

5. Conditions under which the test was conducted, including (as applicable) ambient conditions, set points, override conditions, and status and operating conditions that impact the results of the test.

6. Expected performance of the systems and assemblies at each step of the test.

7. Narrative description of observed performance of the system, equipment, or assembly.

8. Notation to indicate whether the observed performance at each step meets the expected results.

9. Issue number, if any, generated as the result of the test.

10. Dated signatures of the person performing the test and a witness.

F. The CxSP and INSPECTOR will review and OAR, if applicable, accept functional testing results. Deficiencies found during testing shall be submitted to the OAR and, if required, based on the recommendation of INSPECTOR, by the OAR, corrected by the Contractor and retested. Where there is a dispute over a deficiency, OAR, based on the recommendation of ARCHITECT and INSPECTOR, shall be the final authority.

G. Problem Solving: The burden of responsibility to solve, correct and retest problems is with the Contractor and the design team with OAR, based on the recommendations of the ARCHITECT, CxSP and INSPECTOR, having final responsibility for acceptance of the Work.

H. Substantial Completion: All testing, retesting, and acceptance of Functional Performance Testing shall be completed prior to issuing the Certificate of Substantial Completion. FPT may be conducted following building occupancy; however, all associated and reasonable additional costs incurred by the CxSP shall be assessed against Contractor Retention or Withhold funds.

I. Deficiencies in the Cx Plan Functional Performance Test Checklist: If there is any Functional Performance Test Checklist missing for any particular piece of equipment, the Contractor shall inform the CxSP and ask for an updated Functional Performance Test Checklist.

3.05 RETESTING

A. Retesting shall be required when a specific Pre-functional Checklist or Start-up test item, reported to have been successfully completed by Contractor or determined during functional testing to be faulty or incomplete, is identified.

B. Contractor shall be provided one retest opportunity at no additional cost when Contractor can make corrections within two hours of identification of the need to retest. Costs for retesting beyond one retest, or when Contractor cannot make corrections within two hours of identification of the need to retest, will be assessed against Contractor funds if OAR determines, based upon the recommendation of the INSPECTOR and CxSP, that the Contractor is responsible for the deficiency. These costs shall include all reasonable expenses incurred by the CxSP.

C. For a deficiency identified during functional testing, but not included in the approved Start-up Plan, OAR will direct retesting of the equipment with no costs assessed against Contractor for this initial retesting. Costs for retesting, when Contractor cannot effect corrections within two hours of identification of the need to retest, will be assessed against Contractor funds if OAR determines, based upon the recommendation of the INSPECTOR and CxSP, that the Contractor is responsible for the deficiency. These costs shall include all reasonable expenses incurred by the CxSP.

D. Retesting shall not be considered a reason for a claim of delay or for a time extension by the Contractor.

3.06 DEFERRED TESTING

A Unforeseen Deferred Tests: Checks or tests not completed due to the incomplete Work, required occupancy conditions, or other conditions may be delayed upon approval of the OAR based upon the recommendation of the INSPECTOR and CxSP. These tests may be conducted in the same manner as the seasonal tests.

B. Seasonal Testing: Complete seasonal testing, when weather or other testing conditions do not emulate the system's design conditions, employing simulated conditions acceptable to OAR based upon the recommendation of the INSPECTOR and CxSP. The OAR will coordinate with Contractor, and CxSP validate, this activity. Tests shall be executed, documented and deficiencies corrected by the Contractor, with the INSPECTOR and the CxSP witnessing. The Contractor shall make adjustments to the Operations and Maintenance Data, as necessary.

3.07 DOCUMENT REVIEW

A. General: See paragraph 1.06 for submittal requirements.

B. Operations and Maintenance Manuals: Refer to Section 01 7900 for specific requirements.

3.08 OPERATOR TRAINING

A. The CxSP, under the direction of the OAR, coordinates and verifies training completion as shown in Section 01 7900. Forms and procedures are also described in the CxP.

END OF SECTION

SECTION 02 2600

ABATEMENT OF HAZARDOUS MATERIALS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Abatement of hazardous materials identified in the Hazardous Materials Phase I Assessment Report, except for underground storage tanks, contaminated soil or groundwater. Furnish labor, materials, supplies, and incidentals required, protect Project site personnel and the surrounding public from exposure to potentially hazardous substances, and prevent the spread of potentially contaminated or hazardous substances.

2. The furnishing of labor, supervision, materials, equipment, tools, permits, manifesting, and services required in the characterization, transportation, and disposal of identified or suspected hazardous substances. The suspect substance may be in drums, containers, stockpiled, or may exist as debris piles on the Project site.

B. Related Requirements:

1. Section 00 3126 - OWNER'S List of Pre-qualified Asbestos Abatement Subcontractors

2. Division 01 - General Requirements.

3. Section 02 4116 - Demolition

4. Section 02 8213 - Asbestos Abatement

5. Section 02 8223 – Removal of Asbestos Containing Asphalt.

6. Section 02 8333 - Lead Abatement and Lead Related Construction Work.

7. Section 02 8400 – Polychlorinated Biphenyl Remediation.

C. Regulatory Requirements shall include, but not be limited to: Comply with laws, ordinances, codes, rules, and regulations of the Federal, State and local authorities having jurisdiction over any of the Work specified herein. Comply with federal EPA and state Department of Transportation regulations for shipping of hazardous substances to offsite disposal facilities. Comply with regulatory requirements imposed by the treatment, storage, and disposal facility. Regulations pertaining to the transport and disposal of hazardous substances/materials include, but are not limited to, the following:

1. Department of Transportation 49 CFR 172 through 179.

2. Department of Transportation 49 CFR 387 (46 FR 30974, 47073).

3. Department of Transportation DOT-E 8876.

4. Environmental Protection Agency 40 CFR 136 (41 FR 52779).

5. Environmental Protection Agency 40 CFR 261, 262 and 761.

6. Resource Conservation and Recovery Act (RCRA).

D. Any transporter of hazardous substances shall be licensed in the state in which handling and transportation will take place in accordance with applicable regulations.

E. Comply with OSHA (Occupational Safety and Health Administration) Standards and Regulations contained in Title 29 Code of Federal Regulations, Part 1910.120 "Hazardous Waste Operations and Emergency Response."

F. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.02 QUALITY ASSURANCE

A. The Work of this Section shall be performed by an entity possessing the following minimum qualifications:

1. Contractors License in the state where the Work is performed, supplemented by a Hazardous Waste specialty license, where applicable (i.e., California).

2. MCS 90 Endorsement on Liability Insurance.

3. Pollution Liability Insurance in the amount of $2,000,000 occurrence.

4. Forty-hour OSHA Training and site-specific health and safety plan for its employees proposed to work at the Project site as defined in 29 CFR 1910.120.

5. A Comprehensive Quality Assurance Plan on file with the California Environmental Protection Agency.

6. Project site personnel shall wear personal protective equipment and protective clothing consistent with the levels of protection required for this Work as specified by OSHA (29 CFR Part 1910.120).

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 ABATEMENT OF HAZARDOUS MATERIALS

A. Abate hazardous materials including hazardous materials identified in the Phase I Assessment Report.

B. The Work of this section does not include the removal of underground storage tanks, contaminated soil or groundwater, unless specifically authorized in writing by the OAR.

3.02 CONTAINMENT OF RELEASED SUBSTANCES

A. If a hazardous material appears to be leaking or otherwise spreading, contain the release of the material. Provide measures to prevent the release of the material to the environment and protect Project site personnel, adjacent properties and occupants, and the general public from potential exposure.

B. During the course of substance containment or evacuation of Project site personnel, protect personnel (onsite workers, non-workers, or the general public) from contact with or exposure to the released substances.

C. The abatement or evaluation of any suspected hazardous material shall only be performed by properly trained and/or certified personnel.

3.03 HEALTH AND SAFETY

A. In an emergency or imminent hazard situation the health and safety of personnel on or near the Project site are the responsibility of the Work of this section. Immediately notify the Owner office of Environmental Health and Safety (OEHS) and the OAR designated representative of the Owner Consultant. Owner representatives will notify Federal, State and Local regulatory authorities, if required.

B. Project site personnel or members of the general public who have been exposed to or have come in contact with any hazardous materials or chemicals shall be immediately transported to the nearest hospital.

3.04 TESTING, TRANSPORT, AND DISPOSAL OF HAZARDOUS SUBSTANCES

A. Collect one composite sample from each media type (solid, liquid, or sludge) of potentially hazardous substance stored in drums, stockpiled, or otherwise identified at the Project site for the purposes of obtaining approvals for proper transport and disposal of the suspect materials. Submit analytical results to a representative of the Owner Consultant, as designated by the OAR.

B. If required, overpack any leaking or deteriorated drums to prevent leaks or spills, and pack small 5-gallon containers into larger new 55-gallon drums. Cover solid

waste materials and stockpiled soils with an HDPE liner to prevent storm water runoff from contaminating surrounding areas.

C. Prepare manifests, material profiles, and submit lab analysis for drums/containers and any other documentation required by the receiving facility for signature by a representative of the Owner Consultant and/or Owner, as designated by the OAR. Copies of waste profiles, manifests, and disposal documentation shall be submitted to the OAR designated representative of the Owner, prior to disposal and/or transporting of hazardous substances.

D. Coordinate waste sampling and analysis requirements with the disposal facility and properly complete profiling and transport documents prior to loading and transport.

E. A State registered "Hazardous Waste Hauler" shall transport the waste to a lawfully permitted and Owner approved facility.

F. Prior to transport, a copy of the hazardous waste manifest shall be transmitted by facsimile, through the Project site Owner Consultant, to the Owner Office of Environmental Health and Safety (OEHS) for review and approval. The manifests shall list the generator's name as "Los Angeles Unified School District" and the mailing address as "1449 S. San Pedro Street, Los Angeles, CA 90015". The OAR designated representative of the Owner Consultant shall provide the Project site specific generator's EPA ID # which shall be included on the manifest. Attach the land disposal restriction (LDR) form to the manifest prior to submission to the Owner office of OEHS. The blue and yellow manifest copies and a copy of the LDR form shall be mailed to the Owner office of OEHS at 1449 S. San Pedro Street, Los Angeles CA 90015. Other copies of the manifest and LDR shall be submitted to the waste transporter.

G. Load, handle, and transport 55-gallon drums and other waste containers to the appropriate disposal facility in accordance with Federal and State regulations.

H. Transport documentation from the receiving facility verifying acceptance and receipt of drums/containers at the facility and sampling and associated test results shall be submitted to the representative of the Owner Consultant, as designated by the OAR, within fifteen days following receipt of hazardous substances to the disposal facility.

I. Materials identified as hazardous wastes under RCRA are not permitted to remain at the Project site more than 30 days after being deemed to be a hazardous waste. During this period of Project site storage, provide precautions to contain and prevent the release of hazardous or potentially hazardous materials to the environment.

END OF SECTION

SECTION 02 4116

DEMOLITION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Furnishing labor, materials and equipment necessary for demolition, dismantling, cutting and alterations as indicated, specified, or required for completion of the Work. Includes items such as the following:

1. Protection of existing improvements to remain.
2. Cleaning existing improvements to remain.
3. Disconnecting and capping utilities.
4. Removing debris, waste materials, and equipment.
5. Removal of items for performance of the Work.
6. Salvageable items to be retained by the Owner.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 01 1100 - Summary of Work.
3. Section 01 5000 - Construction Facilities and Temporary Controls.
4. Section 01 7329 - Cutting and Patching.
5. Section 01 7419 - Construction and Demolition Waste Management.
6. Division 22 –- Plumbing.
7. Division 23 –- HVAC.
8. Division 26 –- Electrical.

1.02 SUBMITTALS

A. Shop Drawings: Submit Shop Drawings indicating the extent of items and systems to be removed. Indicate items to be salvaged or items to be protected during demolition. Indicate locations of utility terminations and the extent of abandoned lines to be removed. Include details indicating methods and location of utility terminations.

1.03 QUALITY ASSURANCE

A. Perform the Work of this section by workers skilled in the demolition of buildings and structures. Perform the Work of this section under direct superintendence at all times.

B. Prior to commencement of Work, schedule a walkthrough with the OAR, to confirm Owner property items have been removed from scheduled Work areas. Identify and mark remaining property items and schedule their removal.

C. Coordinate demolition for the correct sequence, limits, and methods. Schedule demolition Work to create least possible inconvenience to the public and facility operations.

D. Related Standard: ANSI/ASSE A10.6.

1.04 PROJECT CONDITIONS

A. Drawings may not indicate in detail all demolition Work to be performed. Examine existing conditions to determine the full extent of required demolition.

B. Repair damage to existing improvements or damage due to excessive demolition.

C. Provide all measures to avoid excessive damage from inadequate or improper means and methods, improper shoring, bracing or support.

D. If conditions are encountered that varies from those indicated, promptly notify the Architect for clarification before proceeding.

PART 2 - PRODUCTS

2.01 HANDLING OF MATERIALS

A. Items scheduled for salvage by the Owner shall be delivered to a location designated by the OAR. Items shall be cleaned, packaged and labeled for storage.

B. Items scheduled for reuse shall be stored on the Project site and protected from damage, theft and other deleterious conditions.

PART 3 - EXECUTION

3.01 GENERAL

A. Protection:

1. Do not commence demolition until safety partitions, barricades, warning signs and other forms of protection are installed. Refer to Section 01 5000 - Construction Facilities and Temporary Controls.

2. Provide safeguards, including warning signs, lights and barricades, for protection of workers, occupants, and the public.

B. If safety of existing construction appears to be endangered, take immediate measures to correct such conditions; cease operations and immediately notify the OAR.

3.02 DEMOLITION

A. Do not throw or drop materials. Furnish ramps or chutes as required by the Work.

B. Remove existing construction only to extent necessary for proper installation of Work and interfacing with existing construction. Cut back finished surfaces to straight, plumb or level lines as required for a smooth transition.

C. Where openings are cut oversize or in improper locations, replace or repair to required condition.

3.03 CUTTING EXISTING CONCRETE

A. Cutting of existing concrete shall be performed by skilled workers familiar with the requirements and space necessary for placing concrete. Perform concrete cutting with concrete cutting wheels and hand chisels. Do not damage concrete intended to remain.

B. Extent of cutting of structural concrete shall be as indicated on Drawings. Cutting of non-structural concrete shall be as indicated on Drawings or as reviewed by the Architect or structural engineer. Replace concrete demolished in excess of amounts indicated.

C. Prior to cutting or coring concrete, determine locations of hidden utilities or other existing improvements and provide necessary measures to protect them from damage.

3.04 REMOVAL OF EXISTING PLUMBING AND ELECTRICAL EQUIPMENT AND SERVICES

A. Remove existing plumbing and electrical equipment fixtures and services not indicated for reuse and not necessary for completion of the Work. Remove abandoned lines and cap unused portions of existing lines.

3.05 REMOVAL OF OTHER MATERIALS

A. Masonry: Cut back to joint lines and remove mortar without damaging units to remain. Allow space for repairs to backing where applicable.

B. Woodwork: Cut or remove to a joint or panel line.

C. Roofing: Remove as required, including accessory components such as insulation and flashings. At penetrations through existing roofing, trim cut edges back to sound roofing with openings restricted to the minimum size necessary to receive Work.

D. Sheet Metal: Remove back to joint, lap, or connection. Secure loose and unfastened ends or edges and provide a watertight condition. Re-seal as required.

E. Glass: Remove broken or damaged glass and clean rebates and stops of glazing channels.

F. Modular materials such as acoustical ceiling panels, resilient tile, or ceramic tile: Remove to a natural joint without leaving damaged or defective Work where joining

new Work. After flooring removal, clean substrates to remove setting materials and adhesives.

G. Gypsum Board: Remove to a panel joint line on a stud or support line.

H. Plaster: Saw cut plaster on straight lines, leaving a minimum 2-inch width of firmly attached metal lath for installing new lath and plaster.

I. Remove existing improvements not specifically indicated or required but necessary to perform Work. Cut to clean lines, allowing for installation of Work.

3.06 PATCHING

A. Patch or repair materials to remain when damaged by the performance of the Work of this section. Finish material and appearance of patch and/or repair Work shall match existing.

3.07 CLEANING

A. Clean existing materials to remain with appropriate tools and equipment.

B. Protect existing improvements during cleaning operations.

C. Debris shall be dampened by fog water spray prior to transporting by truck.

D. Debris pick-up area shall be kept broom-clean and shall be washed daily with clean water.

E. Remove waste and debris, other than items to be salvaged. Turn over salvaged items to Owner, or store and protect for reuse where required. Continuously clean up and remove items as demolition Work progresses.

F. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 02 8213

ASBESTOS ABATEMENT AND ASBESTOS RELATED DISTURBANCE

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. Abatement of building and/or structure related Asbestos.

2. Removal of building and/or structure related Asbestos.

3. Disturbance of building and/or structure related Asbestos.

B. Related Requirements:

1. Division 01 - General Requirements.

2. U.S. Environmental Protection Agency Regulations for Asbestos (Title 40, Code of Federal Regulations, Part 61, Subparts A and B, and Part 763, Subpart E.)

3. Title 8, Article 4, California Code of Regulations Construction Industry Safety Orders, Section 1529 "Asbestos" or current revised California regulations.

4. South Coast Air Quality Management District (SCAQMD) Rule 1403.

1.02 SECTION DEFINITIONS AND ACRONYMS

A. Abatement – Procedures to control fiber release from Asbestos Containing Materials or Asbestos Containing Construction Materials. Includes Removal, Encapsulation, Enclosures, Repair, Demolition, and Renovation activities but does not include Asbestos Related Disturbance.

B. AHERA - Asbestos Hazard Emergency Response Act, 40 CFR, Part 763, Subpart E, and subsequent amendments.

C. Air Filtration and Ventilation System - A portable exhaust system, equipped with HEPA filtration, and capable of maintaining a constant air flow into a Regulated Area from adjacent areas and exhausted outside the Regulated Area.

D. Amended Water - Water to which a surfactant (wetting agent) has been added.

E. ANSI - American National Standards Institute.

F. Asbestos - Means the asbestiform varieties of chrysotile (Serpentine); crocidolite (Riebecktite); amosite (cummingtonitegrunerite); anthophyllite; tremolite; and actinolite.

G. Asbestos Containing Construction Material (ACCM) – Means any manufactured construction material which contains more than one tenth of one percent (0.1 percent) Asbestos by weight.

H. Asbestos Containing Material (ACM) – Means any material containing more than one-percent (1 percent) Asbestos.

I. Asbestos Containing Waste (Non-hazardous) – Non-Friable Asbestos Containing Material including, but not limited to, floor covering, roofing materials and cementitious materials requiring disposal.

J. Asbestos Containing Waste (Hazardous) – Friable Asbestos Containing Materials and Asbestos contaminated objects and debris requiring disposal.

K. Asbestos Related Disturbance – is the drilling, coring, removal or similar disturbance of ACCM or ACM not to exceed three square feet in any one opening and not to disturb 100 square feet or greater cumulatively on any one project (contract).

L. ASTM - American Society for Testing and Materials.

M. Building ID Number or Code - A six digit alphanumeric identification code assigned to each building on an Owner site, also referred to as the insurance code, ID number or similar terms.

N. Bulk Samples - Samples of building or other materials collected for analysis to determine the presence and quantities of Asbestos.

O. Class I, II, III, and IV asbestos work has the meaning as defined in California Code of Regulations Title 8, Section 1529.

P. Clean Room - An uncontaminated area or room, which is a part of the worker Decontamination Enclosure System with provisions for storage of worker's street clothes and clean protective equipment.

Q. Competent Person - Has the same meaning as defined in the California Code of Regulations Title 8, as it relates to, "Competent Person."

R. Controlled Disturbance – An activity by which a contractor disturbs an asbestos containing material or an asbestos containing construction material using the work practices allowed for in this specification and in compliance with regulatory limitations.

S. Curtained Doorway – A device to allow ingress and egress from one room to another while permitting minimal air movement between the rooms, typically constructed by placing two overlapping sheets of plastic over an exiting or temporarily framed doorway,

securing each along the top of the doorway, securing the vertical edge of one sheet along one vertical side of the doorway and securing the vertical edge of the other sheet along the opposite vertical side of the doorway. Other effective designs may be submitted for review.

T. Decontamination – The process of eliminating Asbestos contamination from building surfaces, objects, and property, by cloths, mops, or other utensils dampened with water and disposed of afterwards as Asbestos contaminated waste.

U. Decontamination Enclosure System – Means an enclosed area, which is adjacent and connected to the Regulated Area, consisting of an Equipment Room, Shower Room, and Clean Room for the Decontamination of workers, materials, and equipment contaminated with Asbestos.

V. Demolition - The wrecking or taking out of any load supporting structural member of a facility together with any related handling operations.

W. DOSH - Division of Occupational Safety & Health or Cal/OSHA.

X. DOT – Department of Transportation.

Y. DTSC – Department of Toxic Substances Control.

Z. Encapsulating Material - A liquid material applied to Asbestos Containing Materials which controls the possible release of Asbestos fibers from the material either by creating a membrane over the surface (bridging agent) or by penetrating into the material and binding its components together (penetrating Encapsulating Material).

AA. Encapsulation - The application of an Encapsulating Material to Asbestos Containing Materials to prevent the release of Asbestos fibers into the air.

BB. Enclosure - The construction or application of an airtight, impermeable, permanent barrier around Asbestos Containing Material to control the release of Asbestos fibers into the air.

CC. Equipment Room - A room within the worker Decontamination Enclosure System with provisions for storage of used clothing and equipment and for controlled transfer of materials and equipment into and out of the regulated area.

DD. Facility Component – Means any part of a facility including equipment.

EE. FETU - Facilities Environmental Technical Unit.

FF. Fixed Object - A piece of equipment, furniture, or improvement in the Work area, which cannot be removed from the Work area.

GG. Friable Asbestos - Asbestos Containing Material which, when dry, can be crumbled, pulverized or reduced to a powder by hand pressure or as defined by current regulations.

HH. Glove Bag Technique - A method with limited applications for removing small amounts of Asbestos Containing Material from short piping runs, valves, joints, elbows, and other non-planar surfaces in a Work area. The glove bag assembly is a manufactured or fabricated device consisting of a glove bag (typically constructed of 6 mil transparent polyethylene or polyvinyl chloride plastic), two inward projecting long sleeves gloves, an internal tool pouch, and labeled for Asbestos waste. The glove bag is constructed and installed in such a manner that it surrounds the object or material to be removed and contains asbestos fibers released during the process. Workers who are permitted to perform the Glove Bag Technique shall be thoroughly trained, experienced, and skilled in this method.

II. Hazardous Waste - Means Friable Asbestos generated and prepared for waste disposal. Does not include non-friable material or materials containing one-percent or less of Asbestos as determined by PLM and/or the point counting method.

JJ. HEPA Filter - Means a filtering system capable of trapping and retaining at least 99.97 percent of mono-dispersed particles 0.3 microns in diameter or larger. For respirators this shall include NIOSH rated P-100 cartridges only.

KK. HEPA Vacuum - A vacuum system furnished with HEPA filtration.

LL. High Volume Vacuum - A vacuum system with the capacity to collect material through a four inch diameter hose a minimum distance of 150 feet. This system shall be furnished with HEPA Filter at the air exhaust port and water applicators within the hopper.

MM. HVAC – Heating, Ventilation, and Air Conditioning System.

NN. Location Code - Refers to a unique four digit numeric code assigned by the Owner to each of its Project sites.

OO. Lockdown Coat – A material applied to surfaces where Asbestos has been completely removed. The manufacturer shall determine the concentration of this material.

PP. Member – A component part of a structure complete in itself.

QQ. Movable Object - A portable piece of equipment or furniture in the Work area, which can be removed from the Work area.

RR. NESHAP - National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61).

SS. NIOSH - National Institute for Occupational Safety and Health.

TT. Outside Air - Air outside of buildings and structures.

UU. Owner Consultant (OC) - Refers to the firm, company or individual designated by the Owner.

VV. PCM - Phase Contrast Microscopy as it relates to clearance air, personnel exposure assessment, and ambient air monitoring. This procedure must follow the NIOSH Method 7400, Asbestos Fibers by PCM.

WW. PLM - Polarized Light Microscopy used for bulk sample analysis with dispersion staining for the determination and quantifying of Asbestos in Bulk Samples building materials.

XX. Regulated Area - Designated rooms, spaces or areas of the Project in which asbestos Abatement actions are to be performed or which may become contaminated as a result of Abatement activities. A contained Work area is a Work area, which has been sealed and furnished with a Decontamination Enclosure System. A non-contained Work area is an isolated or controlled access Work area, which has not been sealed or furnished with a Decontamination Enclosure System.

YY. Removal – Means operations where ACM and/or PACM is removed or stripped from structures or substrates including Demolition.

ZZ. Renovation – Means the modifying of any existing structure, facility, or portion thereof.

AAA. SCAQMD – South Coast Air Quality Management District.

BBB. Shower Room - A room between the Clean Room and the Equipment Room in the worker Decontamination Enclosure System furnished with hot and cold running water controllable at the tap, and suitably arranged for complete showering during Decontamination.

CCC. Small Scale Short Duration – Such work not to exceed amounts greater than those which can be contained in a single glove bag or may not exceed amounts which can be contained in a single prefabricated mini-enclosure. Such an enclosure shall conform spatially and geometrically to the localized work area, in order to perform its intended containment function, and as completely defined in 40CFR, 763, Subpart E, Appendix C.

DDD. Staging Area - Areas near the Waste Transfer Airlock where containerized Asbestos waste is temporarily placed prior to permanent removal from the Work area.

EEE. Surfactant - A chemical wetting agent added to water.

FFF. TEM - Transmission Electron Microscopy as defined for Asbestos clearance air monitoring within AHERA. This procedure must follow the NIOSH Method 7402, Asbestos Fibers by TEM.

GGG. TSI - Thermal System Insulation as defined in AHERA.

HHH. USEPA or EPA – United States Environmental Protection Agency.

III. Visible Emissions - Any emissions from a known or suspected Asbestos Containing Material that is visually discernible.

JJJ. Waste Transfer Airlock - A Decontamination system provided for transferring containerized waste from inside to outside of the Work area.

1.03 POLICIES AND PROCEDURES

A. The Owner has a zero tolerance policy for uncontrolled Asbestos releases during construction or Abatement Work. An Asbestos release requiring an emergency response is any uncontrolled release of Asbestos Containing Construction Materials. The Owner shall be immediately notified of such uncontrolled releases.

B. Pre-qualified Asbestos Abatement Subcontractors are not permitted to subcontract any Abatement work to a lower tier Subcontractor without the prior written approval of the Owner.

C. Where ACM is damaged or disturbed, except during Controlled Disturbance or Abatement, Work in that room shall cease, the room be vacated immediately, the Owner Consultant notified of the disturbance with corrective action provided as required by the Owner Consultant.

1.04 ROLES AND RESPONSIBILITIES

A. Roles and Functions:

1. Coordinate the Work of this section directly with the Owner and/or Owner Consultant.

2. Work under this section shall be performed in strict accordance with applicable Federal, State, and Local regulations, standards, and codes governing asbestos Abatement and any other Work performed in conjunction with the Asbestos Abatement Work.

3. The most recent edition of any relevant regulation, standard, document, or code is in effect. Where conflict among the requirements or with this Specification exists, the most stringent requirement shall be provided.

1.05 SITE SECURITY

A. The Work area shall be restricted to authorized, trained, and protected personnel. A list of authorized personnel shall be established by the Owner Consultant prior to commencement of the Work and posted at the entrance of the Regulated Area.

B. Report to the Owner Consultant any unauthorized entry into the Regulated Area. Following notification, a written report of the incident shall be provided to the Owner Consultant.

C. A logbook shall be maintained at the entrance of the Regulated Area. Persons entering the Regulated area shall record their name, company affiliation, time in, and time out for each entry and exit.

D. Access to the contained area shall be through the worker Decontamination Enclosure System or other room established when worker Decontamination Enclosure System is not required. Other means of access shall be blocked or locked to prevent entry to or exit from the Work area. The only exceptions are the waste pass-out airlock, which shall be sealed except during the Removal of containerized Asbestos waste from the Work area, and emergency exits in case of fire or accident. Emergency exits shall be operable from inside the Work area; however they shall be sealed with polyethylene sheeting and tape.

E. Maintain Regulated Area security during Abatement Work. Regulated Areas and ancillary equipment accessible to non-authorized personnel shall be protected from unauthorized access by constructing a minimum barrier of 3/8 inch CDX plywood supported by 2 by 4 studs, 16 inches on center. Height shall be as required to safely access Regulated Area. An access door shall be provided with hasp and padlock sufficient to prevent unauthorized entry. A key shall be provided to the Owner and Owner Consultant. Required barriers within an occupied building shall be furnished with sheathing as required by state and local fire protection regulations.

F. The protective barrier for a High Volume Vacuum shall be a minimum of eight feet in height. Barriers for these systems may be constructed of chain link type fencing instead of the specified barriers. Such fencing, if provided, shall be covered with an opaque covering resistant to environmental conditions. This barrier system shall be maintained at times while the enclosed equipment is on the Project site.

G. Unless otherwise specified, remove barriers upon completion of the Work of this section. Repair and/or replace to original condition, damage resulting from installation, use, and removal of the barriers.

1.06 EMERGENCY PLANNING

A. Emergency planning and procedures shall be developed, submitted, reviewed, and agreed to by the Owner prior to the commencement of Abatement Work.

B. Emergency procedures shall be provided in the written languages understood by employees working on the Project and shall be prominently posted at the entrance of the Decontamination Enclosure System. Prior to entering the Work area, parties must read and sign these procedures to acknowledge receipt and understanding of the Work site layout, location of emergency exits, and emergency procedures.

C. Emergency planning shall consider the effects of fire, explosion, toxic atmospheres, electrical hazards, slips, trips and falls, confined spaces, and heat related injury. Develop and provide written procedures and training to employees.

D. Employees shall be trained in evacuation procedures in the event of workplace emergencies.

E. In the event of non-life threatening situations requiring medical treatment, injured or otherwise incapacitated employees shall decontaminate following normal procedures with assistance from fellow workers if necessary, before exiting the Work area.

F. In the event of life threatening injury or illness requiring immediate medical treatment, worker Decontamination shall be given minimum priority. Provide measures to stabilize the injured worker, remove them from the Work area and secure proper medical treatment.

G. Telephone numbers of emergency response personnel shall be prominently posted at the entrance of the Decontamination Enclosure System along with the location of the nearest telephone. In addition to the 911 emergency number, post the address and telephone number of the nearest emergency medical services provider.

H. Provide at least one employee on the Project site at times during progress of Abatement work that is trained and certified in first aid and cardiopulmonary resuscitation (CPR). This employee shall be identified by name and proof of training shall be provided to the Owner Consultant prior to the commencement of the Work of this section.

I. Provide at least one 4A/60BC dry chemical extinguisher in the Equipment Room and one at each corner of contained areas in excess of 1,000 square feet. Workers shall be trained in the proper operation of fire extinguishers.

J. Emergency exits shall be provided and clearly marked with arrows or other clearly visible markings to permit easy identification from anywhere within the Work area. Exits shall be secured to prevent access from uncontaminated areas while still permitting emergency egress. Exits shall be properly sealed with polyethylene sheeting, which can be cut to permit emergency egress. Emergency exits may lead through the worker Decontamination Enclosure, the waste removal airlock or other alternative exits as required by fire officials.

1.07 LICENSING

A. The Work of this section shall be performed by an entity duly licensed in the State of California in accordance with the provisions of Chapter 9 of Division 3 of the Business and Professions Code, as amended. The Abatement work of this section shall be performed by an entity holding a license with an “ABS” Asbestos Certification as issued by the Contractors State License Board.

B. The entity performing the Work of this section, other than Asbestos Related Disturbance involving less than 100 square feet shall be registered with the Department of Industrial Relations in accordance with the provisions of Section 6501.5 of the California Labor Code.

1.08 ASBESTOS RELATED REQUIREMENTS

A. Qualifications:

1. Comply with the provisions of the California Labor Code, Division 5, Part 1, as it pertains to safety in employment and the applicable provisions of Title 8, Chapter 4, Subchapters 1 through 21, California Code of Regulations (CCR) as it pertains to Occupational Safety and Health, and Subchapter 7, Section 5208 Article 4, and Section 1529, Asbestos regulations.

2. Where Electrical Work is required in a Regulated Area this work shall be performed as required in Division 16 and personnel who enter a Contained and Regulated Class I and II Asbestos work area are required to possess a current EPA certification as an Asbestos worker. Personnel who enter a Class III Asbestos Related Disturbance work area shall require personnel trained in accordance with AHERA Operations and Maintenance training requirements.

B. Abatement Activities:

1. The Asbestos Abatement work shall be performed by persons who comply with applicable Federal, State, and local regulations including AHERA certified training.

2. Supply labor, materials, services, insurance, permits, and equipment necessary to perform the Work in accordance with applicable Federal, State, and Local regulations and this Specification.

3. For Class I asbestos work, collect pre-Abatement air samples. Results shall be submitted prior to commencement of the Work of this section. Include location of Samples, name of air sampling professional, equipment, and methods utilized for sampling and analysis.

4. Submit weekly job progress reports detailing Abatement activities for Projects with schedules that exceed thirty days of Abatement work. Include review of progress with respect to previously established Milestones and schedules, major problems and action taken, injury reports, equipment breakdown, and air sampling results.

5. Within five workdays of transport and/or disposal, submit copies of transport manifests, disposal receipts, and weight certificates for Asbestos waste removed from the Work area during the Abatement process. Weight certificates shall indicate in pounds the net weight of waste disposed from the Project site as indicated on the manifest.

6. Submit copies on a daily basis of the Work site entry logbooks.

7. Submit logs on a weekly basis documenting filter changes on respirators, HEPA Vacuums, HEPA Filtered ventilation units, water filtration units, and other approved engineering controls.

8. Submit results of materials testing conducted during Asbestos Abatement work for purposes of utilization during such activities. (i.e., depth test, substitution materials, etcetera).

9. Where Decontamination Enclosure System is required, post at the entrance a list containing the names, addresses, and telephone numbers of the entity performing the Work of this section, designated Competent Person, the Owner and/or Owner Consultant, the testing laboratory and any other personnel who may be required to access the Work area or perform services during the Abatement Work.

10. For employee review, post at the entry of the Work area a copy of the scope of Work, special conditions, the current standard Specifications, and the applicable prevailing wage.

C. Asbestos Related Disturbance:

1. The Asbestos Related Disturbance Work shall be performed by persons who comply with applicable Federal, State, and local regulations including AHERA certified training.

2. Within ten days of analysis, submit results of air sampling data collected for Cal/OSHA compliance air monitoring during the course of the Asbestos Related Disturbance (Class III asbestos work). If this data is used to discontinue use of employee protective equipment then the data shall be provided before discontinuing use of protective equipment.

3. Within five workdays of transport and/or disposal of Asbestos Containing Waste, submit copies of transport manifests and/or disposal receipts.

1.09 SUBMITTALS

A. Provide in accordance with Division 01 and this section.

B. Prior to commencement of the Asbestos Abatement work of this section, submit the following notices, documentation, Shop Drawings, and Product Data:

1. For Projects involving Asbestos Containing Materials 100 square feet or more, provide a typed written notification in accordance with Rule 1403 of SCAQMD and 40 CFR Part 61.146 of Subpart M to the SCAQMD, and to and in accordance with the Division of Occupational Safety and Health prior to start of the Work. For Projects within the geographical limits of Los Angeles

City, provide an additional copy of the SCAQMD notice to the Los Angeles City Fire Department, marked "COURTESY COPY."

2. Submit to the Owner, satisfactory proof the required permits, site location, and arrangements for transport and disposal of Asbestos Containing Waste materials have been completed in accordance with California Health and Safety Code, Section 25143.7. Obtain and submit a copy of handling procedures and a list of protective equipment utilized for Asbestos disposal at the landfill.

3. Submit to the Owner satisfactory documentation that employees, including foremen, supervisors, and any other company personnel or agents who may be exposed to airborne Asbestos fibers or who may be responsible for any aspects of Asbestos Abatement work or Asbestos Related Disturbance have received adequate training that includes, at a minimum, information as described within this section and as required by AHERA.

4. Prior to commencement of Abatement Work, personnel required to construct and enter the Work area or handle containerized Asbestos Containing Materials shall have received adequate training, in accordance with the requirements of this Specification and by 40 CFR, Part 763, Subpart E (AHERA) and Title 8, Section 1529, of the California Code of Regulations applies.

5. Special Project site training for equipment and procedures unique to this Project site shall be provided as required.

6. Training in emergency response and evacuation procedures shall be provided to personnel performing Asbestos Abatement work of this section.

7. Submit documentation from a physician certifying that employees are medically monitored and are physically capable of working while wearing the required respiratory protection without suffering adverse health effects as required by California D.O.S.H regulations. Where such documentation is required, the certification shall state that the employee or agent is approved to work with Asbestos and wear a respiratory protection without restrictions. Provide information to the examining physician about unusual conditions in the workplace environment that may impact on the employee's ability to perform Abatement Work activities.

8. Submit Shop Drawings for layout and construction of Decontamination Enclosure Systems and barriers for isolation of the contained Asbestos Abatement work area as detailed in this Specification and required by applicable regulations.

9. When used, submit manufacturer's certification that HEPA Vacuums, air filtration units, and other local exhaust ventilation equipment complies with ANSI Z9.2.

10. Submit Product Data verifying that air filtration devices (i.e., air filtration units and vacuums) for use on this project have been registered or certified, as applicable, in compliance with the SCAQMD Rules.

11. If rental equipment is to be furnished in Abatement Work areas or to transport Asbestos contaminated waste, written notification concerning the intended use of the rental equipment shall be provided to the rental agency with a copy submitted to the Owner.

12. Document NIOSH approvals for respiratory protective devices furnished as required by the Work. Include manufacturer certification of HEPA filtration capabilities for cartridges and filters.

13. Submit documentation of respirator fit testing for employees and agents entering the Abatement work area or areas where respiratory protection is required. This fit testing shall be performed in accordance with DOSH regulations.

14. Submit a Sample of forms to be used in documenting required items to be submitted and/or reviewed.

C. Provide other required submittals specified as part of the Work of this section.

1.10 PRE-ABATEMENT MEETING

A. Attend a meeting to be held prior to the commencement of Abatement Work. Attending this meeting shall be representatives of the Owner, the Owner Consultant if applicable, and the testing/monitoring personnel who shall actually participate in the testing/monitoring program. Secure the attendance of the individual who will be the Project site Competent Person for the Abatement Work.

B. Included in the general preconstruction meeting will be a discussion of requirements and submittals for Asbestos Related Disturbance, where such applies.

C. At this meeting provide required submittals except for those to be submitted during progress of the Work. In addition, provide detailed information concerning:

1. Preparation of Work area and Shop Drawings. (Abatement Only).

2. Personal protective equipment, including respiratory protection and protective clothing. (Abatement, and Asbestos Related Disturbance if required).

3. Employees who will participate in the Project, including delineation of experience, training, and assigned responsibilities during the Work. (Abatement and Asbestos Related Disturbance).

4. Decontamination procedures for personnel, Work area, and equipment. (Abatement and Asbestos Related Disturbance).

5. Abatement methods and procedures to be provided. (Abatement Only).

6. Required air monitoring procedures (pre-Abatement and SCAQMD requirement and Cal/OSHA mandatory Abatement and Asbestos Related Disturbance.

7. Procedures for handling and disposing of waste materials, including disposal facility. (Abatement and Asbestos Related Disturbance).

8. Procedures for final Decontamination and cleanup. (Abatement Only).

9. A sequence of Work activities and performance schedule. (Abatement Only).

10. Procedures for dealing with heat stress. (Abatement Only).

11. Emergency procedures. (Abatement Only).

1.11 CLOSE OUT DOCUMENTATION

A. Provide the following close out documentation:

1. Filter change logs for air filtration units, water filtration units and respirators. (Abatement Only).

2. Foreman's daily job reports. (Abatement Only).

3. Employee entry/exit logs for containment. (Abatement Only).

4. Visitor entry/exit logs for containment. (Abatement Only).

5. Manometer printout reports for applicable containment. (Abatement Only).

6. Air sample results for personnel (Abatement and Asbestos Related Disturbance).

7. Air Samples for Abatement Work areas and air filtration units. (Abatement Only).

8. Copies of hazardous and non-Hazardous Waste manifests. (Abatement and Asbestos Related Disturbance).

9. Hazardous Waste weight tickets. (Abatement Only).

10. Signed Daily Personnel Report Forms. (Abatement Only).

11. Signed code of conduct form from each employee working on a Project. (Abatement Only).

12. Signed asbestos Abatement Project Personnel Logs. (Abatement Only).

B. Receipt of the last workday attendance log and the daily personal monitoring results shall be submitted within two days upon completion of the Abatement Work of this section.

PART 2 – PRODUCTS

2.01 Materials and Equipment:

A. Materials

1. Products: The following products have been specifically approved for use as encapsulants/lock-down or bridging agents for Owner asbestos abatement and asbestos related construction projects and lead abatement and lead related construction projects. Products not approved by the Owner shall not be used.

a. Asbestos Removal Encapsulant: Foster 32-60 blue by Foster Products Corporation; removal, lock down or penetrating with dilution.

b. Asbestos Bridging Encapsulant: Foster 32-80 by Foster Products Corporation; for pipe covering and boiler lagging.

c. A-B-C Fiberspray 6410 and 6422SP by Fiberlock Technologies, Inc.; for coring, small jobs and gloves bags.

d. A-B-C Asbestos Binding Compound 6421, 6422 and 6423 by Fiberlock Technologies, Inc.; for general use, removal, lock down, penetrating and bridging; good for soils.

e. Fiberset PM 7475 clear by Fiberlock Technologies, Inc.; compatible with flooring.

f. Fiberset PM 7470 white by Fiberlock Technologies, Inc.; compatible with flooring.

g. Lag-Kote by Fiberlock Technologies, Inc.; multi-use product including fireproofing and thermal system insulation.

h. Lag-Klothe by Fiberlock Technologies, Inc.;water activated repair cloth for pipes, boilers and breaching.

2. General:

a. Deliver materials in the original sealed packages, containers, or bundles bearing the name of the manufacturer and brand name.

b. Store materials subject to damage off the ground, away from wet or damp surfaces, and under cover sufficient enough to prevent damage or contamination. Replacement materials shall be stored outside of the Abatement Work area until area is cleared for normal occupancy.

c. Damaged, deteriorating or previously used materials shall not be furnished and shall be removed from the Project site and legally disposed of.

d. A sufficient supply of disposable mops, rags, and sponges for Abatement Work area Decontamination shall be provided.

e. Unless otherwise specified, the Owner will provide water and power for construction purposes. Connect to existing system as required.

3. Asbestos Related:

a. Plastic, polyethylene sheeting or visqueen shall be a fire retardant type. Provide documentation from the manufacturer verifying compliance with this requirement.

b. Where a contained work area is required for Abatement Work, a minimum of two layers of 4-mil polyethylene sheeting shall be installed for walls. For floors and other installations, polyethylene sheeting of at least 6-mil thickness shall be furnished in sufficient widths to minimize the frequency of joints.

c. Method of attaching polyethylene sheeting shall be reviewed prior to installation and/or commencement of Abatement Work. Method of attaching polyethylene sheeting shall not cause damage to equipment, finish surfaces, or other property.

d. Polyethylene sheeting furnished for the Decontamination Enclosure System shall be opaque white or black in color and shall be a minimum of 6-mil thick.

e. Disposal bags shall be of 6-mil polyethylene, with the outer bag pre-printed with labels as required by SCAQMD and applicable Cal/OSHA and DOT requirements at a minimum.

f. Apply labels as per SCAQMD, Cal/OSHA, and DOT requirements for disposal containers.

g. Provide warning signs as required by CAL/OSHA.

h. Surfactant (wetting agent) shall be a material that, when tested, demonstrates a surface tension of 29 dynes/cm as tested in its properly mixed concentration, using ASTM method D1331 - Surface and Interfacial Tension of Solutions of Surface Active Agents. Where Work area temperature may cause freezing of the Amended Water solution, the addition of approved antifreeze in a manufacturer recommended amount is permitted.

B. Equipment

1. General:

a. Equipment delivered to the Project site shall be free of Asbestos and/or fibrous debris. No equipment with Asbestos and/or fibrous debris in or on it is permitted on Owner properties.

b. Provide sufficient lighting to illuminate the Work area for safe visual working conditions and to clearly examine surfaces.

c. Provide a sufficient supply of scaffolds, ladders, lifts, and hand tools that meet applicable Federal, State, and local regulations.

d. Provide non-metallic dustpans, squeegees, and shovels for cleanup.

2. Asbestos Related:

a. A sufficient quantity of air filtration ventilation units furnished with HEPA filtration and operated in accordance with ANSI Z9.2-79 and EPA guidance documents shall be furnished to provide one workplace air change every 15 minutes creating -0.02 column inches of water pressure differential everywhere within the contained area when compared to the pressure outside the area. For small Enclosures and glove bags, a HEPA Filtered vacuum system may be furnished to provide the pressure differential. A log documenting the filter change history of each unit is required before use. Any unit without this log shall have filters changed and the unit decontaminated.

b. Provide a printable manometer for determining and recording the pressure differential within the isolated Work area as compared with the ambient environment. A printed record is required for the duration of the Project. The manometer shall operate 24 hours per day with a printed differential reading not to exceed fifteen minute intervals.

c. High volume vacuum equipment shall be provided during soil Removal operations unless otherwise specified.

d. Provide sprayers with pumps in a quantity capable of providing Amended Water in sufficient quantities to adequately wet materials during Asbestos Abatement activities. Provide spray bottles or adequate equipment necessary to keep materials impacted by Asbestos Related Disturbance adequately wet.

e. Non-skid footwear shall be worn by Abatement workers. Disposable clothing shall be adequately sealed to the footwear to prevent body contamination.

f. Provide other required safety equipment to workers and authorized visitors.

g. When roll-off disposal containers are delivered to a Project site, four wheels of each container shall be moved and rested upon a sheet of plywood no smaller than four-foot by four-foot by ¾ inch minimum.

2.02 EMPLOYEE PERSONAL PROTECTIVE EQUIPMENT

A. Respiratory Protection:

1. Where respirators are required these shall be provided for protection from particulate contaminants as required by the National Institute of Occupational Safety and Health.

2. The respirators provided shall furnish a protection factor as required by CCR Title 8, Section 1529 for the fiber concentration in the work area. When powered air purifying respirators are provided, a sufficient supply of charged replacement batteries, filters, and a flow test meter shall be provided in the Clean Room area. Air purifying respirators with dual HEPA Filters may be provided during Work area preparation activities.

3. Provide spectacle kits and eyeglasses for employees who wear glasses and must wear full-face respirators.

B. Fit Testing:

1. Workers must perform positive and negative air pressure fit tests each time a respirator is donned, whenever the respirator design so permits. Powered air purifying respirators shall be tested for adequate flow as specified by the manufacturer.

2. Workers shall be undergo a qualitative fit test in accordance with procedures detailed in the D.O.S.H. requirements for respirators provided to comply with the requirements of this Project. An appropriately administered quantitative fit test may be substituted for the qualitative fit test.

3. Where respirators are required, documentation of adequate respirator fit must be provided to the Owner Consultant.

4. No one wearing a beard shall be permitted to don a respirator and enter the Work area.

5. Where respirators are required, a minimum of two additional respirators of each type and training on their donning and use must be provided at the Work site for authorized visitors required to enter the Work area.

C. Protective Clothing:

1. Where protective clothing is required, full body disposable protective clothing, including head, body, and foot coverings, shall be provided to workers and authorized visitors in sizes adequate to accommodate movement without tearing.

2. Disposable clothing including head, foot, and full body protection shall be provided in sufficient quantities and adequate sizes for workers and authorized visitors.

3. A new suit shall be donned upon each entry to the Abatement Work area or area where the permissible exposure level will be exceeded.

4. Hard hats, protective eye wear, gloves, rubber boots and/or other footwear shall be provided as required for workers and authorized visitors. Safety shoes may be required and shall be provided.

PART 3 - EXECUTION

3.01 ABATEMENT PROCEDURES AND WORK AREA PREPARATION

A. Work Area Preparation

1. For Class I and II asbestos work, shut down and lock out heating, cooling and air conditioning system (HVAC) components that are located in, supply, or pass through the Work area. Seal intakes and exhaust vents in the Work area with tape and 6-mil polyethylene. Seal seams in any system components that pass through the Work area.

2. Provide and post signs at locations and approaches to the Regulated Area. The signs shall comply with Cal/OSHA regulations.

3. In conjunction with the Owner, shut down and lock out/tag out electric power to Class I and II asbestos work areas. Provide equipment for temporary power with ground fault interrupters and lighting sources. Temporary power sources and equipment shall comply with applicable electrical code requirements and Cal/OSHA requirements for temporary electrical systems. The Owner shall

perform electrical connections of electrical cable and equipment provided as part of the Work of this section to existing Owner systems. The Owner shall pay for the costs of electric power consumed during performance of the Work of this section, unless otherwise noted.

4. For Class I and II asbestos work, clean and seal off windows, doorways, elevator openings, corridor entrances, drains, ducts, grills, grates, diffusers, skylights, and any other openings between the Abatement Work area and areas outside of the Abatement Work area with 6-mil polyethylene sheeting and tape prior to proceeding with required cleaning.

5. Clean Movable Objects within the Abatement Work area with a HEPA Filtered vacuum and wet cleaning methods. After cleaning, these objects shall be removed from the Abatement work area and carefully stored in a location designated by the Owner.

6. Clean Fixed Objects in the Abatement Work area with a HEPA Filtered vacuums and wet cleaning methods. Careful attention shall be given to machinery behind grills or gratings where access may be difficult but contamination is present. Cleaning of walls, floors, and ceilings behind fixed items is required. After cleaning, enclose Fixed Objects in 6-mil polyethylene sheeting and seal securely in place with durable tape.

7. Clean surfaces in the Abatement Work area with a HEPA Filtered vacuums and wet cleaning methods. Do not utilize any methods, such as dry sweeping or vacuuming, with equipment not furnished with HEPA Filters thereby creating airborne dust and particulates. Do not disturb Asbestos Containing Materials during this cleaning phase.

8. For Class I and II asbestos work, floors shall be covered with two layers of 6-mil (minimum) polyethylene sheeting. Additional layers of sheeting may be furnished as drop cloths for cleanup of bulk materials.

9. Polyethylene sheeting shall be sized and installed to minimize seams. If the floor area to be covered requires seaming, seams on successive layers of polyethylene sheeting shall be staggered a minimum of six feet between each seam to reduce the potential for water penetration into the existing flooring. Do not install seams at the junction between a wall and floor.

10. Polyethylene sheeting installed on a floor shall extend at least 12 inches up the sidewalls of the Abatement Work area.

11. Polyethylene sheeting shall be installed so as to prevent slippage between successive layers of installed material.

12. For Class I and II asbestos work, walls shall be covered with two layers of 4-mil minimum thickness polyethylene sheeting.

13. Polyethylene sheeting installed on a wall shall overlap floor sheeting by at least 12 inches beyond the wall/floor joint to provide a seal against water damage.

14. Polyethylene sheeting installed on a wall shall be adequately fastened to prevent it from falling away from the walls. Provide additional support/attachment when air filtration ventilation systems are provided.

15. For Class I and II asbestos work with porous, dropped, or perforated ceilings, those ceilings shall be covered with one layer 4-mil minimum thickness polyethylene sheeting.

16. Polyethylene sheeting installed on ceilings shall be adequately fastened to prevent it from falling away from the ceiling.

17. Provide one layer of 3-mil maximum, polyethylene sheeting (non-fire retardant type) for isolation of fire sprinkler devices. Installed taping shall not impede the normal function of the fire sprinkler device. Approved wire sprinkler guards shall be furnished in conjunction with isolation.

18. Where required, install and operate air filtration equipment to provide one air change in the Abatement Work area every 15 minutes. Openings made in the Enclosure System to accommodate these units shall be made airtight with durable tape and/or caulking as needed. If more than one unit is installed, they shall be turned on one at a time, checking the integrity of barriers after each unit is started. Insure that adequate power supply is available to satisfy the requirements of the air filtration units. Exhaust from these units shall be directed to the outside of the building whenever feasible. They shall not be exhausted into occupied areas of the buildings. Exhaust duct shall be extended from the Abatement Work area to the outside as required. Careful installation and daily inspections shall be performed to verify the exhaust ducts do not discharge into any areas of the building.

19. Once the Enclosure system is constructed and reinforced with air filtration units in operation as required, test the Enclosure for leakage utilizing smoke tubes. Repair, replace or reconstruct as required.

20. Following completion of the construction of polyethylene barriers and Decontamination Enclosure System, operate the air filtration units overnight to insure the barriers will remain intact and secured to walls and fixtures before beginning actual Abatement Work.

21. Commencement of the Work of this section shall not occur until:

    a. The entire containment system has been constructed and inspected by Owner Consultant in accordance with the required Shop Drawings.

    b. Air filtration units are functioning within the requirements of this section.

c. Air filtration units are functioning within the requirements of this section.

d. Pre-Abatement submittals, notifications, postings, and permits have been provided and reviewed by the Owner Consultant.

e. Equipment for Abatement, Decontamination, and disposal are on the Project site.

f. Worker training, respirator fit testing, and medical surveillance has been provided and reviewed by the Owner Consultant.

g. A Notice to Proceed is transmitted by the Owner.

3.02 ASBESTOS RELATED DISTURBANCE WORK PRACTICES (Small-Scale, Short Duration – SSSD)

A. For Class III work, shut off air handling equipment to rooms work will occur in.

B. Provide and post signs at the entrance to the work area affected. The signs shall comply with Cal/OSHA regulations.

C. For Class III work clean the area immediately under the location to be disturbed.

D. For Class III work move any moveable furniture or objects from immediately beneath the area to be disturbed.

E. Provide an enclosure around the area of disturbance. This may include, but is not limited to:

1. Mini-enclosure where not more than two persons may occupy for the purpose cutting holes up to three square feet in walls or ceilings.

2. For drilling, coring, sawing or similar disturbance, an enclosure shall be placed over the area of disturbance of sufficient size to cover that area and contain the tools used. This can include drilling with a shroud, through a wet sponge, through a plastic enclosure, or similar designs which will ensure control of Asbestos fibers and other dust. Drilling or coring with the use of a vacuum collection device shall be equipped with a HEPA filtered vacuum.

F. Class III work performed without a HEPA vacuum collection device shall have surfaces of disturbance adequately wet to control fiber release.

G. Clean by wet method the surfaces disturbed, the enclosure device and/or materials used, and any tools used during the disturbance operation.

H. Clean up by wet method and/or HEPA vacuum any debris that may have escaped outside the enclosure required by this section.

3.03 DECONTAMINATION ENCLOSURE SYSTEM FOR ABATEMENT WORK

A. Decontamination Enclosure Systems shall be provided at locations where workers will enter or exit the Abatement Work area of Class I and II asbestos work prior to any other set up. Only one system at a single location for each Regulated Area is required. At least one individual shall be stationed at the entrance of each system at times Abatement Work is in progress.

B. These systems may consist of existing rooms outside of the Abatement Work area, if the layout permits, and that can be enclosed in polyethylene sheeting, and are accessible from the Abatement Work area. If this intended layout is not feasible, given existing site conditions, Enclosure systems may be constructed out of metal, wood, or plastic support as required.

C. Decontamination Enclosure Systems constructed at the Project site shall be furnished with 6-mil opaque white or black polyethylene sheeting or other approved materials for privacy. Detailed descriptions of portable, prefabricated units, if furnished, shall be submitted for review. Shop Drawings must include floor plan with dimensions, materials, size, thickness, plumbing, and electrical utilities.

D. Decontamination Enclosure System shall consist of at least a Clean Room, a Shower Room, and an equipment room, each separated from the other, from the Abatement Work area and from the non-Work area by "Z-flaps" at a minimum. The system shall be furnished with, at a minimum, two layers of 6-mil polyethylene sheeting on the floors, walls, and ceiling.

E. Clean room shall be of adequate size to accommodate the Abatement crew. Clean work clothes, clean disposable clothing, replacement filters for respirators, disposable towels, and other necessary items shall be provided for in adequate supply adjacent to the Clean Room. A location for posting notices shall also be provided adjacent to this area. When required, a lockable door shall be furnished to control access into the Clean Room from outside the Abatement Work area. Comfort lighting, heat, and electricity shall be provided as required. The Clean Room shall not be used for storage of tools, equipment, materials, or as office space.

F. Shower room shall contain one or more showers as required to adequately accommodate workers. Each showerhead shall be supplied with hot and cold water adjustable at the tap. The shower Enclosure shall be constructed to ensure against any kind of leakage. Provide an adequate supply of soap, shampoo, and disposable towels, available at times. Shower water shall be drained, collected, and progressively filtered through a system achieving a maximum particle size of 1.0 microns.

G. The Equipment Room shall be used for storage of equipment and tools at the end of a shift. These shall have been cleaned using a HEPA Filtered vacuum and wet cleaning methods. A container lined with a labeled 6-mil polyethylene bag for collection of disposable clothing shall be located in this room. Reusable footwear shall be stored in this area after being cleaned.

3.04 WASTE CONTAINER REMOVAL AIRLOCK AND EMERGENCY EXITS

A. The waste container pass-out airlock shall be constructed away from the Decontamination Enclosure System. This airlock shall be in a location that provides direct access from Abatement Work area to the outside of the building if possible.

B. This system shall consist of an airlock, container Staging Area, and another airlock providing access to outside Abatement Work area.

C. The waste container airlock shall be constructed in similar fashion with similar materials as the Decontamination Enclosure System.

D. This airlock system shall not be used to enter or exit the Abatement Work area.

3.05 ALTERNATIVE PROCEDURES

A. Soil Removal

1. Required Asbestos Abatement shall be performed prior to soil Removal.

2. If soil Removal is specified, debris within or upon the soil shall be considered part of the soil and shall be removed as a contaminated waste. Debris includes, but is not limited to, fabric, paper, and other fibrous or porous materials.

3. It is not the intention of this section to require the Removal of large rocks, abandoned non-Asbestos-containing pipe, lumber, and similar debris. If these conditions are encountered, clean and encapsulate these materials instead of removing them as a contaminated waste, provided Asbestos contamination is not ingrained within and/or affixed to them. Any such materials remaining shall be stacked to one side to allow for access to the soil below for removal purposes.

4. Unless otherwise specified, soil shall be removed with a High Volume Vacuum system. Soil shall be removed to the hard pan unless otherwise specified or required.

5. After soil Removal has been completed, the Owner Consultant shall inspect the Work. Approval of the Removal Work is required prior to lock down and Encapsulation.

6. Soil requires Encapsulation following Asbestos Removal, including but not limited to, High Volume Vacuum removal. Apply a continuous even coat of encapsulating material at the rate of no more than fifty square feet per gallon. Other structural surfaces shall receive an evenly applied coat of lock down material.

B. Other:

1. High Volume Vacuum systems shall be provided with an Enclosure constructed at the waste discharge port. This Enclosure shall be of sufficient size to accommodate the workers and disposal containers necessary for the Project. The Enclosure shall be constructed of one layer, 6-mil minimum, of polyethylene sheeting. An air filtration unit shall be furnished during operation of the High Volume Vacuum.

2. Where pipe insulation is to be removed in a crawl space and/or attic space a single layer of 6-mil polyethylene sheeting with a minimum width of four feet shall be placed centered under the Removal surfaces.

3. If specified procedures cannot be furnished, a written request shall be provided to the Owner outlining details of the problem encountered and recommended alternative solutions.

4. Alternative procedures shall provide equivalent or greater protection than the specified and/or required procedures.

5. Any alternative procedure requires the written approval of the Owner prior to implementation.

3.06 WORKPLACE ENTRY AND EXIT PROCEDURES

A. Before entering the Regulated Area personnel shall read and be familiar with posted regulations, personal protection requirements, and emergency procedures. A signature sheet shall be posted for signatory acknowledgement these have been reviewed and understood by personnel prior to entry.

B. Workers and other authorized personnel shall enter the Abatement Work area through the Decontamination Enclosure System or other room required when Decontamination Enclosure System is not required.

C. Personnel who enter or exit the Regulated Area shall sign the entry and exit log located adjacent to the Clean Room.

D. Personnel shall proceed first to the Clean Room, don respirator, and washable and/or disposable clothing.

E. General construction area equipment including, but not limited to, hard hats, eye protection, and gloves shall also be provided as required. Clean respirator and cartridges, and protective clothing shall be provided and utilized by each person for each separate entry into the Regulated Area.

F. Before leaving the Regulated Area for Class I and II asbestos work personnel shall remove gross contamination from the outside of respirators and protective clothing by vacuuming and/or wet wiping methods. Each person shall clean protective footwear just prior to entering the Equipment Room.

1. Personnel shall proceed to Equipment Room where they remove protective equipment except respirators. Deposit disposable clothing into appropriately labeled containers.

2. Still wearing respirator, personnel shall proceed to the shower area, clean the outside of the respirators and the exposed face area under running water prior to removal of respirator then shower and shampoo to remove residual Asbestos contamination. Various types of respirators will require slight modification of these procedures. A powered air purifying respirator face piece will have to be disconnected from the filter/power pack assembly when such is not waterproof, upon entering the shower. A dual cartridge respirator may be worn into the shower and cartridges shall be replaced for each new entry into the Work area.

3. After showering and drying off, proceed to the Clean Room and don clean clothing.

G. At no time shall any personnel exit an Abatement Work area into a space occupied by staff or students without being completely dressed. Any violation of this requirement will result in the permanent removal of the person from the Project site.

3.07 REMOVAL PROCEDURES

A. Brushes furnished for removing loose Asbestos Containing Material during detail cleaning of substrate shall be furnished with nylon or fiber bristles. Metal or wire brushes are not permitted. Brushes used during this process shall be disposed as contaminated waste when use of the brush for this work is completed.

B. A sufficient supply of HEPA Filtered vacuum systems shall be provided during cleanup of Abatement Work. Brush attachments are not permitted for use with vacuum systems.

C. Barriers constructed to isolate the Regulated Area from other areas shall be inspected at least three times per shift; prior to the start of Abatement activities; half way into the shift; and following the completion of the Abatement activities at the end of the shift. Inspect and document observations in the daily Project log.

D. Damage and defects in the Enclosure system shall be repaired immediately upon discovery.

E. At any time during Abatement Work, following barrier installation, if visible debris is observed outside of the Regulated Area or damage occurs to the barriers, stop Work immediately. Repairs shall be performed to the barriers and debris/residue shall be cleaned up with appropriate HEPA Vacuuming and wet wiping methods. These incidents shall be recorded in the daily Project log.

F. If air samples collected outside of the Work area during Abatement Work indicate airborne fiber concentrations greater than 0.01 f/cc or the pre-measured background levels (whichever is lower) Work shall stop immediately. An inspection and repair of barriers

shall be performed as required. Surface cleaning with HEPA Vacuums and wet wiping methods of areas outside of the Work area may be required by the Owner. Findings, observations, and corrective actions shall be documented in the daily Project log.

3.08 ENCAPSULATION AND BRIDGING AGENTS

A. Clean and isolate the Work area in accordance with "Work Area Preparation" of this Section.

B. Repair damaged and missing areas of existing materials with non-Asbestos containing substitutes. Material shall adhere adequately to existing surfaces and provide an adequate base for application of Encapsulating Material. Filler material shall be installed in accordance with manufacturers recommended specifications.

C. Remove loose or hanging Asbestos Containing Materials in accordance with the requirements of "Removal Procedures" in this Section.

D. Lockdown and Encapsulating Material, and bridging agents shall be reviewed by the Owner Consultant prior to the commencement of the Work of this section.

E. Encapsulating Material shall be sprayed applied with airless spray equipment. Nozzle pressure shall be adjustable within a range of 400 to 1500 PSI.

F. Lock down coat shall be spray applied with low pressure providing a continuous even coat.

G. Bridging agents shall be a palm or brush grade.

H. Colorless lock down materials, Encapsulating Material, and bridging agents shall be furnished with a compatible color additive. A different color shall be furnished for each separate coat of applied material.

I. Install penetrating type Encapsulating Material to penetrate existing sprayed applied Asbestos Containing Materials to a depth as required.

J. During installation of the penetrating type Encapsulating Material; remove selected random core samples of the Asbestos Containing Materials in the presence of the Owner Consultant to verify depth of penetration.

K. Lock down coating and Encapsulating Material for installation on hot water, steam, or any other high temperature equipment shall be manufactured and recommended for installation on high temperature systems.

3.09 CLEAN UP PROCEDURES

A. Asbestos Clean Up Procedures:

1. Unless decontaminated daily, reusable footwear and kneepads shall be stored in the Equipment Room when not in the Work area. Upon completion of Abatement Work, these shall be disposed of as Asbestos contaminated waste or may be decontaminated at the completion of Abatement Work.

2. Remove and containerize visible accumulations of Asbestos Containing Material and Asbestos contaminated debris with rubber dustpans and rubber squeegees. Do not use metal shovels to pick up or move accumulated waste. Special care shall be taken to minimize damage to flooring materials.

3. Remove containerized waste from the Abatement Work area and the waste container airlock.

4. Wet wipe surfaces in the Regulated Area with clean rags, mops, and sponges as appropriate.

5. After cleaning remove the top layer of polyethylene sheeting from walls and floors.

6. Clean the second layer of polyethylene sheeting by wet wipe and HEPA Vacuuming. Windows, doors, HVAC system vents, and other critical seals shall remain sealed until the Abatement Work area passes final clearance. The air filtration units shall remain in continuous operation and the Decontamination Enclosure System shall remain in place and be utilized.

7. Decontaminate tools and equipment and remove at the appropriate time in the cleaning process.

8. Provide notification to the Owner at least one day in advance when Abatement Work will be completed and ready for final visual inspection. If, upon inspection, Abatement Work is not completed or the area does not pass final visual inspection, finish or correct the Abatement Work as required before notifying the Owner. Subsequent inspections shall commence not later than one day following notice.

9. The Owner Consultant shall inspect the Work area for visible residue. If residue is observed, it shall be deemed to contain Asbestos and the cleaning process shall be repeated. The lock down coat shall be applied only after inspection by the Owner Consultant and during non-school hours.

10. The second layer of isolation shall only be removed after the Owner Consultant inspects the lock down coat or installed Encapsulation, but in no case prior to overnight drying of lock down coat or Encapsulation.

11. Following completion of air clearance monitoring the remaining barriers shall be removed and properly disposed of. A final visual inspection by the Owner Consultant shall be performed to verify that no contamination remains in the

Abatement Work area. Unsatisfactory conditions may require additional cleaning and air monitoring.

3.10 WASTE HANDLING AND TRANSPORTATION

A. Asbestos Waste Handling

1. As the Work progresses, to prevent exceeding available storage capacity on the Project site, sealed and labeled containers of Asbestos Containing Waste shall be removed and transported to the prearranged disposal location.

2. Waste disposal shall occur at an authorized site in accordance with regulatory requirements of NESHAP and applicable State and Local regulations.

3. Once the drums, bags, and/or wrapped components have been removed from the Work area, they shall be loaded into an enclosed truck for transportation.

4. Waste shall not be transported from the work are to the storage container or waste hauler's vehicle while students or staff are present in the path of travel. Where a path of travel cannot be cordoned off the movement of waste must be completed prior to or after the presence on site of students and staff.

5. Personnel loading Asbestos waste shall be protected with disposable clothing and at a minimum half-face, air purifying, dual cartridge respirators furnished with HEPA Filters.

3.11 TRANSPORTATION OF NON HAZARDOUS WASTE

A. Waste shall be containerized, labeled, and transported in accordance with federal, state, and local regulations.

B. Waste shall be transported under cover a non-Hazardous Waste manifest.

C. Containers shall be enclosed during transportation.

3.12 TRANSPORTATION OF HAZARDOUS WASTE

A. Dump receipts; trip tickets, transportation manifests, weight certificates or other documentation of disposal shall be delivered to the Owner Consultant within 48 hours of disposal. As the material and responsibility for the material changes hands, the generator or designee, the transporter(s), and the Disposal Site Operator shall sign the Uniform Hazardous Waste Manifest. If a separate waste hauler is employed, the name, address, U.S.E.P.A. ID number, and signature of the transporter shall also be affixed onto the manifest.

B. The enclosed cargo area of trucks or containers shall be free of debris and lined with 6 mil polyethylene sheeting to prevent contamination from leaking or spilled containers. Floor

sheeting shall be installed first and extend up the sidewalls. Wall sheeting shall be overlapped and taped into place.

C. Drums shall be placed on level surfaces in the cargo area and packed tightly together to prevent shifting and tipping. Large structural components shall be secured to prevent shifting, with bags placed on top.

D. Access openings on large metal containers, which are used for storing or transporting Asbestos waste, shall have doors and tops that can be closed and locked. Materials not properly bagged shall not be placed in these containers nor shall these containers be used for non-Asbestos waste or nonhazardous asbestos waste. Bags shall be placed, not thrown, into these containers to avoid damage.

3.13 MONITORING

A. Abatement Project Management and Inspection:

1. Owner has the right to perform air and performance monitoring at any time.

2. The Owner has unlimited access to the regulated and surrounding areas at times during progress of the Work, including, but not limited to, use of ladders, scaffolds, and other equipment required to gain access to the Work surfaces.

B. Work Area Monitoring:

1. Visual inspections and air testing may be performed at any time during the progress of the Abatement Work. Provide corrective measures as required to maintain the Work area in compliance with this Specification and regulatory requirements.

C. Contractor's Employee – Personal Air Monitoring:

1. Provide air monitoring as required California Code of Regulations, Title 8, Section 1529. Results shall be provided to the Owner Consultant within ten working days of sampling. Negative Exposure Assessments utilizing prior project monitoring require submittal of applicable data for approval before work proceeds.

D. Clearance Air Monitoring:

1. Following the completion of Abatement Work and clean up operations, lock down coat application, and visual inspection by the Owner, clearance air monitoring shall be performed by the Owner Consultant.

2. The Owner Consultant shall arrange for sampling of the air in the Abatement Work area for airborne fiber concentrations. Unauthorized interference or tampering with air sampling equipment may result in termination of the Contract

and/or removal of the Abatement Contractor from the List of Prequalified Abatement Contractors.

3. If air-sampling results are within the limits of 40 CFR, Part 763, Subpart E (AHERA), the Abatement Work area shall be released for occupancy.

4. Areas failing clearance monitoring shall be cleaned as required in article 3.09, CLEAN UP PROCEDURES, and tested until satisfactory levels are provided in accordance with this Specification where required.

3.14 RE-ESTABLISHMENT OF THE WORK AREA AND SYSTEMS

A. Reestablishment of the Work area shall only occur following the completion of final inspection and clearance air monitoring.

B. Critical barriers shall be removed at this time.

C. Accompanied by the Owner Consultant, visually inspect the Abatement Work area for any remaining visible residue. Evidence of contamination will require additional cleaning requirements.

D. Install and secure Moveable Objects.

E. Relocate Moveable Objects that were removed to temporary locations back to their original positions.

F. Reestablish HVAC, mechanical, and electrical systems to the condition prior to commencement of the Work of this section.

G. Repair areas of damage deemed to be a result of the Abatement Work.

H. Restore the Work area and auxiliary areas utilized during the Abatement to conditions equal to or better than original. Any damage caused during the performance of Abatement Work, including, but not limited to, damage caused by tape, adhesive, staples, nails, water, Encapsulating Material, or any other material shall be repaired as required.

I. Prior to occupancy of a space following clearance monitoring, HVAC systems filters associated with the Work area shall be removed and disposed of as Asbestos waste. Decontaminate filter assembly and surrounding area with HEPA Vacuums and wet cleaning methods.

END OF SECTION

EXHIBIT A

Angeles Unified School District

Facilities Environmental Technical Unit

APPROVAL FOR REQUEST TO ADVERTISE

Approval Date: October 24, 2025 **Approval Expiration Date:** October 24, 2026

Site Name: Sylvan Park Early Education Center **Site Code:** 9565

Project Description: Outdoor Classroom & Campus Upgrades Project

Project Manager: Thomas Tsang

Work Order Number: 39361517 **Colin Project Number:** 10374565

Condition of Approval*:

Asbestos

- ☐ Not Applicable
- ☐ No asbestos impacted by project scope
- ☐ Asbestos impacted has been abated
- ☐ Abatement will be completed by : _____
- ☐ Disturbance by properly trained personnel as per subpart 1.08, Section 02 8213 [1]
- ☑ Requires approved abatement subcontractor

Lead

- ☐ Not applicable
- ☐ No lead impacted by project scope
- ☐ Lead impacted has been removed
- ☐ Remediation will be completed by: _____
- ☑ Disturbance by properly trained personnel as per subpart 1.09,Section 02 8333 [2]
  Distribute the Lead "Right to Renovate" pamphlet to Site Adminstrator for distribution to parent/guardians of children under the age of six within 60 days of the renovation start date.
- ☐ Requires approved remediation subcontractor

Comments:

The scope of work requires an LAUSD approved asbestos abatement contractor for impacts to asbestos containing materials. Lead RRP training is also required for personnel performing work that will disturb painted or coated surfaces. Please refer to the Phase 1 and Phase 2 Reports dated October 22, 2025, for complete specifications and material assessments. Any modifications or revisions to this scope of work shall require prior approval from FETU.

FETU Approver Name: Glenn Gutierrez

OEHS Final Approval: 10/24/2025

FETU Approver Title: Senior Insulator / Asbestos Abatement Worker

FETU Approver Signature: Digitally signed by Glenn Gutierrez
DN: cn=Glenn Gutierrez, o=LAUSD, ou=FETU, email=glenn.gutierrez@lausd.net, c=US
Date: 2025.10.24 08:43:05 -07'00'

* If you must disturb or impact any building material and/or access locations (i.e. attic, crawl, ceiling spaces, etc.) not specified in this scope of work, you must consult the Asbestos Management Plan book located in the school Main Office and contact FETU immediately. DO NOT proceed work without FETU's authorization.

[1] Asbestos: All asbestos related disturbances shall be performed in compliance with LAUSD specification, Section 02 8213, "Asbestos Abatement and Asbestos Related Disturbance"

[2] Lead: All work shall be performed in compliance with LAUSD specification, Section 02 8333, "Lead Abatement and Lead Related Work". Lead-renovation, repair and painting projects (Lead RRP) that disturb painted, varnished, and/or glazed surfaces require special handling, and environmental monitoring. Both firms and individuals must be lead-safe certified. This is regardless of the building or structure's construction date.

EXHIBIT B

Los Angeles Unified School District
Facilities Environmental Technical Unit

FACILITIES ENVIRONMENTAL TECHNICAL UNIT

APPROVAL FOR REQUEST TO ADVERTISE

Approval Date: April 2, 2026 **Approval Expiration Date:** April 2, 2027

Site Name: Sylvan Park Early Education Center **Site Code:** 9565

Project Description: Sylvan Park EEC- Outdoor Classroom and Campus Upgrade Project

Project Manager: Thomas Tsang

Work Order Number: 39944109 **Colin Project Number:** 10374546

Condition of Approval*:

Asbestos

- ☐ Not Applicable
- ☑ No asbestos impacted by project scope
- ☐ Asbestos impacted has been abated
- ☐ Abatement will be completed by : _____
- ☐ Disturbance by properly trained personnel as per subpart 1.08, Section 02 8213 [1]
- ☐ Requires approved abatement subcontractor

Lead

- ☐ Not applicable
- ☐ No lead impacted by project scope
- ☐ Lead impacted has been removed
- ☐ Remediation will be completed by: _____
- ☑ Disturbance by properly trained personnel as per subpart 1.09,Section 02 8333 [2]
  Distribute the Lead "Right to Renovate" pamphlet to Site Adminstrator for distribution to parent/guardians of children under the age of six within 60 days of the renovation start date.
- ☐ Requires approved remediation subcontractor

Comments:

RTA Extension from WO# 38516160. No change in scope of work.

No Asbestos to be impacted per scope of work. Impacts to painted/coated surfaces require lead paint training "RRP" and lead safe work practices. If scope of work changes please contact FETU.

FETU Approver Name: Alec Stern

FETU Approver Title: Senior Asbestos Abatement Worker

FETU Approver Signature: Alec Stern Digitally signed by Alec Stern Date: 2026.04.02 13:44:33 -07'00'

OEHS Final Approval: 04/03/2026

Russell Ragsdale Digitally signed by Russell Ragsdale DN: cn=Russell Ragsdale, o, ou, email=cp-r.ragsdale@lausd.net, c=US Date: 2026.04.03 07:59:43 -07'00'

* If you must disturb or impact any building material and/or access locations (i.e. attic, crawl, ceiling spaces, etc.) not specified in this scope of work, you must consult the Asbestos Management Plan book located in the school Main Office and contact FETU immediately. DO NOT proceed work without FETU's authorization.

[1] Asbestos: All asbestos related disturbances shall be performed in compliance with LAUSD specification, Section 02 8213, "Asbestos Abatement and Asbestos Related Disturbance"

[2] Lead: All work shall be performed in compliance with LAUSD specification, Section 02 8333, "Lead Abatement and Lead Related Work". Lead-renovation, repair and painting projects (Lead RRP) that disturb painted, varnished, and/or glazed surfaces require special handling, and environmental monitoring. Both firms and individuals must be lead-safe certified. This is regardless of the building or structure's construction date.

VISTA ENVIRONMENTAL CONSULTING

SACRAMENTO ● OAKLAND ● SAN JOSE ● MONTEREY ● ANAHEIM ● SAN DIEGO

EXHIBIT C

To: Thomas Tsang, Sr. Designer Manager
Los Angeles Unified School District / Contract Professional
Facilities Services Division / M&O / Architecture & Engineering Services
333 South Beaudry Avenue
Los Angeles, CA 90017

Greta Galoustian, Facilities Environmental Technical Manager
Los Angeles Unified School District
Facilities Environmental Technical Unit
1240 S. Naomi Avenue
Los Angeles, CA 90021

Phase 1 - Asbestos Engineering Assessment Report
Outdoor Classroom and Campus Upgrades Project

Sylvan Park Early Education Center (9565)
15011 Delano Street
Van Nuys, CA 91411

LAUSD (COLIN) Project No. 10374565
FETU Work Order No. 39361517

Date Prepared: October 22, 2025

Prepared by: Vista Environmental Consulting, Inc.
1054 North Tustin Avenue
Anaheim, CA 92807
(714) 289-2600
Vista Project #250334091

Carlos A. Galdamez, Certified Asbestos Consultant No. 98-2379

Los Angeles Unified School District
Facilities Services Division

ALBERTO M. CARVALHO
Superintendent of Schools

India Griffin
Director
Maintenance & Operations

KRISZTINA TOKES
Chief Facilities Executive

GRETA GALOUSTIAN
Facilities Environmental Technical Manager
Facilities Environmental Technical Unit

October 12, 2024

Mr. Carlos Galdamez
Vista Environmental Consulting
1054 North Tustin Avenue
Anaheim, CA 92807

RE: PHASE __I__ REVIEW AND APPROVAL FOR ASBESTOS __X__ and/or LEAD __NA__

The Facilities Environmental Technical Unit (FETU) has reviewed and approved your Phase __I__ document(s) for the project listed below.

School: Sylvan Park Early Education Center School Code # 9565

Project: Outdoor Classroom and Campus Upgrades Project

Colin No. 10374565

Date of Report: 10/22/2025 Maximo Work Order No. 39361517

If you have any questions regarding this approval, please call the FETU at (213) 745-1450.

Sincerely,

Digitally signed by Glenn Gutierrez
DN: cn=Glenn Gutierrez, o=LAUSD, ou=FETU, email=glenn.gutierrez@lausd.net, c=US
Date: 2025.10.24 08:16:38 -07'00'

Glenn Gutierrez
Senior Asbestos Abatement Worker
Facilities Environmental Technical Unit

c: Greta Galoustian, Facilities Environmental Technical Manager
Kwun Yang, FETU Analyst
File

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I. Executive Summary, Introduction, Purpose, and Scope of Services

This Asbestos Engineering Assessment Report has been prepared by Vista Environmental Consulting, Inc. (Vista), for the upcoming project:

Project Name / Number:	Outdoor Classroom and Campus Upgrades LAUSD (COLIN) Project Number: 10374546 FETU Work Order No. 39361517
Project Location / School:	Sylvan Park Early Education Center (9565) 15011 Delano Street Van Nuys, CA 91411.

Introduction

Vista was retained by Los Angeles Unified School District – Facilities Environmental Technical Unit (LAUSD – FETU) to conduct an asbestos engineering assessment at Sylvan Park Early Education Center (9565) at the reference address above for the Outdoor Classroom and Campus Upgrades Project. The asbestos engineering assessment included a review of the LAUSD Asbestos Management Plans and a review of the scope of work provide including drawings, a visual on-site inspection, and the collection of additional suspect asbestos-containing building materials (ACBM), if needed. Vista's field technicians were Mr. Francisco Barraza, a State of California Division of Occupational Safety and Health (DOSH) Certified Asbestos Consultant (CAC) No. 17-6066, Mr. Eloy Acuna (CAC No. 24-7651) with the help Mr. Adair Martinez, a CSST in Training (Building Inspector Certificate No. 225-134-BIR) under the guidance of Mr. Carlos A. Galdamez, a DOSH CAC No. 98-2379. The survey was conducted on September 22, 23, & 30 2025.

At the time of the inspection, Mr. Francisco Barraza, Mr. Carlos A. Galdamez, Mr. Eloy Acuna, and Mr. Adair Martinez are employed by Vista Environmental Consulting, Inc. located at 1054 N. Tustin Avenue in the City of Anaheim, California 92807 (714-289-2600).

Purpose and Scope of Services

The purpose of the asbestos engineering assessment was to determine if any suspect building materials, which are scheduled to be disturbed by the planned project, contains asbestos. The scope of services includes the following: 1) a review of the LAUSD asbestos management plan, 2) review of the scope of work provided including drawings; 3) identify suspect ACBM that will be impacted by the planned project, 4) collect adequate number of samples per AHERA guidelines (if needed), 5) analyze samples for asbestos content, and 6) provide LAUSD with a project specific report with our findings.

II. Scope of Work

The asbestos engineering assessment performed was limited only to the areas involved in and building materials impacted by the scope of work for the above referenced project. The following building(s) and area(s) will be impacted by the scope of work:

Child Care Building (001DAT)
Classroom Building (95652C)

The scope of work consists of site improvements work to incorporate the outdoor activity areas (Outdoor Classrooms with individual learning stations) into the existing playground areas of the school including various upgrades to Path of Travel and other accessibility features. The scope of work also includes new paving and landscaping.

A. The Outdoor Classroom Scope:

1) Selective removal of existing playground equipment, site furniture, and paving.
2) Re-paving and installation of EWF safety surfacing.
3) Construct raised platform with sloped walk.
4) Related landscaping and irrigation work.
5) Related civil and utility works.

B. Accessibility Features:

1) Accessible path of travel from public right away to site.
2) Accessible upgrades to Faculty and All-Gender Student Restrooms.
3) New surface gates.
4) Replacement of playmats.
5) Miscellaneous signage and way finding.
6) Upgrade parking area.
7) Update electrical / fire alarm & FLS components.
8) HVAC Upgrades.

For more details, please refer to the Scope of Work and drawings (dated 8/7/2023) provided in Appendix E.

NOTE: No inspection was conducted at the Elementary School, this Phase 1 report is solely for the Early Education Center. The asphalt sampling was conducted by FETU, please refer to the asphalt survey report which is a stand-alone report.

III. Visual Survey, Sampling Methodology, Analytical Procedures

Visual Survey

The asbestos engineering assessment report was performed generally in accordance with the AHERA protocol (40 CFR Part 763, Subpart E). Visual identification was performed by assessing visible and accessible structural, architectural, and mechanical components that may be impacted as part of this specific project, for the presence of suspect ACM at the Project Site. Each identified suspect asbestos-containing material (ACM) was sampled in accordance with procedures established by the United States Environmental Protection Agency (USEPA).

Quantities and locations are based upon areas that were provided by LAUSD. Materials similar those in this report may be present in areas which were not accessed. Asphalt Core sampling was not conducted as part of this inspection. Subsurface inspection was not part of this survey.

Sampling Methodology

In the next phase, a sampling strategy is then developed to provide representative sampling of the suspect materials using the methods identified in AHERA and Cal/OSHA. Each sample is placed in a container; the container is sealed, labeled and placed in a storage bag. Samples are documented by entering the sample data on a chain-of-custody for bulk analysis form, including a description of the material, sample number, location, condition, accessibility, friability, potential for damage, and quantity. Typically, the sample location is marked on an 8-1/2 x 11 inch not-to-scale floor plan. Throughout the process, special care is taken to prevent cross-contamination of the collected samples. Sampling equipment is cleaned after each sample is obtained. In addition, sample containers are placed directly beneath each sample location, when feasible, to collect any materials which may become dislodged during the sampling process. Any debris generated by the sampling is cleaned by wet-cleaning methods. Sample locations are appropriately repaired.

Analytical Procedures

A total of one hundred and thirty-one (131) suspect ACM samples were delivered, under chain-of-custody, to AQ Environmental Laboratories, LLC located at 1508 East 33rd Street, Signal Hills, California, 90755 (562-206-2770) for analysis with one (1) bulk sample point counted. LAUSD FSD Laboratory is accredited under the National Voluntary Laboratory Accreditation Program (NVLAP#101505-0) for asbestos.

All bulk sample analysis is conducted by Polarized Light Microscopy (PLM) with dispersion staining as described in the "Method for the Determination of Asbestos in Bulk Building Materials" (EPA-600/R-93/116, July 1993). A suspect material is immersed in a solution of known refractive index and subjected to illumination of polarized light. The color displayed enables mineral identification. Quality control samples at a rate of 10% or one per project, whichever is greater, are reanalyzed by a second, independent analyst. Samples estimated to contain asbestos in amounts of 1% or less are also reanalyzed. Once analyzed, results are entered on bulk logs for inclusion in the report.

NOTE: The amended National Emission Standard for Hazardous Air Pollutants (NESHAP), November 20, 1990, included a requirement that when the asbestos content of a bulk sample material is determined using procedures outlined and the asbestos content is estimated to be less than 10% by a method other than point counting, the parties legally responsible for a building (owner/operator) may (1) elect to assume the amount to be greater than 1% and treat the material as a regulated asbestos-containing material, or (2) require verification of the amount by the Point Counting method. The purpose of this procedure is to minimize false negative analysis (reporting the samples as containing less than 1% asbestos for asbestos-containing samples actually containing greater than 1%) and false positives (reporting the sample as containing greater than 1% asbestos for samples containing less than 1% asbestos). Point Counting was included in NESHAP in response to an EPA study that found an unacceptable amount of false negative and false positive analyses by methods outlined in EPA-600/R-93/116, July 1993 method. Unless directed otherwise by LAUSD, Vista will assume that PLM analysis is acceptable for this facility. Reminder: in California the abatement of materials with detectable quantities of asbestos - legally defined as materials containing percentages of asbestos greater than one-tenth of one percent (>0.1%) by area - are regulated by Cal/OSHA and therefore considered positive in this report. Unless directed otherwise by LAUSD, samples with trace amounts of asbestos (less than 1%) will be assumed by Vista to be asbestos-containing and subject to all applicable regulations.

When a material is found to contain asbestos in concentration greater than 1 percent, it is defined by the EPA as an ACM. Title 8 CCR Section 1529 also defines ACM as construction material containing greater than 1 percent asbestos. However, Section 25919 of the California Health and Safety Code and Title 8 Section 1529 defines ACCM as one that contains greater than 0.1 percent asbestos by weight.

Under the California Health and Safety Code, asbestos notification to employees, occupants, and other working in buildings is required for materials containing greater than 0.1 percent asbestos. In addition, removal of more than 100 square feet (SF) of ACCM (greater than 0.1 percent asbestos) still requires a State of California licensed asbestos abatement contractor.

Under Cal/OSHA requirements, worker/employee notification and training are required when a material contains greater than 1 percent asbestos in an area where worker/employees perform work.

IV. Discussion of Survey Findings and Recommendations.

The survey was conducted in accordance with AHERA regulations and was limited to areas and materials impacted by the planned project. The plant manager of the school provided access to the buildings and keys at the time of the inspection.

The tables below include materials that are anticipated to be impacted during the project.

Vista's findings are as follows:

A. Child Care Building (001DAT)

1. Asbestos-Containing Materials (ACM >1%) and Asbestos-Containing Construction Materials (ACCM >0.1%) anticipated to be disturbed during the project:

	MATERIAL	LOCATIONS/SCOPE OF IMPACT	LAB SAMPLE NUMBERS
a.	Joint Compound (**ACM**) associated with Drywall Ceiling (Non-ACM) **Approx. Qty.:** 550 SF	**Locations:** Hallway (Above the Ceiling Tiles) **Scope of Impact:** Remove as needed as per the scope of work.	2564077-001 to 2564077-009 (9/23/2025)
b.	Joint Compound (**ACM**) associated with Unfinished Drywall Ceiling (Non-ACM) **Approx. Qty.:** 100 SF	**Locations**: Rooms 1, 2, & 3 (Above the 2'x4' Ceiling Tiles) and Ceiling Space (Kitchen, Hallway, Restrooms) **Scope of Impact**: Minor impact (drilling, coring, and/or openings) as needed electrical, plumbing, HVAC, and fire alarm.	2564077-010 to 2564077-030 (9/23/2025)
c.	Joint Compound (**ACCM**) associated with Drywall Walls (Non-ACM) **Approx. Qty.:** 500 SF	**Locations:** Rooms 1, 2, & 3, Hallway, Faculty Lounge / Conference Room, Principal Office, Clerk Area, and Storage Room **Scope of Impact**: Remove as per the scope of work for the restroom upgrade portion with minor impact (drilling, coring, and/or openings as needed for electrical, plumbing, HVAC, and fire alarm.	2564179-001 (**ACCM by Point Count Analysis**); 2564078-001 to 2564078-010; 2564077-031 to 2564077-034 (9/23/2025)
d.	Fire Doors (**Assumed ACM**) **Approx. Qty.:** 5 Doors	**Locations:** Interior / Exterior Doors **Scope of Impact:** Doors will be removed as part of the restroom renovation and entrance gate portion.	Assumed ACM by Carlos A. Galdamez, Certified Asbestos Consultant No. 98-2379

e.	Flooring Material and Associated Mastic (**Assumed ACM**) **Approx. Qty**.: 100 SF	**Locations:** Room 2 at Sink Cabinet and Room 3 at Wall Cabinets (Below Cabinets) **Scope of Impact:** Remove wall cabinets along with possible assumed flooring underneath.	Assumed ACM by Carlos A. Galdamez, Certified Asbestos Consultant No. 98-2379

2. Non-Asbestos-Containing Materials (Non-ACM) anticipated to be disturbed during the project:

MATERIAL		LOCATIONS/SCOPE OF IMPACT	LAB SAMPLE NUMBERS
a.	Exterior Stucco Walls (Cored)	**Locations**: Exterior Walls **Scope of Impact**: Minor impact – drilling, coring, and/or openings as needed.	2564075-001 to 2564075-006 (9/23/2025)
b.	Exterior Portico Stucco Ceiling (Cored)	**Locations**: Exterior Portico Ceiling **Scope of Impact**: Minor Impact – Drilling, coring, and/or opening as needed.	2564075-007 to 2565075-012 (9/23/2025)
c.	Exterior Wall Moisture Barrier Paper	**Locations**: Exterior Wall (Behind Stucco Walls) **Scope of Impact**: None. For information purposes only.	2564075-013 to 2565075-015 (9/23/2025)
d.	HVAC Duct Seam Mastic	**Locations**: HVAC Unit at Roof **Scope of Impact**: Remove as per the scope of work.	2564075-016 to 2565075-018 (9/23/2025)
e.	HVAC Duct Seam Tape (White)	**Locations:** HVAC Unit at Roof **Scope of Impact:** Remove as per the scope of work.	2564076-001 to 2564076-003 (9/23/2025)
f.	2’x4’ Fissure Ceiling Tiles (Lay-In)	**Locations:** Rooms 1, 2, & 3 **Scope of Impact:** Remove as needed as per the scope of work.	2564076-004 to 2564076-006 (9/23/2025)

MATERIAL		LOCATIONS/SCOPE OF IMPACT	LAB SAMPLE NUMBERS
g.	12”x12” Random Holes Ceiling Tile (Glued)	**Locations:** Hallway, Faculty Lounge / Conference Room, Isolation Room, Clerk Area, Principal’s Office, and Cot Room **Scope of Impact:** Remove as needed as per the scope of work.	2564076-007 to 2564076-009 (9/23/2025)
h.	Ceiling Tile Mastic associated with 12”x12” Random Holes	**Locations:** Hallway, Faculty Lounge / Conference Room, Isolation Room, Clerk Area, Principal’s Office, and Cot Room **Scope of Impact:** Remove as needed as per the scope of work.	2564076-010 to 2564076-012 (9/23/2025)
i.	4” Brown Cove Base / Adhesive	**Locations:** Rooms 1, 2 & 3, Hallway, Faculty Lounge / Conference Room, Isolation Room, Clerk Area, and Principal’s Office **Scope of Impact:** Remove as needed as per the scope of work.	2564078-011 to 2564078-016 (9/23/2025)
j.	12”x12” Blue Floor Tile and associated Mastic on Concrete Substrate (Cored)	**Locations:** Rooms 1, 2 & 3, Hallway, Faculty Lounge / Conference Room, Clerk Area, Principal’s Office, Isolation Room, and Storage Room **Scope of Impact:** Remove as needed as per the scope of work.	2564078-017 to 2564078-025 (9/23/2025)
k.	HVAC Duct Wrap Insulation	**Locations:** Ceiling Space above Rooms 1, 2, & 3 **Scope of Impact:** Remove as per the scope of work.	2564079-001, 002; 2564078-026 (9/23/2025)
l.	Smooth Plaster Ceiling with Drywall Backing (Core Samples)	**Locations:** Boy’s & Girl’s Restroom in Room 3, Staff Restroom, Boy’s & Girl’s Restroom at Hallway, All-Gender Restroom, Kitchen, and Kitchen Storage **Scope of Impact:** Remove as needed as per the scope of work.	2564079-003 to 2564079-020 (9/23/2025)

MATERIAL		LOCATIONS/SCOPE OF IMPACT	LAB SAMPLE NUMBERS
m.	Smooth Plaster Walls with Drywall Backing (Core Samples)	**Locations:** Boy's & Girl's Restrooms in Room 3, Staff Restroom, Boy's & Girl's Restrooms at Hallway, All-Gender Restroom, Kitchen, and Kitchen Storage **Scope of Impact:** Remove as needed as per the scope of work.	2564080-001 to 2564080-003; 2564079-021 to 2564079-032 (9/23/2025)
n.	White Ceramic Wall Tiles with Grout & Mortar (Core Samples)	**Locations:** Boy's Restroom in Room 3 and Boy's Restroom at Hallway at Urinal **Scope of Impact:** Remove as needed as per the scope of work.	2564080-004 to 2564080-012 (9/23/2025)
o.	Blue & White Ceramic Floor Tile with Grout & Mortar on Concrete (Core Samples)	**Locations:** Boy's Restroom in Room 3 and Boy's Restroom at Hallway **Scope of Impact:** Remove as needed as per the scope of work.	2564080-013 to 2564080-024 (9/23/2025)
p.	White Ceramic Baseboard with Grout & Mortar (Core Samples)	**Locations:** Boy's Restroom in Room 3 and Boy's Restroom at Hallway **Scope of Impact:** Remove as needed as per the scope of work.	2564080-025 to 2564080-033 (9/23/2025)
q.	Brown Ceramic Floor Tile with Grout & Mortar (Core Samples)	**Locations:** Girl's Restroom in Room 3 and Girl's Restroom at Hallway **Scope of Impact:** Remove as needed as per the scope of work.	2564081-001 to 2564081-004; 2564080-034 to 2564080-039 (9/23/2025)
r.	Brown Ceramic Baseboard with Grout & Mortar (Core Samples)	**Locations:** Girl's Restroom in Room 3 and Girl's Restroom at Hallway **Scope of Impact:** Remove as needed as per the scope of work.	2564081-005 to 2564081-013 (9/23/2025)

MATERIAL		LOCATIONS/SCOPE OF IMPACT	LAB SAMPLE NUMBERS
s.	Beige & Blue Ceramic Floor Tile with Grout & Mortar on Concrete (Patch / Cored)	**Locations:** Boy's Restrooms in Room 3 **Scope of Impact:** Remove as needed as per the scope of work.	2564081-014 to 2564081-017 (9/23/2025)
t.	Lt. Brown & Beige Ceramic Floor Tile with Grout & Mortar (Patch / Cored)	**Locations:** Girl's Restroom in Room 3 **Scope of Impact:** Remove as needed as per the scope of work.	2564081-018 to 2564081-021 (9/23/2025)
u.	Beige Ceramic Floor Tile with Grout & Mortar on Concrete (Core Samples)	**Locations:** Boy's Restroom at Hallway – Urinal Area **Scope of Impact:** Remove as needed as per the scope of work.	2564081-022 to 2564081-031 (9/23/2025)
v.	Lt. Brown Ceramic Baseboard with Grout & Mortar (Core Samples)	**Locations:** All Gender Restroom **Scope of Impact:** Remove as needed as per the scope of work.	2564081-032 to 2564081-040 (9/23/2025)
w.	Lt. Brown Ceramic Floor Tile with Grout & Mortar on Concrete (Core Samples)	**Locations:** All Gender Restroom **Scope of Impact:** Remove as needed as per the scope of work.	2564082-001 to 2564082-012 (9/23/2025)
x.	Beige Ceramic Floor Tile with Grout & Mortar on Concrete (Patch / Core Sample)	**Locations:** All Gender Restroom **Scope of Impact:** Remove as needed as per the scope of work.	2564082-013 to 256482-015 (9/23/2025)
y.	Gray Ceramic Floor Tile with Grout & Mortar on Concrete (Core Samples)	**Locations:** Staff Restroom **Scope of Impact:** Remove as needed as per the scope of work.	2564082-016 to 2564082-024 (9/23/2025)

MATERIAL		LOCATIONS/SCOPE OF IMPACT	LAB SAMPLE NUMBERS
z.	Gray Ceramic Baseboard with Grout & Mortar (Core Samples)	**Locations:** Staff Restroom **Scope of Impact:** Remove as needed as per the scope of work.	2564082-025 to 2564082-033 (9/23/2025)
aa.	White PVC Roofing System on Wood Substrate (Core Samples)	**Locations:** Roof **Scope of Impact:** Remove as needed as per the scope of work.	25464138-001 to 2564138-009 (9/30/2025)
bb.	Penetration Sealant (White)	**Locations:** Roof **Scope of Impact:** Remove as needed as per the scope of work.	2564138-010 to 2564138-012 (9/30/2025)
cc.	HVAC Duct Sealant (White)	**Locations:** Roof **Scope of Impact:** Remove as needed as per the scope of work.	2564138-013 to 2564138-015 (9/30/2025)
dd.	HVAC Unit Platform Sealant (White)	**Locations:** Roof **Scope of Impact:** Remove as needed as per the scope of work.	2564138-016 to 2564138-018 (9/30/2025)
ee.	Roof Vent Sealant	**Locations:** Roof **Scope of Impact:** Remove as needed as per the scope of work.	2564139-001 (9/30/2025)

3. Recommendations for handling ACM and/or ACCM:

   a. Joint Compound (ACM) associated with Drywall Ceiling (Non-ACM) – Above the 12”x12” Ceiling Tiles

      1) Removal shall be conducted by an LAUSD approved Abatement Contractor in accordance with LAUSD Specifications Section 02_8213 (Asbestos Abatement and Asbestos Related Disturbances) and Phase 2 - Abatement Design (Project Manual), under the supervision of FETU or District approved Representative.

b. Joint Compound (ACM) associated with Unfinished Drywall Ceiling at Ceiling Space

1) Minor disturbance which is less than three (3) square feet per impact area (i.e. drilling, coring, cut-outs) totaling less than 100 square feet for the entire Project may be performed by authorized personnel that have minimum 16-hour Cal/OSHA O&M training per CCR Cal/OSHA and LAUSD Specification Section 02-8213 (Asbestos Abatement and Asbestos Related Disturbances).

2) Any impact and/or removal of more than three square feet (>3 SF) and greater than 100 square feet overall must be conducted by an LAUSD approved abatement contractor in compliance with LAUSD Section 02 8213 (Asbestos Abatement and Asbestos Related Disturbances).

c. Joint Compound (ACCM) associated with Drywall Walls

1) Removal shall be conducted by an LAUSD approved Abatement Contractor in accordance with LAUSD Specifications Section 02_8213 (Asbestos Abatement and Asbestos Related Disturbances) and Phase 2 - Abatement Design (Project Manual), under the supervision of FETU or District approved Representative.

d. Fire Doors (Assumed ACM)

1) At the time of the inspection, the building was still operational and occupied by staff and students; destructive sampling was not performed at the time to determine if asbestos insulation is present. Further investigation and testing by District Representative will be required prior to demolishing of this building.

2) Removal or impacts shall be conducted by an LAUSD approved Abatement Contractor in accordance with LAUSD Specifications Section 02_8213 (Asbestos Abatement and Asbestos Related Disturbances) and Phase 2 - Abatement Design (Project Manual), under the supervision of FETU or District approved Representative.

e. Flooring Material with Associated Mastic (Assumed ACM)

1) At the time of the inspection, the building was still operational and occupied by staff and students; destructive sampling was not performed at the time to determine if flooring and/or mastic is present underneath the sink cabinet and wall cabinets. Further investigation and testing by District Representative will be required prior to demolishing of this building.

2) Removal or impacts shall be conducted by an LAUSD approved Abatement Contractor in accordance with LAUSD Specifications Section 02_8213 (Asbestos Abatement and Asbestos Related Disturbances) and Phase 2 - Abatement Design (Project Manual), under the supervision of FETU or District approved Representative.

4. General Notes:

a. No crawl space present in the building.
b. At the time of the inspection, Vista inspected the ceiling spaces throughout the building and observed no suspect material. Fiberglass pipe insulation was observed inside the ceiling space intact at the time of the inspection. Access to the ceiling is warrant.
c. Per the scope of work and drawings provided, the Boy's & Girl's Restroom located by the Hallway will not be impacted including the All-Gender Restroom. Only the Staff Restroom and Room 3 Restrooms will be upgrades.
d. All identified asbestos-containing materials were observed intact at the time of the inspection.
e. Where painted building components are impacted, the work shall be performed in compliance with LAUSD Specification, Section 02 8333 (Lead Abatement and Lead Related Construction Work), and by RRP Firm and RRP trained personnel qualified in the techniques of lead-related construction, handling, disposal of lead containing materials, and in accordance with Environmental Protection Agency (EPA) and Renovation, Repair and Painting (RRP) under the supervision of FETU or a District approved Environmental Consultant.

B. Classroom Building (95652C)

1. Asbestos-Containing Materials (ACM >1%) and Asbestos-Containing Construction Materials (ACCM >0.1%) anticipated to be disturbed during the project:

MATERIAL		LOCATIONS/SCOPE OF IMPACT	LAB SAMPLE NUMBERS
a.	None.		

2. Non-Asbestos-Containing Materials (Non-ACM) anticipated to be disturbed during the project:

MATERIAL		LOCATIONS/SCOPE OF IMPACT	LAB SAMPLE NUMBERS
a.	Exterior Stucco Wall (Cored)	**Locations:** Exterior Wall **Scope of Impact**: Remove as needed as per the scope of work.	2564073-001 to 2564073-006 (9/22/2025)
b.	Exterior Wall Moisture Barrier Paper	**Locations:** Exterior Wall (Behind stucco) **Scope of Impact**: Remove as needed as per the scope of work.	2564073-007 to 2564073-009 (9/22/2025)
c.	2'x4' Fiberglass Ceiling Tiles (Lay-In)	**Locations:** Rooms 4 & 5 and Student & Staff Restroom **Scope of Impact**: Remove as need as per the scope of work.	2564073-010 to 2564073-012 (9/22/2025)
d.	Fiberboard Wall Panels with Drywall Backing	**Locations:** Rooms 4 & 5 **Scope of Impact**: Remove as needed as per the scope of work.	2564074-001 to 2564074-003; 2564073-013 to 2564073-015 (9/22/2025)
e.	Vinyl Wall Panel with Drywall Backing (Cored)	**Locations:** Staff & Student Restroom **Scope of Impact**: Remove as needed as per the scope of work.	2564074-004 to 2564074-012 (9/22/2025)

MATERIAL		LOCATIONS/SCOPE OF IMPACT	LAB SAMPLE NUMBERS
f.	White PVC Roofing System on Wood Substrate (Cored)	**Locations:** Roof **Scope of Impact**: Remove as needed as per the scope of work.	2564140-001 to 2564140-006 (9/30/2025)
g.	Penetration Sealant (White)	**Locations:** Roof **Scope of Impact**: Remove as needed as per the scope of work.	2564140-007 to 2564140-009 (9/30/2025)

3. Recommendations for handling ACM and/or ACCM:

   a. None.

4. General Notes:

   a. No attic space present but a ceiling space with no suspect material. Ceiling space is cleared for access.
   b. Per the scope of work, flooring material will not be impacted.
   c. Where painted components are impacted, the work shall be performed in compliance with LAUSD Specification, Section 02 8333 (Lead Abatement and Lead Related Construction Work), and by RRP Firm and RRP trained personnel qualified in the techniques of lead-related construction, handling, disposal of lead containing materials, and in accordance with Environmental Protection Agency (EPA) and Renovation, Repair and Painting (RRP) under the supervision of FETU or a District approved Environmental Consultant.

V. General Recommendations and Notes

All suspect construction materials not identified above are presumed asbestos-containing. All attics and crawl spaces not specified herein as clear for normal access and ceiling spaces not inspected and identified as absent of contamination are to be considered asbestos-contaminated areas. If materials not identified in this report will be disturbed or if attics, crawl spaces or ceiling spaces not identified in this report as clear of contamination are to be accessed during construction, notify IOR or OAR. They will contact the Facilities Environmental Technical Unit for further direction prior to disturbance of these materials or access of the contaminated spaces.

Based on the scope of work for this project and extent of asbestos-containing materials to be impacted, a Phase II report is required. All work that will result in disturbance of asbestos containing materials shall be performed in accordance with all applicable specifications, laws and regulations, including but not limited to the LAUSD Facilities Standard Specifications and Procedures, Division 02 8213, "Asbestos Abatement and Asbestos Related Disturbance," 29 CFR 1926.1101, Title 8, CCR 1529, and AHERA.

The Contractor shall take care when demolishing materials which will open wall cavities, sealed ceiling areas, covered trenches, and in general, areas which were inaccessible during the limited asbestos inspection. If any additional known, presumed, or suspected asbestos-containing materials are discovered during the demolition/renovation, the Contractor shall immediately stop all work and then contact the FETU and the project Environmental Consultant to determine the proper course of action.

Please refer to the asphalt report conducted by FETU regarding the asphalt sample results for the exterior grounds.

Authorization was provided by FETU for the sampling of the PVC roofing system. Any core samples were patched as per the direction of FETU.

All doors at LAUSD are considered to be fire doors and insulated with asbestos-containing materials unless they have a metal plate placed on the side of the door stating, "No Asbestos".

Any repairs to the doors or replacement to their hardware must be conducted by 16 hours asbestos O&M trained personnel, following safe work practices and use of asbestos control means and methods.

VI. Lead Related Construction and Impact to Coated Surfaces

A. The building(s) and ground(s) involved with this project are as follows:

Child Care Building (001DAT)
Classroom Building (95652C)

B. Renovation, repair or painting work performed on buildings constructed prior to 1978 require special handling and environmental monitoring when coated surfaces including, but not limited to, painted, varnished, and glazed surfaces are impacted. Coated surfaces applied prior to 1978 are assumed to be lead-based. All work shall be performed in compliance with Facilities Standard Specification, Section 02 8333, "Lead Abatement and Lead Related Construction Work." XRF testing methodology is not acceptable in determining negative for lead content for Cal/OSHA compliance purposes, except for notification requirements. XRF may be used

in determining lead-based paint for compliance with the U.S.E.P.A. Renovator, Repair, and Painting Rule. Disturbance of coated surfaces by contractors will be monitored by qualified District staff or Environmental Consultant sufficient to ensure that proper training and work procedures, cleanup, and waste handling are employed.

C. Loose or flaky paint that will be disturbed during the work of this project or in close proximity of the work area shall be stabilized by removing the loose or flaky paint and leaving only paint in stable condition.

D. It should be noted that any coated surfaces and building materials not listed above are to be considered to be lead-based and asbestos-containing respectively. Should the project require the disturbance of these surfaces and building materials, the FETU shall be notified.

If any changes occur in the scope of work, notify the Consultant or the FETU immediately before further commencement of work.

This report may not be changed, modified or include additions without the express written permission from the FETU.

If you have any questions regarding this report, contact the FETU at (213) 745-1450.

Signatures below certify that the information contained herein has been proofread and is technically accurate.

Carlos A. Galdamez, CAC No. 98-2379

VII. Confidentiality and Limitations

Reasonable effort is made by Vista personnel to locate and sample suspect materials impacted by the planned project. However, for any school site the existence of unique or concealed asbestos-containing materials and debris is a possibility. In addition, sampling and laboratory analysis constraints typically hinder the investigation. Vista does not warrant, guarantee or profess to have the ability to locate or identify all asbestos-containing materials in a school site.

This report is based upon the site conditions at Sylvan Park Early Education Center at the time of our inspection. Should the scope of work change affecting any other materials to be impacted, the LAUSD FETU shall be notified immediately.

Appendices

Appendix A. Site Plan

Appendix B. Analytical Results from Samples and Sample Location Drawings

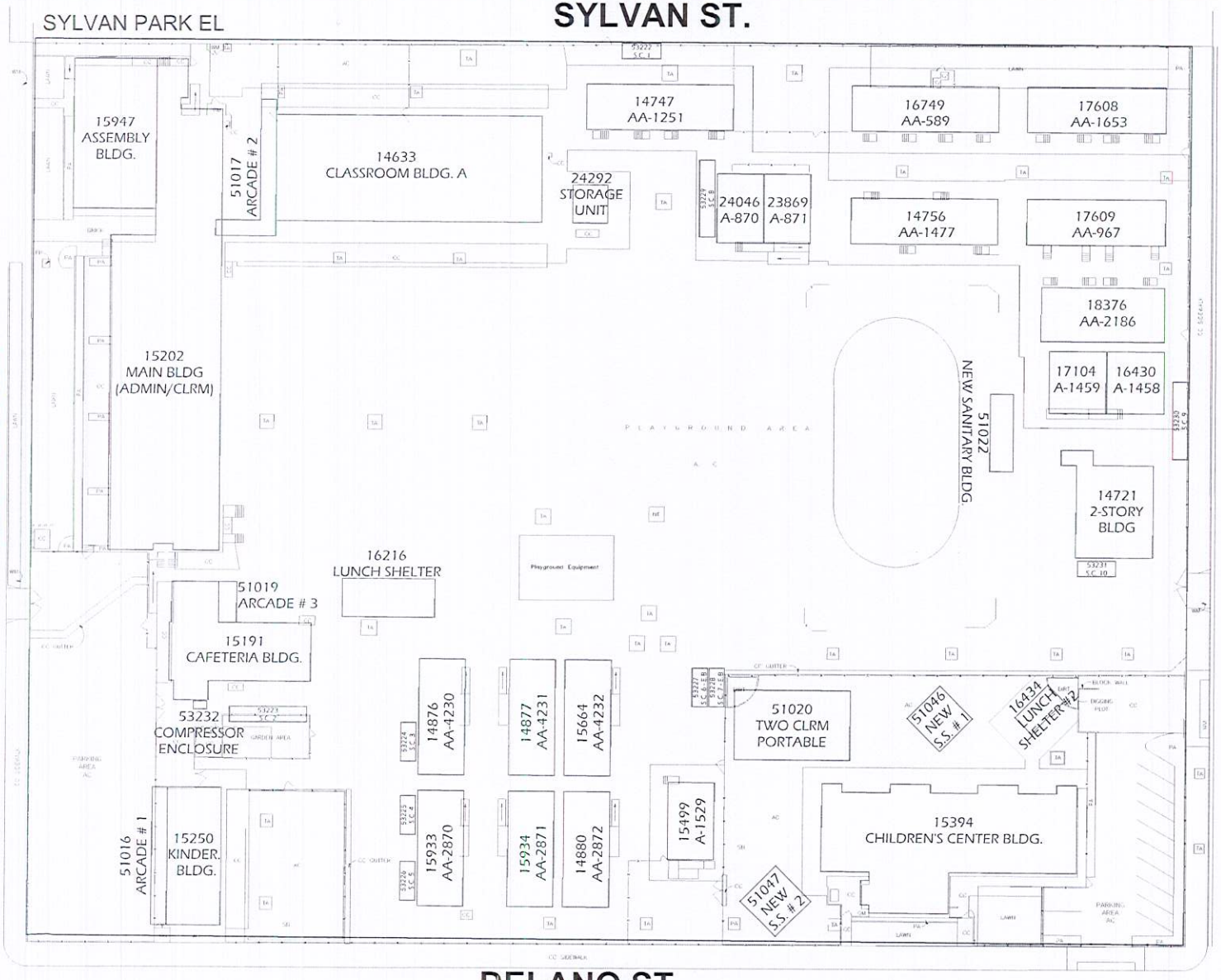
Appendix C. Asbestos Survey Form A

Appendix D. Consultant's Certifications

Appendix E. Scope of Work

Appendix F. Consultant's Checklist

APPENDIX A -
SITE PLAN



SCALE:NTS

FACILITIES RECORDS MANAGEMENT
CAFM UNIT - N2
8960 HERRICK AVENUE, SUN VALLEY, CA 91352

SITE I.D. -
9565 - SYLVAN PARK EEC
15011 DELANO ST., VAN NUYS, CA 91411

SITE I.D. - 13477
7027 - SYLVAN PARK EL.
6238 NOBLE AVE., VAN NUYS, CA 91411

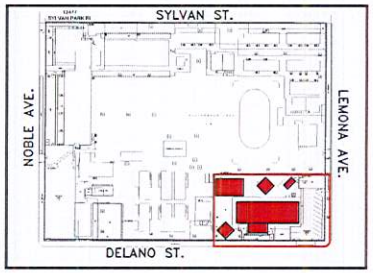
LEVEL

SITE PLAN

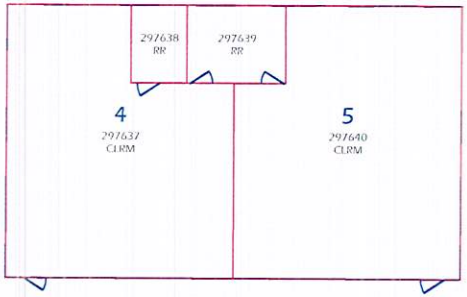
DATE: 07-30-2024

PREP BY: SM

SHT. NO.
SP



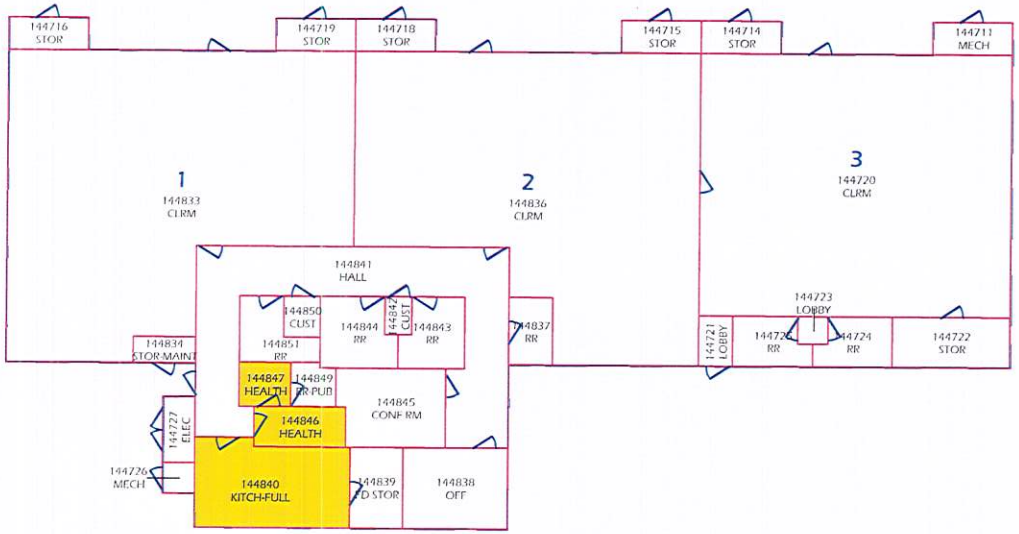
51020
TWO CLASSROOM PORTABLE



51046
NEW SHADE STRUCTURE # 1

16434
LUNCH SHELTER #2

15394
CHILDREN'S CENTER BUILDING



51047
NEW SHADE STRUCTURE # 2

SCALE:NTS

FACILITIES RECORDS MANAGEMENT
CAFM UNIT - N2
8960 HERRICK AVENUE, SUN VALLEY, CA 91352

SITE I.D. -
9565 - SYLVAN PARK EEC
15011 DELANO ST., VAN NUYS, CA 91411

LEVEL
CHILDREN'S CENTER BLDG.
2-CLASSROOM
PORTABLE

DATE: 07-30-2024
PREP BY: SM
SHT. NO.
EEC

APPENDIX B:

ANALYTICAL RESULTS FROM SAMPLES AND SAMPLE LOCATIONS

LOS ANGELES UNIFIED SCHOOL DISTRICT
FACILITIES SERVICES DIVISION
CHAIN-OF-CUSTODY FOR BULK ANALYSIS

2564073

SITE NAME: Sylvan Park Early Eduation Center CODE: 9565 PROJ. DESC.: Outdoor Classroom and Campus Upgrades

SITE ADDRESS: 15011 Delano Street, Van Nuys, CA 91411 COLIN #: 10374546

SAMPLED BY: Francisco Barraza DATE SAMPLED: 9/22/2025 DEPT. / CONSULTANT: Vista Environmental Consulting, Inc. TEL: 714-289-2600

Fill in all information legibly and precisely. Original must be submitted with the samples. Make a copy before submitting samples. Results and a copy of the Chain of Custody (COC) with sample numbers will be submitted to FETU when analysis is completed. ***USE BLACK/BLUE INK ONLY. DO NOT USE WHITE OUT! ALL RUSH ANALYSIS AND POINT COUNT REQUESTS MUST BE APPROVED BY FETU SUPERVISORS.***

LAB NUMBER	SAMPLE NUMBER	BUILDING NUMBER	BUILDING NAME	ROOM NUMBER AND/OR NAME	LOCATION IN ROOM	MATERIAL TYPE (DESCRIBE)	FRIABLE (YES or NO)
	1	95652C	Classrooms Building	Exterior	East Center	Stucco Wall (Cored)	NO
	2	95652C	Classrooms Building	Exterior	South Center	Stucco Wall (Cored)	NO
	3	95652C	Classrooms Building	Exterior	West Center	Stucco Wall (Cored)	NO
	4	95652C	Classrooms Building	Exterior	East Center	Wall Moisture Barrier Paper	NO
	5	95652C	Classrooms Building	Exterior	South Center	Wall Moisture Barrier Paper	NO
	6	95652C	Classrooms Building	Exterior	West Center	Wall Moisture Barrier Paper	NO
	7	95652C	Classrooms Building	Room 4	South West	2'X4' Fiberglass Ceiling Tile (Lay-In)	YES
	8	95652C	Classrooms Building	Student Restroom	South East	2'X4' Fiberglass Ceiling Tile (Lay-In)	YES
	9	95652C	Classrooms Building	Room 5	South East	2'X4' Fiberglass Ceiling Tile (Lay-In)	YES
	10	95652C	Classrooms Building	Room 4	South West Behind Fiberboard	Drywall Wall	NO
	11	95652C	Classrooms Building	Room 5	South East Behind Fiberboard	Drywall Wall	NO
	12	95652C	Classrooms Building	Room 5	South West Behind Fiberboard	Drywall Wall	NO

	NAME (PRINT & SIGN)	DEPT./AREA/CONSULTANT	# OF SAMPLES	DATE	TIME
Relinquished By:	Francisco Barraza	Vista Environmental Consulting, Inc.	12	9/29/25	1615pm
Received By:	Justine Pablo Jameson	AQ Environmental	12	9/30/25	0800
Relinquished By:					
Received By:					

Maximo Work Order Number: 39361542 Project Type: ☐ Maintenance (MA) ☐ Deferred Maintenance ☐ Bond (specify: K,R,Y,Q) ☑ Other: _____

FETU USE ONLY

FETU REVIEWED BY: _____ RUSH? ☐ Yes ☐ No APPROVAL: _____

FETU REVIEW DATE: 9-29-25 POINT COUNT? ☐ Yes ☐ No PT. CT. RUSH? ☐ Yes ☐ No APPROVAL: _____

ENVIRONMENTAL LABORATORIES LLC

1508 East 33rd Street
Signal Hill, CA 90755
Tel: 562-206-2770
Fax: 562-206-2773

Vista Environmental Consulting
1054 N Tustin Avenue
Anaheim, CA 92807
Attn.: Carlos Galdamez

Report Number 2564073
Date Received 09/30/2025
Date Analyzed 10/07/2025
Date Reported 10/07/2025

Project Number
Project Name Sylvan Park Early Education Center
Location 15011 Delano Street, Van Nuys, CA 91411
PO Number
Total Samples Submitted 12
Date Sampled 09/22/2025
Sampled By Francisco Barraza
Total Layers Analyzed 15

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564073-001	95652C, Classrooms Building, Exterior, East Center					
1A	Stucco Wall (Cored) - Skim Coat/Paint, Yellow/Brown, Non-homogeneous	LAYER 1 100%	Quartz Calcium Carbonate Other Non-Fibrous Material	50% 30% 20%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564073-002	95652C, Classrooms Building, Exterior, East Center					
1B	Stucco, Gray, Non-homogeneous	LAYER 1 100%	Metal Lath Fibrous Glass Quartz Calcium Carbonate Other Non-Fibrous Material	10% <1% 45% 30% 15%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564073-003	95652C, Classrooms Building, Exterior, South Center					
2A	Stucco Wall (Cored) - Skim Coat/Paint, Yellow/Brown, Non-homogeneous	LAYER 1 100%	Quartz Calcium Carbonate Other Non-Fibrous Material	50% 30% 20%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564073-004	95652C, Classrooms Building, Exterior, South Center					
2B	Stucco, Gray, Non-homogeneous	LAYER 1 100%	Fibrous Glass Quartz Gypsum Other Non-Fibrous Material	<1% 45% 30% 25%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

ENVIRONMENTAL LABORATORIES LLC

1508 East 33rd Street
Signal Hill, CA 90755
Tel: 562-206-2770
Fax: 562-206-2773

Vista Environmental Consulting
1054 N Tustin Avenue
Anaheim, CA 92807
Attn.: Carlos Galdamez

Report Number 2564073
Date Received 09/30/2025
Date Analyzed 10/07/2025
Date Reported 10/07/2025

Project Number
Project Name Sylvan Park Early Education Center
Location 15011 Delano Street, Van Nuys, CA 91411
PO Number
Total Samples Submitted 12
Date Sampled 09/22/2025
Sampled By Francisco Barraza
Total Layers Analyzed 15

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564073-005	95652C, Classrooms Building, Exterior, West Center					
3A	Stucco Wall (Cored) - Skim Coat/Paint, Yellow/Brown, Non-homogeneous	LAYER 1 100%	Quartz Calcium Carbonate Other Non-Fibrous Material	50% 30% 20%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564073-006	95652C, Classrooms Building, Exterior, West Center					
3B	Stucco, Gray, Non-homogeneous	LAYER 1 100%	Fibrous Glass Quartz Calcium Carbonate Other Non-Fibrous Material	1% 45% 30% 24%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564073-007	95652C, Classrooms Building, Exterior, East Center					
4	Wall Moisture Barrier Paper, Black, Homogeneous	LAYER 1 100%	Cellulose Fiber Bituminous Matrix	95% 5%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564073-008	95652C, Classrooms Building, Exterior, South Center					
5	Wall Moisture Barrier Paper, Brown, Homogeneous	LAYER 1 100%	Cellulose Fiber Bituminous Matrix	100% <1%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564073-009	95652C, Classrooms Building, Exterior, West Center					
6	Wall Moisture Barrier Paper, Black, Homogeneous	LAYER 1 100%	Cellulose Fiber Bituminous Matrix	95% 5%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Attn.: Carlos Galdamez

Report Number 2564073
Date Received 09/30/2025
Date Analyzed 10/07/2025
Date Reported 10/07/2025

Project Number
Project Name Sylvan Park Early Education Center
Location 15011 Delano Street, Van Nuys, CA 91411
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Total Samples Submitted 12
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Total Layers Analyzed 15

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564073-010	95652C, Classrooms Building, Room 4, South West					
7	2'x4' Fiberglass Ceiling Tile (Lay-in), Yellow/White, Non-homogeneous	LAYER 1 100%	Fibrous Glass Non-Fibrous Material	90% 10%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564073-011	95652C, Classrooms Building, Student Restroom, South East					
8	2'x4' Fiberglass Ceiling Tile (Lay-in), Yellow/White, Non-homogeneous	LAYER 1 100%	Fibrous Glass Non-Fibrous Material	60% 40%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564073-012	95652C, Classrooms Building, Room 5, South East					
9	2'x4' Fiberglass Ceiling Tile (Lay-in), Yellow/White, Non-homogeneous	LAYER 1 100%	Fibrous Glass Non-Fibrous Material	90% 10%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564073-013	95652C, Classrooms Building, Room 4, South West Behind Fiberboard					
10	Drywall Wall, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Fibrous Glass Gypsum/Filler	15% <1% 85%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564073-014	95652C, Classrooms Building, Room 5, South East Behind Fiberboard					
11	Drywall Wall, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Fibrous Glass Gypsum/Filler	15% <1% 85%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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1054 N Tustin Avenue
Anaheim, CA 92807
Attn.: Carlos Galdamez

Report Number 2564073
Date Received 09/30/2025
Date Analyzed 10/07/2025
Date Reported 10/07/2025

Project Number
Project Name Sylvan Park Early Education Center
Location 15011 Delano Street, Van Nuys, CA 91411
PO Number
Total Samples Submitted 12
Date Sampled 09/22/2025
Sampled By Francisco Barraza
Total Layers Analyzed 15

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564073-015	95652C, Classrooms Building, Room 5, South West Behind Fiberboard					
12	Drywall Wall, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber	35%	None Detected	
			Fibrous Glass	<1%		
			Gypsum/Filler	65%		

Asbestos Present: No Total % Non-Asbestos: 100.0% **Total %Asbestos:** **No Asbestos Detected**

Method Detection Limit: Less than one percent (<1%). Asbestos content has been determined using calibrated visual estimation (CVES). Samples tested were received in acceptable condition unless otherwise stated. Test report relates only to items tested. Test results apply only to samples submitted and in the condition they were received. Non-homogeneous samples containing discrete and separable layers are analyzed and reported separately; composite results may be reported upon customer's request. Non-homogeneous samples with inseparable layers are analyzed and reported as composite samples. Due to the limitations of Polarized Light Microscopy, samples reported as None Detected or with low asbestos concentrations may not be reliable and further analysis such as TEM is recommended to confirm PLM results. This report shall not be reproduced except in full without the written approval of this laboratory. This report may not be used by the customer to claim product certification, endorsement, or approval by NIST/NVLAP or any agency of the government. Samples shall be disposed according to local, state and federal laws, 30 days after results are reported unless otherwise instructed.

Analyst - Fred Chappelear

Approved Signatory Cristina E. Tabatt

CA-ELAP #2823
NVLAP TESTING
NVLAP Lab Code 500044-0

VISTA ENVIRONMENTAL CONSULTING

BUILDING DIAGRAM

Client: LAUSD

Date: 9/22/25

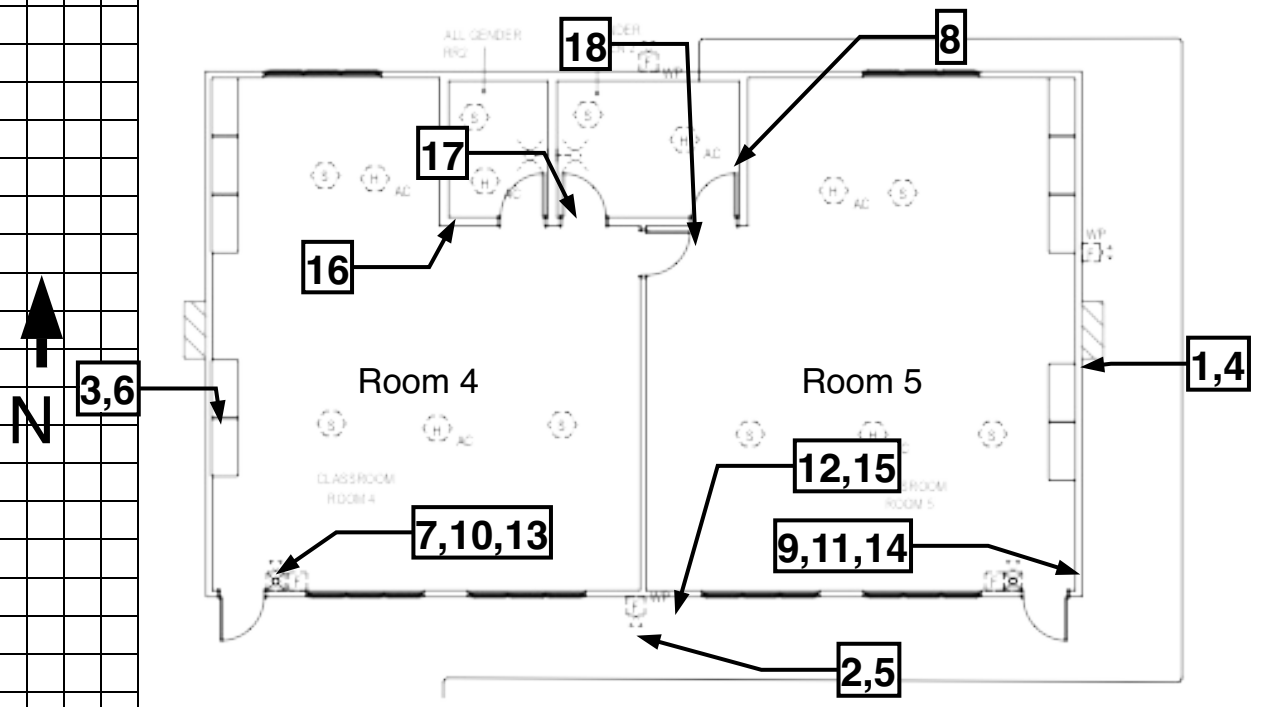
Address: Sylvan Park Early Education Center (9565)

Project No:

Building: Classroom Building (95652C)

Vista Inspector: Francisco Barraza

ATTIC Y / N BASEMENT Y / N CRAWL SPACE Y / N GARAGE Y / N NO # FLOORS:



L E G E N D

1 - 3 = Stucco Wall (Cored)
4 - 6 = Wall Moisture Barrier Paper
7 - 9 = 2'X4' Fiberglass Ceiling Tile (Lay-In)
10 - 12 = Drywall Wall
13 - 15 = Fiberboard Wall Panel
16 - 18 = Vinyl Wall Panel w/ Drywall Backing (Cored)

N

(Not to Scale)

LOS ANGELES UNIFIED SCHOOL DISTRICT
FACILITIES SERVICES DIVISION
CHAIN-OF-CUSTODY FOR BULK ANALYSIS

2564074

SITE NAME: Sylvan Park Early Eduation Center CODE: 9565 PROJ. DESC.: Outdoor Classroom and Campus Upgrades

SITE ADDRESS: 15011 Delano Street, Van Nuys, CA 91411 COLIN #: 10374546

SAMPLED BY: Francisco Barraza DATE SAMPLED: 9/22/2025 DEPT. / CONSULTANT: Vista Environmental Consulting, Inc. TEL: 714-289-2600

Fill in all information legibly and precisely. Original must be submitted with the samples. Make a copy before submitting samples. Results and a copy of the Chain of Custody (COC) with sample numbers will be submitted to FETU when analysis is completed. ***USE BLACK/BLUE INK ONLY. DO NOT USE WHITE OUT! ALL RUSH ANALYSIS AND POINT COUNT REQUESTS MUST BE APPROVED BY FETU SUPERVISORS.***

LAB NUMBER	SAMPLE NUMBER	BUILDING NUMBER	BUILDING NAME	ROOM NUMBER AND/OR NAME	LOCATION IN ROOM	MATERIAL TYPE (DESCRIBE)	FRIABLE (YES or NO)
	13	95652C	Classrooms Building	Room 504	South West	Fiberboard Wall Panel	NO
	14	95652C	Classrooms Building	Room 505	South East	Fiberboard Wall Panel	NO
	15	95652C	Classrooms Building	Room 505	South West	Fiberboard Wall Panel	NO
	16	95652C	Classrooms Building	Staff Restroom	South East	Vinyl Wall Panel w/ Drywall Backing (Cored)	NO
	17	95652C	Classrooms Building	Student Restroom	South West	Vinyl Wall Panel w/ Drywall Backing (Cored)	NO
	18	95652C	Classrooms Building	Student Restroom	South East	Vinyl Wall Panel w/ Drywall Backing (Cored)	NO

	NAME (PRINT & SIGN)	DEPT./AREA/CONSULTANT	# OF SAMPLES	DATE	TIME
Relinquished By:	Francisco Barraza	Vista Environmental Consulting, Inc.	6	9/29/25	1615PM
Received By:	Justme Dabbs Jamie Pham	AQ Environmental	6	9/30/25	0800
Relinquished By:					
Received By:					

Maximo Work Order Number: 39361542 Project Type: ☐ Maintenance (MA) ☐ Deferred Maintenance ☐ Bond (specify: K,R,Y,Q) ☑ Other:

FETU USE ONLY

FETU REVIEWED BY: [signature] RUSH? ☐ Yes ☐ No APPROVAL:

FETU REVIEW DATE: 9-29-25 POINT COUNT? ☐ Yes ☐ No PT. CT. RUSH? ☐ Yes ☐ No APPROVAL:

ENVIRONMENTAL LABORATORIES LLC

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Signal Hill, CA 90755
Tel: 562-206-2770
Fax: 562-206-2773

Vista Environmental Consulting
1054 N Tustin Avenue
Anaheim, CA 92807
Attn.: Carlos Galdamez

Report Number 2564074
Date Received 09/30/2025
Date Analyzed 10/02/2025
Date Reported 10/07/2025

Project Number
Project Name Sylvan Park Early Education Center
Location 15011 Delano Street, Van Nuys, CA 91411
PO Number
Total Samples Submitted 6
Date Sampled 09/22/2025
Sampled By Francisco Barraza
Total Layers Analyzed 12

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564074-001	95652C, Classrooms Building, Room 504, South West					
13	Fiberboard Wall Panel, White/Brown, Non-homogeneous	LAYER 1 100%	Wood Fiber	70%	None Detected	
			Cellulose Fiber	15%		
			Synthetic Fiber	<1%		
			Non-Asbestos Residue	15%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564074-002	95652C, Classrooms Building, Room 505, South East					
14	Fiberboard Wall Panel, White/Brown, Non-homogeneous	LAYER 1 100%	Wood Fiber	70%	None Detected	
			Cellulose Fiber	15%		
			Synthetic Fiber	<1%		
			Non-Asbestos Residue	15%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564074-003	95652C, Classrooms Building, Room 505, South West					
15	Fiberboard Wall Panel, White/Brown, Non-homogeneous	LAYER 1 100%	Wood Fiber	70%	None Detected	
			Cellulose Fiber	15%		
			Synthetic Fiber	<1%		
			Non-Asbestos Residue	15%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564074-004	95652C, Classrooms Building, Staff Restroom, South East					
16A	Vinyl Wall Panel w/ Drywall Backing (Cored), White, Non-homogeneous	LAYER 1 100%	Fibrous Glass	10%	None Detected	
			Binder/Filler	90%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564074-005	95652C, Classrooms Building, Staff Restroom, South East					
16B	Vinyl Wall Panel w/ Drywall Backing (Cored), White, Non-homogeneous	LAYER 1 100%	Fibrous Glass	10%	None Detected	
			Binder/Filler	90%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

ENVIRONMENTAL LABORATORIES LLC

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Vista Environmental Consulting
1054 N Tustin Avenue
Anaheim, CA 92807
Attn.: Carlos Galdamez

Report Number 2564074
Date Received 09/30/2025
Date Analyzed 10/02/2025
Date Reported 10/07/2025

Project Number
Project Name Sylvan Park Early Education Center
Location 15011 Delano Street, Van Nuys, CA 91411
PO Number
Total Samples Submitted 6
Date Sampled 09/22/2025
Sampled By Francisco Barraza
Total Layers Analyzed 12

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564074-006	95652C, Classrooms Building, Staff Restroom, South East					
16C	Vinyl Wall Panel w/ Drywall Backing (Cored), White, Non-homogeneous	LAYER 1 100%	Fibrous Glass Binder/Filler	10% 90%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564074-007	95652C, Classrooms Building, Student Restroom, South West					
17A	Vinyl Wall Panel w/ Drywall Backing (Cored), White, Non-homogeneous	LAYER 1 100%	Fibrous Glass Binder/Filler	10% 90%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564074-008	95652C, Classrooms Building, Student Restroom, South West					
17B	Adhesive, Blue, Non-homogeneous	LAYER 1 100%	Adhesive Binders	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564074-009	95652C, Classrooms Building, Student Restroom, South West					
17C	Drywall, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Fibrous Glass Gypsum/Filler	20% <1% 80%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564074-010	95652C, Classrooms Building, Student Restroom, South East					
18A	Vinyl Wall Panel w/ Drywall Backing (Cored), White, Non-homogeneous	LAYER 1 100%	Fibrous Glass Binder/Filler	10% 90%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564074-011	95652C, Classrooms Building, Student Restroom, South East					
18B	Adhesive, Blue, Homogeneous	LAYER 1 100%	Adhesive Binders	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

ENVIRONMENTAL LABORATORIES LLC

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Vista Environmental Consulting
1054 N Tustin Avenue
Anaheim, CA 92807
Attn.: Carlos Galdamez

Report Number 2564074
Date Received 09/30/2025
Date Analyzed 10/07/2025
Date Reported 10/07/2025

Project Number
Project Name Sylvan Park Early Education Center
Location 15011 Delano Street, Van Nuys, CA 91411
PO Number
Total Samples Submitted 6
Date Sampled 09/22/2025
Sampled By Francisco Barraza
Total Layers Analyzed 12

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564074-012	95652C, Classrooms Building, Student Restroom, South East					
18C	Drywall, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber	15%	None Detected	
			Fibrous Glass	<1%		
			Gypsum/Filler	85%		

Asbestos Present: No Total % Non-Asbestos: 100.0% **Total %Asbestos:** **No Asbestos Detected**

Method Detection Limit: Less than one percent (<1%). Asbestos content has been determined using calibrated visual estimation (CVES). Samples tested were received in acceptable condition unless otherwise stated. Test report relates only to items tested. Test results apply only to samples submitted and in the condition they were received. Non-homogeneous samples containing discrete and separable layers are analyzed and reported separately; composite results may be reported upon customer's request. Non-homogeneous samples with inseparable layers are analyzed and reported as composite samples. Due to the limitations of Polarized Light Microscopy, samples reported as None Detected or with low asbestos concentrations may not be reliable and further analysis such as TEM is recommended to confirm PLM results. This report shall not be reproduced except in full without the written approval of this laboratory. This report may not be used by the customer to claim product certification, endorsement, or approval by NIST/NVLAP or any agency of the government. Samples shall be disposed according to local, state and federal laws, 30 days after results are reported unless otherwise instructed.

Analyst - Fred Chappelear

Approved Signatory Cristina E. Tabatt

CA-ELAP #2823
NVLAP TESTING
NVLAP Lab Code 500044-0

VISTA ENVIRONMENTAL CONSULTING

BUILDING DIAGRAM

Client: LAUSD

Date: 9/22/25

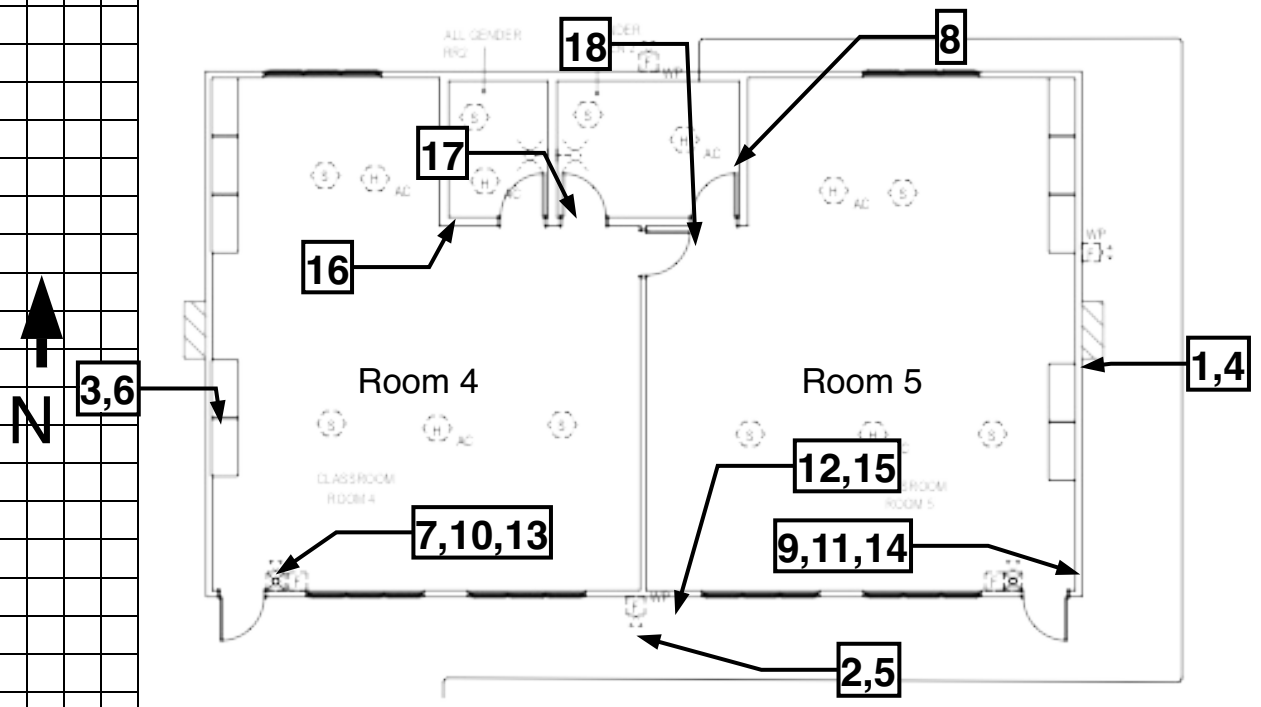
Address: Sylvan Park Early Education Center (9565)

Project No:

Building: Classroom Building (95652C)

Vista Inspector: Francisco Barraza

ATTIC Y / N BASEMENT Y / N CRAWL SPACE Y / N GARAGE Y / N NO # FLOORS:



L E G E N D

1 - 3 = Stucco Wall (Cored)
4 - 6 = Wall Moisture Barrier Paper
7 - 9 = 2'X4' Fiberglass Ceiling Tile (Lay-In)
10 - 12 = Drywall Wall
13 - 15 = Fiberboard Wall Panel
16 - 18 = Vinyl Wall Panel w/ Drywall Backing (Cored)

N

(Not to Scale)

LOS ANGELES UNIFIED SCHOOL DISTRICT
FACILITIES SERVICES DIVISION
CHAIN-OF-CUSTODY FOR BULK ANALYSIS

2564075

SITE NAME: Sylvan Park Early Eduation Center CODE: 9565 PROJ. DESC.: Outdoor Classroom and Campus Upgrades

SITE ADDRESS: 15011 Delano Street, Van Nuys, CA 91411 COLIN #: 10374546

SAMPLED BY: Francisco Barraza DATE SAMPLED: 9/23/2025 DEPT. / CONSULTANT: Vista Environmental Consulting, Inc. TEL: 714-289-2600

Fill in all information legibly and precisely. Original must be submitted with the samples. Make a copy before submitting samples. Results and a copy of the Chain of Custody (COC) with sample numbers will be submitted to FETU when analysis is completed. ***USE BLACK/BLUE INK ONLY. DO NOT USE WHITE OUT! ALL RUSH ANALYSIS AND POINT COUNT REQUESTS MUST BE APPROVED BY FETU SUPERVISORS.***

LAB NUMBER	SAMPLE NUMBER	BUILDING NUMBER	BUILDING NAME	ROOM NUMBER AND/OR NAME	LOCATION IN ROOM	MATERIAL TYPE (DESCRIBE)	FRIABLE (YES or NO)
	19	001DAT	Children's Center	Exterior	South East	Stucco Wall (Cored)	NO
	20	001DAT	Children's Center	Exterior	North East	Stucco Wall (Cored)	NO
	21	001DAT	Children's Center	Exterior	North Center	Stucco Wall (Cored)	NO
	22	001DAT	Children's Center	Exterior	South East	Portico Stucco (Cored)	NO
	23	001DAT	Children's Center	Exterior	North East	Portico Stucco (Cored)	NO
	24	001DAT	Children's Center	Exterior	North Center	Portico Stucco (Cored)	NO
	25	001DAT	Children's Center	Exterior	South East	Wall Moisture Barrier Paper	NO
	26	001DAT	Children's Center	Exterior	North East	Wall Moisture Barrier Paper	NO
	27	001DAT	Children's Center	Exterior	North Center	Wall Moisture Barrier Paper	NO
	28	001DAT	Children's Center	Roof	East Center	Duct Seam Mastic (Black)	NO
	29	001DAT	Children's Center	Roof	East Center	Duct Seam Mastic (Black)	NO
	30	001DAT	Children's Center	Roof	East Center	Duct Seam Mastic (Black)	NO

	NAME (PRINT & SIGN)	DEPT./AREA/CONSULTANT	# OF SAMPLES	DATE	TIME
Relinquished By:	Francisco Barraza	Vista Environmental Consulting, Inc.	12	9/29/25	1615pm
Received By:	Justine Pablo	AQ Environmental	12	9/30/25	0800
Relinquished By:					
Received By:					

Maximo Work Order Number: 39361542 Project Type: ☐ Maintenance (MA) ☐ Deferred Maintenance ☐ Bond (specify: K,R,Y,Q) ☑ Other:

FETU USE ONLY

FETU REVIEWED BY: [signature] RUSH? ☐ Yes ☐ No APPROVAL:

FETU REVIEW DATE: 9-29-25 POINT COUNT? ☐ Yes ☐ No PT. CT. RUSH? ☐ Yes ☐ No APPROVAL:

ENVIRONMENTAL LABORATORIES LLC

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Vista Environmental Consulting
1054 N Tustin Avenue
Anaheim, CA 92807
Attn.: Carlos Galdamez

Report Number 2564075
Date Received 09/30/2025
Date Analyzed 10/07/2025
Date Reported 10/07/2025

Project Number
Project Name Sylvan Park Early Education Center
Location 15011 Delano Street, Van Nuys, CA 91411
PO Number
Total Samples Submitted 12
Date Sampled 09/23/2025
Sampled By Francisco Barraza
Total Layers Analyzed 18

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564075-001	001DAT, Children's Center, Exterior, South East					
19A	Stucco Wall (Cored) - Skim Coat, Yellow/Brown, Non-homogeneous	LAYER 1 100%	Quartz Calcium Carbonate Other Non-Fibrous Material	40% 30% 30%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564075-002	001DAT, Children's Center, Exterior, South East					
19B	Stucco, Gray, Non-homogeneous	LAYER 1 100%	Quartz Calcium Carbonate Other Non-Fibrous Material	50% 30% 20%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564075-003	001DAT, Children's Center, Exterior, North East					
20A	Stucco Wall (Cored) - Skim Coat, Yellow/Brown, Non-homogeneous	LAYER 1 100%	Quartz Calcium Carbonate Other Non-Fibrous Material	40% 30% 30%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564075-004	001DAT, Children's Center, Exterior, North East					
20B	Stucco, Gray, Non-homogeneous	LAYER 1 100%	Quartz Calcium Carbonate Other Non-Fibrous Material	50% 30% 20%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564075-005	001DAT, Children's Center, Exterior, North Center					
21A	Stucco Wall (Cored) - Skim Coat, Yellow/Brown, Non-homogeneous	LAYER 1 100%	Quartz Calcium Carbonate Other Non-Fibrous Material	40% 30% 30%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

ENVIRONMENTAL LABORATORIES LLC

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Signal Hill, CA 90755
Tel: 562-206-2770
Fax: 562-206-2773

Vista Environmental Consulting
1054 N Tustin Avenue
Anaheim, CA 92807
Attn.: Carlos Galdamez

Report Number 2564075
Date Received 09/30/2025
Date Analyzed 10/07/2025
Date Reported 10/07/2025

Project Number
Project Name Sylvan Park Early Education Center
Location 15011 Delano Street, Van Nuys, CA 91411
PO Number
Total Samples Submitted 12
Date Sampled 09/23/2025
Sampled By Francisco Barraza
Total Layers Analyzed 18

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564075-006	001DAT, Children's Center, Exterior, North Center					
21B	Stucco, Gray, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Calcium Carbonate	30%		
			Other Non-Fibrous Material	20%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564075-007	001DAT, Children's Center, Exterior, South East					
22A	Portico Stucco (Cored) - Skim coat/Paint, Yellow/Brown, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	40%		
			Calcium Carbonate	30%		
			Other Non-Fibrous Material	30%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564075-008	001DAT, Children's Center, Exterior, South East					
22B	Stucco, Gray, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Calcium Carbonate	30%		
			Other Non-Fibrous Material	20%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564075-009	001DAT, Children's Center, Exterior, North East					
23A	Portico Stucco (Cored) - Skim coat/Paint, Yellow/Brown, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	40%		
			Calcium Carbonate	30%		
			Other Non-Fibrous Material	30%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564075-010	001DAT, Children's Center, Exterior, North East					
23B	Stucco, Gray, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Calcium Carbonate	30%		
			Other Non-Fibrous Material	20%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564075-011	001DAT, Children's Center, Exterior, North Center					
24A	Portico Stucco (Cored) - Skim coat/Paint, Yellow/Brown, Non-homogeneous	LAYER 1 100%	Quartz Calcium Carbonate Other Non-Fibrous Material	40% 30% 30%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564075-012	001DAT, Children's Center, Exterior, North Center					
24B	Stucco, Gray, Homogeneous	LAYER 1 100%	Quartz Calcium Carbonate Other Non-Fibrous Material	50% 30% 20%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564075-013	001DAT, Children's Center, Exterior, South East					
25	Wall Moisture Barrier Paper, Beige/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Bituminous Matrix	100% <1%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564075-014	001DAT, Children's Center, Exterior, North East					
26	Wall Moisture Barrier Paper, Beige/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Bituminous Matrix	98% 2%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564075-015	001DAT, Children's Center, Exterior, North Center					
27	Wall Moisture Barrier Paper, Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Bituminous Matrix	97% 3%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564075-016	001DAT, Children's Center, Roof, East Center					
28	Duct Seam Mastic, Black, Homogeneous	LAYER 1 100%	Cellulose Fiber Bituminous Matrix/Filler	10% 90%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564075-017	001DAT, Children's Center, Roof, East Center					
29	Duct Seam Mastic, Black, Homogeneous	LAYER 1 100%	Cellulose Fiber Bituminous Matrix/Filler	10% 90%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564075-018	001DAT, Children's Center, Roof, East Center					
30	Duct Seam Mastic, Black, Homogeneous	LAYER 1 100%	Cellulose Fiber Bituminous Matrix/Filler	15% 85%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

Method Detection Limit: Less than one percent (<1%). Asbestos content has been determined using calibrated visual estimation (CVES). Samples tested were received in acceptable condition unless otherwise stated. Test report relates only to items tested. Test results apply only to samples submitted and in the condition they were received. Non-homogeneous samples containing discrete and separable layers are analyzed and reported separately; composite results may be reported upon customer's request. Non-homogeneous samples with inseparable layers are analyzed and reported as composite samples. Due to the limitations of Polarized Light Microscopy, samples reported as None Detected or with low asbestos concentrations may not be reliable and further analysis such as TEM is recommended to confirm PLM results. This report shall not be reproduced except in full without the written approval of this laboratory. This report may not be used by the customer to claim product certification, endorsement, or approval by NIST/NVLAP or any agency of the government. Samples shall be disposed according to local, state and federal laws, 30 days after results are reported unless otherwise instructed.

Analyst - Fred Chappelear

Approved Signatory Cristina E. Tabatt

CA-ELAP #2823
NVLAP TESTING
NVLAP Lab Code 500044-0

VISTA ENVIRONMENTAL CONSULTING

BUILDING DIAGRAM

Client: LAUSD

Address: Sylvan Park Early Education Center (9565)

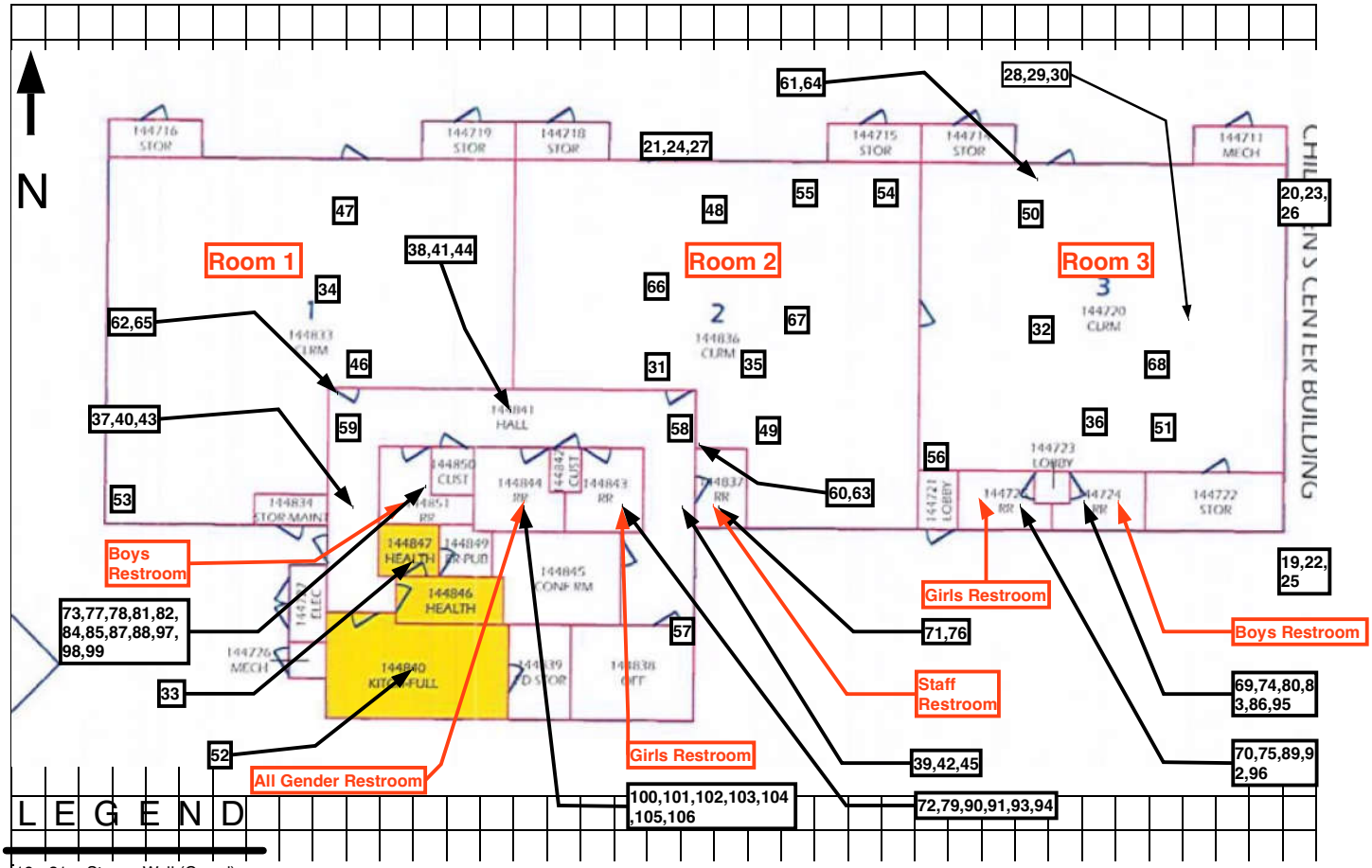
Building: Child Care Center Bldg. (001DAT)

Date: 9/22/25

Project No:

Vista Inspector: Francisco Barraza

ATTIC Y / N BASEMENT Y / N CRAWL SPACE Y / N GARAGE Y / N NO # FLOORS:



LEGEND

19 - 21 = Stucco Wall (Cored)
22 - 24 = Portico Stucco (Core)
25 - 27 = Wall Moisture Barrier Paper
28 - 30 = Duct Seam Tape
31 - 33 = Duct Seam Tape (White)
34 - 36 = 2'X4' Fissured Ceiling Tile (Lay-In)
37 - 39 = 12"X12" Random Hole Ceiling Tile
40 - 42 = Ceiling Tile Mastic (Brown)
43 - 45 = Drywall Ceiling w/ Joint Compound & Tape
46 - 52 = Unfinished Drywall w/ Joint Compound & Tape
53 - 59 = Drywall Wall w/ Joint Compound
60 - 62 = 4" Brown Cove Base w/ Adhesive
63 - 65 = 12"X12" Blue Vinyl Floor Tile (Cored) on Concrete
66 -68 = Duct Wrap Insulation
69 - 73 = Smooth Plaster Ceiling w/ Drywall (Cored)
74 - 79 = Smooth Plaster Wall w/ Drywall (Cored)
80 - 82 = White Ceramic Tile w/ Grout & Mortar (Cored)
83 - 85 = Blue & White Ceramic Floor Tile w/ Grout & Mortar (Cored)
86 - 88 = White Ceramic Baseboard w/ Grout & Mortar (Cored)
89 - 91 = Brown Ceramic Floor Tile w/ Grout & Mortar (Cored)
92 - 94 = Brown Ceramic Baseboard w/ Grout & Mortar (Cored)
95 = Beige & Blue Ceramic Floor Tile w/ Grout & Mortar (Patch)
96 = Lt Brown & Beige Ceramic Floor Tile w/ Grout & Mortar (Patch)
97 - 99 = Beige Ceramic Floor Tile w/ Grout & Mortar (Cored)
100 - 102 = Lt Brown Ceramic Baseboard w/ Grout & Mortar (Cored)
103 - 105 = Lt Brown Ceramic Floor Tile w/ Grout & Mortar (Cored)
106 = Beige Ceramic Floor Tile w/ Grout & Mortar (Patch)
107 - 109 = Gray Ceramic Floor Tile w/ Grout & Mortar (Cored) on Concrete
110 - 112 = Gray Ceramic Baseboard w/ Grout & Mortar (Cored)

LOS ANGELES UNIFIED SCHOOL DISTRICT
FACILITIES SERVICES DIVISION
CHAIN-OF-CUSTODY FOR BULK ANALYSIS

2564076

SITE NAME: Sylvan Park Early Eduation Center CODE: 9565 PROJ. DESC.: Outdoor Classroom and Campus Upgrades

SITE ADDRESS: 15011 Delano Street, Van Nuys, CA 91411 COLIN #: 10374546

SAMPLED BY: Francisco Barraza DATE SAMPLED: 9/23/2025 DEPT. / CONSULTANT: Vista Environmental Consulting, Inc. TEL: 714-289-2600

Fill in all information legibly and precisely. Original must be submitted with the samples. Make a copy before submitting samples. Results and a copy of the Chain of Custody (COC) with sample numbers will be submitted to FETU when analysis is completed. ***USE BLACK/BLUE INK ONLY. DO NOT USE WHITE OUT! ALL RUSH ANALYSIS AND POINT COUNT REQUESTS MUST BE APPROVED BY FETU SUPERVISORS.***

LAB NUMBER	SAMPLE NUMBER	BUILDING NUMBER	BUILDING NAME	ROOM NUMBER AND/OR NAME	LOCATION IN ROOM	MATERIAL TYPE (DESCRIBE)	FRIABLE (YES or NO)
	31	001DAT	Children's Center	Room 2	South Center Ceiling Void	Duct Seam Tape (White)	NO
	32	001DAT	Children's Center	Room 3	Center Celing Void	Duct Seam Tape (White)	NO
	33	001DAT	Children's Center	Health	Center Ceiling Void	Duct Seam Tape (White)	NO
	34	001DAT	Children's Center	Room 1	Center	2'X4' Fissured Ceiling Tile (Lay-In)	YES
	35	001DAT	Children's Center	Room 2	South Center	2'X4' Fissured Ceiling Tile (Lay-In)	YES
	36	001DAT	Children's Center	Room 3	South Center	2'X4' Fissured Ceiling Tile (Lay-In)	YES
	37	001DAT	Children's Center	Hallway	West Center	12"X12" Random Hole Ceiling Tile	YES
	38	001DAT	Children's Center	Hallway	North Center	12"X12" Random Hole Ceiling Tile	YES
	39	001DAT	Children's Center	Hallway	East Center	12"X12" Random Hole Ceiling Tile	YES
	40	001DAT	Children's Center	Hallway	West Center	Ceiling Tile Mastic (Brown)	NO
	41	001DAT	Children's Center	Hallway	North Center	Ceiling Tile Mastic (Brown)	NO
	42	001DAT	Children's Center	Hallway	East Center	Ceiling Tile Mastic (Brown)	NO

	NAME (PRINT & SIGN)	DEPT./AREA/CONSULTANT	# OF SAMPLES	DATE	TIME
Relinquished By:	Francisco Barraza	Vista Environmental Consulting, Inc.	12	9/29/25	1605PM
Received By:	Justme Pablo	AQ Environmental	12	9/30/25	0800
Relinquished By:					
Received By:					

Maximo Work Order Number: 39361542 Project Type: ☐ Maintenance (MA) ☐ Deferred Maintenance ☐ Bond (specify: K,R,Y,Q) ☑ Other:

FETU USE ONLY

FETU REVIEWED BY: [signature] RUSH? ☐ Yes ☐ No APPROVAL:

FETU REVIEW DATE: 9-29-25 POINT COUNT? ☐ Yes ☐ No PT. CT. RUSH? ☐ Yes ☐ No APPROVAL:

ENVIRONMENTAL LABORATORIES LLC

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Vista Environmental Consulting
1054 N Tustin Avenue
Anaheim, CA 92807
Attn.: Carlos Galdamez

Report Number 2564076
Date Received 09/30/2025
Date Analyzed 10/07/2025
Date Reported 10/07/2025

Project Number
Project Name Sylvan Park Early Education Center
Location 15011 Delano Street, Van Nuys, CA 91411
PO Number
Total Samples Submitted 12
Date Sampled 09/23/2025
Sampled By Francisco Barraza
Total Layers Analyzed 12

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564076-001	001DAT, Children's Center, Room 2, South Center Ceiling Void					
31	Duct Seam Tape, White, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Binder/Filler	75% 25%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564076-002	001DAT, Children's Center, Room 3, Center Ceiling Void					
32	Duct Seam Tape, White, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Binder/Filler	75% 25%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564076-003	001DAT, Children's Center, Health, Center Ceiling Void					
33	Duct Seam Tape, White, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Binder/Filler	75% 25%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564076-004	001DAT, Children's Center, Room 1, Center					
34	2'x4' Fissured Ceiling Tile (Lay-in), White/Beige, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Perlite Binder/Filler	45% 45% 10%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564076-005	001DAT, Children's Center, Room 2, South Center					
35	2'x4' Fissured Ceiling Tile (Lay-in), White/Beige, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Perlite Binder/Filler	45% 45% 10%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564076-006	001DAT, Children's Center, Room 3, South Center					
36	2'x4' Fissured Ceiling Tile (Lay-in), White/Beige, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Perlite Binder/Filler	45% 45% 10%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564076-007	001DAT, Children's Center, Hallway, West Center					
37	2'x4' Fissured Ceiling Tile (Lay-in), White/Beige, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Perlite Binder/Filler	45% 45% 10%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564076-008	001DAT, Children's Center, Hallway, North Center					
38	12"x12" Random Hole Ceiling Tile, White/Brown, Non-homogeneous	LAYER 1 100%	Wood Fiber Non-Fibrous Material	90% 10%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564076-009	001DAT, Children's Center, Hallway, East Center					
39	12"x12" Random Hole Ceiling Tile, White/Brown, Non-homogeneous	LAYER 1 100%	Wood Fiber Non-Fibrous Material	95% 5%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564076-010	001DAT, Children's Center, Hallway, West Center					
40	Ceiling Tile Mastic, Brown, Homogeneous	LAYER 1 100%	Adhesive Binders/Filler	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564076-011	001DAT, Children's Center, Hallway, North Center					
41	Ceiling Tile Mastic, Brown, Homogeneous	LAYER 1 100%	Adhesive Binders/Filler	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564076-012	001DAT, Children's Center, Hallway, East Center					
42	Ceiling Tile Mastic, Brown, Homogeneous	LAYER 1			None Detected	
		100%	Adhesive Binders/Filler	100%		

Asbestos Present: No Total % Non-Asbestos: 100.0% **Total %Asbestos:** **No Asbestos Detected**

Method Detection Limit: Less than one percent (<1%). Asbestos content has been determined using calibrated visual estimation (CVES). Samples tested were received in acceptable condition unless otherwise stated. Test report relates only to items tested. Test results apply only to samples submitted and in the condition they were received. Non-homogeneous samples containing discrete and separable layers are analyzed and reported separately; composite results may be reported upon customer's request. Non-homogeneous samples with inseparable layers are analyzed and reported as composite samples. Due to the limitations of Polarized Light Microscopy, samples reported as None Detected or with low asbestos concentrations may not be reliable and further analysis such as TEM is recommended to confirm PLM results. This report shall not be reproduced except in full without the written approval of this laboratory. This report may not be used by the customer to claim product certification, endorsement, or approval by NIST/NVLAP or any agency of the government. Samples shall be disposed according to local, state and federal laws, 30 days after results are reported unless otherwise instructed.

Analyst - Fred Chappelear

Approved Signatory Cristina E. Tabatt

CA-ELAP #2823
NVLAP TESTING
NVLAP Lab Code 500044-0

VISTA ENVIRONMENTAL CONSULTING

BUILDING DIAGRAM

Client: LAUSD

Address: Sylvan Park Early Education Center (9565)

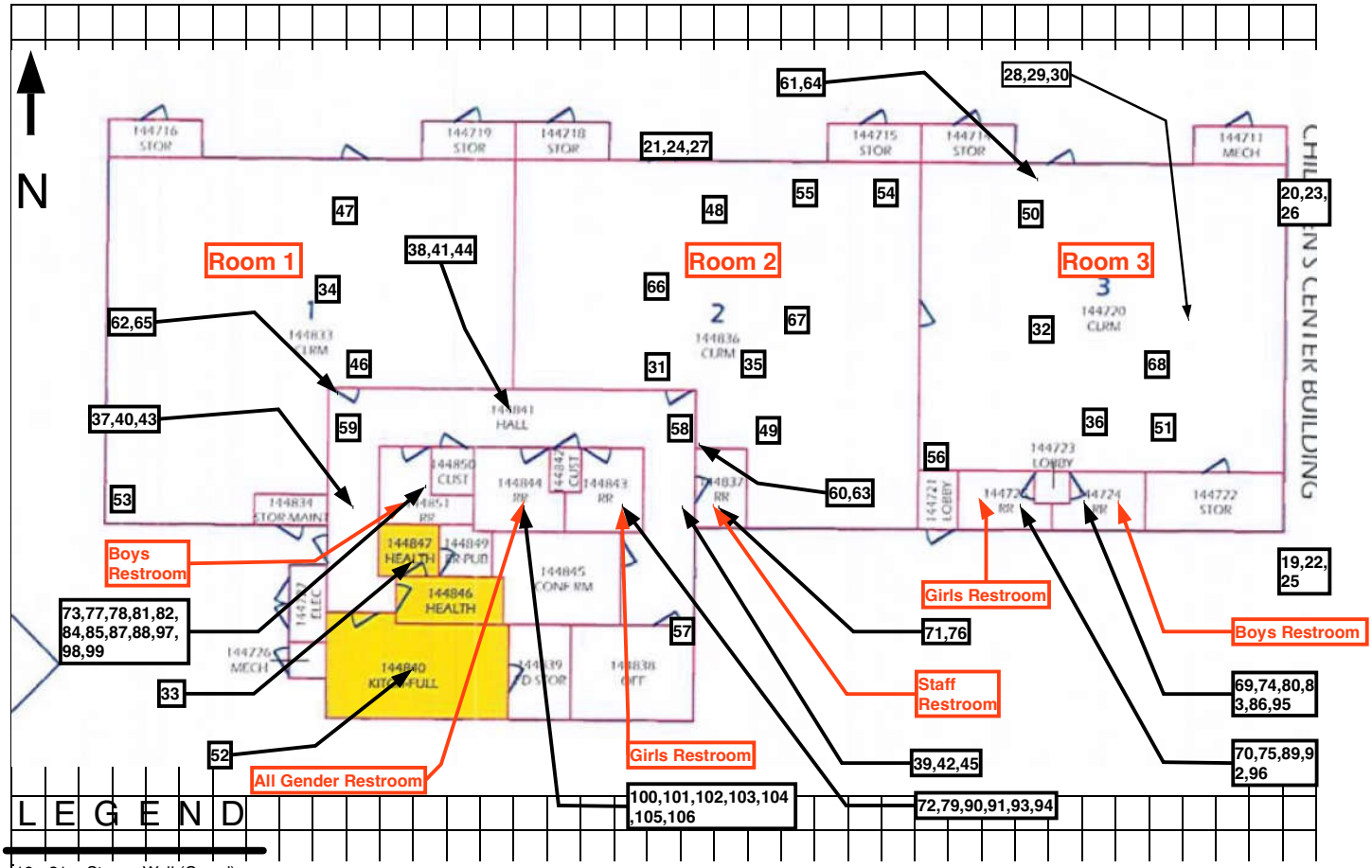
Building: Child Care Center Bldg. (001DAT)

Date: 9/22/25

Project No:

Vista Inspector: Francisco Barraza

ATTIC Y / N BASEMENT Y / N CRAWL SPACE Y / N GARAGE Y / N NO # FLOORS:



LEGEND

19 - 21 = Stucco Wall (Cored)
22 - 24 = Portico Stucco (Core)
25 - 27 = Wall Moisture Barrier Paper
28 - 30 = Duct Seam Tape
31 - 33 = Duct Seam Tape (White)
34 - 36 = 2'X4' Fissured Ceiling Tile (Lay-In)
37 - 39 = 12"X12" Random Hole Ceiling Tile
40 - 42 = Ceiling Tile Mastic (Brown)
43 - 45 = Drywall Ceiling w/ Joint Compound & Tape
46 - 52 = Unfinished Drywall w/ Joint Compound & Tape
53 - 59 = Drywall Wall w/ Joint Compound
60 - 62 = 4" Brown Cove Base w/ Adhesive
63 - 65 = 12"X12" Blue Vinyl Floor Tile (Cored) on Concrete
66 -68 = Duct Wrap Insulation
69 - 73 = Smooth Plaster Ceiling w/ Drywall (Cored)
74 - 79 = Smooth Plaster Wall w/ Drywall (Cored)
80 - 82 = White Ceramic Tile w/ Grout & Mortar (Cored)
83 - 85 = Blue & White Ceramic Floor Tile w/ Grout & Mortar (Cored)
86 - 88 = White Ceramic Baseboard w/ Grout & Mortar (Cored)
89 - 91 = Brown Ceramic Floor Tile w/ Grout & Mortar (Cored)
92 - 94 = Brown Ceramic Baseboard w/ Grout & Mortar (Cored)
95 = Beige & Blue Ceramic Floor Tile w/ Grout & Mortar (Patch)
96 = Lt Brown & Beige Ceramic Floor Tile w/ Grout & Mortar (Patch)
97 - 99 = Beige Ceramic Floor Tile w/ Grout & Mortar (Cored)
100 - 102 = Lt Brown Ceramic Baseboard w/ Grout & Mortar (Cored)
103 - 105 = Lt Brown Ceramic Floor Tile w/ Grout & Mortar (Cored)
106 = Beige Ceramic Floor Tile w/ Grout & Mortar (Patch)
107 - 109 = Gray Ceramic Floor Tile w/ Grout & Mortar (Cored) on Concrete
110 - 112 = Gray Ceramic Baseboard w/ Grout & Mortar (Cored)

LOS ANGELES UNIFIED SCHOOL DISTRICT
FACILITIES SERVICES DIVISION
CHAIN-OF-CUSTODY FOR BULK ANALYSIS

2564077

SITE NAME: Sylvan Park Early Eduation Center CODE: 9565 PROJ. DESC.: Outdoor Classroom and Campus Upgrades

SITE ADDRESS: 15011 Delano Street, Van Nuys, CA 91411 COLIN #: 10374546

SAMPLED BY: Francisco Barraza DATE SAMPLED: 9/23/2025 DEPT. / CONSULTANT: Vista Environmental Consulting, Inc. TEL: 714-289-2600

Fill in all information legibly and precisely. Original must be submitted with the samples. Make a copy before submitting samples. Results and a copy of the Chain of Custody (COC) with sample numbers will be submitted to FETU when analysis is completed. ***USE BLACK/BLUE INK ONLY. DO NOT USE WHITE OUT! ALL RUSH ANALYSIS AND POINT COUNT REQUESTS MUST BE APPROVED BY FETU SUPERVISORS.***

LAB NUMBER	SAMPLE NUMBER	BUILDING NUMBER	BUILDING NAME	ROOM NUMBER AND/OR NAME	LOCATION IN ROOM	MATERIAL TYPE (DESCRIBE)	FRIABLE (YES or NO)
	43	001DAT	Children's Center	Hallway	West Center Above Ceiling Tile	Drywall Ceiling w/ Joint Compound & Tape	NO
	44	001DAT	Children's Center	Hallway	North Center Above Ceiling Tile	Drywall Ceiling w/ Joint Compound & Tape	NO
	45	001DAT	Children's Center	Hallway	East Center Above Ceiling Tile	Drywall Ceiling w/ Joint Compound & Tape	NO
	46	001DAT	Children's Center	Room 1	South Center Ceiling Void	Unfinished Drywall w/ Joint Compound & Tape	NO
	47	001DAT	Children's Center	Room 1	North Center Ceiling Void	Unfinished Drywall w/ Joint Compound & Tape	NO
	48	001DAT	Children's Center	Room 2	North Center Ceiling Void	Unfinished Drywall w/ Joint Compound & Tape	NO
	49	001DAT	Children's Center	Room 2	South Center Ceiling Void	Unfinished Drywall w/ Joint Compound & Tape	NO
	50	001DAT	Children's Center	Room 3	North Center Ceiling Void	Unfinished Drywall w/ Joint Compound & Tape	NO
	51	001DAT	Children's Center	Room 3	South Center Ceiling Void	Unfinished Drywall w/ Joint Compound & Tape	NO
	52	001DAT	Children's Center	Kitchen	Center Ceiling Void	Unfinished Drywall w/ Joint Compound & Tape	NO
	53	001DAT	Children's Center	Room 1	South West	Drywall Wall w/ Joint Compound	NO
	54	001DAT	Children's Center	Room 2	North East	Drywall Wall w/ Joint Compound	NO

	NAME (PRINT & SIGN)	DEPT./AREA/CONSULTANT	# OF SAMPLES	DATE	TIME
Relinquished By:	Francisco Barraza	Vista Environmental Consulting, Inc.	12	9/29/25	1615pm
Received By:	Justme Pablo	AQ Environmental	12	9/30/25	0800
Relinquished By:					
Received By:					

Maximo Work Order Number: 39361542 Project Type: ☐ Maintenance (MA) ☐ Deferred Maintenance ☐ Bond (specify: K,R,Y,Q) ☑ Other:

FETU USE ONLY

FETU REVIEWED BY: RR RUSH? ☐ Yes ☐ No APPROVAL:

FETU REVIEW DATE: 9-29-25 POINT COUNT? ☐ Yes ☐ No PT. CT. RUSH? ☐ Yes ☐ No APPROVAL:

ENVIRONMENTAL LABORATORIES LLC

1508 East 33rd Street
Signal Hill, CA 90755
Tel: 562-206-2770
Fax: 562-206-2773

Vista Environmental Consulting
1054 N Tustin Avenue
Anaheim, CA 92807
Attn.: Carlos Galdamez

Report Number 2564179
Date Received 10/10/2025
Date Analyzed 10/15/2025
Date Reported 10/15/2025

Project Number
Project Name Sylvan Park Early Education Center
Location 15011 Delano Street, Van Nuys, CA 91411
PO Number PLM Ref. #2564077
Total Samples Submitted 1
Date Sampled 09/23/2025
Sampled By Francisco Barraza
Total Layers Analyzed 1

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564179-001	001DAT, Children's Center, Room 1, South West					
53B	Joint Compound, White, Non-homogeneous	LAYER 1			Chrysotile	0.45%
		100%	Acid Soluble Material	75.44%		
			Organic/Volatile Material	9.65%		
			Non-Asbestos Residue	14.46%		

1000 pt. Point Count

Asbestos Present: Yes Total % Non-Asbestos: 99.55% **Total %Asbestos: 0.45%**

Note: EPA 400 point count extended to 1000 points to meet the Cal OSHA regulatory limit of 0.10%.

Method Detection Limit: One tenth of one percent (0.10%). Asbestos content has been determined using the point count method. Samples tested were received in acceptable condition unless otherwise stated. Test report relates only to items tested. Test results apply only to samples submitted and in the condition they were received. Non-homogeneous samples containing discrete and separable layers are analyzed and reported separately; composite results may be reported upon customer's request. Non-homogeneous samples with inseparable layers are analyzed and reported as composite samples. Due to the limitations of Polarized Light Microscopy, samples reported as None Detected or with low asbestos concentrations may not be reliable and further analysis such as TEM is recommended to confirm PLM results. This report shall not be reproduced except in full without the written approval of this laboratory. This report may not be used by the customer to claim product certification, endorsement, or approval by NIST/NVLAP or any agency of the government. Samples shall be disposed according to local, state and federal laws, 30 days after results are reported unless otherwise instructed.

Analyst - Fred Chappelear

Approved Signatory Cristina E. Tabatt

CA-ELAP #2823
NVLAP TESTING
NVLAP Lab Code 500044-0

Point Count was used in laboratory analysis.

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Report Number 2564077
Date Received 09/30/2025
Date Analyzed 10/08/2025
Date Reported 10/08/2025

Project Number
Project Name Sylvan Park Early Education Center
Location 15011 Delano Street, Van Nuys, CA 91411
PO Number
Total Samples Submitted 12
Date Sampled 09/23/2025
Sampled By Francisco Barraza
Total Layers Analyzed 33

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564077-001	001DAT, Children's Center, Hallway, West Center Above Ceiling Tile					
43A	Drywall Ceiling - DW, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Fibrous Glass Gypsum/Filler	40% <1% 60%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564077-002	001DAT, Children's Center, Hallway, West Center Above Ceiling Tile					
43B	Joint Compound, White, Non-homogeneous	LAYER 1 100%	 Calcium Carbonate Gypsum Mica Binder/Filler	 40% 40% 10% 10%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564077-003	001DAT, Children's Center, Hallway, West Center Above Ceiling Tile					
43C	Tape, Note: No Tape Present	LAYER 1 100%				
2564077-004	001DAT, Children's Center, Hallway, North Center Above Ceiling Tile					
44A	Drywall Ceiling - DW, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Fibrous Glass Gypsum/Filler	25% <1% 75%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564077-005	001DAT, Children's Center, Hallway, North Center Above Ceiling Tile					
44B	Joint Compound, White, Homogeneous	LAYER 1 100%	 Calcium Carbonate Mica Binder/Filler	 73% 10% 15%	Chrysotile	2%
	Asbestos Present: Yes		Total % Non-Asbestos:	98.0%	**Total %Asbestos:**	**2.0%**

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Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564077-006	001DAT, Children's Center, Hallway, North Center Above Ceiling Tile					
44C	Tape, Beige, Homogeneous	LAYER 1 100%	Cellulose Fiber Binder/Filler	95% 5%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564077-007	001DAT, Children's Center, Hallway, East Center Above Ceiling Tile					
45A	Drywall Ceiling - DW, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Fibrous Glass Gypsum/Filler	40% <1% 60%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564077-008	001DAT, Children's Center, Hallway, East Center Above Ceiling Tile					
45B	Joint Compound, White, Non-homogeneous	LAYER 1 100%	 Calcium Carbonate Mica Binder/Filler	 68% 10% 20%	Chrysotile	2%
	Asbestos Present: Yes		Total % Non-Asbestos:	98.0%	**Total %Asbestos:**	**2.0%**
2564077-009	001DAT, Children's Center, Hallway, East Center Above Ceiling Tile					
45C	Tape, Beige, Homogeneous	LAYER 1 100%	Cellulose Fiber Binder/Filler	95% 5%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564077-010	001DAT, Children's Center, Room 1, South Center Ceiling Void					
46A	Unfinished Drywall - DW, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Fibrous Glass Gypsum/Filler	50% <1% 50%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Sampled By Francisco Barraza
Total Layers Analyzed 33

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564077-011	001DAT, Children's Center, Room 1, South Center Ceiling Void					
46B	Joint Compound, Beige, Non-homogeneous	LAYER 1 100%	 Gypsum Binder/Filler	 75% 25%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564077-012	001DAT, Children's Center, Room 1, South Center Ceiling Void					
46C	Tape, Beige, Homogeneous	LAYER 1 100%	Cellulose Fiber Binder/Filler	95% 5%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564077-013	001DAT, Children's Center, Room 1, North Center Ceiling Void					
47A	Unfinished Drywall, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Fibrous Glass Gypsum/Filler	40% <1% 60%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564077-014	001DAT, Children's Center, Room 1, North Center Ceiling Void					
47B	Joint Compound, White, Homogeneous	LAYER 1 100%	 Calcium Carbonate Mica Binder/Filler	 73% 10% 15%	Chrysotile	2%
	Asbestos Present: Yes		Total % Non-Asbestos:	98.0%	**Total %Asbestos:**	**2.0%**
2564077-015	001DAT, Children's Center, Room 1, North Center Ceiling Void					
47C	Tape, Beige, Homogeneous	LAYER 1 100%	Cellulose Fiber Binder/Filler	95% 5%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564077-016	001DAT, Children's Center, Room 2, North Center Ceiling Void					
48A	Unfinished Drywall - DW, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Fibrous Glass Gypsum/Filler	35% <1% 65%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564077-017	001DAT, Children's Center, Room 2, North Center Ceiling Void					
48B	Joint Compound, White, Non-homogeneous	LAYER 1 100%	 Calcium Carbonate Mica Binder/Filler	 73% 10% 15%	Chrysotile	2%
	Asbestos Present: Yes		Total % Non-Asbestos:	98.0%	**Total %Asbestos:**	**2.0%**
2564077-018	001DAT, Children's Center, Room 2, North Center Ceiling Void					
48C	Tape, Beige, Homogeneous	LAYER 1 100%	Cellulose Fiber Binder/Filler	95% 5%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564077-019	001DAT, Children's Center, Room 2, South Center Ceiling Void					
49A	Unfinished Drywall - DW, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Fibrous Glass Gypsum/Filler	35% <1% 65%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564077-020	001DAT, Children's Center, Room 2, South Center Ceiling Void					
49B	Joint Compound, Beige, Homogeneous	LAYER 1 100%	 Gypsum Binder/Filler	 75% 25%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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PO Number
Total Samples Submitted 12
Date Sampled 09/23/2025
Sampled By Francisco Barraza
Total Layers Analyzed 33

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564077-021	001DAT, Children's Center, Room 2, South Center Ceiling Void					
49C	Tape, Beige, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Binder/Filler	95% 5%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564077-022	001DAT, Children's Center, Room 3, North Center Ceiling Void					
50A	Unfinished Drywall, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Fibrous Glass Gypsum/Filler	35% <1% 65%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564077-023	001DAT, Children's Center, Room 3, North Center Ceiling Void					
50B	Joint Compound, Beige, Homogeneous	LAYER 1 100%	Gypsum Binder/Filler	75% 25%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564077-024	001DAT, Children's Center, Room 3, North Center Ceiling Void					
50C	Tape, Beige, Homogeneous	LAYER 1 100%	Cellulose Fiber Binder/Filler	95% 5%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564077-025	001DAT, Children's Center, Room 3, South Center Ceiling Void					
51A	Unfinished Drywall, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Fibrous Glass Gypsum/Filler	30% <1% 70%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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PO Number
Total Samples Submitted 12
Date Sampled 09/23/2025
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Total Layers Analyzed 33

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564077-026	001DAT, Children's Center, Room 3, South Center Ceiling Void					
51B	Joint Compound, Beige, Non-homogeneous	LAYER 1 100%	 Gypsum Binder/Filler	 75% 25%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564077-027	001DAT, Children's Center, Room 3, South Center Ceiling Void					
51C	Tape, Beige, Homogeneous	LAYER 1 100%	Cellulose Fiber Binder/Filler	95% 5%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564077-028	001DAT, Children's Center, Kitchen, Center Ceiling Void					
52A	Unfinished Drywall - DW, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Fibrous Glass Gypsum/Filler	30% <1% 70%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564077-029	001DAT, Children's Center, Kitchen, Center Ceiling Void					
52B	Joint Compound, White, Non-homogeneous	LAYER 1 100%	 Calcium Carbonate Mica Binder/Filler	 70% 15% 15%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564077-030	001DAT, Children's Center, Kitchen, Center Ceiling Void					
52C	Tape, Beige, Homogeneous	LAYER 1 100%	Cellulose Fiber Binder/Filler	95% 5%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564077-031	001DAT, Children's Center, Room 1, South West					
53A	Drywall Wall - DW, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Fibrous Glass Gypsum/Filler	40% <1% 60%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564077-032	001DAT, Children's Center, Room 1, South West					
53B	Joint Compound, White, Non-homogeneous	LAYER 1 100%	Calcium Carbonate Mica Binder/Filler	70% 15% 15%	Chrysotile	<1%
	Asbestos Present: Yes		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**<1%**
2564077-033	001DAT, Children's Center, Room 2, North East					
54A	Drywall Wall, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Fibrous Glass Gypsum	50% <1% 50%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564077-034	001DAT, Children's Center, Room 2, North East					
54B	Joint Compound, Beige, Non-homogeneous	LAYER 1 100%	Gypsum Binder/Filler	75% 25%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)

Method Detection Limit: Less than one percent (<1%). Asbestos content has been determined using calibrated visual estimation (CVES). Samples tested were received in acceptable condition unless otherwise stated. Test report relates only to items tested. Test results apply only to samples submitted and in the condition they were received. Non-homogeneous samples containing discrete and separable layers are analyzed and reported separately; composite results may be reported upon customer's request. Non-homogeneous samples with inseparable layers are analyzed and reported as composite samples. Due to the limitations of Polarized Light Microscopy, samples reported as None Detected or with low asbestos concentrations may not be reliable and further analysis such as TEM is recommended to confirm PLM results. This report shall not be reproduced except in full without the written approval of this laboratory. This report may not be used by the customer to claim product certification, endorsement, or approval by NIST/NVLAP or any agency of the government. Samples shall be disposed according to local, state and federal laws, 30 days after results are reported unless otherwise instructed.

Analyst - Fred Chappelear

Approved Signatory Cristina E. Tabatt

CA-ELAP #2823
NVLAP TESTING
NVLAP Lab Code 500044-0

VISTA ENVIRONMENTAL CONSULTING

BUILDING DIAGRAM

Client: LAUSD

Address: Sylvan Park Early Education Center (9565)

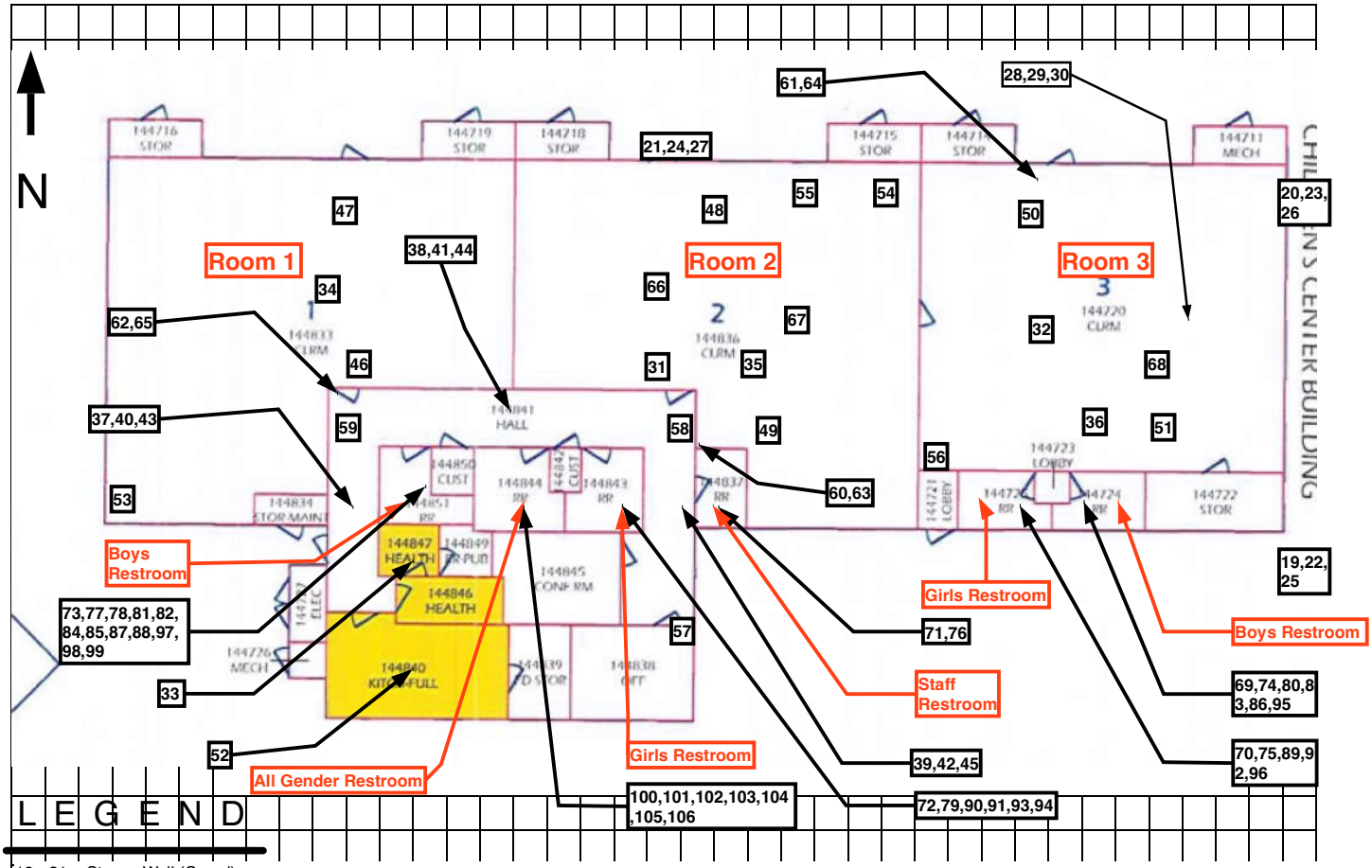
Building: Child Care Center Bldg. (001DAT)

Date: 9/22/25

Project No:

Vista Inspector: Francisco Barraza

ATTIC Y / N BASEMENT Y / N CRAWL SPACE Y / N GARAGE Y / N NO # FLOORS:



LEGEND

19 - 21 = Stucco Wall (Cored)
22 - 24 = Portico Stucco (Core)
25 - 27 = Wall Moisture Barrier Paper
28 - 30 = Duct Seam Tape
31 - 33 = Duct Seam Tape (White)
34 - 36 = 2'X4' Fissured Ceiling Tile (Lay-In)
37 - 39 = 12"X12" Random Hole Ceiling Tile
40 - 42 = Ceiling Tile Mastic (Brown)
43 - 45 = Drywall Ceiling w/ Joint Compound & Tape
46 - 52 = Unfinished Drywall w/ Joint Compound & Tape
53 - 59 = Drywall Wall w/ Joint Compound
60 - 62 = 4" Brown Cove Base w/ Adhesive
63 - 65 = 12"X12" Blue Vinyl Floor Tile (Cored) on Concrete
66 -68 = Duct Wrap Insulation
69 - 73 = Smooth Plaster Ceiling w/ Drywall (Cored)
74 - 79 = Smooth Plaster Wall w/ Drywall (Cored)
80 - 82 = White Ceramic Tile w/ Grout & Mortar (Cored)
83 - 85 = Blue & White Ceramic Floor Tile w/ Grout & Mortar (Cored)
86 - 88 = White Ceramic Baseboard w/ Grout & Mortar (Cored)
89 - 91 = Brown Ceramic Floor Tile w/ Grout & Mortar (Cored)
92 - 94 = Brown Ceramic Baseboard w/ Grout & Mortar (Cored)
95 = Beige & Blue Ceramic Floor Tile w/ Grout & Mortar (Patch)
96 = Lt Brown & Beige Ceramic Floor Tile w/ Grout & Mortar (Patch)
97 - 99 = Beige Ceramic Floor Tile w/ Grout & Mortar (Cored)
100 - 102 = Lt Brown Ceramic Baseboard w/ Grout & Mortar (Cored)
103 - 105 = Lt Brown Ceramic Floor Tile w/ Grout & Mortar (Cored)
106 = Beige Ceramic Floor Tile w/ Grout & Mortar (Patch)
107 - 109 = Gray Ceramic Floor Tile w/ Grout & Mortar (Cored) on Concrete
110 - 112 = Gray Ceramic Baseboard w/ Grout & Mortar (Cored)

LOS ANGELES UNIFIED SCHOOL DISTRICT
FACILITIES SERVICES DIVISION
CHAIN-OF-CUSTODY FOR BULK ANALYSIS

2564078

SITE NAME: Sylvan Park Early Eduation Center CODE: 9565 PROJ. DESC.: Outdoor Classroom and Campus Upgrades

SITE ADDRESS: 15011 Delano Street, Van Nuys, CA 91411 COLIN #: 10374546

SAMPLED BY: Francisco Barraza DATE SAMPLED: 9/23/2025 DEPT. / CONSULTANT: Vista Environmental Consulting, Inc. TEL: 714-289-2600

Fill in all information legibly and precisely. Original must be submitted with the samples. Make a copy before submitting samples. Results and a copy of the Chain of Custody (COC) with sample numbers will be submitted to FETU when analysis is completed. ***USE BLACK/BLUE INK ONLY. DO NOT USE WHITE OUT! ALL RUSH ANALYSIS AND POINT COUNT REQUESTS MUST BE APPROVED BY FETU SUPERVISORS.***

LAB NUMBER	SAMPLE NUMBER	BUILDING NUMBER	BUILDING NAME	ROOM NUMBER AND/OR NAME	LOCATION IN ROOM	MATERIAL TYPE (DESCRIBE)	FRIABLE (YES or NO)
	55	001DAT	Children's Center	Room 2	North East	Drywall Wall w/ Joint Compound	NO
	56	001DAT	Children's Center	Room 3	South West	Drywall Wall w/ Joint Compound	NO
	57	001DAT	Children's Center	Hallway	South East	Drywall Wall w/ Joint Compound	NO
	58	001DAT	Children's Center	Hallway	North West	Drywall Wall w/ Joint Compound	NO
	59	001DAT	Children's Center	Hallway	North East	Drywall Wall w/ Joint Compound	NO
	60	001DAT	Children's Center	Room 2	South Center	4" Brown Cove Base w/ Adhesive	NO
	61	001DAT	Children's Center	Room 3	North West	4" Brown Cove Base w/ Adhesive	NO
	62	001DAT	Children's Center	Hallway	North East	4" Brown Cove Base w/ Adhesive	NO
	63	001DAT	Children's Center	Room 2	South Center	12"X12" Blue Vinyl Floor Tile (Cored) on Concrete	NO
	64	001DAT	Children's Center	Room 3	North West	12"X12" Blue Vinyl Floor Tile (Cored) on Concrete	NO
	65	001DAT	Children's Center	Hallway	North East	12"X12" Blue Vinyl Floor Tile (Cored) on Concrete	NO
	66	001DAT	Children's Center	Room 2	Center	Duct Wrap Insulation	YES

	NAME (PRINT & SIGN)	DEPT./AREA/CONSULTANT	# OF SAMPLES	DATE	TIME
Relinquished By:	Francisco Barraza	Vista Environmental Consulting, Inc.	12	9/29/25	1615pm
Received By:	Justme Pablo	AQ Environmental	12	9/30/25	0800
Relinquished By:					
Received By:					

Maximo Work Order Number: 39361542 Project Type: ☐ Maintenance (MA) ☐ Deferred Maintenance ☐ Bond (specify: K,R,Y,Q) ☑ Other: _____

FETU USE ONLY

FETU REVIEWED BY: _____ RUSH? ☐ Yes ☐ No APPROVAL: _____

FETU REVIEW DATE: 9-29-25 POINT COUNT? ☐ Yes ☐ No PT. CT. RUSH? ☐ Yes ☐ No APPROVAL: _____

ENVIRONMENTAL LABORATORIES LLC

1508 East 33rd Street
Signal Hill, CA 90755
Tel: 562-206-2770
Fax: 562-206-2773

Vista Environmental Consulting
1054 N Tustin Avenue
Anaheim, CA 92807
Attn.: Carlos Galdamez

Report Number 2564078
Date Received 09/30/2025
Date Analyzed 10/08/2025
Date Reported 10/08/2025

Project Number
Project Name Sylvan Park Early Education Center
Location 15011 Delano Street, Van Nuys, CA 91411
PO Number
Total Samples Submitted 12
Date Sampled 09/23/2025
Sampled By Francisco Barraza
Total Layers Analyzed 25

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564078-001	001DAT, Children's Center, Room, North East					
55A	Drywall Wall, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Fibrous Glass Gypsum/Filler	40% <1% 60%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564078-002	001DAT, Children's Center, Room, North East					
55B	Joint Compound, White, Non-homogeneous	LAYER 1 100%	 Gypsum Binder/Filler	 75% 25%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564078-003	001DAT, Children's Center, Room, South West					
56A	Drywall Wall, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Fibrous Glass Gypsum/Filler	20% <1% 80%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564078-004	001DAT, Children's Center, Room, South West					
56B	Joint Compound, White, Non-homogeneous	LAYER 1 100%	 Gypsum Binder/Filler	 75% 25%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564078-005	001DAT, Children's Center, Hallway, South East					
57A	Drywall Wall, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Fibrous Glass Gypsum/Filler	30% <1% 70%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564078-006	001DAT, Children's Center, Hallway, South East					
57B	Joint Compound, Note: No Joint Compound Present	LAYER 1				
2564078-007	001DAT, Children's Center, Hallway, North West					
58A	Drywall, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Fibrous Glass Gypsum/Filler	50% <1% 50%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564078-008	001DAT, Children's Center, Hallway, North West					
58B	Joint Compound, White, Non-homogeneous	LAYER 1 100%	 Gypsum Binder/Filler	 75% 25%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564078-009	001DAT, Children's Center, Hallway, North East					
59A	Drywall, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Fibrous Glass Gypsum/Filler	25% <1% 75%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564078-010	001DAT, Children's Center, Hallway, North East					
59B	Joint Compound, White, Non-homogeneous	LAYER 1 100%	 Gypsum Binder/Filler	 75% 25%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564078-011	001DAT, Children's Center, Room 2, South Center					
60A	4" Cove Base, Brown, Homogeneous	LAYER 1			None Detected	
		100%	Calcium Carbonate	40%		
			Vinyl Binder/ Filler	60%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564078-012	001DAT, Children's Center, Room 2, South Center					
60B	Adhesive, Brown/Cream, Non-homogeneous	LAYER 1			None Detected	
		100%	Adhesive Binders/Filler	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564078-013	001DAT, Children's Center, Room 3, North West					
61A	4" Cove Base, Brown, Homogeneous	LAYER 1			None Detected	
		100%	Calcium Carbonate	40%		
			Vinyl Binder/ Filler	60%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564078-014	001DAT, Children's Center, Room 3, North West					
61B	Adhesive, Brown/Cream, Non-homogeneous	LAYER 1			None Detected	
		100%	Adhesive Binders/Filler	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564078-015	001DAT, Children's Center, Hallway, North East					
62A	4" Cove Base, Brown, Homogeneous	LAYER 1			None Detected	
		100%	Calcium Carbonate	40%		
			Vinyl Binder/ Filler	60%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Date Reported 10/08/2025

Project Number
Project Name Sylvan Park Early Education Center
Location 15011 Delano Street, Van Nuys, CA 91411
PO Number
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Date Sampled 09/23/2025
Sampled By Francisco Barraza
Total Layers Analyzed 25

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564078-016	001DAT, Children's Center, Hallway, North East					
62B	Adhesive, Brown/Cream, Homogeneous	LAYER 1 100%	Adhesive Binders/Filler	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564078-017	001DAT, Children's Center, Room 2, South Center					
63A	12"x12" Vinyl Floor Tile (Cored) on Concrete, Blue, Homogeneous	LAYER 1 100%	Calcium Carbonate Vinyl Binder/ Filler	65% 35%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564078-018	001DAT, Children's Center, Room 2, South Center					
63B	Adhesive, Cream, Homogeneous	LAYER 1 100%	Adhesive Binders/Filler	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564078-019	001DAT, Children's Center, Room 2, South Center					
63C	Concrete, Gray, Homogeneous	LAYER 1 100%	Quartz Mineral binders/Filler	65% 35%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564078-020	001DAT, Children's Center, Room 3, North West					
64A	12"x12" Vinyl Floor Tile (Cored) on Concrete, Blue, Homogeneous	LAYER 1 100%	Calcium Carbonate Vinyl Binder/ Filler	65% 35%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

AQ ENVIRONMENTAL LABORATORIES LLC

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Report Number 2564078
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Project Number
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Date Sampled 09/23/2025
Sampled By Francisco Barraza
Total Layers Analyzed 25

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564078-021	001DAT, Children's Center, Room 3, North West					
64B	Adhesive, Yellow, Homogeneous	LAYER 1			None Detected	
		100%	Adhesive Binders/Filler	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564078-022	001DAT, Children's Center, Room 3, North West					
64C	Concrete, Gray, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	65%		
			Mineral Binders/Filler	35%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564078-023	001DAT, Children's Center, Hallway, North East					
65A	12"x12" Vinyl Floor Tile (Cored) on Concrete, Blue, Homogeneous	LAYER 1			None Detected	
		100%	Calcium Carbonate	65%		
			Vinyl Binder/ Filler	35%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564078-024	001DAT, Children's Center, Hallway, North East					
65B	Adhesive, Yellow, Non-homogeneous	LAYER 1			None Detected	
		100%	Adhesive Binders/Filler	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564078-025	001DAT, Children's Center, Hallway, North East					
65C	Concrete, Gray, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	65%		
			Mineral Binders/Filler	35%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Sampled By Francisco Barraza
Total Layers Analyzed 25

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564078-026	001DAT, Children's Center, Room 2, Center					
66	Duct Wrap Insulation, Silver/Brown/Pink, Non-homogeneous	LAYER 1 100%	Fibrous Glass	90%	None Detected	
			Cellulose Fiber	6%		
			Non-Fibrous Material	4%		

Asbestos Present: No Total % Non-Asbestos: 100.0% **Total %Asbestos: No Asbestos Detected**

Method Detection Limit: Less than one percent (<1%). Asbestos content has been determined using calibrated visual estimation (CVES). Samples tested were received in acceptable condition unless otherwise stated. Test report relates only to items tested. Test results apply only to samples submitted and in the condition they were received. Non-homogeneous samples containing discrete and separable layers are analyzed and reported separately; composite results may be reported upon customer's request. Non-homogeneous samples with inseparable layers are analyzed and reported as composite samples. Due to the limitations of Polarized Light Microscopy, samples reported as None Detected or with low asbestos concentrations may not be reliable and further analysis such as TEM is recommended to confirm PLM results. This report shall not be reproduced except in full without the written approval of this laboratory. This report may not be used by the customer to claim product certification, endorsement, or approval by NIST/NVLAP or any agency of the government. Samples shall be disposed according to local, state and federal laws, 30 days after results are reported unless otherwise instructed.

Analyst - Fred Chappelear

Approved Signatory Cristina E. Tabatt

CA-ELAP #2823
NVLAP TESTING
NVLAP Lab Code 500044-0

VISTA ENVIRONMENTAL CONSULTING

BUILDING DIAGRAM

Client: LAUSD

Address: Sylvan Park Early Education Center (9565)

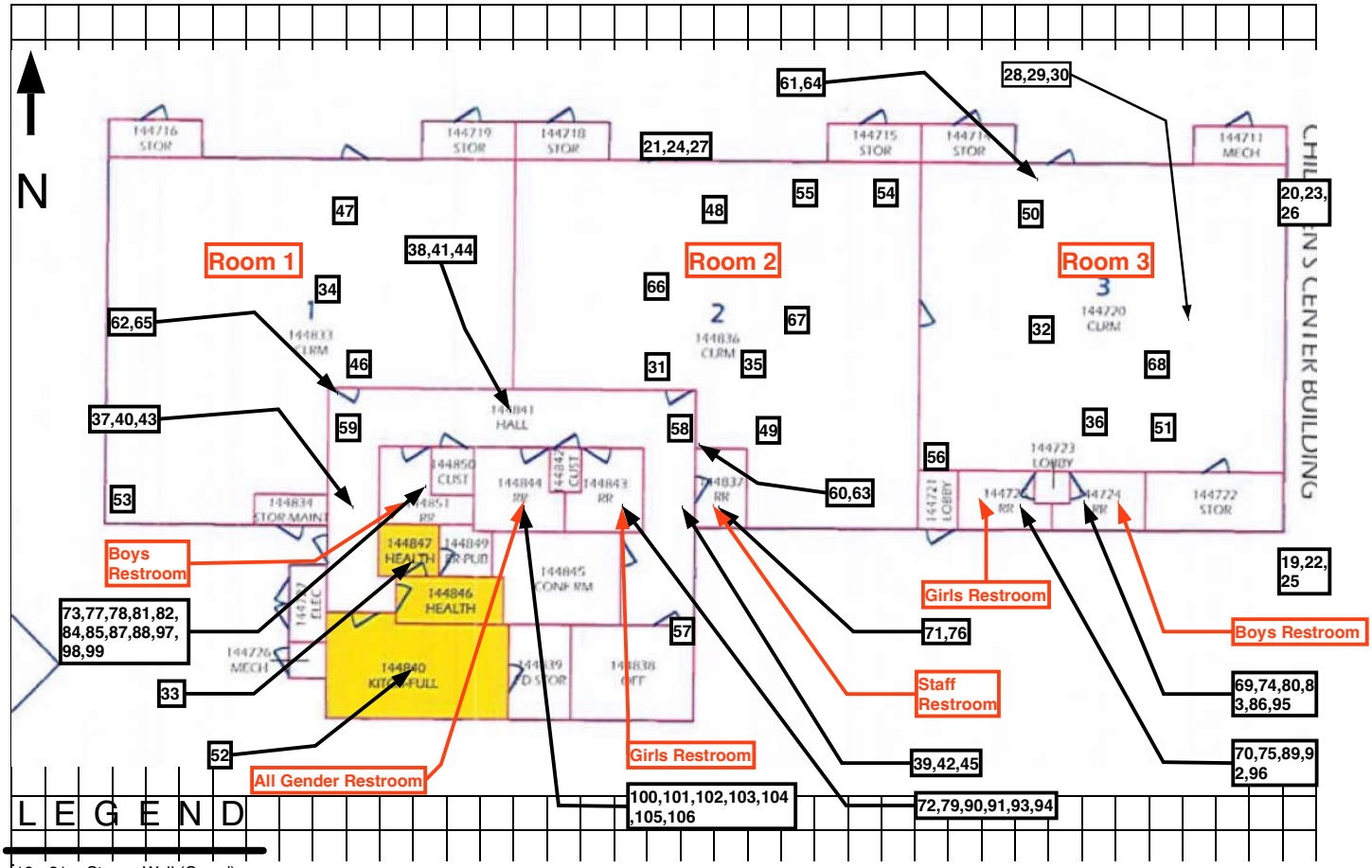
Building: Child Care Center Bldg. (001DAT)

Date: 9/22/25

Project No:

Vista Inspector: Francisco Barraza

ATTIC Y / N BASEMENT Y / N CRAWL SPACE Y / N GARAGE Y / N NO # FLOORS:



LEGEND

19 - 21 = Stucco Wall (Cored)
22 - 24 = Portico Stucco (Core)
25 - 27 = Wall Moisture Barrier Paper
28 - 30 = Duct Seam Tape
31 - 33 = Duct Seam Tape (White)
34 - 36 = 2'X4' Fissured Ceiling Tile (Lay-In)
37 - 39 = 12"X12" Random Hole Ceiling Tile
40 - 42 = Ceiling Tile Mastic (Brown)
43 - 45 = Drywall Ceiling w/ Joint Compound & Tape
46 - 52 = Unfinished Drywall w/ Joint Compound & Tape
53 - 59 = Drywall Wall w/ Joint Compound
60 - 62 = 4" Brown Cove Base w/ Adhesive
63 - 65 = 12"X12" Blue Vinyl Floor Tile (Cored) on Concrete
66 -68 = Duct Wrap Insulation
69 - 73 = Smooth Plaster Ceiling w/ Drywall (Cored)
74 - 79 = Smooth Plaster Wall w/ Drywall (Cored)
80 - 82 = White Ceramic Tile w/ Grout & Mortar (Cored)
83 - 85 = Blue & White Ceramic Floor Tile w/ Grout & Mortar (Cored)
86 - 88 = White Ceramic Baseboard w/ Grout & Mortar (Cored)
89 - 91 = Brown Ceramic Floor Tile w/ Grout & Mortar (Cored)
92 - 94 = Brown Ceramic Baseboard w/ Grout & Mortar (Cored)
95 = Beige & Blue Ceramic Floor Tile w/ Grout & Mortar (Patch)
96 = Lt Brown & Beige Ceramic Floor Tile w/ Grout & Mortar (Patch)
97 - 99 = Beige Ceramic Floor Tile w/ Grout & Mortar (Cored)
100 - 102 = Lt Brown Ceramic Baseboard w/ Grout & Mortar (Cored)
103 - 105 = Lt Brown Ceramic Floor Tile w/ Grout & Mortar (Cored)
106 = Beige Ceramic Floor Tile w/ Grout & Mortar (Patch)
107 - 109 = Gray Ceramic Floor Tile w/ Grout & Mortar (Cored) on Concrete
110 - 112 = Gray Ceramic Baseboard w/ Grout & Mortar (Cored)

LOS ANGELES UNIFIED SCHOOL DISTRICT
FACILITIES SERVICES DIVISION
CHAIN-OF-CUSTODY FOR BULK ANALYSIS

2564079

SITE NAME: Sylvan Park Early Eduation Center CODE: 9565 PROJ. DESC.: Outdoor Classroom and Campus Upgrades

SITE ADDRESS: 15011 Delano Street, Van Nuys, CA 91411 COLIN #: 10374546

SAMPLED BY: Francisco Barraza DATE SAMPLED: 9/23/2025 DEPT. / CONSULTANT: Vista Environmental Consulting, Inc. TEL: 714-289-2600

Fill in all information legibly and precisely. Original must be submitted with the samples. Make a copy before submitting samples. Results and a copy of the Chain of Custody (COC) with sample numbers will be submitted to FETU when analysis is completed. ***USE BLACK/BLUE INK ONLY. DO NOT USE WHITE OUT! ALL RUSH ANALYSIS AND POINT COUNT REQUESTS MUST BE APPROVED BY FETU SUPERVISORS.***

LAB NUMBER	SAMPLE NUMBER	BUILDING NUMBER	BUILDING NAME	ROOM NUMBER AND/OR NAME	LOCATION IN ROOM	MATERIAL TYPE (DESCRIBE)	FRIABLE (YES or NO)
	67	001DAT	Children's Center	Room 2	Center	Duct Wrap Insulation	YES
	68	001DAT	Children's Center	Room 3	Center	Duct Wrap Insulation	YES
	69	001DAT	Children's Center	Boys Restroom Room 3	North West	Smooth Plaster Ceiling w/ Drywall (Cored)	NO
	70	001DAT	Children's Center	Girls Restroom Room 3	North East	Smooth Plaster Ceiling w/ Drywall (Cored)	NO
	71	001DAT	Children's Center	Staff Restroom	North West	Smooth Plaster Ceiling w/ Drywall (Cored)	NO
	72	001DAT	Children's Center	Girls Restroom Hallway	North Center	Smooth Plaster Ceiling w/ Drywall (Cored)	NO
	73	001DAT	Children's Center	Boys Restroom Hallway	North Center	Smooth Plaster Ceiling w/ Drywall (Cored)	NO
	74	001DAT	Children's Center	Boys Restroom Room 3	South East	Smooth Plaster Wall w/ Drywall (Cored)	NO
	75	001DAT	Children's Center	Girls Restroom Room 3	East Center	Smooth Plaster Wall w/ Drywall (Cored)	NO
	76	001DAT	Children's Center	Staff Restroom	North West	Smooth Plaster Wall w/ Drywall (Cored)	NO
	77	001DAT	Children's Center	Boys Restroom Hallway	South East	Smooth Plaster Wall w/ Drywall (Cored)	NO
	78	001DAT	Children's Center	Boys Restroom Hallway	North West	Smooth Plaster Wall w/ Drywall (Cored)	NO

	NAME (PRINT & SIGN)	DEPT./AREA/CONSULTANT	# OF SAMPLES	DATE	TIME
Relinquished By:	Francisco Barraza	Vista Environmental Consulting, Inc.	12	9/29/25	1645PM
Received By:	Justine Pablo	AQ Environmental	12	9/30/25	0800
Relinquished By:					
Received By:					

Maximo Work Order Number: 39361542 Project Type: ☐ Maintenance (MA) ☐ Deferred Maintenance ☐ Bond (specify: K,R,Y,Q) ☑ Other:

FETU USE ONLY

FETU REVIEWED BY: _____ RUSH? ☐ Yes ☐ No APPROVAL: _____

FETU REVIEW DATE: 9-29-25 POINT COUNT? ☐ Yes ☐ No PT. CT. RUSH? ☐ Yes ☐ No APPROVAL: _____

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Attn.: Carlos Galdamez

Report Number 2564079
Date Received 09/30/2025
Date Analyzed 10/07/2025
Date Reported 10/08/2025

Project Number
Project Name Sylvan Park Early Education Center
Location 15011 Delano Street, Van Nuys, CA 91411
PO Number
Total Samples Submitted 12
Date Sampled 09/23/2025
Sampled By Francisco Barraza
Total Layers Analyzed 29

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564079-001	001DAT, Children's Center, Room 2, Center					
67	Duct Wrap Insulation, Pink, Homogeneous	LAYER 1 100%	Fibrous Glass	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564079-002	001DAT, Children's Center, Room 3, Center					
68	Duct Wrap Insulation, Silver/Brown/Pink, Non-homogeneous	LAYER 1 100%	Fibrous Glass Cellulose Fiber Non-Fibrous Material	90% 8% 2%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564079-003	001DAT, Children's Center, Boys Restroom Room 3, North West					
69A	Smooth Plaster Ceiling w/ DW (Cored) - Skim Coat, White, Non-homogeneous	LAYER 1 100%	Calcium Carbonate Gypsum Quartz Other Non-Fibrous Material	40% 30% 15% 15%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564079-004	001DAT, Children's Center, Boys Restroom Room 3, North West					
69B	Plaster, Beige, Non-homogeneous	LAYER 1 100%	Calcium Carbonate Gypsum Quartz Other Non-Fibrous Material	40% 30% 15% 15%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564079-005	001DAT, Children's Center, Boys Restroom Room 3, North West					
69C	Drywall, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Fibrous Glass Gypsum/Filler	20% <1% 80%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

ENVIRONMENTAL LABORATORIES LLC

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Signal Hill, CA 90755
Tel: 562-206-2770
Fax: 562-206-2773

Vista Environmental Consulting
1054 N Tustin Avenue
Anaheim, CA 92807
Attn.: Carlos Galdamez

Report Number 2564079
Date Received 09/30/2025
Date Analyzed 10/07/2025
Date Reported 10/08/2025

Project Number
Project Name Sylvan Park Early Education Center
Location 15011 Delano Street, Van Nuys, CA 91411
PO Number
Total Samples Submitted 12
Date Sampled 09/23/2025
Sampled By Francisco Barraza
Total Layers Analyzed 29

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564079-006	001DAT, Children's Center, Girls Restroom Room 3, North East					
70A	Smooth Plaster Ceiling w/ DW (Cored) - Skim Coat, White, Non-homogeneous	LAYER 1 100%	Calcium Carbonate Gypsum Quartz Other Non-Fibrous Material	40% 30% 15% 15%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564079-007	001DAT, Children's Center, Girls Restroom Room 3, North East					
70B	Plaster, Beige, Non-homogeneous	LAYER 1 100%	Metal Lath Quartz Gypsum Other Non-Fibrous Material	10% 45% 35% 10%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564079-008	001DAT, Children's Center, Girls Restroom Room 3, North East					
70C	Drywall, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Fibrous Glass Gypsum/Filler	20% <1% 80%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564079-009	001DAT, Children's Center, Staff Restroom, North West					
71A	Smooth Plaster Ceiling w/ DW (Cored) - Skim Coat, White, Non-homogeneous	LAYER 1 100%	Calcium Carbonate Gypsum Quartz Other Non-Fibrous Material	40% 30% 15% 15%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564079-010	001DAT, Children's Center, Staff Restroom, North West					
71B	Plaster, Beige, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	45%		
			Gypsum	40%		
			Other Non-Fibrous Material	15%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564079-011	001DAT, Children's Center, Staff Restroom, North West					
71C	Drywall, White/Brown, Non-homogeneous	LAYER 1	Cellulose Fiber	20%	None Detected	
		100%	Fibrous Glass	<1%		
			Gypsum/Filler	80%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564079-012	001DAT, Children's Center, Girls Restroom Hallway, North Center					
72A	Smooth Plaster Ceiling w/ DW (Cored) - Skim Coat, White, Non-homogeneous	LAYER 1			None Detected	
		100%	Calcium Carbonate	40%		
			Gypsum	30%		
			Quartz	15%		
			Other Non-Fibrous Material	15%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564079-013	001DAT, Children's Center, Girls Restroom Hallway, North Center					
72B	Plaster, Beige, Non-homogeneous	LAYER 1	Metal Lath	10%	None Detected	
		100%	Quartz	45%		
			Gypsum	35%		
			Other Non-Fibrous Material	10%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564079-014	001DAT, Children's Center, Girls Restroom Hallway, North Center					
72C	Drywall, White/Brown, Non-homogeneous	LAYER 1	Cellulose Fiber	20%	None Detected	
		100%	Fibrous Glass	<1%		
			Gypsum/Filler	80%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564079-015	001DAT, Children's Center, Boys Restroom Hallway, North Center					
73A	Smooth Plaster Ceiling w/ DW (Cored) - Skim Coat, White, Non-homogeneous	LAYER 1 100%	Calcium Carbonate Gypsum Quartz Other Non-Fibrous Material	40% 30% 15% 15%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564079-016	001DAT, Children's Center, Bo's Restroom Hallway, North Center					
73B	Plaster, Beige, Non-homogeneous	LAYER 1 100%	Metal Lath Quartz Gypsum Other Non-Fibrous Material	10% 45% 35% 10%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564079-017	001DAT, Children's Center, Bo's Restroom Hallway, North Center					
73C	Drywall, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Fibrous Glass Gypsum/Filler	20% <1% 80%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564079-018	001DAT, Children's Center, Boys Restroom Room 3, South East					
74A	Smooth Plaster Wall w/ DW - Skim Coat, White, Non-homogeneous	LAYER 1 100%	Gypsum Calcium Carbonate Quartz Binder/Filler	40% 40% 10% 10%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564079-019	001DAT, Children's Center, Boys Restroom Room 3, South East					
74B	Plaster, Beige, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	45%		
			Gypsum	40%		
			Other Non-Fibrous Material	15%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564079-020	001DAT, Children's Center, Boys Restroom Room 3, South East					
74C	Drywall, Note: No Drywall Present	LAYER 1				
2564079-021	001DAT, Children's Center, Girls Restroom Room 3, East Center					
75A	Smooth Plaster Wall w/ DW - Skim Coat, White, Non-homogeneous	LAYER 1			None Detected	
		100%	Gypsum	40%		
			Calcium Carbonate	40%		
			Quartz	10%		
			Binder/Filler	10%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564079-022	001DAT, Children's Center, Girls Restroom Room 3, East Center					
75B	Plaster, Beige, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	45%		
			Gypsum	40%		
			Other Non-Fibrous Material	15%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564079-023	001DAT, Children's Center, Girls Restroom Room 3, East Center					
75C	Drywall, White/Brown, Non-homogeneous	LAYER 1	Cellulose Fiber	20%	None Detected	
		100%	Fibrous Glass	<1%		
			Gypsum/Filler	80%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564079-024	001DAT, Children's Center, Staff Restroom, North West					
76A	Smooth Plaster Wall w/ DW - Skim Coat, Note: No Skim Coat Present	LAYER 1				
2564079-025	001DAT, Children's Center, Staff Restroom, North West					
76B	Plaster, Beige, Non-homogeneous	LAYER 1 100%	Quartz Gypsum Other Non-Fibrous Material	45% 40% 15%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564079-026	001DAT, Children's Center, Staff Restroom, North West					
76C	Drywall, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Fibrous Glass Gypsum/Filler	20% <1% 80%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564079-027	001DAT, Children's Center, Boys Restroom Hallway, South East					
77A	Smooth Plaster Wall w/ DW - Skim Coat, White, Non-homogeneous	LAYER 1 100%	Gypsum Calcium Carbonate Quartz Binder/Filler	40% 40% 10% 10%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564079-028	001DAT, Children's Center, Boys Restroom Hallway, South East					
77B	Plaster, Beige, Non-homogeneous	LAYER 1 100%	Metal Lath Quartz Gypsum Other Non-Fibrous Material	10% 40% 35% 15%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564079-029	001DAT, Children's Center, Boys Restroom Hallway, South East					
77C	Drywall, Note: No Drywall Present	LAYER 1				
2564079-030	001DAT, Children's Center, Boys Restroom Hallway, North West					
78A	Smooth Plaster Wall w/ DW - Skim Coat, White, Non-homogeneous	LAYER 1 100%	Gypsum Calcium Carbonate Quartz Binder/Filler	40% 40% 10% 10%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564079-031	001DAT, Children's Center, Boys Restroom Hallway, North West					
78B	Plaster, Beige, Non-homogeneous	LAYER 1 100%	Metal Lath Quartz Gypsum Other Non-Fibrous Material	10% 40% 35% 15%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564079-032	001DAT, Children's Center, Boys Restroom Hallway, North West					
78C	Drywall, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Fibrous Glass Gypsum/Filler	25% <1% 75%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)

Method Detection Limit: Less than one percent (<1%). Asbestos content has been determined using calibrated visual estimation (CVES). Samples tested were received in acceptable condition unless otherwise stated. Test report relates only to items tested. Test results apply only to samples submitted and in the condition they were received. Non-homogeneous samples containing discrete and separable layers are analyzed and reported separately; composite results may be reported upon customer's request. Non-homogeneous samples with inseparable layers are analyzed and reported as composite samples. Due to the limitations of Polarized Light Microscopy, samples reported as None Detected or with low asbestos concentrations may not be reliable and further analysis such as TEM is recommended to confirm PLM results. This report shall not be reproduced except in full without the written approval of this laboratory. This report may not be used by the customer to claim product certification, endorsement, or approval by NIST/NVLAP or any agency of the government. Samples shall be disposed according to local, state and federal laws, 30 days after results are reported unless otherwise instructed.

Analyst - Fred Chappelear

Approved Signatory Cristina E. Tabatt

CA-ELAP #2823
NVLAP TESTING
NVLAP Lab Code 500044-0

VISTA ENVIRONMENTAL CONSULTING

BUILDING DIAGRAM

Client: LAUSD

Address: Sylvan Park Early Education Center (9565)

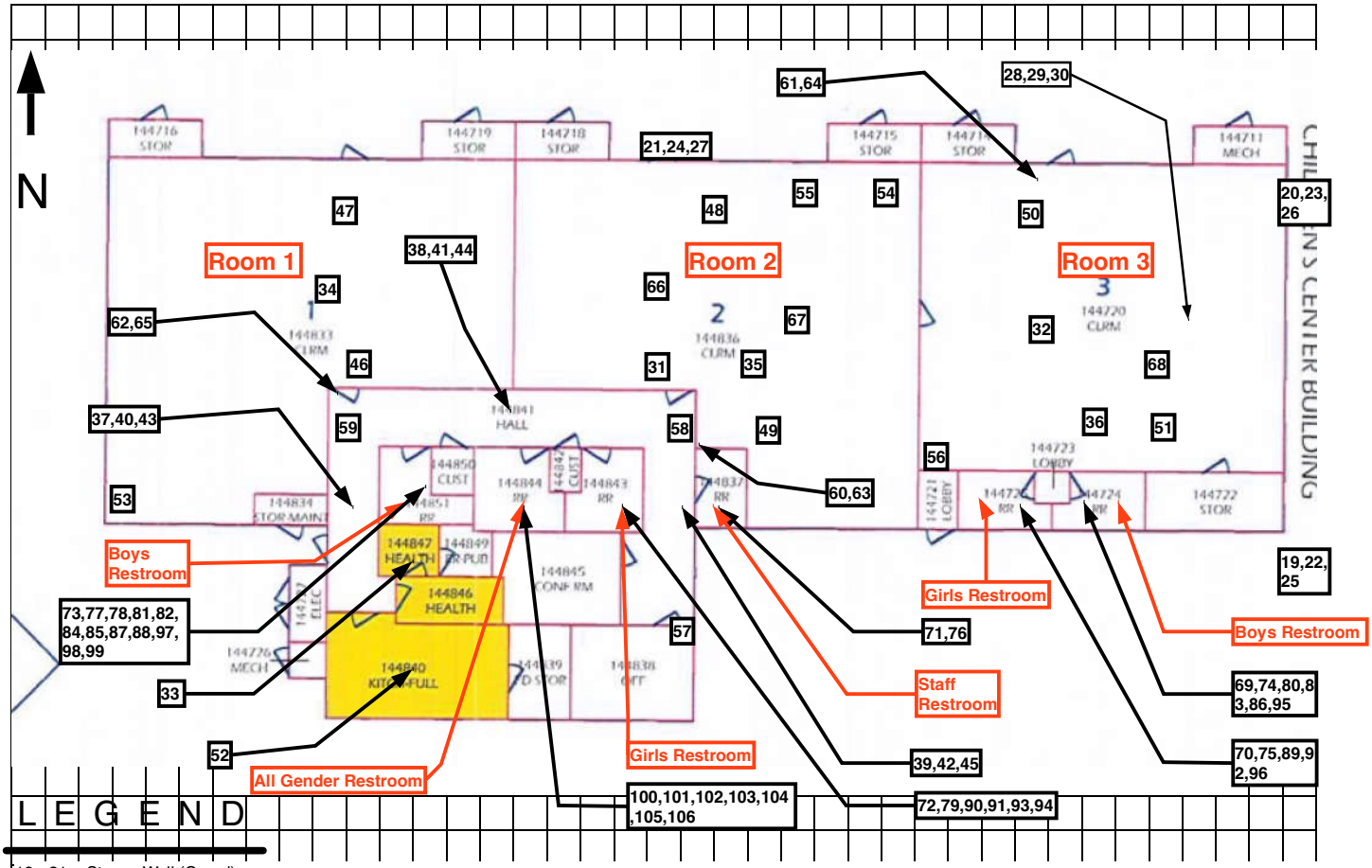
Building: Child Care Center Bldg. (001DAT)

Date: 9/22/25

Project No:

Vista Inspector: Francisco Barraza

ATTIC Y / N BASEMENT Y / N CRAWL SPACE Y / N GARAGE Y / N NO # FLOORS:



LEGEND

19 - 21 = Stucco Wall (Cored)
22 - 24 = Portico Stucco (Core)
25 - 27 = Wall Moisture Barrier Paper
28 - 30 = Duct Seam Tape
31 - 33 = Duct Seam Tape (White)
34 - 36 = 2'X4' Fissured Ceiling Tile (Lay-In)
37 - 39 = 12"X12" Random Hole Ceiling Tile
40 - 42 = Ceiling Tile Mastic (Brown)
43 - 45 = Drywall Ceiling w/ Joint Compound & Tape
46 - 52 = Unfinished Drywall w/ Joint Compound & Tape
53 - 59 = Drywall Wall w/ Joint Compound
60 - 62 = 4" Brown Cove Base w/ Adhesive
63 - 65 = 12"X12" Blue Vinyl Floor Tile (Cored) on Concrete
66 -68 = Duct Wrap Insulation
69 - 73 = Smooth Plaster Ceiling w/ Drywall (Cored)
74 - 79 = Smooth Plaster Wall w/ Drywall (Cored)
80 - 82 = White Ceramic Tile w/ Grout & Mortar (Cored)
83 - 85 = Blue & White Ceramic Floor Tile w/ Grout & Mortar (Cored)
86 - 88 = White Ceramic Baseboard w/ Grout & Mortar (Cored)
89 - 91 = Brown Ceramic Floor Tile w/ Grout & Mortar (Cored)
92 - 94 = Brown Ceramic Baseboard w/ Grout & Mortar (Cored)
95 = Beige & Blue Ceramic Floor Tile w/ Grout & Mortar (Patch)
96 = Lt Brown & Beige Ceramic Floor Tile w/ Grout & Mortar (Patch)
97 - 99 = Beige Ceramic Floor Tile w/ Grout & Mortar (Cored)
100 - 102 = Lt Brown Ceramic Baseboard w/ Grout & Mortar (Cored)
103 - 105 = Lt Brown Ceramic Floor Tile w/ Grout & Mortar (Cored)
106 = Beige Ceramic Floor Tile w/ Grout & Mortar (Patch)
107 - 109 = Gray Ceramic Floor Tile w/ Grout & Mortar (Cored) on Concrete
110 - 112 = Gray Ceramic Baseboard w/ Grout & Mortar (Cored)

LOS ANGELES UNIFIED SCHOOL DISTRICT
FACILITIES SERVICES DIVISION
CHAIN-OF-CUSTODY FOR BULK ANALYSIS

2564080

SITE NAME: Sylvan Park Early Eduation Center CODE: 9565 PROJ. DESC.: Outdoor Classroom and Campus Upgrades

SITE ADDRESS: 15011 Delano Street, Van Nuys, CA 91411 COLIN #: 10374546

SAMPLED BY: Francisco Barraza DATE SAMPLED: 9/23/2025 DEPT. / CONSULTANT: Vista Environmental Consulting, Inc. TEL: 714-289-2600

Fill in all information legibly and precisely. Original must be submitted with the samples. Make a copy before submitting samples. Results and a copy of the Chain of Custody (COC) with sample numbers will be submitted to FETU when analysis is completed. ***USE BLACK/BLUE INK ONLY. DO NOT USE WHITE OUT! ALL RUSH ANALYSIS AND POINT COUNT REQUESTS MUST BE APPROVED BY FETU SUPERVISORS.***

LAB NUMBER	SAMPLE NUMBER	BUILDING NUMBER	BUILDING NAME	ROOM NUMBER AND/OR NAME	LOCATION IN ROOM	MATERIAL TYPE (DESCRIBE)	FRIABLE (YES or NO)
	79	001DAT	Children's Center	Girls Restroom Hallway	South East	Smooth Plaster Wall w/ Drywall (Cored)	NO
	80	001DAT	Children's Center	Boys Restroom Room 3	South West (Urinal)	White Ceramic Wall w/ Grout & Mortar (Cored)	NO
	81	001DAT	Children's Center	Boys Restroom Hallway	South West (Urinal)	White Ceramic Wall w/ Grout & Mortar (Cored)	NO
	82	001DAT	Children's Center	Boys Restroom Hallway	South West (Urinal)	White Ceramic Wall w/ Grout & Mortar (Cored)	NO
	83	001DAT	Children's Center	Boys Restroom Room 3	South Center	Blue & White Ceramic Floor Tile w/ Grout & Mortar (Cored)	NO
	84	001DAT	Children's Center	Boys Restroom Hallway	East Center	Blue & White Ceramic Floor Tile w/ Grout & Mortar (Cored)	NO
	85	001DAT	Children's Center	Boys Restroom Hallway	South Center	Blue & White Ceramic Floor Tile w/ Grout & Mortar (Cored)	NO
	86	001DAT	Children's Center	Boys Restroom Room 3	South Center	White Ceramic Baseboard w/ Grout & Mortar (Cored)	NO
	87	001DAT	Children's Center	Boys Restroom Hallway	North West	White Ceramic Baseboard w/ Grout & Mortar (Cored)	NO
	88	001DAT	Children's Center	Boys Restroom Hallway	East Center	White Ceramic Baseboard w/ Grout & Mortar (Cored)	NO
	89	001DAT	Children's Center	Girls Restroom Room 3	East Center	Brown Ceramic Floor Tile w/ Grout & Mortar (Cored)	NO
	90	001DAT	Children's Center	Girls Restroom Hallway	South Center	Brown Ceramic Floor Tile w/ Grout & Mortar (Cored)	NO

	NAME (PRINT & SIGN)	DEPT./AREA/CONSULTANT	# OF SAMPLES	DATE	TIME
Relinquished By:	Francisco Barraza	Vista Environmental Consulting, Inc.	12	9/29/25	1615PM
Received By:	Justine Pablo	AQ Environmental	12	9/30/25	0800
Relinquished By:					
Received By:					

Maximo Work Order Number: 39361542 Project Type: ☐ Maintenance (MA) ☐ Deferred Maintenance ☐ Bond (specify: K,R,Y,Q) ☑ Other:

FETU USE ONLY

FETU REVIEWED BY:

FETU REVIEW DATE: 9-29-25

RUSH? ☐ Yes ☐ No APPROVAL:

POINT COUNT? ☐ Yes ☐ No PT. CT. RUSH? ☐ Yes ☐ No APPROVAL:

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Report Number 2564080
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Date Analyzed 10/06/2025
Date Reported 10/07/2025

Project Number
Project Name Sylvan Park Early Education Center
Location 15011 Delano Street, Van Nuys, CA 91411
PO Number
Total Samples Submitted 12
Date Sampled 09/23/2025
Sampled By Francisco Barraza
Total Layers Analyzed 39

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564080-001	001DAT, Children's Center, Girls Restroom Hallway, South East					
79A	Smooth Plaster - Skim Coat, White, Non-homogeneous	LAYER 1 100%	Quartz Gypsum Binder/Filler	10% 65% 25%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-002	001DAT, Children's Center, Girls Restroom Hallway, South East					
79B	Plaster w/ Metal Lath, Beige, Homogeneous	LAYER 1 100%	Quartz Gypsum Other Non-Fibrous Material	45% 40% 15%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-003	001DAT, Children's Center, Girls Restroom Hallway, South East					
79C	Drywall, White/Brown, Non-homogeneous	LAYER 1 100%	Cellulose Fiber Fibrous Glass Gypsum/Filler	20% <1% 80%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-004	001DAT, Children's Center, Boys Restroom Room 3, South West (Urinal)					
80A	Ceramic Wall Tile, White, Non-homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-005	001DAT, Children's Center, Boys Restroom Room 3, South West (Urinal)					
80B	Grout, White, Non-homogeneous	LAYER 1 100%	Quartz Calcium Carbonate Binder/Filler	15% 50% 35%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Signal Hill, CA 90755
Tel: 562-206-2770
Fax: 562-206-2773

Vista Environmental Consulting
1054 N Tustin Avenue
Anaheim, CA 92807
Attn.: Carlos Galdamez

Report Number 2564080
Date Received 09/30/2025
Date Analyzed 10/06/2025
Date Reported 10/07/2025

Project Number
Project Name Sylvan Park Early Education Center
Location 15011 Delano Street, Van Nuys, CA 91411
PO Number
Total Samples Submitted 12
Date Sampled 09/23/2025
Sampled By Francisco Barraza
Total Layers Analyzed 39

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564080-006	001DAT, Children's Center, Boys Restroom Room 3, South West (Urinal)					
80C	Mortar, Gray, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Calcium Carbonate	30%		
			Other Non-Fibrous Material	20%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-007	001DAT, Children's Center, Boys Restroom Hallway, South West (Urinal)					
81A	Ceramic Wall Tile, White, Non-homogeneous	LAYER 1			None Detected	
		100%	Non-Fibrous Material	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-008	001DAT, Children's Center, Boys Restroom Hallway, South West (Urinal)					
81B	Grout, White, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	15%		
			Calcium Carbonate	50%		
			Binder/Filler	35%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-009	001DAT, Children's Center, Boys Restroom Hallway, South West (Urinal)					
81C	Mortar, Gray, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Calcium Carbonate	30%		
			Other Non-Fibrous Material	20%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564080-010	001DAT, Children's Center, Boys Restroom Hallway, South West (Urinal)					
82A	Ceramic Wall Tile, White, Non-homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-011	001DAT, Children's Center, Boys Restroom Hallway, South West (Urinal)					
82B	Grout, White, Homogeneous	LAYER 1 100%	Quartz Calcium Carbonate Binder/Filler	15% 50% 35%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-012	001DAT, Children's Center, Boys Restroom Hallway, South West (Urinal)					
82C	Mortar, Gray, Homogeneous	LAYER 1 100%	Quartz Calcium Carbonate Binder/Filler	50% 30% 20%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-013	001DAT, Children's Center, Boys Restroom Room 3, South Center					
83A	Ceramic Floor Tile, White, Homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-014	001DAT, Children's Center, Boys Restroom Room 3, South Center					
83B	Ceramic Floor Tile, Blue, Homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564080-015	001DAT, Children's Center, Boys Restroom Room 3, South Center					
83C	Ceramic Floor Tile, Gray, Homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-016	001DAT, Children's Center, Boys Restroom Room 3, South Center					
83D	Grout, Gray, Non-homogeneous	LAYER 1 100%	Quartz Mineral Binders/Filler	50% 50%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-017	001DAT, Children's Center, Boys Restroom Room 3, South Center					
83E	Mortar, Gray, Homogeneous	LAYER 1 100%	Quartz Calcium Carbonate Other Non-Fibrous Material	50% 30% 20%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-018	001DAT, Children's Center, Boys Restroom Hallway, East Center					
84A	Ceramic Floor Tile, White, Homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-019	001DAT, Children's Center, Boys Restroom Hallway, East Center					
84B	Ceramic Floor Tile, Gray, Homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564080-020	001DAT, Children's Center, Boys Restroom Hallway, East Center					
84C	Grout, Gray, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Mineral Binders/Filler	50%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-021	001DAT, Children's Center, Boys Restroom Hallway, East Center					
84D	Mortar, Gray, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	70%		
			Calcium Carbonate	20%		
			Other Non-Fibrous Material	10%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-022	001DAT, Children's Center, Boys Restroom Hallway, South Center					
85A	Ceramic Wall Tile, White, Homogeneous	LAYER 1			None Detected	
		100%	Non-Fibrous Material	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-023	001DAT, Children's Center, Boys Restroom Hallway, South Center					
85B	Grout, Gray, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Mineral Binders/Filler	50%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-024	001DAT, Children's Center, Boys Restroom Hallway, South Center					
85C	Mortar, Gray, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	70%		
			Calcium Carbonate	20.%		
			Other Non-Fibrous Material	10%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564080-025	001DAT, Children's Center, Boys Restroom Room 3, South Center					
86A	Ceramic Baseboard, White, Non-homogeneous	LAYER 1			Positive Stop	
		100%	Non-Fibrous Material	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-026	001DAT, Children's Center, Boys Restroom Room 3, South Center					
86B	Grout, Gray, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Mineral Binders/Filler	50%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-027	001DAT, Children's Center, Boys Restroom Room 3, South Center					
86C	Mortar, Beige, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Calcium Carbonate	30%		
			Other Non-Fibrous Material	20%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-028	001DAT, Children's Center, Boys Restroom Hallway, North West					
87A	Ceramic Baseboard, White, Non-homogeneous	LAYER 1			None Detected	
		100%	Non-Fibrous Material	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-029	001DAT, Children's Center, Boys Restroom Hallway, North West					
87B	Grout, Gray, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Mineral Binders/Filler	50%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564080-030	001DAT, Children's Center, Boys Restroom Hallway, North West					
87C	Mortar, White, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Calcium Carbonate	30%		
			Other Non-Fibrous Material	20%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-031	001DAT, Children's Center, Boys Restroom Hallway, East Center					
88A	Ceramic Baseboard, White, Non-homogeneous	LAYER 1			None Detected	
		100%	Non-Fibrous Material	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-032	001DAT, Children's Center, Boys Restroom Hallway, East Center					
88B	Grout, Gray, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Mineral Binders/Filler	50%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-033	001DAT, Children's Center, Boys Restroom Hallway, East Center					
88C	Mortar, Gray, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	60%		
			Calcium Carbonate	30%		
			Other Non-Fibrous Material	10%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-034	001DAT, Children's Center, Girls Restroom Room 3, East Center					
89A	Ceramic Floor Tile, Brown, Homogeneous	LAYER 1			None Detected	
		100%	Non-Fibrous Material	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564080-035	001DAT, Children's Center, Girls Restroom Room 3, East Center					
89B	Grout, Gray, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Mineral Binders/Filler	50%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-036	001DAT, Children's Center, Girls Restroom Room 3, East Center					
89C	Mortar, Gray, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	60%		
			Calcium Carbonate	30%		
			Other Non-Fibrous Material	10%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-037	001DAT, Children's Center, Girls Restroom Hallway, South Center					
90A	Ceramic Floor Tile, Brown, Homogeneous	LAYER 1			None Detected	
		100%	Non-Fibrous Material	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-038	001DAT, Children's Center, Girls Restroom Hallway, South Center					
90B	Grout, Gray, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Mineral Binders/Filler	50%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564080-039	001DAT, Children's Center, Girls Restroom Hallway, South Center					
90C	Mortar, Gray, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	65%		
			Calcium Carbonate	25%		
			Other Non-Fibrous Material	10%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)

Method Detection Limit: Less than one percent (<1%). Asbestos content has been determined using calibrated visual estimation (CVES). Samples tested were received in acceptable condition unless otherwise stated. Test report relates only to items tested. Test results apply only to samples submitted and in the condition they were received. Non-homogeneous samples containing discrete and separable layers are analyzed and reported separately; composite results may be reported upon customer's request. Non-homogeneous samples with inseparable layers are analyzed and reported as composite samples. Due to the limitations of Polarized Light Microscopy, samples reported as None Detected or with low asbestos concentrations may not be reliable and further analysis such as TEM is recommended to confirm PLM results. This report shall not be reproduced except in full without the written approval of this laboratory. This report may not be used by the customer to claim product certification, endorsement, or approval by NIST/NVLAP or any agency of the government. Samples shall be disposed according to local, state and federal laws, 30 days after results are reported unless otherwise instructed.

Analyst - Fred Chappelear

Approved Signatory Cristina E. Tabatt

CA-ELAP #2823
NVLAP TESTING
NVLAP Lab Code 500044-0

VISTA ENVIRONMENTAL CONSULTING

BUILDING DIAGRAM

Client: LAUSD

Address: Sylvan Park Early Education Center (9565)

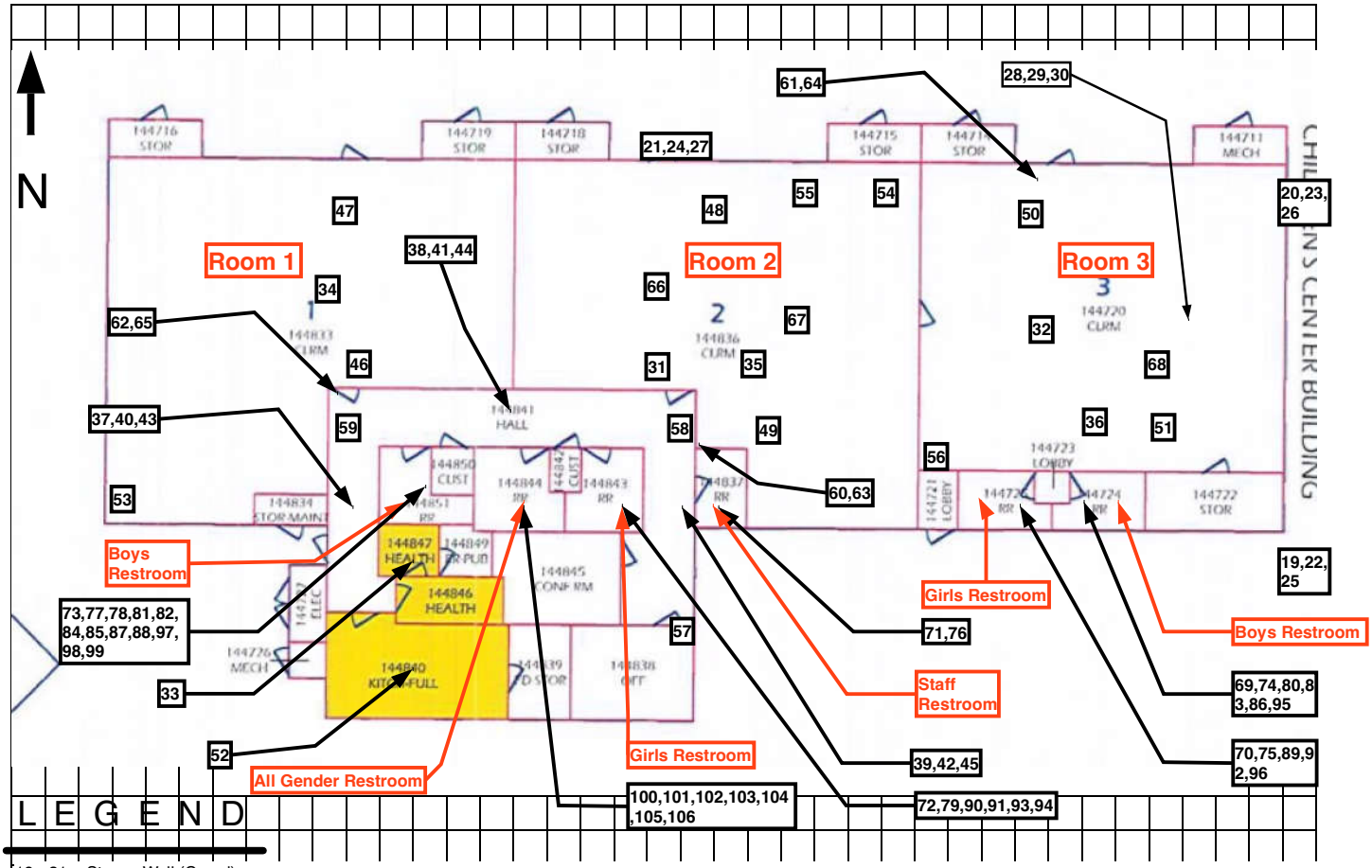
Building: Child Care Center Bldg. (001DAT)

Date: 9/22/25

Project No:

Vista Inspector: Francisco Barraza

ATTIC Y / N BASEMENT Y / N CRAWL SPACE Y / N GARAGE Y / N NO # FLOORS:



LEGEND

19 - 21 = Stucco Wall (Cored)
22 - 24 = Portico Stucco (Core)
25 - 27 = Wall Moisture Barrier Paper
28 - 30 = Duct Seam Tape
31 - 33 = Duct Seam Tape (White)
34 - 36 = 2'X4' Fissured Ceiling Tile (Lay-In)
37 - 39 = 12"X12" Random Hole Ceiling Tile
40 - 42 = Ceiling Tile Mastic (Brown)
43 - 45 = Drywall Ceiling w/ Joint Compound & Tape
46 - 52 = Unfinished Drywall w/ Joint Compound & Tape
53 - 59 = Drywall Wall w/ Joint Compound
60 - 62 = 4" Brown Cove Base w/ Adhesive
63 - 65 = 12"X12" Blue Vinyl Floor Tile (Cored) on Concrete
66 -68 = Duct Wrap Insulation
69 - 73 = Smooth Plaster Ceiling w/ Drywall (Cored)
74 - 79 = Smooth Plaster Wall w/ Drywall (Cored)
80 - 82 = White Ceramic Tile w/ Grout & Mortar (Cored)
83 - 85 = Blue & White Ceramic Floor Tile w/ Grout & Mortar (Cored)
86 - 88 = White Ceramic Baseboard w/ Grout & Mortar (Cored)
89 - 91 = Brown Ceramic Floor Tile w/ Grout & Mortar (Cored)
92 - 94 = Brown Ceramic Baseboard w/ Grout & Mortar (Cored)
95 = Beige & Blue Ceramic Floor Tile w/ Grout & Mortar (Patch)
96 = Lt Brown & Beige Ceramic Floor Tile w/ Grout & Mortar (Patch)
97 - 99 = Beige Ceramic Floor Tile w/ Grout & Mortar (Cored)
100 - 102 = Lt Brown Ceramic Baseboard w/ Grout & Mortar (Cored)
103 - 105 = Lt Brown Ceramic Floor Tile w/ Grout & Mortar (Cored)
106 = Beige Ceramic Floor Tile w/ Grout & Mortar (Patch)
107 - 109 = Gray Ceramic Floor Tile w/ Grout & Mortar (Cored) on Concrete
110 - 112 = Gray Ceramic Baseboard w/ Grout & Mortar (Cored)

LOS ANGELES UNIFIED SCHOOL DISTRICT
FACILITIES SERVICES DIVISION
CHAIN-OF-CUSTODY FOR BULK ANALYSIS

2564081

SITE NAME: Sylvan Park Early Eduation Center CODE: 9565 PROJ. DESC.: Outdoor Classroom and Campus Upgrades

SITE ADDRESS: 15011 Delano Street, Van Nuys, CA 91411 COLIN #: 10374546

SAMPLED BY: Francisco Barraza DATE SAMPLED: 9/23/2025 DEPT. / CONSULTANT: Vista Environmental Consulting, Inc. TEL: 714-289-2600

Fill in all information legibly and precisely. Original must be submitted with the samples. Make a copy before submitting samples. Results and a copy of the Chain of Custody (COC) with sample numbers will be submitted to FETU when analysis is completed. ***USE BLACK/BLUE INK ONLY. DO NOT USE WHITE OUT! ALL RUSH ANALYSIS AND POINT COUNT REQUESTS MUST BE APPROVED BY FETU SUPERVISORS.***

LAB NUMBER	SAMPLE NUMBER	BUILDING NUMBER	BUILDING NAME	ROOM NUMBER AND/OR NAME	LOCATION IN ROOM	MATERIAL TYPE (DESCRIBE)	FRIABLE (YES or NO)
	91	001DAT	Children's Center	Girls Restroom Hallway	East Center	Brown Ceramic Floor Tile w/ Grout & Mortar (Cored)	NO
	92	001DAT	Children's Center	Girls Restroom Room 3	East Center	Brown Ceramic Baseboard w/ Grout & Mortar (Cored)	NO
	93	001DAT	Children's Center	Girls Restroom Hallway	South Center	Brown Ceramic Baseboard w/ Grout & Mortar (Cored)	NO
	94	001DAT	Children's Center	Girls Restroom Hallway	East Center	Brown Ceramic Baseboard w/ Grout & Mortar (Cored)	NO
	95	001DAT	Children's Center	Boys Restroom Room 3	South West	Beige & Blue Ceramic Floor Tile w/ grout & Mortar (Patch)	NO
	96	001DAT	Children's Center	Girls Restroom Room 3	South East	Lt Brown & Beige Ceramic Floor Tile w/ Grout & Mortar (Patch)	NO
	97	001DAT	Children's Center	Boys Restroom Hallway	South West (Urinal)	Beige Ceramic Floor Tile w/ Grout & Mortar (Cored)	NO
	98	001DAT	Children's Center	Boys Restroom Hallway	South West (Urinal)	Beige Ceramic Floor Tile w/ Grout & Mortar (Cored)	NO
	99	001DAT	Children's Center	Boys Restroom Hallway	South West (Urinal)	Beige Ceramic Floor Tile w/ Grout & Mortar (Cored)	NO
	100	001DAT	Children's Center	All Gender Restroom	South Center	Lt Brown Ceramic Baseboard w/ Grout & Mortar (Core)	NO
	101	001DAT	Children's Center	All Gender Restroom	East Center	Lt Brown Ceramic Baseboard w/ Grout & Mortar (Core)	NO
	102	001DAT	Children's Center	All Gender Restroom	North Center	Lt Brown Ceramic Baseboard w/ Grout & Mortar (Core)	NO

	NAME (PRINT & SIGN)	DEPT./AREA/CONSULTANT	# OF SAMPLES	DATE	TIME
Relinquished By:	Francisco.Barraza	Vista Environmental Consulting, Inc.	12	9/29/25	1605 PM
Received By:	Justme Pinto	AQ Environmental	12	9/30/25	0800
Relinquished By:					
Received By:					

Maximo Work Order Number: 39361542 Project Type: ☐ Maintenance (MA) ☐ Deferred Maintenance ☐ Bond (specify: K,R,Y,Q) ☑ Other:

FETU USE ONLY

FETU REVIEWED BY:

FETU REVIEW DATE: 9-29-25

RUSH? ☐ Yes ☐ No APPROVAL:

POINT COUNT? ☐ Yes ☐ No PT. CT. RUSH? ☐ Yes ☐ No APPROVAL:

ENVIRONMENTAL LABORATORIES LLC

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Signal Hill, CA 90755
Tel: 562-206-2770
Fax: 562-206-2773

Vista Environmental Consulting
1054 N Tustin Avenue
Anaheim, CA 92807
Attn.: Carlos Galdamez

Report Number 2564081
Date Received 09/30/2025
Date Analyzed 10/07/2025
Date Reported 10/07/2025

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Project Name Sylvan Park Early Education Center
Location 15011 Delano Street, Van Nuys, CA 91411
PO Number
Total Samples Submitted 12
Date Sampled 09/23/2025
Sampled By Francisco Barraza
Total Layers Analyzed 39

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564081-001	001DAT, Children's Center, Girls Restroom Hallway, East Center					
91A	Ceramic Floor Tile (Cored), Brown, Homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-002	001DAT, Children's Center, Girls Restroom Hallway, East Center					
91B	Grout, Dk. Gray, Homogeneous	LAYER 1 100%	Quartz Mineral Binders/Filler	50% 50%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-003	001DAT, Children's Center, Girls Restroom Hallway, East Center					
91C	Mortar, Gray, Homogeneous	LAYER 1 100%	Quartz Calcium Carbonate Other Non-Fibrous Material	65% 25% 10%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-004	001DAT, Children's Center, Girls Restroom Hallway, East Center					
91D	Paper Backing, Beige, Homogeneous	LAYER 1 100%	Cellulose Fiber Binder/Filler	95% 5%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-005	001DAT, Children's Center, Girls Restroom Room 3, East Center					
92A	Ceramic Floor Tile (Cored), Brown/White, Non-homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564081-006	001DAT, Children's Center, Girls Restroom Room 3, East Center					
92B	Grout, Dk. Gray, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Mineral Binders/Filler	50%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-007	001DAT, Children's Center, Girls Restroom Room 3, East Center					
92C	Mortar, Note: No Mortar Present	LAYER 1				
2564081-008	001DAT, Children's Center, Girls Restroom Hallway, South Center					
93A	Ceramic Floor Tile (Cored), Brown/White, Homogeneous	LAYER 1			None Detected	
		100%	Non-Fibrous Material	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-009	001DAT, Children's Center, Girls Restroom Hallway, South Center					
93B	Grout, Dk. Gray, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Mineral Binders/Filler	50%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-010	001DAT, Children's Center, Girls Restroom Hallway, South Center					
93C	Mortar, White/Beige, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	60%		
			Calcium Carbonate	25%		
			Other Non-Fibrous Material	15%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-011	001DAT, Children's Center, Girls Restroom Hallway, East Center					
94A	Ceramic Floor Tile (Cored), Brown/White, Non-homogeneous	LAYER 1			None Detected	
		100%	Non-Fibrous Material	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564081-012	001DAT, Children's Center, Girls Restroom Hallway, East Center					
94B	Grout, Dk. Gray, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Mineral binders/Filler	50%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-013	001DAT, Children's Center, Girls Restroom Hallway, East Center					
94C	Mortar, White/Beige, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	65%		
			Calcium Carbonate	25%		
			Other Non-Fibrous Material	10%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-014	001DAT, Children's Center, Boys Restroom Room 3, South West					
95A	Ceramic Floor Tile (Patch), Blue, Homogeneous	LAYER 1			None Detected	
		100%	Non-Fibrous Material	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-015	001DAT, Children's Center, Boys Restroom Room 3, South West					
95B	Ceramic Floor Tile (Patch), Beige, Homogeneous	LAYER 1			None Detected	
		100%	Non-Fibrous Material	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-016	001DAT, Children's Center, Boys Restroom Room 3, South West					
95C	Grout, White, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Mineral Binders/Filler	50%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564081-017	001DAT, Children's Center, Boys Restroom Room 3, South West					
95D	Mortar, Gray, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	65%		
			Calcium Carbonate	25%		
			Other Non-Fibrous Material	10%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-018	001DAT, Children's Center, Girls Restroom Room 3, South East					
96A	Ceramic Floor Tile, Lt. Brown, Homogeneous	LAYER 1			None Detected	
		100%	Non-Fibrous Material	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-019	001DAT, Children's Center, Girls Restroom Room 3, South East					
96B	Ceramic Floor Tile, Beige, Homogeneous	LAYER 1			None Detected	
		100%	Non-Fibrous Material	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-020	001DAT, Children's Center, Girls Restroom Room 3, South East					
96C	Grout, Gray, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Mineral Binders/Filler	50%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-021	001DAT, Children's Center, Girls Restroom Room 3, South East					
96D	Mortar, White, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	60%		
			Calcium Carbonate	30%		
			Other Non-Fibrous Material	10%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564081-022	001DAT, Children's Center, Boys Restroom Hallway, South West (Urinal)					
97A	Ceramic Floor Tile (Cored), Beige, Homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-023	001DAT, Children's Center, Boys Restroom Hallway, South West (Urinal)					
97B	Ceramic Floor Tile (Cored), Blue, Homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-024	001DAT, Children's Center, Boys Restroom Hallway, South West (Urinal)					
97C	Grout, Dk. Gray, Homogeneous	LAYER 1 100%	Quartz Mineral Binders/Filler	50% 50%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-025	001DAT, Children's Center, Boys Restroom Hallway, South West (Urinal)					
97D	Mortar, Beige, Homogeneous	LAYER 1 100%	Quartz Calcium Carbonate Other Non-Fibrous Material	65% 25% 10%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-026	001DAT, Children's Center, Boys Restroom Hallway, South West (Urinal)					
98A	Ceramic Floor Tile (Cored), Beige, Homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564081-027	001DAT, Children's Center, Boys Restroom Hallway, South West (Urinal)					
98B	Grout, Dk. Gray, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Mineral Binders/Filler	50%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-028	001DAT, Children's Center, Boys Restroom Hallway, South West (Urinal)					
98C	Mortar, Gray, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	65%		
			Calcium Carbonate	25%		
			Other Non-Fibrous Material	10%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-029	001DAT, Children's Center, Boys Restroom Hallway, South West (Urinal)					
99A	Ceramic Floor Tile (Cored), Beige, Homogeneous	LAYER 1			None Detected	
		100%	Non-Fibrous Material	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-030	001DAT, Children's Center, Boys Restroom Hallway, South West (Urinal)					
99B	Grout, Dk. Gray, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Mineral Binders/Filler	50%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564081-031	001DAT, Children's Center, Boys Restroom Hallway, South West (Urinal)					
99C	Mortar, Gray, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	65%		
			Calcium Carbonate	25%		
			Other Non-Fibrous Material	10%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-032	001DAT, Children's Center, All Gender Restroom, South Center					
100A	Ceramic Baseboard (Core), Beige/White, Non-homogeneous	LAYER 1			None Detected	
		100%	Non-Fibrous Material	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-033	001DAT, Children's Center, All Gender Restroom, South Center					
100B	Grout, Dk.Gray, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Fine Grained EA:0%	50%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-034	001DAT, Children's Center, All Gender Restroom, South Center					
100C	Mortar, White, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	60%		
			Calcium Carbonate	30%		
			Other Non-Fibrous Material	10%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-035	001DAT, Children's Center, All Gender Restroom, East Center					
101A	Ceramic Baseboard (Core), Beige/White, Non-homogeneous	LAYER 1			None Detected	
		100%	Non-Fibrous Material	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564081-036	001DAT, Children's Center, All Gender Restroom, East Center					
101B	Grout, Dk. Gray, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Mineral Binders/Filler	50%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-037	001DAT, Children's Center, All Gender Restroom, East Center					
101C	Mortar, White, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	60%		
			Calcium Carbonate	30%		
			Other Non-Fibrous Material	10%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-038	001DAT, Children's Center, All Gender Restroom, North Center					
102A	Ceramic Baseboard (Core), Beige/White, Non-homogeneous	LAYER 1			None Detected	
		100%	Non-Fibrous Material	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-039	001DAT, Children's Center, All Gender Restroom, North Center					
102B	Grout, Dk. Gray, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Mineral Binders/Filler	50%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564081-040	001DAT, Children's Center, All Gender Restroom, North Center					
102C	Mortar, White, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	60%		
			Calcium Carbonate	30%		
			Other Non-Fibrous Material	10%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)

Method Detection Limit: Less than one percent (<1%). Asbestos content has been determined using calibrated visual estimation (CVES). Samples tested were received in acceptable condition unless otherwise stated. Test report relates only to items tested. Test results apply only to samples submitted and in the condition they were received. Non-homogeneous samples containing discrete and separable layers are analyzed and reported separately; composite results may be reported upon customer's request. Non-homogeneous samples with inseparable layers are analyzed and reported as composite samples. Due to the limitations of Polarized Light Microscopy, samples reported as None Detected or with low asbestos concentrations may not be reliable and further analysis such as TEM is recommended to confirm PLM results. This report shall not be reproduced except in full without the written approval of this laboratory. This report may not be used by the customer to claim product certification, endorsement, or approval by NIST/NVLAP or any agency of the government. Samples shall be disposed according to local, state and federal laws, 30 days after results are reported unless otherwise instructed.

Analyst - Fred Chappelear

Approved Signatory Cristina E. Tabatt

CA-ELAP #2823
NVLAP TESTING
NVLAP Lab Code 500044-0

VISTA ENVIRONMENTAL CONSULTING

BUILDING DIAGRAM

Client: LAUSD

Address: Sylvan Park Early Education Center (9565)

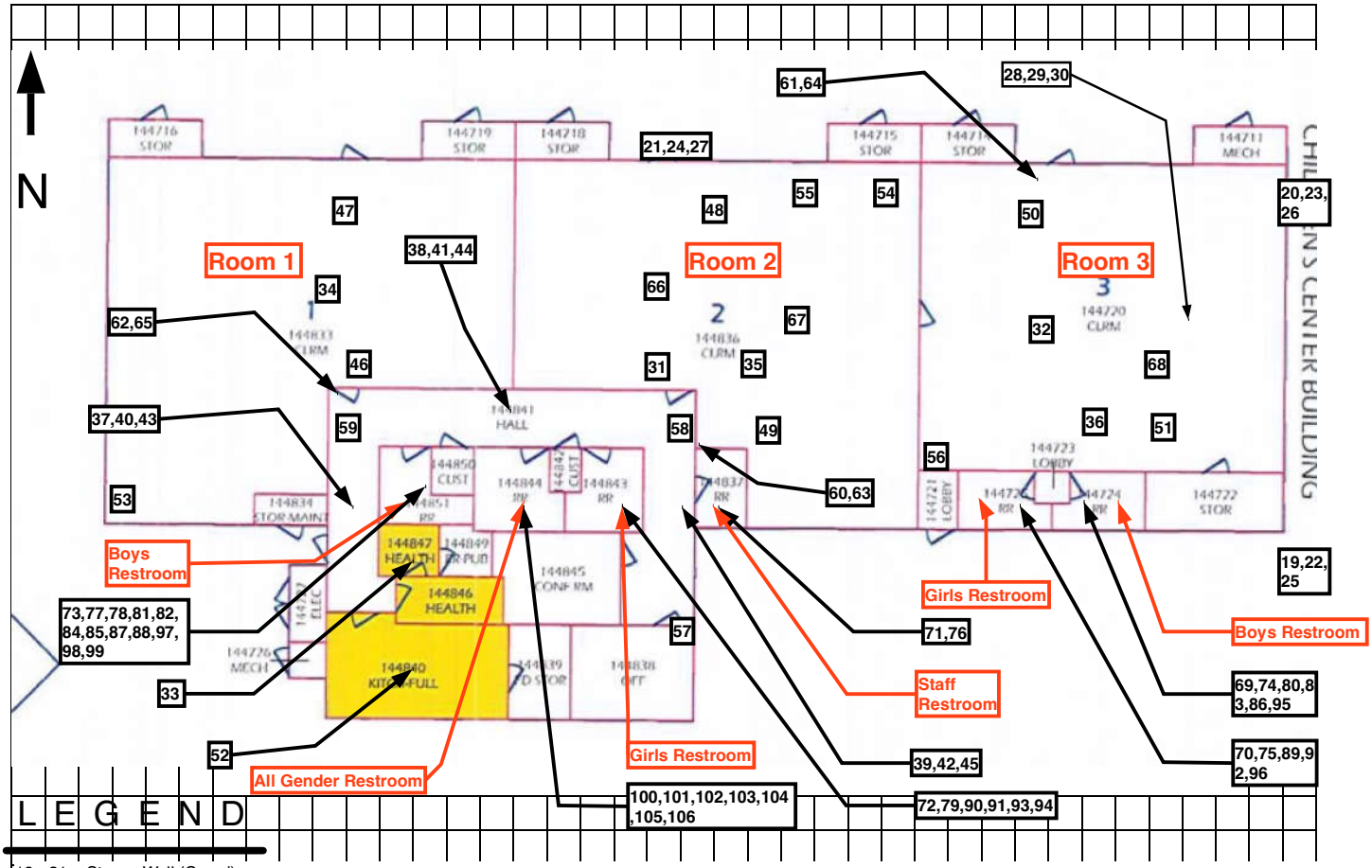
Building: Child Care Center Bldg. (001DAT)

Date: 9/22/25

Project No:

Vista Inspector: Francisco Barraza

ATTIC Y / N BASEMENT Y / N CRAWL SPACE Y / N GARAGE Y / N NO # FLOORS:



LEGEND

19 - 21 = Stucco Wall (Cored)
22 - 24 = Portico Stucco (Core)
25 - 27 = Wall Moisture Barrier Paper
28 - 30 = Duct Seam Tape
31 - 33 = Duct Seam Tape (White)
34 - 36 = 2'X4' Fissured Ceiling Tile (Lay-In)
37 - 39 = 12"X12" Random Hole Ceiling Tile
40 - 42 = Ceiling Tile Mastic (Brown)
43 - 45 = Drywall Ceiling w/ Joint Compound & Tape
46 - 52 = Unfinished Drywall w/ Joint Compound & Tape
53 - 59 = Drywall Wall w/ Joint Compound
60 - 62 = 4" Brown Cove Base w/ Adhesive
63 - 65 = 12"X12" Blue Vinyl Floor Tile (Cored) on Concrete
66 -68 = Duct Wrap Insulation
69 - 73 = Smooth Plaster Ceiling w/ Drywall (Cored)
74 - 79 = Smooth Plaster Wall w/ Drywall (Cored)
80 - 82 = White Ceramic Tile w/ Grout & Mortar (Cored)
83 - 85 = Blue & White Ceramic Floor Tile w/ Grout & Mortar (Cored)
86 - 88 = White Ceramic Baseboard w/ Grout & Mortar (Cored)
89 - 91 = Brown Ceramic Floor Tile w/ Grout & Mortar (Cored)
92 - 94 = Brown Ceramic Baseboard w/ Grout & Mortar (Cored)
95 = Beige & Blue Ceramic Floor Tile w/ Grout & Mortar (Patch)
96 = Lt Brown & Beige Ceramic Floor Tile w/ Grout & Mortar (Patch)
97 - 99 = Beige Ceramic Floor Tile w/ Grout & Mortar (Cored)
100 - 102 = Lt Brown Ceramic Baseboard w/ Grout & Mortar (Cored)
103 - 105 = Lt Brown Ceramic Floor Tile w/ Grout & Mortar (Cored)
106 = Beige Ceramic Floor Tile w/ Grout & Mortar (Patch)
107 - 109 = Gray Ceramic Floor Tile w/ Grout & Mortar (Cored) on Concrete
110 - 112 = Gray Ceramic Baseboard w/ Grout & Mortar (Cored)

LOS ANGELES UNIFIED SCHOOL DISTRICT
FACILITIES SERVICES DIVISION
CHAIN-OF-CUSTODY FOR BULK ANALYSIS

2564082

SITE NAME: Sylvan Park Early Eduation Center CODE: 9565 PROJ. DESC.: Outdoor Classroom and Campus Upgrades

SITE ADDRESS: 15011 Delano Street, Van Nuys, CA 91411 COLIN #: 10374546

SAMPLED BY: Francisco Barraza DATE SAMPLED: 9/23/2025 DEPT. / CONSULTANT: Vista Environmental Consulting, Inc. TEL: 714-289-2600

Fill in all information legibly and precisely. Original must be submitted with the samples. Make a copy before submitting samples. Results and a copy of the Chain of Custody (COC) with sample numbers will be submitted to FETU when analysis is completed. ***USE BLACK/BLUE INK ONLY. DO NOT USE WHITE OUT! ALL RUSH ANALYSIS AND POINT COUNT REQUESTS MUST BE APPROVED BY FETU SUPERVISORS.***

LAB NUMBER	SAMPLE NUMBER	BUILDING NUMBER	BUILDING NAME	ROOM NUMBER AND/OR NAME	LOCATION IN ROOM	MATERIAL TYPE (DESCRIBE)	FRIABLE (YES or NO)
	103	001DAT	Children's Center	All Gender Restroom	South Center	Lt Brown Ceramic Floor Tile w/ Grout & Mortar (Cored)	NO
	104	001DAT	Children's Center	All Gender Restroom	East Center	Lt Brown Ceramic Floor Tile w/ Grout & Mortar (Cored)	NO
	105	001DAT	Children's Center	All Gender Restroom	North Center	Lt Brown Ceramic Floor Tile w/ Grout & Mortar (Cored)	NO
	106	001DAT	Children's Center	All Gender Restroom	Center	Beige Ceramic Floor Tile w/ Grout & Mortar (Patch)	NO
	107	001DAT	Children's Center	Staff Restroom	North Center	Gray Ceramic Floor Tile w/ Grout & Mortar (Cored) on Concrete	NO
	108	001DAT	Children's Center	Staff Restroom	West Center	Gray Ceramic Floor Tile w/ Grout & Mortar (Cored) on Concrete	NO
	109	001DAT	Children's Center	Staff Restroom	South Center	Gray Ceramic Floor Tile w/ Grout & Mortar (Cored) on Concrete	NO
	110	001DAT	Children's Center	Staff Restroom	North Center	Gray Ceramic Baseboard w/ Grout & Mortar (Cored)	NO
	111	001DAT	Children's Center	Staff Restroom	West Center	Gray Ceramic Baseboard w/ Grout & Mortar (Cored)	NO
	112	001DAT	Children's Center	Staff Restroom	South Center	Gray Ceramic Baseboard w/ Grout & Mortar (Cored)	NO

	NAME (PRINT & SIGN)	DEPT./AREA/CONSULTANT	# OF SAMPLES	DATE	TIME
Relinquished By:	Francisco Barraza	Vista Environmental Consulting, Inc.	10	9/29/25	1615
Received By:	Justme Pakka Jamie Dorn	AQ Environmental	10	9/30/25	0800
Relinquished By:					
Received By:					

Maximo Work Order Number: 39361542 Project Type: ☐ Maintenance (MA) ☐ Deferred Maintenance ☐ Bond (specify: K,R,Y,Q) ☑ Other:

FETU USE ONLY

FETU REVIEWED BY: [signature] RUSH? ☐ Yes ☐ No APPROVAL:

FETU REVIEW DATE: 9-29-25 POINT COUNT? ☐ Yes ☐ No PT. CT. RUSH? ☐ Yes ☐ No APPROVAL:

ENVIRONMENTAL LABORATORIES LLC

1508 East 33rd Street
Signal Hill, CA 90755
Tel: 562-206-2770
Fax: 562-206-2773

Vista Environmental Consulting
1054 N Tustin Avenue
Anaheim, CA 92807
Attn.: Carlos Galdamez

Report Number 2564082
Date Received 09/30/2025
Date Analyzed 10/08/2025
Date Reported 10/08/2025

Project Number
Project Name Sylvan Park Early Education Center
Location 15011 Delano Street, Van Nuys, CA 91411
PO Number
Total Samples Submitted 10
Date Sampled 09/23/2025
Sampled By Francisco Barraza
Total Layers Analyzed 29

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564082-001	001DAT, Children's Center, All Gender Restroom, South Center					
103A	Ceramic Floor Tile (Core), Lt. Brown, Homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564082-002	001DAT, Children's Center, All Gender Restroom, South Center					
103B	Grout, Dk. Gray, Non-homogeneous	LAYER 1 100%	Quartz Mineral Binders/Filler	50% 50%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564082-003	001DAT, Children's Center, All Gender Restroom, South Center					
103C	Mortar, Gray, Non-homogeneous	LAYER 1 100%	Quartz Calcium Carbonate Other Non-Fibrous Material	60% 30% 10.%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564082-004	001DAT, Children's Center, All Gender Restroom, South Center					
103D	Backing Paper, Beige, Non-homogeneous	LAYER 1 100%	Cellulose Fiber	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564082-005	001DAT, Children's Center, All Gender Restroom, East Center					
104A	Ceramic Floor Tile (Core), Lt. Brown, Homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564082-006	001DAT, Children's Center, All Gender Restroom, East Center					
104B	Grout, Dk. Gray, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Mineral Binders/Filler	50%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564082-007	001DAT, Children's Center, All Gender Restroom, East Center					
104C	Mortar, Gray, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Calcium Carbonate	30%		
			Other Non-Fibrous Material	20%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564082-008	001DAT, Children's Center, All Gender Restroom, East Center					
104D	Backing Paper, Beige, Homogeneous	LAYER 1	Cellulose Fiber	100%	None Detected	
		100%				
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564082-009	001DAT, Children's Center, All Gender Restroom, North Center					
105A	Ceramic Floor Tile (Core), Lt. Brown, Homogeneous	LAYER 1			None Detected	
		100%	Non-Fibrous Material	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564082-010	001DAT, Children's Center, All Gender Restroom, North Center					
105B	Grout, Dk. Gray, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Mineral Binders/Filler	50%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564082-011	001DAT, Children's Center, All Gender Restroom, North Center					
105C	Mortar, Gray, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Calcium Carbonate	30%		
			Other Non-Fibrous Material	20%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564082-012	001DAT, Children's Center, All Gender Restroom, North Center					
105D	Backing Paper, Beige, Homogeneous	LAYER 1	Cellulose Fiber	100%	None Detected	
		100%				
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564082-013	001DAT, Children's Center, Staff Restroom, North Center					
106A	Ceramic Floor Tile (Cored) on Concrete, Beige, Homogeneous	LAYER 1			None Detected	
		100%	Non-Fibrous Material	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564082-014	001DAT, Children's Center, Staff Restroom, North Center					
106B	Grout, Dk. Gray, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Mineral Binders/Filler	50%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564082-015	001DAT, Children's Center, Staff Restroom, West Center					
106C	Mortar, Beige, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	60%		
			Calcium Carbonate	30%		
			Other Non-Fibrous Material	10%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564082-016	001DAT, Children's Center, Staff Restroom, North Center					
107A	Ceramic Floor Tile (Cored) on Concrete, Gray/Beige, Non-homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564082-017	001DAT, Children's Center, Staff Restroom, North Center					
107B	Grout, Dk. Gray, Homogeneous	LAYER 1 100%	Quartz Mineral Binders/Filler	50% 50%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564082-018	001DAT, Children's Center, Staff Restroom, North Center					
107C	Mortar, Note: No Mortar Present	LAYER 1 100%				
2564082-019	001DAT, Children's Center, Staff Restroom, West Center					
108A	Ceramic Floor Tile (Cored) on Concrete, Beige/Gray, Non-homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564082-020	001DAT, Children's Center, Staff Restroom, West Center					
108B	Grout, Dk. Gray, Non-homogeneous	LAYER 1 100%	Quartz Mineral Binders/Filler	50% 50%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564082-021	001DAT, Children's Center, Staff Restroom, West Center					
108C	Mortar, Note: No Mortar Present	LAYER 1				

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Report Number 2564082
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Project Number
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Sampled By Francisco Barraza
Total Layers Analyzed 29

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564082-022	0001DAT, Children's Center, Staff Restroom, South Center					
109A	Ceramic Floor Tile (Cored) on Concrete, Gray, Homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564082-023	001DAT, Children's Center, Staff Restroom, South Center					
109B	Grout, Dk. Gray, Homogeneous	LAYER 1 100%	Quartz Mineral Binders/Filler	50% 50%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564082-024	001DAT, Children's Center, Staff Restroom, South Center					
109C	Mortar, Note: No Mortar Present	LAYER 1 100%				
2564082-025	001DAT, Children's Center, Staff Restroom, North Center					
110A	Ceramic Baseboard (Cored), Gray/Beige, Non-homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564082-026	001DAT, Children's Center, Staff Restroom, North Center					
110B	Grout, Dk. Gray, Homogeneous	LAYER 1 100%	Quartz Mineral Binders/Filler	50% 50%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564082-027	001DAT, Children's Center, Staff Restroom, North Center					
110C	Mortar, Note: No Mortar Present	LAYER 1 100%				

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Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564082-028	001DAT, Children's Center, Staff Restroom, South Center					
111A	Ceramic Baseboard (Cored), Gray/White, Non-homogeneous	LAYER 1			None Detected	
		100%	Non-Fibrous Material	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564082-029	001DAT, Children's Center, Staff Restroom, South Center					
111B	Grout, Gray, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Mineral Binders/Filler	50%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564082-030	001DAT, Children's Center, Staff Restroom, South Center					
111C	Mortar, White, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	40%		
			Mineral Binders/Filler	60%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564082-031	001DAT, Children's Center, Staff Restroom, South Center					
112A	Ceramic Floor Tile (Cored) on Concrete, Gray/White, Non-homogeneous	LAYER 1			None Detected	
		100%	Non-Fibrous Material	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564082-032	001DAT, Children's Center, Staff Restroom, South Center					
112B	Grout, Dk. Gray, Non-homogeneous	LAYER 1			None Detected	
		100%	Quartz	50%		
			Mineral Binders/Filler	50%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564082-033	001DAT, Children's Center, Staff Restroom, South Center					
112C	Mortar, White, Homogeneous	LAYER 1			None Detected	
		100%	Quartz	40%		
			Mineral Binders/Filler	60%		

Asbestos Present: No Total % Non-Asbestos: 100.0% **Total %Asbestos:** **No Asbestos Detected**

Method Detection Limit: Less than one percent (<1%). Asbestos content has been determined using calibrated visual estimation (CVES). Samples tested were received in acceptable condition unless otherwise stated. Test report relates only to items tested. Test results apply only to samples submitted and in the condition they were received. Non-homogeneous samples containing discrete and separable layers are analyzed and reported separately; composite results may be reported upon customer's request. Non-homogeneous samples with inseparable layers are analyzed and reported as composite samples. Due to the limitations of Polarized Light Microscopy, samples reported as None Detected or with low asbestos concentrations may not be reliable and further analysis such as TEM is recommended to confirm PLM results. This report shall not be reproduced except in full without the written approval of this laboratory. This report may not be used by the customer to claim product certification, endorsement, or approval by NIST/NVLAP or any agency of the government. Samples shall be disposed according to local, state and federal laws, 30 days after results are reported unless otherwise instructed.

Analyst - Fred Chappelear

Approved Signatory Cristina E. Tabatt

CA-ELAP #2823
NVLAP TESTING
NVLAP Lab Code 500044-0

VISTA ENVIRONMENTAL CONSULTING

BUILDING DIAGRAM

Client: LAUSD

Address: Sylvan Park Early Education Center (9565)

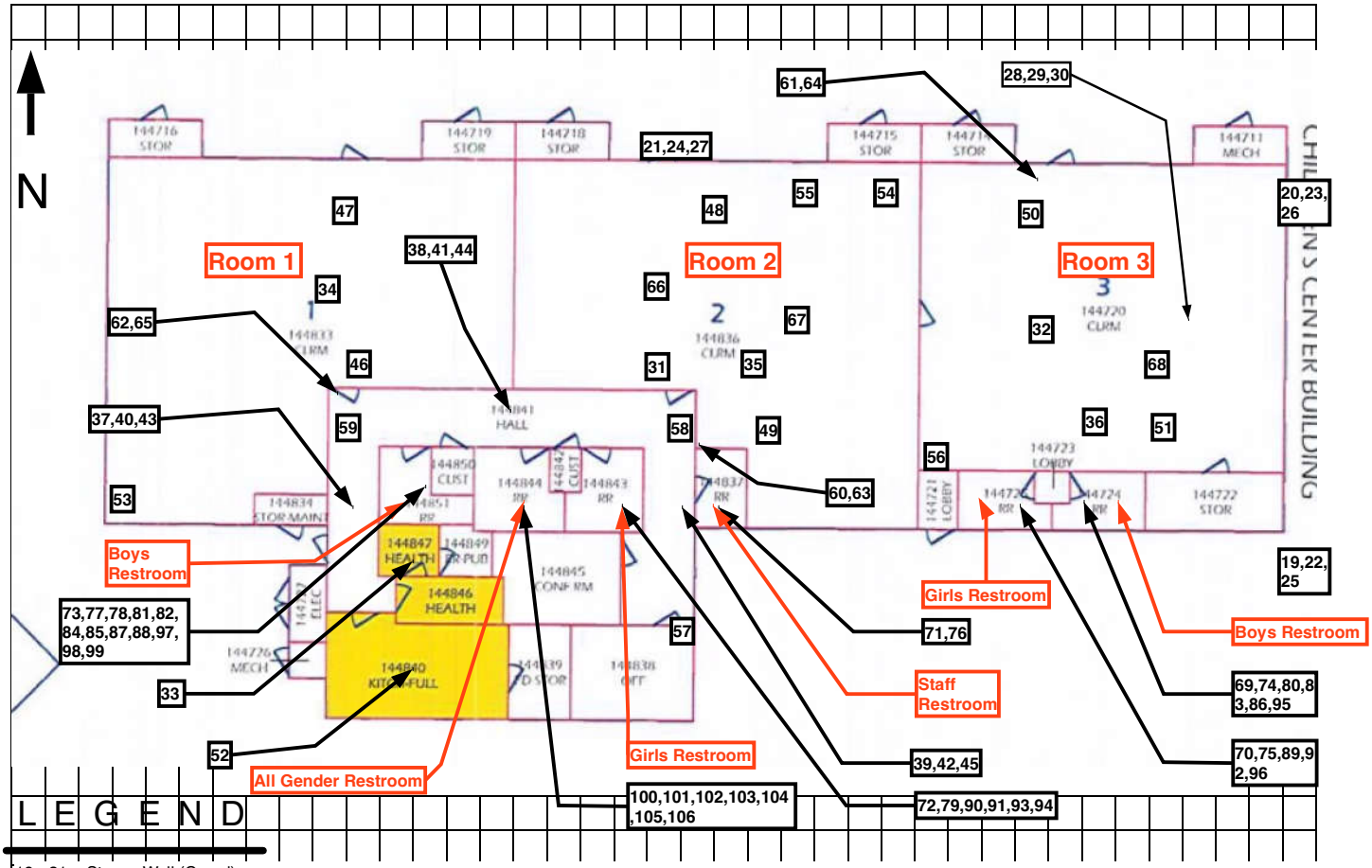
Building: Child Care Center Bldg. (001DAT)

Date: 9/22/25

Project No:

Vista Inspector: Francisco Barraza

ATTIC Y / N BASEMENT Y / N CRAWL SPACE Y / N GARAGE Y / N NO # FLOORS:



LEGEND

19 - 21 = Stucco Wall (Cored)
22 - 24 = Portico Stucco (Core)
25 - 27 = Wall Moisture Barrier Paper
28 - 30 = Duct Seam Tape
31 - 33 = Duct Seam Tape (White)
34 - 36 = 2'X4' Fissured Ceiling Tile (Lay-In)
37 - 39 = 12"X12" Random Hole Ceiling Tile
40 - 42 = Ceiling Tile Mastic (Brown)
43 - 45 = Drywall Ceiling w/ Joint Compound & Tape
46 - 52 = Unfinished Drywall w/ Joint Compound & Tape
53 - 59 = Drywall Wall w/ Joint Compound
60 - 62 = 4" Brown Cove Base w/ Adhesive
63 - 65 = 12"X12" Blue Vinyl Floor Tile (Cored) on Concrete
66 -68 = Duct Wrap Insulation
69 - 73 = Smooth Plaster Ceiling w/ Drywall (Cored)
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80 - 82 = White Ceramic Tile w/ Grout & Mortar (Cored)
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86 - 88 = White Ceramic Baseboard w/ Grout & Mortar (Cored)
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110 - 112 = Gray Ceramic Baseboard w/ Grout & Mortar (Cored)

LOS ANGELES UNIFIED SCHOOL DISTRICT
FACILITIES SERVICES DIVISION
CHAIN-OF-CUSTODY FOR BULK ANALYSIS

2564138

SITE NAME: Sylvan Park Early Eduation Center CODE: 9565 PROJ. DESC.: Outdoor Classroom and Campus Upgrades

SITE ADDRESS: 15011 Delano Street, Van Nuys, CA 91411 COLIN #: 10374546

SAMPLED BY: Francisco Barraza DATE SAMPLED: 9/30/2025 DEPT. / CONSULTANT: Vista Environmental Consulting, Inc. TEL: 714-289-2600

Fill in all information legibly and precisely. Original must be submitted with the samples. Make a copy before submitting samples. Results and a copy of the Chain of Custody (COC) with sample numbers will be submitted to FETU when analysis is completed. ***USE BLACK/BLUE INK ONLY. DO NOT USE WHITE OUT! ALL RUSH ANALYSIS AND POINT COUNT REQUESTS MUST BE APPROVED BY FETU SUPERVISORS.***

LAB NUMBER	SAMPLE NUMBER	BUILDING NUMBER	BUILDING NAME	ROOM NUMBER AND/OR NAME	LOCATION IN ROOM	MATERIAL TYPE (DESCRIBE)	FRIABLE (YES or NO)
	113	001DAT	Children's Center	Roof	West Center	PVC Roofing Material (Cored) on Wood	NO
	114	001DAT	Children's Center	Roof	North Center	PVC Roofing Material (Cored) on Wood	NO
	115	001DAT	Children's Center	Roof	East Center	PVC Roofing Material (Cored) on Wood	NO
	116	001DAT	Children's Center	Roof	South West	White Penetration Sealant	NO
	117	001DAT	Children's Center	Roof	South East	White Penetration Sealant	NO
	118	001DAT	Children's Center	Roof	South East	White Penetration Sealant	NO
	119	001DAT	Children's Center	Roof	South Center	White Duct Sealant	NO
	120	001DAT	Children's Center	Roof	South Center	White Duct Sealant	NO
	121	001DAT	Children's Center	Roof	South Center	White Duct Sealant	NO
	122	001DAT	Children's Center	Roof	East Center	HVAC Unit Platform Sealant (White)	NO
	123	001DAT	Children's Center	Roof	South Center	HVAC Unit Platform Sealant (White)	NO
	124	001DAT	Children's Center	Roof	South Center	HVAC Unit Platform Sealant (White)	NO

	NAME (PRINT & SIGN)	DEPT./AREA/CONSULTANT	# OF SAMPLES	DATE	TIME
Relinquished By:	Francisco Barraza	Vista Environmental Consulting, Inc.	12	10/8/25	9:40 am
Received By:	Justine Pabro	AQ Environmental	12	10/8/25	0940
Relinquished By:					
Received By:					

Maximo Work Order Number: 39361542 Project Type: ☐ Maintenance (MA) ☐ Deferred Maintenance ☐ Bond (specify: K,R,Y,Q) ☑ Other: _____

FETU USE ONLY

FETU REVIEWED BY: _____

FETU REVIEW DATE: 10-10-25

RUSH? ☐ Yes ☐ No APPROVAL: _____

POINT COUNT? ☐ Yes ☐ No PT. CT. RUSH? ☐ Yes ☐ No APPROVAL: _____

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Anaheim, CA 92807
Attn.: Carlos Galdamez

Report Number 2564138
Date Received 10/08/2025
Date Analyzed 10/13/2025
Date Reported 10/13/2025

Project Number
Project Name Sylvan Park Early Education Center
Location 15011 Delano Street, Van Nuys, CA 91411
PO Number
Total Samples Submitted 12
Date Sampled 09/30/2025
Sampled By Francisco Barraza
Total Layers Analyzed 18

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564138-001	001DAT, Children's Center, Roof, West Center					
113A	PVC Roofing Material (Cored) on Wood - Membrane, White, Homogeneous	LAYER 1 100%	Synthetic Fiber Fibrous Glass Non-Fibrous Material	10% <1% 90%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564138-002	001DAT, Children's Center, Roof, West Center					
113B	Fiberboard, White, Non-homogeneous	LAYER 1 100%	Fibrous Glass Gypsum/Filler	10% 90%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564138-003	001DAT, Children's Center, Roof, West Center					
113C	Wood Substrate, Brown, Homogeneous	LAYER 1 100%	Wood Fiber	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564138-004	001DAT, Children's Center, Roof, North Center					
114A	PVC Roofing Material (Cored) on Wood - Membrane, White, Non-homogeneous	LAYER 1 100%	Synthetic Fiber Non-Fibrous Material	35% 65%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564138-005	001DAT, Children's Center, Roof, North Center					
114B	Fiberboard, White, Non-homogeneous	LAYER 1 100%	Fibrous Glass Gypsum/Filler	10% 90%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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PO Number
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Date Sampled 09/30/2025
Sampled By Francisco Barraza
Total Layers Analyzed 18

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564138-006	001DAT, Children's Center, Roof, North Center					
114C	Wood Substrate, Brown, Homogeneous	LAYER 1 100%	Wood Fiber	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564138-007	001DAT, Children's Center, Roof, East Center					
115A	PVC Roofing Material (Cored) on Wood - Membrane, White, Non-homogeneous	LAYER 1 100%	Synthetic Fiber Non-Fibrous Material	35% 65%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564138-008	001DAT, Children's Center, Roof, East Center					
115B	Fiberboard, White, Non-homogeneous	LAYER 1 100%	Fibrous Glass Gypsum/Filler	10% 90%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564138-009	001DAT, Children's Center, Roof, East Center					
115C	Wood Substrate, Brown, Non-homogeneous	LAYER 1 100%	Wood Fiber	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564138-010	001DAT, Children's Center, Roof, South West					
116	Penetration Sealant, White, Non-homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564138-011	001DAT, Children's Center, Roof, South East					
117	Penetration Sealant, White, Non-homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Project Number
Project Name Sylvan Park Early Education Center
Location 15011 Delano Street, Van Nuys, CA 91411
PO Number
Total Samples Submitted 12
Date Sampled 09/30/2025
Sampled By Francisco Barraza
Total Layers Analyzed 18

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564138-012	001DAT, Children's Center, Roof, South East					
118	Penetration Sealant, White, Non-homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564138-013	001DAT, Children's Center, Roof, South Center					
119	Duct Sealant, White, Non-homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564138-014	001DAT, Children's Center, Roof, South Center					
120	Duct Sealant, White, Non-homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564138-015	001DAT, Children's Center, Roof, South Center					
121	Duct Sealant, White, Non-homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564138-016	001DAT, Children's Center, Roof, East Center					
122	HVAC Unit Platform Sealant, White, Non-homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564138-017	001DAT, Children's Center, Roof, South Center					
123	HVAC Unit Platform Sealant, White/Beige, Non-homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Attn.: Carlos Galdamez

Report Number 2564138
Date Received 10/08/2025
Date Analyzed 10/13/2025
Date Reported 10/13/2025

Project Number
Project Name Sylvan Park Early Education Center
Location 15011 Delano Street, Van Nuys, CA 91411
PO Number
Total Samples Submitted 12
Date Sampled 09/30/2025
Sampled By Francisco Barraza
Total Layers Analyzed 18

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564138-018	001DAT, Children's Center, Roof, South Center					
124	HVAC Unit Platform Sealant, White/Beige, Non-homogeneous	LAYER 1 100%	Non-Fibrous Material	100%	None Detected	

Asbestos Present: No

Total % Non-Asbestos: 100.0% **Total %Asbestos:** **No Asbestos Detected**

Method Detection Limit: Less than one percent (<1%). Asbestos content has been determined using calibrated visual estimation (CVES). Samples tested were received in acceptable condition unless otherwise stated. Test report relates only to items tested. Test results apply only to samples submitted and in the condition they were received. Non-homogeneous samples containing discrete and separable layers are analyzed and reported separately; composite results may be reported upon customer's request. Non-homogeneous samples with inseparable layers are analyzed and reported as composite samples. Due to the limitations of Polarized Light Microscopy, samples reported as None Detected or with low asbestos concentrations may not be reliable and further analysis such as TEM is recommended to confirm PLM results. This report shall not be reproduced except in full without the written approval of this laboratory. This report may not be used by the customer to claim product certification, endorsement, or approval by NIST/NVLAP or any agency of the government. Samples shall be disposed according to local, state and federal laws, 30 days after results are reported unless otherwise instructed.

Analyst - Fred Chappelear

Approved Signatory Cristina E. Tabatt

CA-ELAP #2823
NVLAP TESTING
NVLAP Lab Code 500044-0

VISTA ENVIRONMENTAL CONSULTING

BUILDING DIAGRAM

Client: Lausd

Date: 9/30/25

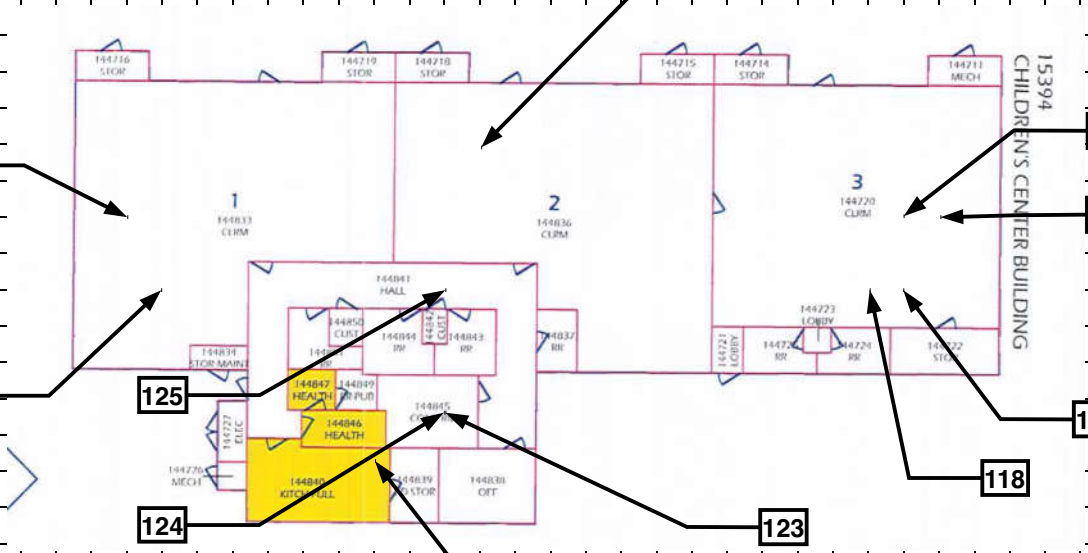
Address: Sylvan Park EEC (9565)

Project No:

Building: Children's Center (001DAT)

Vista Inspector: Francisco Barraza

ATTIC Y / N BASEMENT Y / N CRAWL SPACE Y / N GARAGE Y / N NO # FLOORS:_____



N

113

114

115

116

117

118

119,120,121

122

123

124

125

LEGEND

113 - 115 = PVC Roofing Material (Cored) on Wood
116 - 118 = White Penetration Sealant
119 - 121 = White Duct Sealant
122 - 124 = HVAC Unit Platform Sealant (White)
125 = Roof Vent Sealant (Gray)

N

(Not to Scale)

LOS ANGELES UNIFIED SCHOOL DISTRICT
FACILITIES SERVICES DIVISION
CHAIN-OF-CUSTODY FOR BULK ANALYSIS

2564139

SITE NAME: Sylvan Park Early Eduation Center CODE: 9565 PROJ. DESC.: Outdoor Classroom and Campus Upgrades

SITE ADDRESS: 15011 Delano Street, Van Nuys, CA 91411 COLIN #: 10374546

SAMPLED BY: Francisco Barraza DATE SAMPLED: 9/30/2025 DEPT. / CONSULTANT: Vista Environmental Consulting, Inc. TEL: 714-289-2600

Fill in all information legibly and precisely. Original must be submitted with the samples. Make a copy before submitting samples. Results and a copy of the Chain of Custody (COC) with sample numbers will be submitted to FETU when analysis is completed. ***USE BLACK/BLUE INK ONLY. DO NOT USE WHITE OUT! ALL RUSH ANALYSIS AND POINT COUNT REQUESTS MUST BE APPROVED BY FETU SUPERVISORS.***

LAB NUMBER	SAMPLE NUMBER	BUILDING NUMBER	BUILDING NAME	ROOM NUMBER AND/OR NAME	LOCATION IN ROOM	MATERIAL TYPE (DESCRIBE)	FRIABLE (YES or NO)
	125	001DAT	Children's Center	Roof	South Center	Roof Vent Sealant (Gray)	NO

	NAME (PRINT & SIGN)	DEPT./AREA/CONSULTANT	# OF SAMPLES	DATE	TIME
Relinquished By:	Francisco Barraza	Vista Environmental Consulting, Inc.	1	10/8/25	9:40 am
Received By:	Justine Pablo	AQ Environmental	1	10/8/25	0940
Relinquished By:					
Received By:					

Maximo Work Order Number: 39361542 Project Type: ☐ Maintenance (MA) ☐ Deferred Maintenance ☐ Bond (specify: K,R,Y,Q) ☑ Other: _____

FETU USE ONLY

FETU REVIEWED BY: _____ RUSH? ☐ Yes ☐ No APPROVAL: _____

FETU REVIEW DATE: 10-6-25 POINT COUNT? ☐ Yes ☐ No PT. CT. RUSH? ☐ Yes ☐ No APPROVAL: _____

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Vista Environmental Consulting
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Anaheim, CA 92807
Attn.: Carlos Galdamez

Report Number 2564139
Date Received 10/08/2025
Date Analyzed 10/13/2025
Date Reported 10/13/2025

Project Number
Project Name Sylvan Park Early Education Center
Location 15011 Delano Street, Van Nuys, CA 91411
PO Number
Total Samples Submitted 1
Date Sampled 09/30/2025
Sampled By Francisco Barraza
Total Layers Analyzed 1

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564139-001	001AT, Children's Center, Roof, South Center					
125	Roof Vent Sealant, Gray, Homogeneous	LAYER 1 100%	Synthetic Fiber Adhesive Binders/Filler	<1% 100%	None Detected	

Asbestos Present: No Total % Non-Asbestos: 100.0% **Total %Asbestos:** **No Asbestos Detected**

Method Detection Limit: Less than one percent (<1%). Asbestos content has been determined using calibrated visual estimation (CVES). Samples tested were received in acceptable condition unless otherwise stated. Test report relates only to items tested. Test results apply only to samples submitted and in the condition they were received. Non-homogeneous samples containing discrete and separable layers are analyzed and reported separately; composite results may be reported upon customer's request. Non-homogeneous samples with inseparable layers are analyzed and reported as composite samples. Due to the limitations of Polarized Light Microscopy, samples reported as None Detected or with low asbestos concentrations may not be reliable and further analysis such as TEM is recommended to confirm PLM results. This report shall not be reproduced except in full without the written approval of this laboratory. This report may not be used by the customer to claim product certification, endorsement, or approval by NIST/NVLAP or any agency of the government. Samples shall be disposed according to local, state and federal laws, 30 days after results are reported unless otherwise instructed.

Analyst - Fred Chappelear

Approved Signatory Cristina E. Tabatt

CA-ELAP #2823
NVLAP TESTING
NVLAP Lab Code 500044-0

VISTA ENVIRONMENTAL CONSULTING

BUILDING DIAGRAM

Client: Lausd

Date: 9/30/25

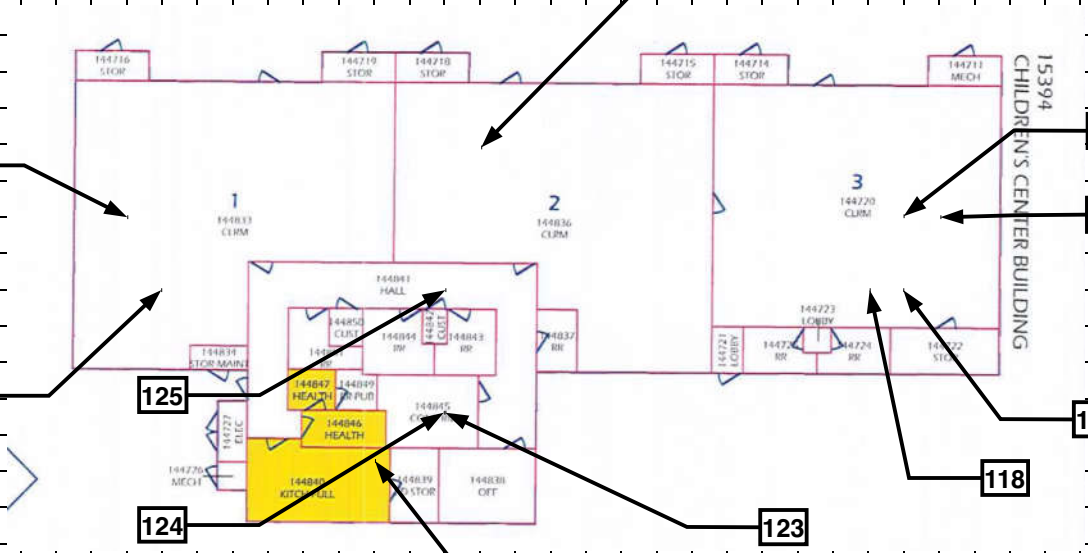
Address: Sylvan Park EEC (9565)

Project No:

Building: Children's Center (001DAT)

Vista Inspector: Francisco Barraza

ATTIC Y / N BASEMENT Y / N CRAWL SPACE Y / N GARAGE Y / N NO # FLOORS:_____



N

113

114

115

116

117

118

119,120,121

122

123

124

125

LEGEND

113 - 115 = PVC Roofing Material (Cored) on Wood
116 - 118 = White Penetration Sealant
119 - 121 = White Duct Sealant
122 - 124 = HVAC Unit Platform Sealant (White)
125 = Roof Vent Sealant (Gray)

N

(Not to Scale)

LOS ANGELES UNIFIED SCHOOL DISTRICT
FACILITIES SERVICES DIVISION
CHAIN-OF-CUSTODY FOR BULK ANALYSIS

2564140

SITE NAME: Sylvan Park Early Education Center CODE: 9565 PROJ. DESC.: Outdoor Classroom and Campus Upgrades

SITE ADDRESS: 15011 Delano Street, Van Nuys, CA 91411 COLIN #: 10374546

SAMPLED BY: Francisco Barraza DATE SAMPLED: 9/30/2025 DEPT. / CONSULTANT: Vista Environmental Consulting, Inc. TEL: 714-289-2600

Fill in all information legibly and precisely. Original must be submitted with the samples. Make a copy before submitting samples. Results and a copy of the Chain of Custody (COC) with sample numbers will be submitted to FETU when analysis is completed. ***USE BLACK/BLUE INK ONLY. DO NOT USE WHITE OUT! ALL RUSH ANALYSIS AND POINT COUNT REQUESTS MUST BE APPROVED BY FETU SUPERVISORS.***

LAB NUMBER	SAMPLE NUMBER	BUILDING NUMBER	BUILDING NAME	ROOM NUMBER AND/OR NAME	LOCATION IN ROOM	MATERIAL TYPE (DESCRIBE)	FRIABLE (YES or NO)
	126	556526 ~~-001DAT~~	CLASSROOM ~~Children's Center~~	Roof	West Center	PVC Roofing Material (Cored) on Wood	NO
	127	~~001DAT~~	~~Children's Center~~	Roof	North Center	PVC Roofing Material (Cored) on Wood	NO
	128	~~001DAT~~	~~Children's Center~~	Roof	East Center	PVC Roofing Material (Cored) on Wood	NO
	129	~~001DAT~~	~~Children's Center~~	Roof	North Center	White Penetration Sealant	NO
	130	~~001DAT~~	~~Children's Center~~	Roof	North Center	White Penetration Sealant	NO
	131	~~001DAT~~	~~Children's Center~~	Roof	North Center	White Penetration Sealant	NO

	NAME (PRINT & SIGN)	DEPT./AREA/CONSULTANT	# OF SAMPLES	DATE	TIME
Relinquished By:	Francisco Barraza	Vista Environmental Consulting, Inc.	6	10/8/25	9:40am
Received By:	Justine Pabla	AQ Environmental	6	10/8/25	0940
Relinquished By:					
Received By:					

Maximo Work Order Number: 39361542 Project Type: ☐ Maintenance (MA) ☐ Deferred Maintenance ☐ Bond (specify: K,R,Y,Q) ☑ Other:

FETU USE ONLY

FETU REVIEWED BY: RUSH? ☐ Yes ☐ No APPROVAL:

FETU REVIEW DATE: 10-6-25 POINT COUNT? ☐ Yes ☐ No PT. CT. RUSH? ☐ Yes ☐ No APPROVAL

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Anaheim, CA 92807
Attn.: Carlos Galdamez

Report Number 2564140
Date Received 10/08/2025
Date Analyzed 10/13/2025
Date Reported 10/13/2025

Project Number
Project Name Sylvan Park Early Education Center
Location 15011 Delano Street, Van Nuys, CA 91411
PO Number
Total Samples Submitted 6
Date Sampled 10/08/2025
Sampled By Francisco Barraza
Total Layers Analyzed 9

Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564140-001	95652C, Classroom, Roof, West Center					
126A	PVC Roofing Material (Cored) on Wood - Membrane, White/Gray, Non-homogeneous	LAYER 1 100%	Synthetic Fiber Binder/Filler	35% 65%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564140-002	95652C, Classroom, Roof, West Center					
126B	Fiberboard, White/Brown, Non-homogeneous	LAYER 1 100%	Fibrous Glass Gypsum/Filler	10% 90%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564140-003	95652C, Classroom, Roof, North Center					
127A	PVC Roofing Material (Cored) on Wood - Membrane, White/Gray, Non-homogeneous	LAYER 1 100%	Synthetic Fiber Binder/Filler	35% 65%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564140-004	95652C, Classroom, Roof, North Center					
127B	Fiberboard, White, Non-homogeneous	LAYER 1 100%	Fibrous Glass Gypsum/Filler	10% 90%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564140-005	95652C, Classroom, Roof, East Center					
128A	PVC Roofing Material (Cored) on Wood - Membrane, White/Gray, Non-homogeneous	LAYER 1 100%	Synthetic Fiber Binder/Filler	35% 65%	None Detected	
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

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Method of Analysis 40 CFR Part 763 Appendix E to Subpart E, EPA Method 600/M4-82-020; updated method 600 R-93/116 Determination of Asbestos in Bulk Building Materials.

Test Report

Laboratory ID / Client ID	Client Sample Location / Description	Layer No. / Layer %	Non-Asbestos Components	(%)	Asbestos Type	(%)
2564140-006	95652C, Classroom, Roof, East Center					
128B	Fiberboard, White, Non-homogeneous	LAYER 1	Fibrous Glass	10%	None Detected	
		100%	Gypsum/Filler	90%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564140-007	95652C, Classroom, Roof, North Center					
129	Penetration Mastic, Cream, Homogeneous	LAYER 1			None Detected	
		100%	Adhesive Binders/Filler	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564140-008	95652C, Classroom, Roof, North Center					
130	Penetration Mastic, Cream, Homogeneous	LAYER 1			None Detected	
		100%	Adhesive Binders/Filler	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**
2564140-009	95652C, Classroom, Roof, North Center					
131	Penetration Mastic, Cream, Homogeneous	LAYER 1			None Detected	
		100%	Adhesive Binders/Filler	100%		
	Asbestos Present: No		Total % Non-Asbestos:	100.0%	**Total %Asbestos:**	**No Asbestos Detected**

Method Detection Limit: Less than one percent (<1%). Asbestos content has been determined using calibrated visual estimation (CVES). Samples tested were received in acceptable condition unless otherwise stated. Test report relates only to items tested. Test results apply only to samples submitted and in the condition they were received. Non-homogeneous samples containing discrete and separable layers are analyzed and reported separately; composite results may be reported upon customer's request. Non-homogeneous samples with inseparable layers are analyzed and reported as composite samples. Due to the limitations of Polarized Light Microscopy, samples reported as None Detected or with low asbestos concentrations may not be reliable and further analysis such as TEM is recommended to confirm PLM results. This report shall not be reproduced except in full without the written approval of this laboratory. This report may not be used by the customer to claim product certification, endorsement, or approval by NIST/NVLAP or any agency of the government. Samples shall be disposed according to local, state and federal laws, 30 days after results are reported unless otherwise instructed.

Analyst - Fred Chappelear

Approved Signatory Cristina E. Tabatt

CA-ELAP #2823
NVLAP TESTING
NVLAP Lab Code 500044-0

VISTA ENVIRONMENTAL CONSULTING

BUILDING DIAGRAM

Client: LAUSD

Date: 9/22/25

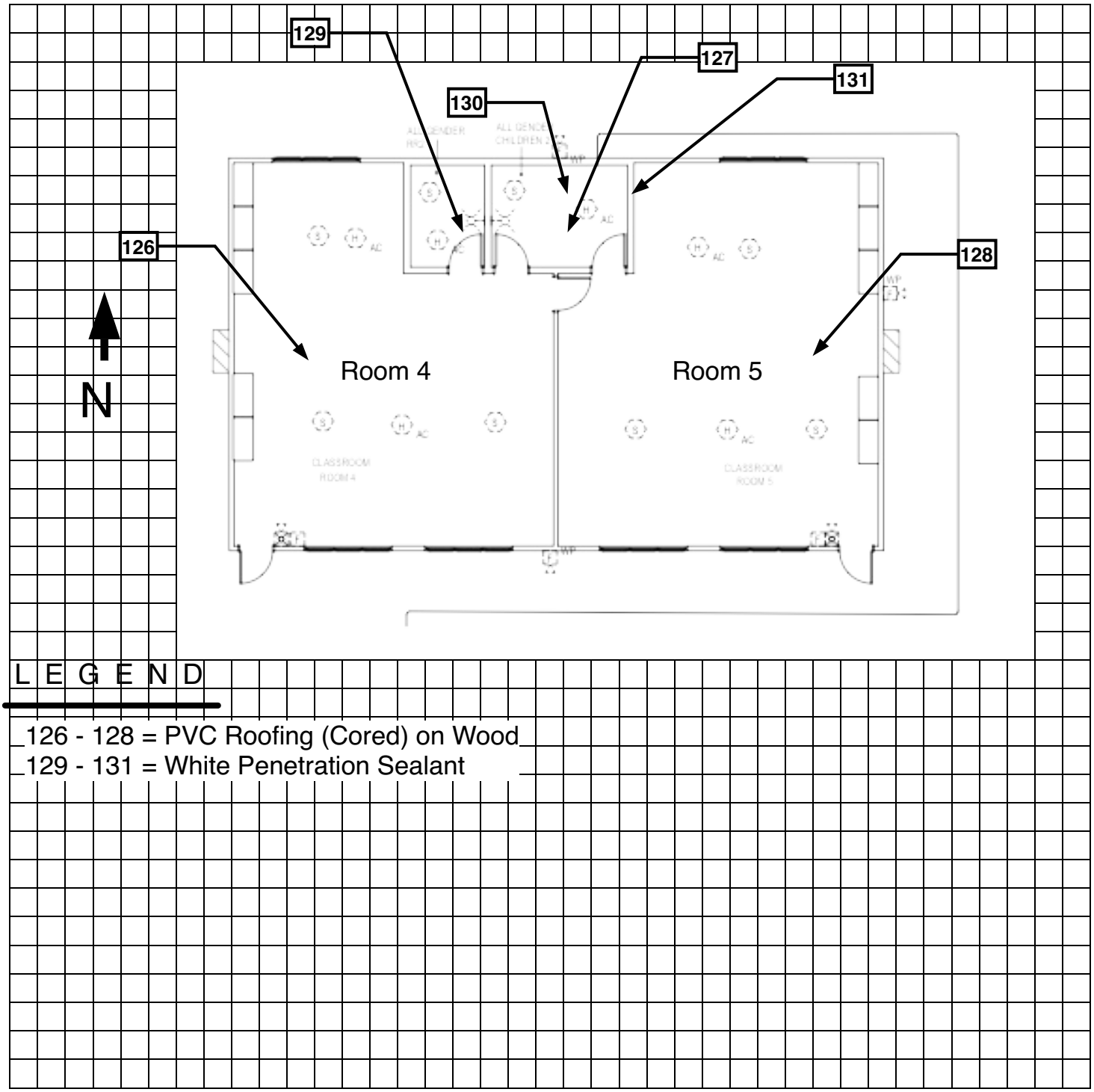
Address: Sylvan Park Early Education Center (9565)

Project No:

Building: Classroom Building (95652C)

Vista Inspector: Francisco Barraza

ATTIC Y / N BASEMENT Y / N CRAWL SPACE Y / N GARAGE Y / N NO # FLOORS:



L E G E N D

126 - 128 = PVC Roofing (Cored) on Wood

129 - 131 = White Penetration Sealant

N

(Not to Scale)

APPENDIX C –
ASBESTOS SURVEY FORM A

ASBESTOS SURVEY FORM A
Initial Survey

School Name SYLVAN PARK CC Loc. Code 9565 (S-16691)

Building Name CHILDRENS CENTER Building Number 001 DAT (B-15394)

Building Square Feet 6,663' Height of Typical Room 9'

Inspector's Name D. R. OROS Number 1393

	Type of Suspected Material	Specific Location	Req. Number Samples	Asbestos Present
A.	~~Plaster~~ Dry w/Tape/Mud Ceiling	Rms 1, 2, 3, HALLWAY ~~All except noted below~~	7 | 5	8/11/00 6-12-88 POS 8/11/00
B.	~~Plaster~~ Drywall w/Tape/Sand Walls	Rms. 1, 2, 3 ~~All except noted below~~	2	6-12-88 POS <1%
C.	12"x12" Random Ceiling Tiles w/Adhesive (NOTE- Adhesive may have been contaminated from 3CT)	Office, Hallways,	3	8/11/00 Pos-Adhesive
			5	ND 6-12-88
REMOVED BY CONT. 12-28-04 * D.	12"x12" ORANGE Floor Tile	Office, CLASSROOM STORAGE'S		Removal ~~ASSUMED~~
REMOVED @ 12-28-04 R.E. E.	TAN FLOOR Sheeting W/MASTIC 2'x4' Random	Kitchen, EXT. DAY CARE, ENTRY FOOD STORAGE CLASSROOMS 1/2	6/6	Removal ~~POS 11-1-04~~
F.	Ceiling Tile SMOOTH	CLASSROOMS 1, 2, 3, Kitchen	5	ND 6-12-88
G.	PLASTER WALL SMOOTH	BATHROOMS ALL Kitchen	3	ND 6-12-88
H.	PLASTER CEILINGS	BATHROOMS ALL	3	ND 6-12-88
REMOVED BY CONT. 12-28-04 I.	12"x12" ORANGE Floor Tile W/ MASTIC	HALLWAY, ISOLATION RM., COT RM., W. TOILET, CUSTODIAN, CONF. RM., CLOSET, E. TOILET	8/8	Removal ~~POS 11-1-04~~
J.	FIREDOORS	ALL INSIDE DOORS		ASSUMED (POS)
	A.O. Smith Hot Water Heater	Hot water Heater Room		ASSUMED (POS)
TEC. 1113 9/12/88 K.				
L.	DUCT TAPE 75' FIBER GLASS P.I.	ATTIC DUCTWORK IN ATTIC	3	NO 9-12-88 ~~ASSUMED (POS)~~

INSPECTOR'S SIGNATURE D. R. Oros DATE 06/10/88

	Type of Suspected Material	Specific Location	Req. # of Samples	Asbestos Present
M.	Asphalt shingles w/ Asphalt SHEETING	Roof	3	NEG 3/25/03 RB
N.	4" BROWN COVE BASE W/ MASTIC	EAST TOILET, FOOD STORAGE, CONF. RM.	3|3	Removed ~~NEG. 11-1-04~~
O.	12"x12" LT. GREEN W/ WHITE SPECKS FLOOR TILE & MASTIC	SUPERVISOR OFFICE, EXT. DAY CARE STORAGE	3|3	Removed ~~POS 11-1-04~~ Resampled NEG 5/4/06
P.	ROCK	ROOF TOP	3/3	
Q.	SMOOTH SHEET	ROOF TOP	3	POS. 9-7-05
R.	MASTIC	ROOF TOP	3	POS. 9-7-05
S.	SEAM MASTIC	(EAST HVAC UNIT,) (SOUTH HVAC UNIT) ROOF	6	NEG. 6-22-07
T.	STUCCO WALLS	EXTERIOR	3	NEG. 8-11-00
U.	DRYWALL W/ JCT	KITCHEN CEILING VOID, R/R CEILING VOID	3+3	NEG. 6-22-07
V.	Carpet Mastic Beige Cove	1, 2, 3	3	Neg. 8-20-08
W.	Base Mastic Grey Cove	1, 2, 3	3	Neg. 8-20-08 Neg. By Point Count 8-20-08
X.	Base Mastic 12x12 Blue	1, 2, 3	3	
Y.	Floor Tile 4" Brown	Storage, R/R Kitchen Rm 1, 2, 3, Offices, Hall		ASSUMED (POS)
Z.	Cove base. 2X4 FISSURE	Rm 1, 2, 3, offices Hall, R/R, Kitchen RMS 1, 2, 3		ASSUMED (POS) ASSUMED 6A.
AA.	DROP CEILING 611"X48" WOOD			
BB.	PLANKS F.T.	SUPERVISOR OFFICE		ASSUMED (POS)
CC.	INT & EXT DOORS	THROUGHOUT BUILDING		ASSUMED (POS)

Inspector's Signature:_____ Date:_____

ASBESTOS SURVEY FORM A
Reinspection Survey

School Name: Sylvan Park C.C. Loc. Code: 9565 (S-16691)

Building Name: child care Building Number: 001 DAT (B-15394)

Building Square Feet: 6,663' Height of Typical Room: 9'

Inspector: Paul Flores Number: RBI-12524

Type of Suspected Material	Specific Location	Req. # of Samples	Asbestos Present
A. Plaster Ceilings	All except noted below		
B. Plaster Walls	All except noted below		
C. Ceiling Tiles			
D. SAND (over DRYWALL) PLASTER WALL	OVERSIDE (#1), 3, 4 STORAGE	3	8/11/00 Neg
E. SAND (over DRYWALL) PLASTER CEILING	1, 3, 4 (OVERSIDE STORAGE)	3	8/11/00 Neg
F.			
G.			
H.			
I.			
J.			
K.			
L.			

Inspector's Signature: Paul Flores Date: 8/30/00

ASBESTOS SURVEY FORM A
Reinspection Survey

School Name: SYLVAN PARK EEC Loc. Code: 9565 (S-166691)

Building Name: CLASSROOMS Building Number: 95652C (51020)

Building Square Feet: 2,160' Height of Typical Room: 8'

Inspector: R. BOWIE Number: 1033

AURORA MODULAR Built DEC 03 JOB # 5143

APP# 04 104385 SERIAL #'S 33450 33451 33452

Type of Suspected Material	Specific Location	Req. # of Samples	Asbestos Present
A. ~~Plaster~~ Walls Ceilings	All except noted below		
B. ~~Plaster~~ Walls (Drywall Behind Fiberboard)	All except noted below		
C. Ceiling Tiles (ACT Fiberglass)	2 CLASSROOMS & Foyer & 2 Adjacent RESTROOMS.		
D.	ABOVE CT		
E. Batting Insulation (Fiberglass)	In CLASSROOMS & RESTROOMS		
F.			
G.			
H.			
I.			
J.			
K.			
L.			

EXCLUDED FROM AHERA INSPECTION BUT SUBJECT TO ASBESTOS SURVEY PRIOR TO ANY DISTURBANCE/RENOVATION/DEMOLITION ACTIVITY

Inspector's Signature: Rand Bowie Date: 8/11/04

LOS ANGELES UNIFIED SCHOOL DISTRICT
Asbestos Technical Unit

To Whom It May Concern:

From: Rick Henry, Facilities Service Director
Asbestos Technical Unit, Central Shops

Subject; Post A.H.E.R.A. Modular Buildings

A certified Asbestos Inspector has reviewed documents pertaining to the building/s listed Below Documents in the possession of the Los Angeles Unified School District indicate That no asbestos-containing building materials (ACBM) were specified in the construction of the building/s a letter from the manufacturer is attached.

SITE: **SYLVAN PARK EEC** LOCATION CODE: 9565 (S-16691)

Building number: 395652C (51020) Manufacture: AURORA MODULAR

Serial #: 33450, 33451, 33452

Date of construction: DEC 2003 Date of inspection: 08/19/05

Certified Inspector: mike Guinan Certification number: 1038

Inspector's signature: Michael Guinan Date: 08/22/05

APPENDIX D -
CONSULTANT CERTIFICATIONS

State of California
Division of Occupational Safety and Health
Certified Asbestos Consultant

Name: **Francisco Barraza**

Certification No. **17-6066**

Expires on **11/14/25**

This certification was issued by the Division of Occupational Safety and Health as authorized by Sections 7180 et seq. of the Business and Professions Code.

State of California
Division of Occupational Safety and Health
Certified Asbestos Consultant

Carlos A Galdamez

Name

Certification No. **98-2379**

Expires on **05/29/2026**

This certification was issued by the Division of Occupational Safety and Health as authorized by Sections 7180 et seq of the Business and Professions Code.

State of California
Division of Occupational Safety and Health
Certified Asbestos Consultant

Eloy J. Acuna

Name

Certification No. **24-7651**

Expires on **05/17/2026**

This certification was issued by the Division of Occupational Safety and Health as authorized by Sections 7180 et seq of the Business and Professions Code.

Global Environmental Training

This is to certify that

Adair Martinez

SS# 7060

Has completed course work that meets the criteria required for EPA/AHERA (TSCA Title II) Approved Reaccreditations and NESHAPs Regulations Training *

Asbestos in Buildings: Building Inspector Refresher

May 15, 2025
Course Date

225-134-BIR
Certificate Number

May 15, 2026
Expiration Date

CA - 023 - 06
Course Approval Number

Mario Virgen
Course Director

1520 W. Cameron Ave., Suite 103 * West Covina, CA 91790 (626) 962-4436
*This course meets California requirements

APPENDIX E -
SCOPE OF WORK

Los Angeles Unified School District
Facilities Services Division
Facilities Environmental Technical Unit

TASK ORDER – NOTICE TO PROCEED

September 9, 2025

Vista Environmental Consulting, Inc.
1054 N. Tustin Avenue
Anaheim, CA 92807

Task Order #: 22-VIS-481
Laboratory Work Order #: 39361542
Project Work Order #: 39361517

NOTICE TO PROCEED - ASBESTOS AND LEAD-CONTAINING MATERIAL CONSULTING SERVICES

Project Reference:
SYLVAN PARK EARLY EDUCATION CENTER
15011 DELANO ST, VAN NUYS, CA 91411
Project/Colin #10374546
Loc. Code: 9565
OUTDOOR CLASSROOM CAMPUS UPGRADE - ASPHALT @ PLAYGROUND & PARKING AREA. (FUNDING LINE: F-313619-03-404-99, 1110-8100-14935)

In accordance with the *AGREEMENT FOR ASBESTOS AND LEAD CONSULTING SERVICES,* agreement number **2290043/4400010142**, you are hereby authorized to proceed, in accordance with your attached proposal with the following work:

☒ **PHASE 1** – Project Assessment and Asbestos and Lead Material Identification - Work to commence within five (5) working days from NTP issuance.
Estimated Date of Completion: 17 Calendar Days from issuance of an NTP

☒ **PHASE 2** – Project Design for Asbestos and Lead Material In-Place Management or Abatement Contract.
Estimated Date of Completion: 7 Calendar Days from completion of phase 1 or from issuance of phase 2 NTP

☐ **PHASE 3 –** Project Monitoring of Asbestos and Lead Material In-Place Management or Abatement Contract
Estimated Date of Completion: 45 Days from the issuance of Phase 3 Asbestos/Lead Project Completion Site Acceptance form. Close-Out report must be prepared and submitted no later than forty-five (45) days from the issuance of Phase 3 Asbestos/Lead Project Completion Site Acceptance form.

- All phase 1 & 2 work authorized pursuant to this notice to proceed shall be completed within one (1) year from the date of this letter.
- All Phase 3 work authorized pursuant to this notice to proceed shall be completed within three (3) years from the date of this letter.
- Final invoices shall be received no later than 60 (Sixty) days after the completion of Task Order Services or termination of the contract.
- For all Phase 3 invoices, 10% of invoice amount will be held. This withhold shall be paid upon final Close-Out report approval by FETU.
- Please include a signed copy of this letter and approved cost proposal with all invoices.
- Please submit your invoices via email to fetuinvoices@laschools.org.

GLENN GUTIERREZ GLENN GUTIERREZ (Sep 10, 2025 08:10:18 PDT)
Senior Insulator/Asbestos Abatement Worker

TO #	WBS or CC	Program	Proj Type (Fund)	PO #	NTE	NTP Date
22-VIS-481	**IO:808000141804**			8000097506	**$10,447.10**	**9/9/2025**
22-						

Cumulative Not-To-Exceed Total: $10,447.10

Vista Environmental Consulting, Inc. agrees to provide the above services according to the dates and fees of this Task Order.

Carlos A. Galdamez — Digitally signed by Carlos A. Galdamez DN: CN=Carlos A. Galdamez, O="Vista Environmental Consulting, Inc.", OU=Carlos A. Galdamez, E=carlos.galdamez@vista-env.com Reason: I am the author of this document Location: your signing location Date: 2025.09.12 13:41:32-07'00' Foxit PDF Editor Version: 11.0.1

Signed | Sr. Project Manager — Title | 9/12/2025 — Date

REQUEST FOR ASSISTANCE FORM

FACILITIES ENVIRONMENTAL TECHNICAL UNIT

Request for (Please select):

- [x] Environmental Assessment (Phase 1) & Abatement Design (Phase 2)
- [ ] Environmental Project Monitoring (Phase 3)
- [ ] Water Intrusion/Mold Remediation
- [ ] Asbestos Assistance
- [ ] Insulation
- [ ] Other:

Section 1 - General Information *(complete this section for all request types):*

Date: 9/3/2025	Requestor Office: M&O, AES	
Requestor Name: Thomas Tsang	Title: Sr. Design Manager	
Phone No: 213-241-2625	Email: cp-thomas.tsang@lausd.net	Site Reg/Dist: N2
Site Name: Sylvan Park EEC		Site Code: 13870
Building Name & Number (e.g., Administrative Building (001CDG)), Specific Location (e.g., Room #1): Asphalt already been tested, SOW is for classroom upgrades PH 1 & 2 WO#: 39361517 PH 1 & 2 LAB WO#: 39361542		

Section 2 - Project & Funding Information *(provide as much project and/or funding information as possible)*

Official Project Name: Sylvan Park EEC Outdoor Classroom and campus upgrade

Cost Ctr or WBS Project #	Func. Area	GL Acct	Colin Project #	Funding Source
		580001	10374546	Measure-RR

Section 3 - Phase 1 & 2 Request Information* *(Note: Failure to attach a scope or drawings may delay assessment)*

Written scope attached? Yes	Scope % Complete: 100 %	DSA drawings attached? No	Drawing % Complete: 30 %
Phase 1 & 2 supplemental form attached? Yes	Project Pre-Bid Meeting Date: Q4 2024		

Note: *Phase 1 & 2 supplemental form MUST be filled out for ALL phase 1 & 2 requests! See page 2 of this form.

Section 4 - Phase 3 Request Information *(Note: You must attach a copy of FETU approved "Request to Advertise" form)*

WO # on RTA:	RTA Approver Name:

Section5 - Water Intrusion/Mold Remediation, Insulation, or Other Request Information

Describe the Problem:

Section 6 - Asbestos Assistance Request Information

Room/Area Requiring Assistance:	
Asbestos Management Plan has been reviewed? Yes	Work Order #:
Bulk sample has been completed on:	Requesting FETU to sample suspect materials? Yes
Name Building Material in Question:	Asbestos Present? Yes
Description of Material(s) to be Abated:	
Quantity of Material to be Abated:	Abatement Type Requested:
Tentative Start Date of Requestor's Project:	Abatement is required for:

FOR FETU USE ONLY

FETU Received Date:	Senior Assigned:	Date Assigned:
Parent WO #	Ph. 1 & 2 WO #:	Ph. 3 WO #:
Crew I&P WO #:	Crew Removal WO #:	Crew Lab. WO #:
Date Assigned for Samples:	Date Assigned for Abatement:	
Date Requestor Contacted with Bulk Sample Results:	By:	
Date Requestor Notified of Abatement Completion:	By:	

ENVIRONMENTAL ASSESSMENT (PHASE 1) & ABATEMENT DESIGN (PHASE 2) SUPPLEMENTAL FORM

Purpose of Form: This form will assist the Requestor to determine the proper asbestos and lead requirements by identifying the project as a NO, MINIMAL OR MAJOR IMPACT PROJECT. In turn, information the Requestor provides herein will assist FETU to expeditiously process request for no or minimal impact projects that don't necessarily require a Phase 1 Environmental Assessment.

Date: 9/3/2025	**Requestor:** Thomas Tsang	**School:** Sylvan Park EEC
Official Project Name: Sylvan Park EEC Outdoor Classroom and campus upgrade		

Directions: Based on the project scope of work, please identify if this Project is a No, Minimal or Major Impact Project by checking the corresponding box below. Also, please check the appropriate sub-box(es) under each main category as appropriate and include any other information that substantiates this project, as No, Minimal or Major Impact Project in the COMMENTS section below.

☐ **THIS IS A NO IMPACT PROJECT**

- ☐ This project does not impact any structures/buildings. (*For example, new stand-alone shade structure.)*
- ☐ Materials to be impacted by this project are not coated with paint, varnish, glazing or any other coating, and are not suspect, known or assumed to be asbestos-containing. In addition, this project does not require working in or exposing any ceiling spaces, attics, crawl spaces or other building interstitial areas. *In the COMMENTS section below, identify the material (e.g., unpainted concrete floor, unpainted metal duct, unpainted concrete walls, unpainted brick wall, etc.).*
- ☐ This project includes work in a building(s) but does not impact any coated surfaces or building materials and does not require working in or exposing any ceiling spaces, attics, crawl spaces or other building interstitial areas. *Elaborate in COMMENTS section below. For example, the scope only includes the re-programming of the fire alarm system or only includes new utilities point of connection at existing conduit and pull box at exterior of building.*
- ☐ This project includes excavation.
- ☐ This project does not include excavation.
- ☐ New construction. Construction Date:
- ☐ Other. *Explain in COMMENTS section below.*

☐ **THIS IS A MINIMAL IMPACT PROJECT**

- ☐ This project requires minimal disturbance or removal of building materials and meets the following criteria:
  - Disturbance or removal of building materials, are less or equal to three (3) square feet per impact area.
  - Total quantity of building material impact does not exceed 99 square feet.
  - No ceiling spaces, attics, crawl spaces or other building interstitial areas are required to be worked in or exposed.
- ☐ This project impacts coated surfaces only.
- ☐ This project does not impact coated surfaces.

An example of a project, which may be a minimal impact project, is a fire alarm upgrade project, which only requires coring, installing surface mounted conduits/raceways and replacing existing surface-mounted fire alarm devices.

☒ **THIS IS A MAJOR IMPACT PROJECT**

- ☒ This project requires major impacts to building materials and/or work in ceiling spaces/attics/crawl spaces/other interstitial building areas. Major impacts to building materials are those that are greater than three (3) square feet for any impact area or total quantity of building material to be impacted exceeds 99 square feet total.

☐ **BASED ON THE SCOPE OF WORK, I AM NOT ABLE TO DETERMINE IF THE PROJECT IS A NO, MINIMAL OR MAJOR IMPACT PROJECT**

COMMENTS (Include supplemental information regarding the scope of this project and/or additional information regarding no, minimal or major impacts to building materials)

Exterior paving had been tested from previous RFAs. This RFA submitted for the work related to the buildings.

APPENDIX F -
CONSULTANT'S CHECKLIST

APPENDIX E

CONSULTANT'S REPORT FORMAT CHECKLIST FOR PHASE 1 ASBESTOS REPORT
(Attach to Draft Report Only)

Site Name: **Sylvan Park EEC** Loc: **9565**

Project Description: **Outdoor Classroom and Campus Upgrades**

		YES	NO
1.	**Requestor-provided Information**		
	Is the report based on a complete scope of work and/or 100% drawings?	X	
	Is the Notice to Proceed included?	X	
2.	**Scope of Work**		
	Is this report project specific?	X	
	Is this report a Full Site Survey?		X
	Is the complete and detailed scope of work, which is project specific, included in Section II?	X	
3.	**Consultant Boiler Plate Information**		
	Is boiler plate text complete and specific to this project?	X	
	Are references to regulations and District documents and specifications correct and complete?	X	
4.	**Project Drawings**		
	Are legible drawings complete and accurate with the text matching content of report (including site name, site location code, building name, building number, date of sampling, name of sampler, sample locations, field sample numbers, sample description, north direction arrow, and appropriate historical data)?	X	
5.	**Chain of Custody and Analytical Results**		
	Was the District's FETU Laboratory used?		X
	If the District's FETU Laboratory was not used, is the lab's Refusal Letter included in the draft report?		X
	Were bulk samples collected in accordance with District policy?	X	
	Are the Asbestos Bulk Sample Submittal/Chain of Custody forms complete and signed?	X	
	Are bulk sample numbers consecutive and consistent throughout the report?	X	
	Are point-count results included in the report?	X	

APPENDIX E

CONSULTANT'S REPORT FORMAT CHECKLIST FOR PHASE 1 ASBESTOS REPORT
(Attach to Draft Report Only)

Site Name: **Sylvan Park EEC** Loc: **9565**

Project Description: **Outdoor Classroom and Campus Upgrades**

		YES	NO
6.	**Asbestos Survey Form A**		
	Were the most current forms from the Facilities Environmental Technical Unit used?	X	
	Are they specific to the project and included in the report?	X	
7.	**Conclusions and Recommendations**		
	Are the conclusions and recommendations complete and specific to the scope of work?	X	
	Are materials identified as ACM or ACCM?	X	
8.	**General Recommendations and Notes**		
	Are statements regarding attics and crawl spaces, and Section 13280 complete and included in the report?	X	
	Are inaccessible spaces addressed and explained?	X	
9.	**Appendices**		
	Is each appendix complete?	X	
	Do the appendices match the text of the report, as appropriate?	X	
10.	**Consultant's Certifications**		
	Are the certifications of staff involved with the project correct and current?	X	

Carlos A. Galdamez

Digitally signed by Carlos A. Galdamez
DN: C=US, O="Vista Environmental Counsulting, Inc.", CN=Carlos A. Galdamez, E=carlos.galdamez@vista-env.com
Reason: I am the author of this document
Location: Home Office
Date: 2025.10.22 12:27:27-07'00'
Foxit PDF Editor Version: 11.0.1

Carlos A. Galdamez — Printed Name and Signature

10/22/2025 — Date

EXHIBIT D

LOS ANGELES UNIFIED SCHOOL DISTRICT

TO: THOMAS TSANG, SENIOR DESIGN MANAGER
LOS ANGELES UNIFIED SCHOOL DISTRICT
MAINTENANCE AND OPERATIONS
333 SOUTH BEAUDRY AVENUE, 22F
LOS ANGELES, CA 90017

GRETA GALOUSTIAN, FACILITIES ENVIRONMENTAL TECHNICAL MANAGER
LOS ANGELES UNIFIED SCHOOL DISTRICT
FACILITIES ENVIRONMENTAL TECHNICAL UNIT
1240 S. NAOMI AVENUE, 2ND FLOOR
LOS ANGELES, CA 90021

ASBESTOS ENGINEERING ASSESSMENT
SYLVAN PARK EARLY EDUCATION CENTER (9565)
15011 DELANO STREET
VAN NUYS, CA 91411

SYLVAN PARK EEC OUTDOOR CLASSROOM AND CAMPUS UPGRADE PROJECT

WORK ORDER NUMBER: 38516160

COLIN NUMBER: 10374546

DATE PREPARED: DECEMBER 23, 2024

PREPARED BY: Alec St Digitally signed by Alec Stern Date: 2024.12.27 12:55:57 -08'00'

ALEC STERN, CAC# 24-7663
SENIOR ASBESTOS ABATEMENT WORKER
FACILITIES ENVIRONMENTAL TECHNICAL UNIT

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Appendices:
Appendix A: Form A
Appendix B: Analytical Results
Appendix C: Request For Assistance (RFA)

LIST OF ACRONYMS
For Asbestos

ACM	Asbestos-Containing Material
ACBM	Asbestos-Containing Building Material
ACCM	Asbestos-Containing Construction Material (California only)
AHERA	Asbestos Hazard Emergency Response Act
CAC	California Certified Asbestos Consultant
Cal/OSHA	California Division of Occupational Safety and Health
CCR	California Code of Regulations
CSST	California Certified Site Surveillance Technician
CFR	Code of Federal Regulations
EPA	Environmental Protection Agency
FETU	Facilities Environmental Technical Unit (LAUSD)
HEPA	High Efficiency Particulate Air
HVAC	Heating, Ventilation, and Air Conditioning
LAUSD	Los Angeles Unified School District
NEA	Negative Exposure Assessment
NESHAP	National Emission Standards for Hazardous Air Pollutants
OEHS	Office of Environmental Health & Safety (LAUSD)
PEL	Permissible Exposure Limit
PLM	Polarized Light Microscopy
RACM	Regulated Asbestos-Containing Material
SCAQMD	South Coast Air Quality Management District

LIST OF DEFINITIONS
Asbestos

Abatement: Control/elimination of asbestos through operations and maintenance, repair, enclosure, encapsulation, or removal.

Amended Water: Water to which a surfactant (wetting agent) has been added to increase the ability of the liquid to penetrate ACM.

Asbestos: Asbestiform varieties of Chrysotile (serpentine), crocidolite (riebeckite), amosite (cummingtonitegrunerite), anthophyllite tremolite, and actinolite.

Asbestos-Containing Material (ACM): Material or product containing more than one percent (1%) asbestos

Asbestos-Containing Building Material (ACBM): Surfacing ACM, thermal system insulation ACM, or miscellaneous ACM that is found in or on interior structural members or other parts of a school building.

Asbestos-Containing Construction Material (ACCM): For California only. Manufactured construction material that contains more than one-tenth of one percent (0.1%) asbestos by weight.

Building ID Number or Code: Six-digit alphanumeric identification code assigned to each building on a site; sometimes referred to as the insurance code, ID number, or other similar terms.

District: The Los Angeles Unified School District and its representatives.

Friable: Used in reference to a school building material which, when dry, may be crumbled, pulverized, or reduced to powder by hand pressure.

High Efficiency Particulate Air (HEPA): Filter or system capable of removing particulates of 0.3 microns or larger from air at 99.97 percent or greater efficiency.

Nonfriable: Used in reference to a school building material which, when dry, may not be crumbled, pulverized, or reduced to powder by hand pressure.

Plasticize: To cover floors, ceilings, and walls with plastic (polyethylene) sheeting.

Regulated Area: Area established by the employer (abatement contractor) to demarcate where asbestos work is conducted, and by the adjoining area where debris and waste from such asbestos work accumulate; a work area within which airborne concentrations of asbestos exceed or may exceed (with reasonable possibility) the permissible exposure limit.

I. Executive Summary, Introduction, Purpose, and Scope of Services

For the Sylvan Park EEC Outdoor Classroom and Campus Upgrade Project at Sylvan Park Early Education Center (9565), the Facilities Environmental Technical Unit (FETU) has performed an asbestos engineering assessment of the work areas involved. The asbestos engineering assessment performed was limited to the areas and building materials that will be impacted by the renovation project, as indicated in the Request For Assistance (RFA) Form from Mr. Thomas Tseng, Senior Design Manager, received on November 22, 2024.

II. Scope of Work

The asbestos engineering assessment performed was limited only to the areas involved and building materials impacted by the scope of work for the above referenced project. The following area will be impacted by the scope of work:

Grounds (9565-G) / Exterior Paving

The main scope of this project is to construct an outdoor classroom and replace the asphalt in the parking lot. Please see appendix c for a map of the work area.

III. Visual Survey, Sampling Methodology, Analytical Procedures

Visual Survey

The asbestos engineering assessment report was performed generally in accordance with the AHERA protocol (40 CFR Part 763, Subpart E). Visual identification was performed by assessing visible and accessible structural, architectural, and mechanical components that may be impacted as part of this specific project, for the presence of suspect ACM at the Project Site. Each identified suspect asbestos-containing material (ACM) was sampled in accordance with procedures established by the United States Environmental Protection Agency (USEPA).

Quantities and locations are based upon areas that are included in the project scope of work. Materials similar to those in this report may be present in areas which were not accessed.

Destructive sampling was not required.

Sampling Methodology

In the next phase, a sampling strategy is then developed to provide representative sampling of the suspect materials using the methods identified in AHERA and Cal/OSHA. Each sample is placed in a container; the container is sealed, labeled and

placed in a storage bag. Samples are documented by entering the sample data on a chain-of-custody for bulk analysis form, including a description of the material, sample number, location, condition, accessibility, friability, potential for damage, and quantity. Typically, the sample location is marked on an 8-1/2 x 11 inch not-to-scale floor plan. Throughout the process, special care is taken to prevent cross-contamination of the collected samples. Sampling equipment is cleaned after each sample is obtained. In addition, sample containers are placed directly beneath each sample location, when feasible, to collect any materials which may become dislodged during the sampling process. Any debris generated by the sampling is cleaned by wet-cleaning methods. Sample locations are appropriately repaired.

Analytical Procedures

Suspect ACM samples were delivered, under chain-of-custody, to LAUSD Facilities Services Division (FSD) Laboratory located at 1449 South San Pedro Street, Los Angeles, California, 90015 (213-745-1138). LAUSD FSD Laboratory is accredited under the National Voluntary Laboratory Accreditation Program (NVLAP#101505-0) for asbestos.

All bulk sample analysis is conducted by Polarized Light Microscopy (PLM) with dispersion staining as described in the "Method for the Determination of Asbestos in Bulk Building Materials" (EPA-600/R-93/116, July 1993). A suspect material is immersed in a solution of known refractive index and subjected to illumination of polarized light. The color displayed enables mineral identification. Quality control samples at a rate of 10% or one per project, whichever is greater, are reanalyzed by a second, independent analyst. Samples estimated to contain asbestos in amounts of 1% or less are also reanalyzed. Once analyzed, results are entered on bulk logs for inclusion in the report.

NOTE: The amended National Emission Standard for Hazardous Air Pollutants (NESHAP), November 20, 1990, included a requirement that when the asbestos content of a bulk sample material is determined using procedures outlined and the asbestos content is estimated to be less than 10% by a method other than point counting, the parties legally responsible for a building (owner/operator) may (1) elect to assume the amount to be greater than 1% and treat the material as a regulated asbestos-containing material, or (2) require verification of the amount by the Point Counting method. The purpose of this procedure is to minimize false negative analysis (reporting the samples as containing less than 1% asbestos for asbestos-containing samples actually containing greater than 1%) and false positives (reporting the sample as containing greater than 1% asbestos for samples containing less than 1% asbestos). Point Counting was included in NESHAP in response to an EPA study that found an unacceptable amount of false negative and false positive analyses by methods outlined in EPA-600/R-93/116, July 1993 method. Reminder: in California the abatement of materials with detectable quantities of asbestos - legally defined as materials containing percentages of asbestos greater than one-tenth of one percent (>0.1%) by area

- are regulated by Cal/OSHA and therefore considered positive in this report. Samples with trace amounts of asbestos (less than 1%) will be assumed to be asbestos-containing and subject to all applicable regulations.

IV Discussion of Survey Findings and Recommendations.

The FETU representative Alec Stern visited the job site on December 16, 2024, to access the suspect asbestos-containing material. Ten (10) asphalt core samples were collected by FETU in conjunction with this assessment.

The tables below include materials that are anticipated to be impacted during the course of this project.

The FETU's findings are as follows:

A. Grounds (9565-G) Exterior Paving

1. Asbestos-Containing Materials (ACM >1%) or Asbestos-Containing Construction Material (ACCM >0.1%) anticipated to be disturbed during the project:

	MATERIAL	LOCATION/IMPACT	LAB SAMPLE NUMBERS
a.	None	**NA**	NA

2. Non-Asbestos-Containing Materials (Non-ACM) anticipated to be disturbed during the project:

	MATERIAL	LOCATION/IMPACT	LAB SAMPLE NUMBERS
a.	Asphalt Paving - Core	**Location:** Area A **Scope of Impact:** Removal	2412-1167 to 2412-1171 (12/16/2024)
b.	Asphalt Paving - Core	**Location:** Area B **Scope of Impact:** Removal	2412-1172 to 2412-1176 (12/16/2024)
c.	Asphalt Core Sample	**Location:** Dark Patch **Scope of Impact:** Removal	2206-0949 to 2206-0951 (06/14/2022)
d.	Asphalt Core Sample	**Location:** Main Asphalt **Scope of Impact:** Removal	2206-0952 to 2206-0958 (06/14/2022)

3. Recommendations for handling ACM *and/or* ACCM:

   a. None

   b. General notes:

      1. Painted/coated surface was observed at the asphalt paving area at the time of the assessment.

      2. All work involving assumed lead-based and/or lead-containing materials shall be performed in accordance with the District Specification Section 02 8333 – Lead Abatement and Lead Related Construction Work, under supervision of FETU or District approved Environmental Consultant

V. General Recommendations and Notes

All suspect construction materials not identified above are presumed asbestos-containing. All attics and crawl spaces not specified herein as clear for normal access and ceiling spaces not inspected and identified as absent of contamination are to be considered asbestos-contaminated areas. If materials not identified in this report will be disturbed or if attics, crawl spaces or ceiling spaces not identified in this report as clear of contamination are to be accessed during construction, notify IOR or OAR. They will contact the Facilities Environmental Technical Unit for further direction prior to disturbance of these materials or access of the contaminated spaces.

If during the course of the project contractor encounters suspect materials which are not identified in this report, contact the Facilities Environmental Technical Unit (FETU) immediately for further direction prior to disturbance of these materials.

VI. Lead Related Construction / Impact to Coated Surfaces

A. The following building is involved with this project:

Grounds (9565-G)

B. Renovation, repair or painting work performed on buildings regardless of the date of construction require special handling and environmental monitoring when coated surfaces including, but not limited to, painted, varnished, and glazed surfaces are impacted. All coated surfaces applied are assumed to be lead-based. All work shall be performed in compliance with Facilities Standard Specification, Section 02 8333, "Lead Abatement and Lead Related Construction Work." XRF testing methodology is not acceptable in determining negative for lead content for Cal/OSHA compliance purposes, except for notification requirements. XRF may be used in determining lead-based paint for compliance with the U.S.E.P.A. Renovator, Repair, and Painting Rule. Disturbance of coated surfaces by contractors will be monitored by qualified District staff or Environmental Consultant sufficient to ensure that proper training and work procedures, cleanup, and waste handling are employed.

C. Loose or flaky paint that will be disturbed during the work of this project or in close proximity of the work area shall be stabilized by removing the loose or flaky paint and leaving only paint in stable condition.

D. It should be noted that any coated surfaces and building materials not listed above are to be considered to be lead-based and asbestos-containing respectively. Should the project require the disturbance of these surfaces and building materials, the FETU shall be notified.

If any changes occur in the scope of work, notify the FETU before such changes are implemented.

This report may not be changed, modified or include additions without the express written permission from the FETU.

If you have any questions regarding this report, contact Alec Stern at (213) 745-1450.

APPENDICES

APPENDIX A. Form A

APPENDIX B. Analytical Results

APPENDIX C. Request for Assistance (RFA)

APPENDIX A.

Form A

Not Applicable

APPENDIX B.

Analytical Results

Los Angeles Unified School District
Facilities Services Division Laboratory
1449 S. San Pedro St.
Los Angeles, CA 90015
(213)745-1138

Asbestos Bulk Sample Analysis Laboratory Report

Laboratory Report

SYLVAN PARK CHILDREN'S CTR
9565

NVLAP (TESTING) LAB# 101505-0
Method EPA/600/R-93/116(MOD) July 1993
Date Received: 12/17/2024

LAUSD Lab#	MIC	Date Analyzed	BUILDING/AREA SAMPLED	MATERIAL DESCRIPTION	CHR %	AM %	CROC %	TREM %	ACT %	ANTH %	TOTAL %	MATERIAL BACKGROUND
2024121167	RC	12/18/2024	9565-G : GROUNDS AREA A NW	HOMOGENEOUS; NON-FRIABLE; BLACK; ASPHALT; TARLIKE, ROCK	0	0	0	0	0	0	0	ASPHALT, ROCK, TAR
2024121168	RC	12/18/2024	9565-G : GROUNDS AREA A NE	HOMOGENEOUS; NON-FRIABLE; BLACK; ASPHALT; TARLIKE, ROCK	0	0	0	0	0	0	0	ASPHALT, ROCK, TAR
2024121169	RC	12/18/2024	9565-G : GROUNDS AREA A CTR	HOMOGENEOUS; NON-FRIABLE; BLACK; ASPHALT; TARLIKE, ROCK	0	0	0	0	0	0	0	ASPHALT, ROCK, TAR
2024121170	RC	12/18/2024	9565-G : GROUNDS AREA A SW	HOMOGENEOUS; NON-FRIABLE; BLACK; ASPHALT; TARLIKE, ROCK	0	0	0	0	0	0	0	ASPHALT, ROCK, TAR
2024121171	RC	12/18/2024	9565-G : GROUNDS AREA A SE	HOMOGENEOUS; NON-FRIABLE; BLACK; ASPHALT; TARLIKE, ROCK	0	0	0	0	0	0	0	ASPHALT, ROCK, TAR

Lab Supervisor Signature and Date _____ 12/19/24

Signature of Analyst _____

Note: 0%: No Asbestos Detected; <1%: Asbestos Detected Above 0% and Below or Equal to 1%
NA: Not Applicable. ""Quantification done by optical estimate"" 1 - 5 % considered non-quantifiable.
This report relates to only the material tested. An asterisk '*' indicates preliminary results.
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LOS ANGELES UNIFIED SCHOOL DISTRICT
FACILITIES SERVICES DIVISION
CHAIN-OF-CUSTODY FOR BULK ANALYSIS

56106

SITE NAME: Sylvan Park EEC CODE: 9565 PROJECT DESC Outdoor Classroom & Campus Upgrade COLIN #: 10374546

SAMPLED BY: Alec Stern DATE SAMPLED: 12/16/2024 DEPT. / CONSULTANT: FETU TEL: 213-745-1450

Fill in all information legibly and precisely. Original must be submitted with the samples. Make a copy before submitting samples. Results and a copy of the Chain of Custody (COC) with sample numbers will be submitted to FETU when analysis is completed. ***USE BLACK/BLUE INK ONLY. DO NOT USE WHITE OUT! ALL RUSH ANALYSIS AND POINT COUNT REQUESTS MUST BE APPROVED BY FETU SUPERVISORS.***

LAB NUMBER	SAMPLE NUMBER	BUILDING NUMBER	BUILDING NAME	ROOM NUMBER AND/OR NAME	LOCATION IN ROOM	MATERIAL TYPE (DESCRIBE)	FRIABLE (YES or NO)
2412-1167	A1	9565-G	Grounds	Area A	Northwest	Asphalt Paving (Core)	NO
2412-1168	A2	9565-G	Grounds	Area A	Northeast	Asphalt Paving (Core)	NO
2412-1169	A3	9565-G	Grounds	Area A	Center	Asphalt Paving (Core)	NO
2412-1170	A4	9565-G	Grounds	Area A	Southwest	Asphalt Paving (Core)	NO
2412-1171	A5	9565-G	Grounds	Area A	Southeast	Asphalt Paving (Core)	NO

	NAME (PRINT & SIGN)	DEPT./AREA/CONSULTANT	# OF SAMPLES	DATE	TIME
Relinquished By:	Alec Stern	FETU	5	12/17/24	1:32
Received By:	ROGELIO CASTILLO	FSD LAB	5	12/17/24	1:32 pm
Relinquished By:					
Received By:					

Maximo Work Order Number: 38516164 Project Type: ☐ Maintenance (MA) ☐ Deferred Maintenance ☑ Bond (specify: K,R,Y,Q) ☐ Other:

FETU USE ONLY

FETU REVIEWED BY: Jonathan Vargas

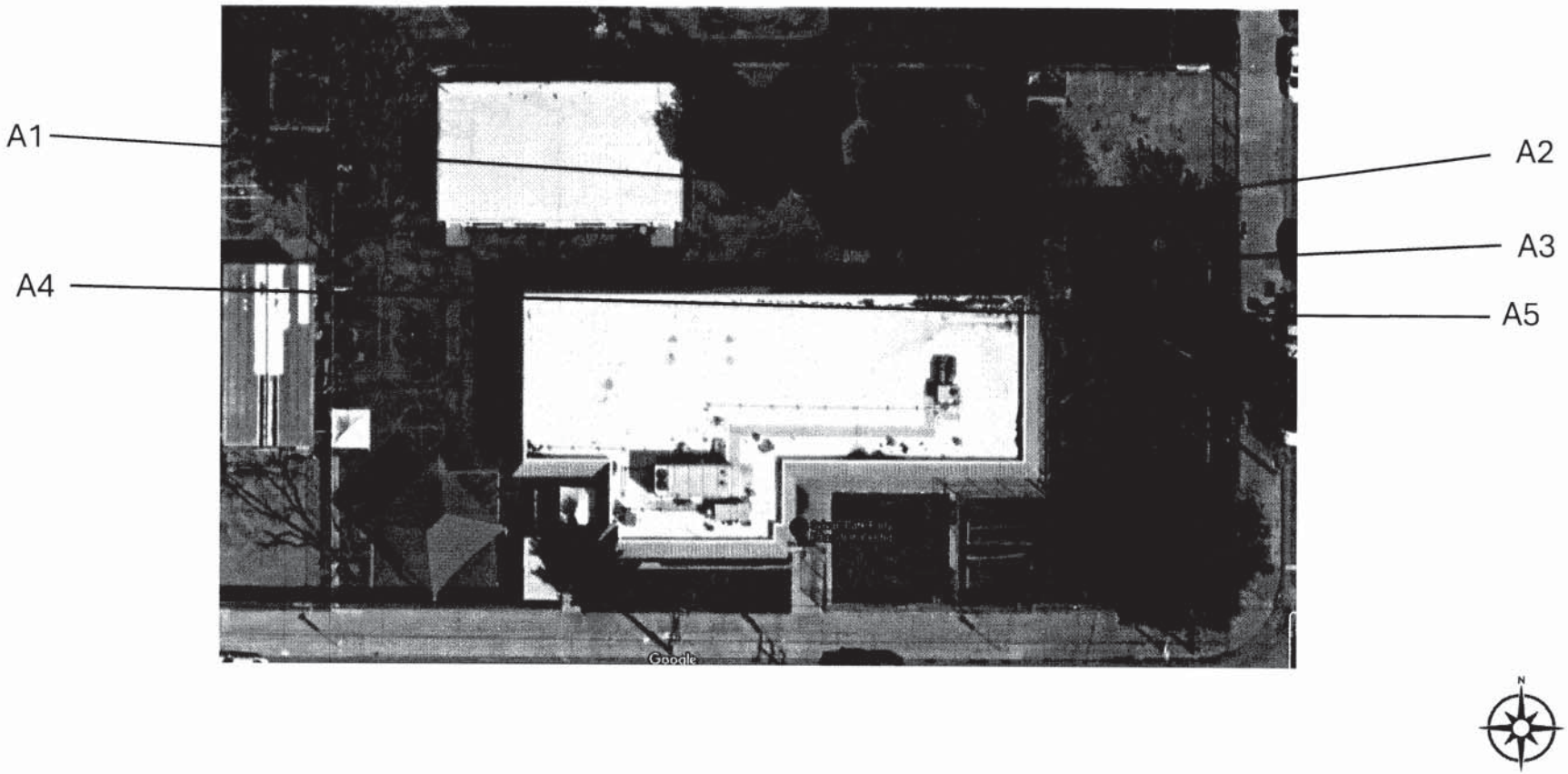
FETU REVIEW DATE: 12/17/24

RUSH? ☐ Yes ☐ No APPROVAL:

POINT COUNT? ☐ Yes ☐ No PT. CT. RUSH? ☐ Yes ☐ No APPROVAL:

Site: Sylvan Park EEC (9565)
Building: Grounds (9565-G)
Date Sampled: 12/16/2024
Sampled By: Alec Stern

A1-A5: Asphalt Paving (Core)



Los Angeles Unified School District
Facilities Services Division Laboratory
1449 S. San Pedro St.
Los Angeles, CA 90015
(213)745-1138

Asbestos Bulk Sample Analysis Laboratory Report

Laboratory Report

SYLVAN PARK CHILDREN'S CTR
9565

NVLAP (TESTING) LAB# 101505-0
Method EPA/600/R-93/116(MOD) July 1993
Date Received: 12/17/2024

LAUSD Lab#	MIC	Date Analyzed	BUILDING/AREA SAMPLED	MATERIAL DESCRIPTION	CHR %	AM %	CROC %	TREM %	ACT %	ANTH %	TOTAL %	MATERIAL BACKGROUND
2024121172	RC	12/18/2024	9565-G : GROUNDS AREA B SE	HOMOGENEOUS; NON-FRIABLE; BLACK; ASPHALT; TARLIKE, ROCK	0	0	0	0	0	0	0	ASPHALT, ROCK, TAR
2024121173	RC	12/18/2024	9565-G : GROUNDS AREA B SW	HOMOGENEOUS; NON-FRIABLE; BLACK; ASPHALT; TARLIKE, ROCK	0	0	0	0	0	0	0	ASPHALT, ROCK, TAR
2024121174	RC	12/18/2024	9565-G : GROUNDS AREA B CTR	HOMOGENEOUS; NON-FRIABLE; BLACK; ASPHALT; TARLIKE, ROCK	0	0	0	0	0	0	0	ASPHALT, ROCK, TAR
2024121175	RC	12/18/2024	9565-G : GROUNDS AREA B NW	HOMOGENEOUS; NON-FRIABLE; BLACK; ASPHALT; TARLIKE, ROCK	0	0	0	0	0	0	0	ASPHALT, ROCK, TAR
2024121176	RC	12/18/2024	9565-G : GROUNDS AREA B NE	HOMOGENEOUS; NON-FRIABLE; BLACK; ASPHALT; TARLIKE, ROCK	0	0	0	0	0	0	0	ASPHALT, ROCK, TAR

Lab Supervisor Signature and Date _____ 12/19/24

Signature of Analyst _____

Note: 0%: No Asbestos Detected; <1%: Asbestos Detected Above 0% and Below or Equal to 1%
NA: Not Applicable. ""Quantification done by optical estimate"" 1 - 5 % considered non-quantifiable.
This report relates to only the material tested. An asterisk '*' indicates preliminary results.
The laboratory is not responsible for samples and data collected by personnel who are not part of the laboratory.

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LOS ANGELES UNIFIED SCHOOL DISTRICT
FACILITIES SERVICES DIVISION
CHAIN-OF-CUSTODY FOR BULK ANALYSIS

56107

SITE NAME: Sylvan Park EEC CODE: 9565 PROJECT DESC: Outdoor Classroom & Campus Upgrade COLIN #: 10374546

SAMPLED BY: Alec Stern DATE SAMPLED: 12/16/2024 DEPT. / CONSULTANT: FETU TEL: 213-745-1450

Fill in all information legibly and precisely. Original must be submitted with the samples. Make a copy before submitting samples. Results and a copy of the Chain of Custody (COC) with sample numbers will be submitted to FETU when analysis is completed. ***USE BLACK/BLUE INK ONLY. DO NOT USE WHITE OUT! ALL RUSH ANALYSIS AND POINT COUNT REQUESTS MUST BE APPROVED BY FETU SUPERVISORS.***

LAB NUMBER	SAMPLE NUMBER	BUILDING NUMBER	BUILDING NAME	ROOM NUMBER AND/OR NAME	LOCATION IN ROOM	MATERIAL TYPE (DESCRIBE)	FRIABLE (YES or NO)
2412-1172	B1	9565-G	Grounds	Area B	Southeast	Asphalt Paving (Core)	NO
2412-1173	B2	9565-G	Grounds	Area B	Southwest	Asphalt Paving (Core)	NO
2412-1174	B3	9565-G	Grounds	Area B	Center	Asphalt Paving (Core)	NO
2412-1175	B4	9565-G	Grounds	Area B	Northwest	Asphalt Paving (Core)	NO
2412-1176	B5	9565-G	Grounds	Area B	Northeast	Asphalt Paving (Core)	NO

	NAME (PRINT & SIGN)	DEPT./AREA/CONSULTANT	# OF SAMPLES	DATE	TIME
Relinquished By:	Alec Stern	FETU	5	12/17/24	1:32
Received By:	Rogelio Castillo	FSD LAB	5	12/17/24	1:32p
Relinquished By:					
Received By:					

Maximo Work Order Number: 38516164 Project Type: ☐ Maintenance (MA) ☐ Deferred Maintenance ☑ Bond (specify: K,R,Y,Q) ☐ Other:

FETU USE ONLY

FETU REVIEWED BY: Jonathan Vargas

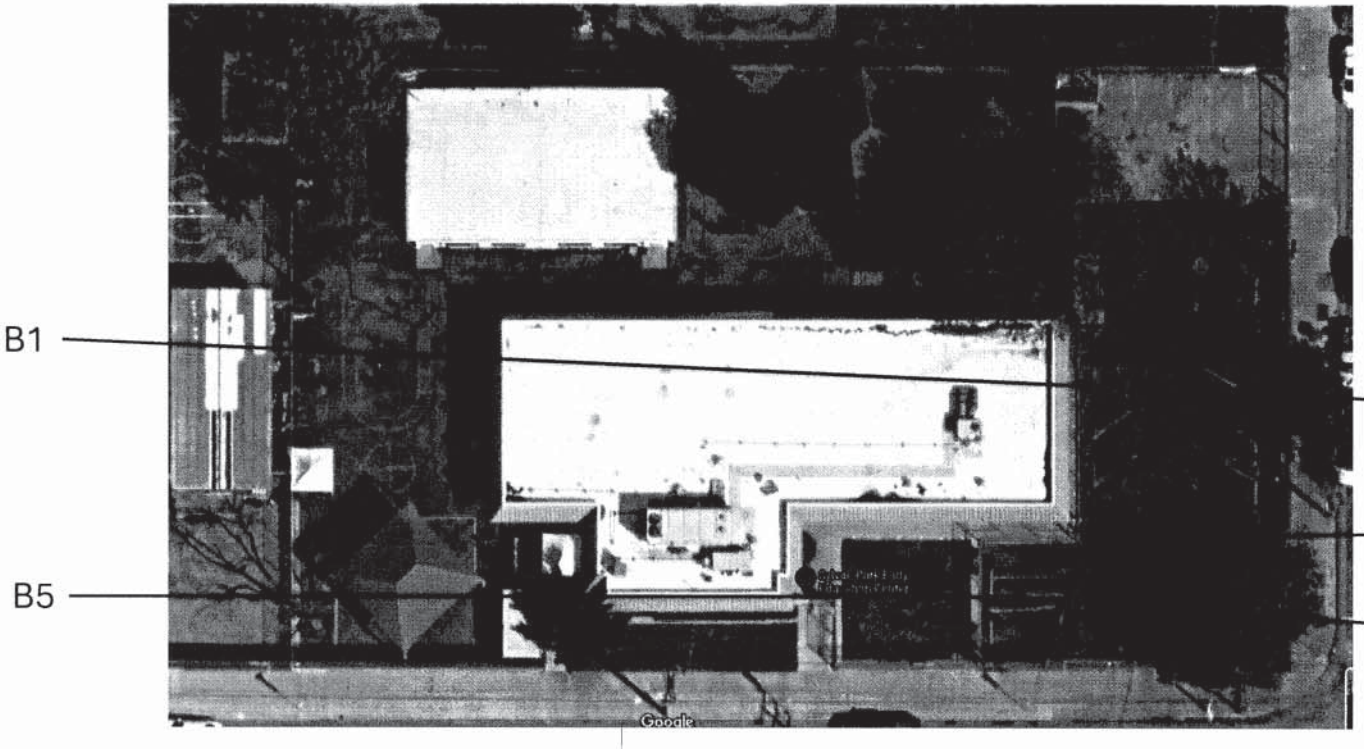
FETU REVIEW DATE: 12/17/24

RUSH? ☐ Yes ☐ No APPROVAL:

POINT COUNT? ☐ Yes ☐ No PT. CT. RUSH? ☐ Yes ☐ No APPROVAL:

Site: Sylvan Park EEC (9565)
Building: Grounds (9565-G)
Date Sampled: 12/16/2024
Sampled By: Alec Stern

A1-A5: Asphalt Paving (Core)



Los Angeles Unified School District
Facilities Services Division Laboratory
1449 S. San Pedro St.
Los Angeles, CA 90015
(213)745-1138

Asbestos Bulk Sample Analysis Laboratory Report

Laboratory Report

SYLVAN PARK CHILDREN'S CTR
9565

NVLAP (TESTING) LAB# 101505-0
Method EPA/600/R-93/116(MOD) July 1993
Date Received: 06/16/2022

LAUSD Lab#	MIC	Date Analyzed	BUILDING/AREA SAMPLED	MATERIAL DESCRIPTION	CHR %	AM %	CROC %	TREM %	ACT %	ANTH %	TOTAL %	MATERIAL BACKGROUND
2022060949	RC	06/24/2022	9565-G : GROUNDS DARK PATCH EAST	HOMOGENEOUS; NON-FRIABLE; BLACK; ASPHALT; TARLIKE, ROCK	0	0	0	0	0	0	0	ASPHALT, ROCK, TAR
2022060950	RC	06/24/2022	9565-G : GROUNDS DARK PATCH CENTER	HOMOGENEOUS; NON-FRIABLE; BLACK; ASPHALT; TARLIKE, ROCK	0	0	0	0	0	0	0	ASPHALT, ROCK, TAR
2022060951	RC	06/24/2022	9565-G : GROUNDS DARK PATCH NORTH	HOMOGENEOUS; NON-FRIABLE; BLACK; ASPHALT; TARLIKE, ROCK	0	0	0	0	0	0	0	ASPHALT, ROCK, TAR
2022060952	RC	06/24/2022	9565-G : GROUNDS MAIN ASPHALT EAST	HOMOGENEOUS; NON-FRIABLE; BLACK; ASPHALT; TARLIKE, ROCK	0	0	0	0	0	0	0	ASPHALT, ROCK, TAR
2022060953	RC	06/24/2022	9565-G : GROUNDS MAIN ASPHALT NORTH	HOMOGENEOUS; NON-FRIABLE; BLACK; ASPHALT; TARLIKE, ROCK	0	0	0	0	0	0	0	ASPHALT, ROCK, TAR
2022060954	RC	06/24/2022	9565-G : GROUNDS MAIN ASPHALT (N) CENTER	HOMOGENEOUS; NON-FRIABLE; BLACK; ASPHALT; TARLIKE, ROCK	0	0	0	0	0	0	0	ASPHALT, ROCK, TAR
2022060955	RC	06/24/2022	9565-G : GROUNDS MAIN ASPHALT CENTER (W)	HOMOGENEOUS; NON-FRIABLE; BLACK; ASPHALT; TARLIKE, ROCK	0	0	0	0	0	0	0	ASPHALT, ROCK, TAR

Lab Supervisor Signature and Date for MS 6/27/22

Signature of Analyst _____

Note: 0%: No Asbestos Detected. <1%: Asbestos Detected Above 0% and Below or Equal to 1%
NA: Not Applicable. ""Quantification done by optical estimate"" 1 - 5 % considered non-quantifiable.
This report relates to only the material tested. An asterisk '*' indicates preliminary results.
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Los Angeles Unified School District
Facilities Services Division Laboratory
1449 S. San Pedro St.
Los Angeles, CA 90015
(213)745-1138

Asbestos Bulk Sample Analysis Laboratory Report

Laboratory Report

SYLVAN PARK CHILDREN'S CTR
9565

NVLAP (TESTING) LAB# 101505-0
Method EPA/600/R-93/116(MOD) July 1993
Date Received: 06/16/2022

LAUSD Lab#	MIC	Date Analyzed	BUILDING/AREA SAMPLED	MATERIAL DESCRIPTION	CHR %	AM %	CROC %	TREM %	ACT %	ANTH %	TOTAL %	MATERIAL BACKGROUND
2022060956	RC	06/24/2022	9565-G : GROUNDS MAIN ASPHALT NORTHWEST	HOMOGENEOUS; NON-FRIABLE; BLACK; ASPHALT; TARLIKE, ROCK	0	0	0	0	0	0	0	ASPHALT, ROCK, TAR
2022060957	RC	06/24/2022	9565-G : GROUNDS MAIN ASPHALT WEST	HOMOGENEOUS; NON-FRIABLE; BLACK; ASPHALT; TARLIKE, ROCK	0	0	0	0	0	0	0	ASPHALT, ROCK, TAR
2022060958	RC	06/24/2022	9565-G : GROUNDS MAIN ASPHALT SOUTHWEST	HOMOGENEOUS; NON-FRIABLE; BLACK; ASPHALT; TARLIKE, ROCK	0	0	0	0	0	0	0	ASPHALT, ROCK, TAR

Lab Supervisor Signature and Date [signature] 6/27/22

Signature of Analyst _____

Note: 0%: No Asbestos Detected, < 1% Asbestos Detected Above 0% and Below or Equal to 1%
NA: Not Applicable ""Quantification done by optical estimate"" 1 - 5 % considered non-quantifiable
This report relates to only the material tested. An asterisk '*' indicates preliminary results.
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LOS ANGELES UNIFIED SCHOOL DISTRICT
FACILITIES SERVICES DIVISION
CHAIN-OF-CUSTODY FOR BULK ANALYSIS

SITE NAME: Sylvan Park EEC CODE: 9565 PROJECT DESC: Asphalt 48392 COLIN #: NA

SAMPLED BY: IVAN Salazar DATE SAMPLED: 6/14/22 DEPT. / CONSULTANT: Facilities Environmental Techinical Unit TEL: 213-745-1450

Fill in all information legibly and precisely. Original must be submitted with the samples. Make a copy before submitting samples. Results and a copy of the Chain of Custody (COC) with sample numbers will be submitted to FETU when analysis is completed. ***USE BLACK/BLUE INK ONLY. DO NOT USE WHITE OUT! ALL RUSH ANALYSIS AND POINT COUNT REQUESTS MUST BE APPROVED BY FETU SUPERVISORS.***

LAB NUMBER	SAMPLE NUMBER	BUILDING NUMBER	BUILDING NAME	ROOM NUMBER AND/OR NAME	LOCATION IN ROOM	MATERIAL TYPE (DESCRIBE)	FRIABLE (YES or NO)
2206-0949	1	9565-G	Grounds	Dark Patch	East	Asphalt Core Sample	No
2206-0950	2				Center		
2206-0951	3				North		
2206-0952	4			Main Asphalt	East		
2206-0953	5				North		
2206-0954	6				(N) Center		
2206-0955	7				center (NS)		
2206-0956	8				North West		
2206-0957	9				west		
2206-0958	10				South West		

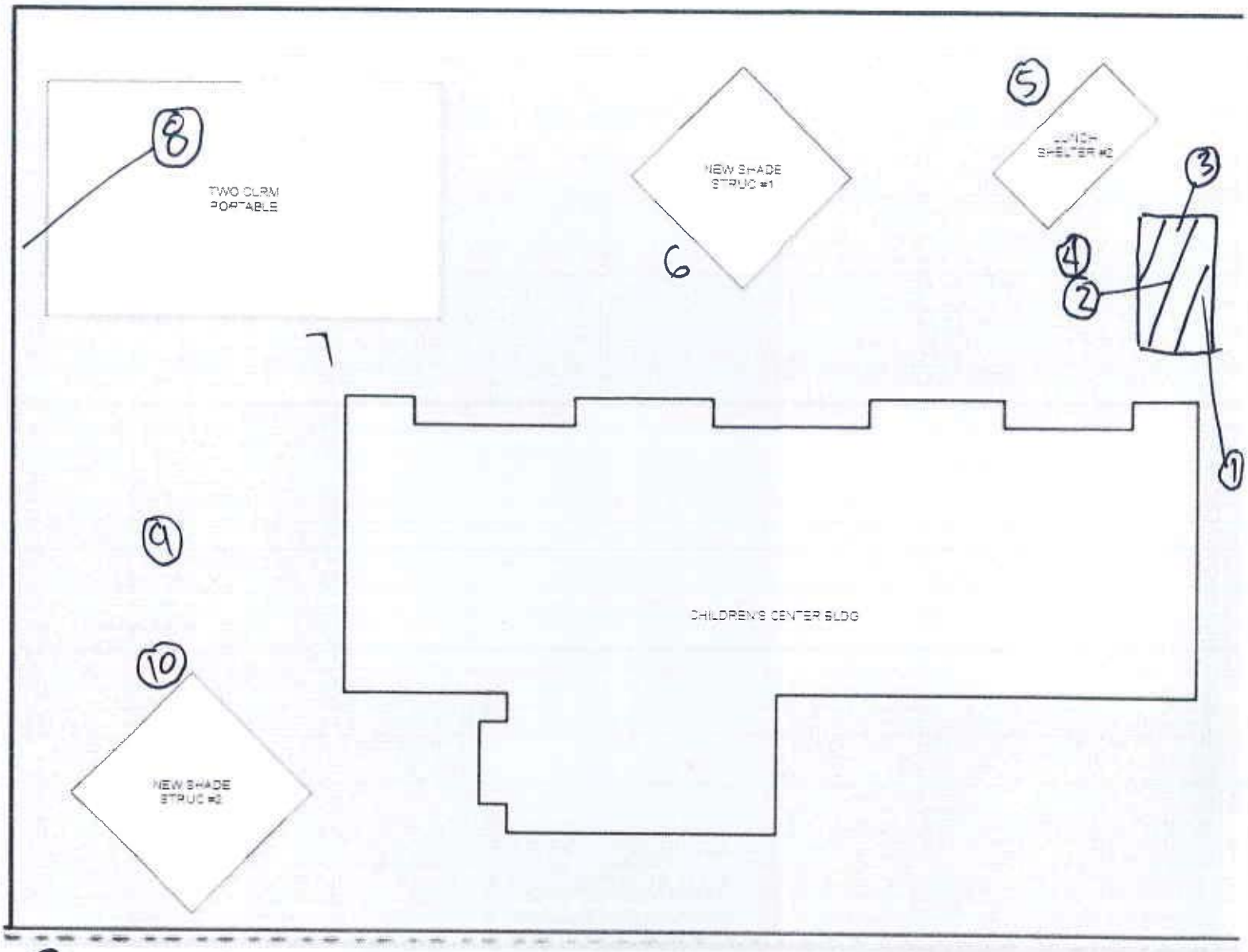
DATE	TIME	NAME (PRINT & SIGN)	DEPARTMENT / AREA / CONSULTANT	# OF SAMPLES
6/16/22	7:21 Am	IVAN Salazar	Facilities Environmental Techinical Unit	10
6/16/22	7.21a	Mohd Sulaiman	FSD Lab	10

Maximo Work Order Number: 33112529 Project Type: ☑ Maintenance (MA) ☐ Deferred Maintenance ☐ Bond (specify: K,R,Y,Q) ☐ Other:

FETU USE ONLY

FETU REVIEWED BY: [signature] RUSH? ☐ Yes ☐ No APPROVAL:

FETU REVIEW DATE: 6/15/22 POINT COUNT? ☐ Yes ☐ No PT. CT. RUSH? ☐ Yes ☐ No APPROVAL:



Sylvan Park EEC (9565) Grounds /9565-G

6/14/22 IRWIN Salazar.

~100sf Dark Patch 1-3 } Asphalt
~1200sf Main Asphalt 4-10 } core sample

APPENDIX C.

Request for Assistance (RFA)

REQUEST FOR ASSISTANCE FORM

FACILITIES ENVIRONMENTAL TECHNICAL UNIT

Request for (Please select):

- [x] Environmental Assessment (Phase 1) & Abatement Design (Phase 2)
- [x] Environmental Project Monitoring (Phase 3)
- [ ] Water Intrusion/Mold Remediation
- [ ] Asbestos Assistance
- [ ] Insulation
- [ ] Other:

Section 1 - General Information *(complete this section for all request types):*

Date: 11/22/2024	Requestor Office: M&O, AES		
Requestor Name: Thomas Tsang		Title: Sr. Design Manager	
Phone No: 213-241-2625	Email: cp-thomas.tsang@lausd.net	Site Reg/Dist: N2	
Site Name: Sylvan Park EEC			Site Code: 13870
Building Name & Number (e.g., Administrative Building (001CDG)), Specific Location (e.g., Room #1): All site asphalt paving at both playground side and EEC parking area.			

Section 2 - Project & Funding Information *(provide as much project and/or funding information as possible)*

Official Project Name: Sylvan Park EEC Outdoor Classroom and campus upgrade

Cost Ctr or WBS Project #	Func. Area	GL Acct	Colin Project #	Funding Source
		580001	10374546	Measure-RR

Section 3 - Phase 1 & 2 Request Information* *(Note: Failure to attach a scope or drawings may delay assessment)*

Written scope attached? Yes	Scope % Complete: 100 %	DSA drawings attached? No	Drawing % Complete: 30 %
Phase 1 & 2 supplemental form attached? Yes	Project Pre-Bid Meeting Date: Q4 2024		

Note: *Phase 1 & 2 supplemental form MUST be filled out for ALL phase 1 & 2 requests! See page 2 of this form.

Section 4 - Phase 3 Request Information *(Note: You must attach a copy of FETU approved "Request to Advertise" form)*

WO # on RTA:	RTA Approver Name:

Section5 - Water Intrusion/Mold Remediation, Insulation, or Other Request Information

Describe the Problem:

Section 6 - Asbestos Assistance Request Information

Room/Area Requiring Assistance:		
Asbestos Management Plan has been reviewed? Yes	Work Order #:	
Bulk sample has been completed on:	Requesting FETU to sample suspect materials? Yes	
Name Building Material in Question:		Asbestos Present? Yes
Description of Material(s) to be Abated:		
Quantity of Material to be Abated:	Abatement Type Requested:	
Tentative Start Date of Requestor's Project:	Abatement is required for:	

FOR FETU USE ONLY

FETU Received Date:	Senior Assigned:	Date Assigned:
Parent WO #	Ph. 1 & 2 WO #:	Ph. 3 WO #:
Crew I&P WO #:	Crew Removal WO #:	Crew Lab. WO #:
Date Assigned for Samples:	Date Assigned for Abatement:	
Date Requestor Contacted with Bulk Sample Results:	By:	
Date Requestor Notified of Abatement Completion:	By:	

ENVIRONMENTAL ASSESSMENT (PHASE 1) & ABATEMENT DESIGN (PHASE 2) SUPPLEMENTAL FORM

Purpose of Form: This form will assist the Requestor to determine the proper asbestos and lead requirements by identifying the project as a NO, MINIMAL OR MAJOR IMPACT PROJECT. In turn, information the Requestor provides herein will assist FETU to expeditiously process request for no or minimal impact projects that don't necessarily require a Phase 1 Environmental Assessment.

Date: 11/22/2024	**Requestor:** Thomas Tsang	**School:** Sylvan Park EEC
Official Project Name: Sylvan Park EEC Outdoor Classroom and campus upgrade		

Directions: Based on the project scope of work, please identify if this Project is a No, Minimal or Major Impact Project by checking the corresponding box below. Also, please check the appropriate sub-box(es) under each main category as appropriate and include any other information that substantiates this project, as No, Minimal or Major Impact Project in the COMMENTS section below.

☐ **THIS IS A NO IMPACT PROJECT**

- ☐ This project does not impact any structures/buildings. (*For example, new stand-alone shade structure.)*
- ☐ Materials to be impacted by this project are not coated with paint, varnish, glazing or any other coating, and are not suspect, known or assumed to be asbestos-containing. In addition, this project does not require working in or exposing any ceiling spaces, attics, crawl spaces or other building interstitial areas. *In the COMMENTS section below, identify the material (e.g., unpainted concrete floor, unpainted metal duct, unpainted concrete walls, unpainted brick wall, etc.).*
- ☐ This project includes work in a building(s) but does not impact any coated surfaces or building materials and does not require working in or exposing any ceiling spaces, attics, crawl spaces or other building interstitial areas. *Elaborate in COMMENTS section below. For example, the scope only includes the re-programming of the fire alarm system or only includes new utilities point of connection at existing conduit and pull box at exterior of building.*
- ☐ This project includes excavation.
- ☐ This project does not include excavation.
- ☐ New construction. Construction Date:
- ☐ Other. *Explain in COMMENTS section below.*

☐ **THIS IS A MINIMAL IMPACT PROJECT**

- ☐ This project requires minimal disturbance or removal of building materials and meets the following criteria:
  - Disturbance or removal of building materials, are less or equal to three (3) square feet per impact area.
  - Total quantity of building material impact does not exceed 99 square feet.
  - No ceiling spaces, attics, crawl spaces or other building interstitial areas are required to be worked in or exposed.
- ☐ This project impacts coated surfaces only.
- ☐ This project does not impact coated surfaces.

An example of a project, which may be a minimal impact project, is a fire alarm upgrade project, which only requires coring, installing surface mounted conduits/raceways and replacing existing surface-mounted fire alarm devices.

☒ **THIS IS A MAJOR IMPACT PROJECT**

- ☒ This project requires major impacts to building materials and/or work in ceiling spaces/attics/crawl spaces/other interstitial building areas. Major impacts to building materials are those that are greater than three (3) square feet for any impact area or total quantity of building material to be impacted exceeds 99 square feet total.

☐ **BASED ON THE SCOPE OF WORK, I AM NOT ABLE TO DETERMINE IF THE PROJECT IS A NO, MINIMAL OR MAJOR IMPACT PROJECT**

COMMENTS (Include supplemental information regarding the scope of this project and/or additional information regarding no, minimal or major impacts to building materials)

Test all asphalt on EEC playground and parking lot to allow geotech engineer to bore sample and perform percolation test.

Sylvan Park EEC

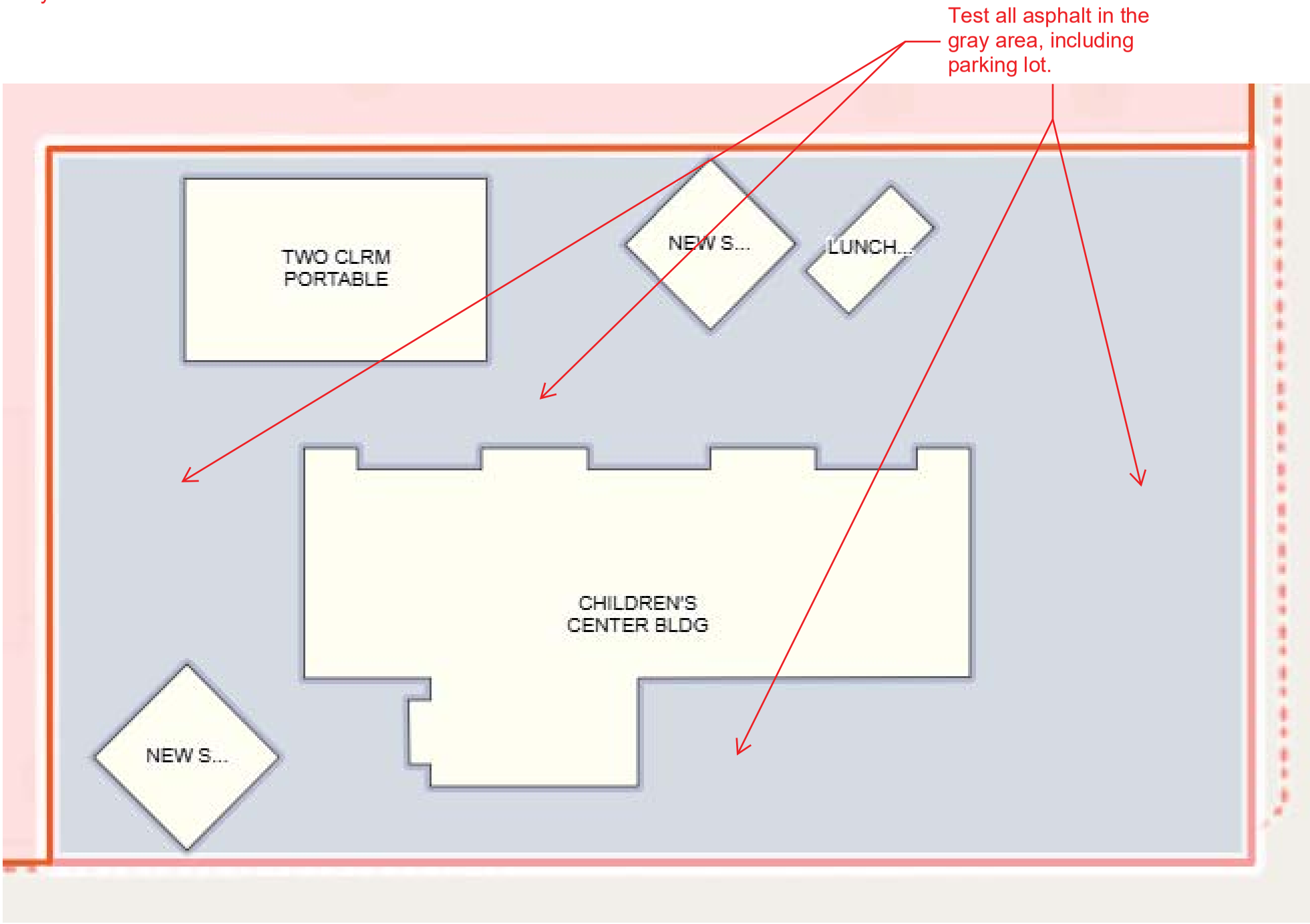


EXHIBIT E

ATTACHMENT A
PROJECT MANUAL

FOR

OUTDOOR CLASSROOM AND CAMPUS UPGRADE PROJECT

AT

SYLVAN PARK EARLY EDUCATION CENTER (9565)

LOCATED AT

15011 DELANO STREET
VAN NUYS, CA 91411

IN THE LOS ANGELES UNIFIED SCHOOL DISTRICT

PREPARED BY:

VISTA ENVIRONMENTAL CONSULTING, INC.
1054 NORTH TUSTIN AVENUE
ANAHEIM, CA 92867
VISTA PROJECT NO. 250334091

PREPARED FOR:

THOMAS TSANG, SR. PROJECT DESIGNER
LOS ANGELES UNIFIED SCHOOL DISTRICT
FACILITIES SERVICES DIVISION | M&O | AES
333 S. BEAUDRY AVENUE
LOS ANGELES, CA 90017

LAUSD (COLIN) PROJECT NO. 10374546
FETU WORK ODER NO. 39361517

DATE PREPARED: OCTOBER 22, 2025

CARLOS A. GALDAMEZ, CERTIFIED ASBESTOS CONSULTANT NO. 98-2379

Los Angeles Unified School District
Facilities Services Division

ALBERTO M. CARVALHO
Superintendent of Schools

INDIA GRIFFIN
Director
Maintenance & Operations

KRISZTINA TOKES
Chief Facilities Executive

GRETA GALOUSTIAN
Facilities Environmental Technical Manager
Facilities Environmental Technical Unit

October 12, 2024

Mr. Carlos Galdamez
Vista Environmental Consulting
1054 North Tustin Avenue
Anaheim, CA 92807

RE: PHASE II REVIEW AND APPROVAL FOR ASBESTOS X and/or LEAD NA

The Facilities Environmental Technical Unit (FETU) has reviewed and approved your Phase II document(s) for the project listed below.

School: Sylvan Park Early Education Center School Code # 9565

Project: Outdoor Classroom and Campus Upgrades Project

Colin No. 10374565

Date of Report: 10/22/2025 Maximo Work Order No. 39361517

If you have any questions regarding this approval, please call the FETU at (213) 745-1450.

Sincerely,

Digitally signed by Glenn Gutierrez
DN: cn=Glenn Gutierrez, o=LAUSD, ou=FETU, email=glenn.gutierrez@lausd.net, c=US
Date: 2025.10.24 08:17:22 -07'00'

Glenn Gutierrez
Senior Asbestos Abatement Worker
Facilities Environmental Technical Unit

c: Greta Galoustian, Facilities Environmental Technical Manager
Kwun Yang, FETU Analyst

SYLVAN PARK EARLY EDUCATION CENTER (9565)
OUTDOOR CLASSROOM AND CAMPUS UPGRADE PROJECT

I. CHILD CARE BUILDING (001DAT)

A. Joint Compound (ACM) associated with Drywall Ceiling (Non-ACM) (Above the Ceiling Tiles)

1. Abatement Contractor must remove and dispose of as friable and hazardous asbestos-containing waste the joint compound on drywall ceiling behind the ceiling tile, approximately 550 square feet from the Hallway.

2. The abatement contractor must also remove the 12”x12” Random Holes Ceiling Tiles along with the Ceiling Tile Mastic as asbestos contaminated asbestos waste, approximately 550 square feet from the Hallway.

B. Joint Compound (ACM) associated with Unfinished Drywall Ceiling (Non-ACM)

1. Abatement Contractor must remove and dispose of as friable and hazardous asbestos-containing waste the joint compound associated with unfinished drywall ceiling, approximately 100 square feet from the Ceiling Space above Rooms 1, 2, & 3, Restrooms, Hallway, and Kitchen Area.

C. Joint Compound (ACCM) associated with Drywall Walls (Non-ACM)

1. Abatement Contractor must remove and dispose of as friable and hazardous asbestos-containing construction waste the joint compound associated with drywall wall, approximately 500 square feet from Rooms 2, & 3.

2. Note:

a) Minor disturbance (i.e., drilling, coring, sawing, spot removal) of ACM and/or ACCM less than or equal to 3 square or linear feet per location and less than 100 square feet total for the entire project can be performed by AHERA-certified, 16 hour operation and maintenance trained personnel in accordance with LAUSD Specification, Section 02 8213 (Asbestos Abatement and Asbestos Related Disturbance), under the supervision of FETU or a District approved Environmental Consultant.

b) Major disturbance of ACM and/or ACCM greater than three (3) square or linear feet per location and/or greater than 100 square feet total for the entire project shall be performed by a District-approved Asbestos Abatement Contractor in accordance with LAUSD Specification, Section 02 8213 (Asbestos Abatement and Asbestos Related Disturbance) under the supervision of FETU or a District approved Environmental Consultant.

D. Fire Doors (Assumed ACM)

1. Abatement Contractor must remove the assumed asbestos-containing Fire Doors, approximately 5 doors from building.

a) The Fire Doors shall be removed intact, if possible.

E. Flooring Material and Associated Mastic (Assumed ACM)

1. Abatement Contractor must remove the assumed asbestos-containing flooring with associated mastic (**Assumed ACM**) on concrete substrate, approximately 100 square feet from underneath the sink and wall cabinets in Rooms 2 & 3.

a) Mastic must be removed from the concrete substrate via a bead-blasting machine and/or grinders with HEPA attachment.

F. The work area involved is shown in the attached drawings, Figures 2 & 3.

II. PEELING AND LOOSE PAINT

A. The buildings and grounds involved with this project are as follows:

Child Care Building (001DAT)
Classroom Building (95652C)

B. Renovation, repair or painting work performed on buildings constructed prior to 1978 require special handling and environmental monitoring when coated surfaces including, but not limited to, painted, varnished, and glazed surfaces are impacted. Coated surfaces applied prior to 1978 are assumed to be lead-based. All work shall be performed in compliance with Facilities Standard Specification, Section 02 8333, "Lead Abatement and Lead Related Construction Work." XRF testing methodology is not acceptable in determining negative for lead content for Cal/OSHA compliance purposes, except for notification requirements. XRF may be used in determining lead-based paint for compliance with the U.S.E.P.A. Renovator, Repair, and Painting Rule. Disturbance of coated surfaces by contractors will be monitored by qualified District staff or Environmental Consultant sufficient to ensure that proper training and work procedures, cleanup, and waste handling are employed.

C. Loose or flaky paint that will be disturbed during the work of this project or in close proximity of the work area shall be stabilized by removing the loose or flaky paint and leaving only paint in stable condition.

D. It should be noted that any coated surfaces and building materials not listed above are to be considered to be lead-based and asbestos-containing respectively. Should the project require the disturbance of these surfaces and building materials, the FETU shall be notified.

III. All work involving lead-based and/or lead-containing materials shall be performed in accordance with the attached specifications "Section 02 8333– Lead Abatement and Lead Related Construction Work" as prepared by the Los Angeles Unified School District.

IV. All work involving asbestos-containing materials shall be performed in accordance with the attached specifications "Section 02 8213 – Asbestos Abatement and Asbestos Related Disturbances" as prepared by the Los Angeles Unified School District.

Only contractors on the LAUSD Approved list of Asbestos Abatement Contractors are qualified to perform asbestos abatement on District projects.

SYLVAN PARK EARLY EDUCATION CENTER (9565)
OUTDOOR CLASSROOM AND CAMPUS UPGRADES PROJECT

I. GENERAL

A. The following special conditions shall take precedence over the standard specifications. The drawings included with these specifications show the plot and floor plans of the work area(s).

B. Abatement contractor shall be responsible for verifying all dimensions prior to bid. Any amounts listed on these specifications are only estimated and are not to be considered final measurements.

C. Abatement contractor shall provide a secured and separate storage for all materials, equipment, and waste.

D. Abatement contractor shall physically secure all entrances and opening to work areas until final clearance is received, as approved by the District representative.

E. In addition to the project specification submittal requirements, the Abatement contractor shall submit for review and approval an asbestos abatement work plan. The asbestos work plan shall detail the means and methods that will be used for controlling and containing fiber release during the removal/disturbance of asbestos containing material in accordance with the project specifications. The plan shall include, but not be limited to, a drawing that adequately depicts the location of asbestos control areas, change areas, emergency exit routes and exits, and any special features (e.g. critical barriers, pony walls, air filtration units, makeup air, air filtration unit exhaust, decontamination units, load out/bag out units, etc.).

F. The Abatement Contractor and/or lead-trained General or Sub-Contractors shall also submit a Lead Related Disturbance Work Plan. The Lead Work Plan shall detail the means and methods that will be used for controlling and containing lead dust released during removal / disturbance of assumed lead containing building components in accordance with project specifications. The plan shall include, but no limited to, a drawing that adequately depicts the locations of lead control areas, emergency exit routes, make-up air, air filtration unit exhaust, decontamination units, and load-out / bag-out units, etc.

G. The abatement contractor shall not proceed with the disturbance of ACM/ACCM until the asbestos work plan and written work schedule have been approved by a District representative in writing.

H. Abatement Contractor shall be responsible for restoring the work area and other areas utilized during the abatement to conditions equal or better that original. Any damage caused by the Abatement Contractor during the performance of abatement activities (including but not limited to, damage caused by tape, adhesive, staples, nails, water, encapsulant, or other materials) shall be repaired by the Abatement Contractor at no additional cost to the District.

I. Contractor shall take precautions not to damage the ceiling during abatement. Any damage to ceiling shall be repaired or replaced by the contractor.

J. It is anticipated the Contractor shall perform work after school hours during the school is in session unless approved by the District.

K. Noise from the work process shall not interfere with the normal and scheduled day or evening school activities. Work schedule will be determined with the involvement of the school staff at the job start meeting.

L. Contractor must be in full compliance with all city ordinances at tall times throughout the duration of the project. At the commencement of the project, all Contract Documents, Project Manual and Specifications shall remain on-site until the completion of the project.

M. Abatement Contractor awarded the project shall notify SCAQMD (South Coast Air Quality Management District) ten working days prior to the start of abatement

N. At the commencement of the project, all Contract Documents, Project Manual and Specifications shall be on site and remain until the completion of the project.

II. SITE SPECIFIC CONDITIONS

A. Removal of friable asbestos-containing materials shall be performed in full containment with three (3) stage decontamination unit in accordance with LAUSD Specifications 02 8213 (Asbestos Abatement and Asbestos Related Disturbance).

B. Abatement Contractor shall install a hard barrier security system around the three (3) stage decontamination unit adjacent to the abatement work area and prior to commencing removal.

C. Where feasible, Abatement Contractor shall install transparent viewing ports to allow outside observation of all stripping and removal of ACM.

D. The Abatement Contractor shall pre-clean, wet-wipe/HEPA vacuum all horizontal and vertical surfaces in the work area prior to containment set-up.

E. All movable furniture and equipment in the work areas involved shall be removed by District personnel prior to starting abatement, to be scheduled by OAR.

F. Permanent cabinets and/or equipment not part of the scope of work for removal shall remain in place and be protected during the abatement activities.

G. All electrical and mechanical equipment, including but not limited to, gauges, valves, etc., throughout the work areas involved shall not be encapsulated or a lockdown applied. These items shall be decontaminated, left in place, and protected during the duration of the contract.

H. The Abatement Contractor shall use LAUSD approved white encapsulant for lockdown, after visual inspection by the Owner and/or Owner Consultant.

I. Dustpans, squeegees, shovels, etc. shall be non-metallic. Use of wire brushes and brooms are strictly prohibited.

J. Air filtration units

1. Where applicable, the abatement contractor shall install secured hard lid enclosures around air filtration units and always maintain the integrity of the hard lid enclosures.

2. The exhaust tube from the negative air filtration units shall be at a minimum 10 feet vertically to the roof line of the building and shall be covered in 6-mil polyethylene sheeting.

3. In addition to the requirements of the standard specifications, removal shall not commence until the work area is fully isolated and the stipulated negative pressure differential established. Manometer input terminal (tube) must be located away from the intake of any air filtration unit.

K. Clearance Air Monitoring

1. The District shall arrange for sampling of the air in the work area(s) for airborne fiber concentration.

2. Final Clearance Air Sampling shall be done in accordance with 40 CFR, Part 763, Subpart E, Appendix A. The clearance criteria shall be based on TEM analysis using AHERA protocols. If air sample results are within the limits of AHERA requirements (70 structures/mm2) the Contractor shall remove the containment barriers.

3. Areas exceeding this level shall require additional cleaning and retesting until satisfactory levels are obtained in accordance with this section. Contractor shall be responsible for the cost of all subsequent clearance air monitoring and analysis resulting from the failure to receive initial clearance

III. CLOSE-OUT DOCUMENTS

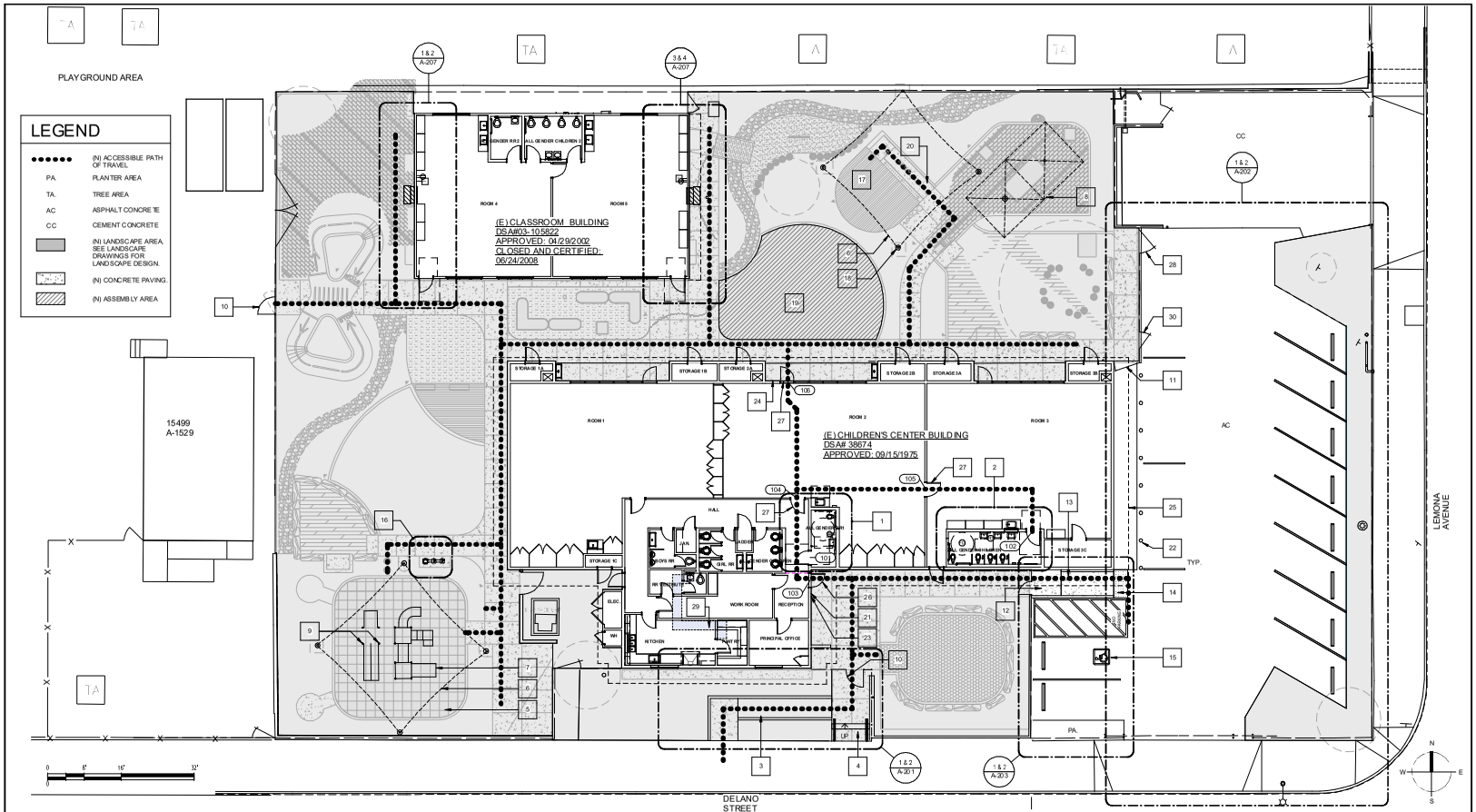
A. The contractor shall provide the District all of the following documents:

1. Filter change logs for all respirators
2. Foreman's daily job report
3. Employee's entry/exit logs for all containments
4. Visitor's entry/exit logs for all containments
5. Air samples for personnel
6. Copy of any waste manifest(s)
7. All signed LAUSD Contractor-Daily Personnel Report Forms
8. Signed Code of Conduct form, from each employee working on this project
9. Signed LAUSD Asbestos Abatement Project Personnel Logs

B. Abatement contractor shall have five (30) working days after tear-down of the last work area containment to submit the required close out documents.

This report may not be changed, modified or include additions without the express written permission from the FETU.

END OF SECTION



PROPOSED SITE PLAN

SCALE: 3/32" = 1'-0"

1

NOTES

PATH OF TRAVEL (P.O.T.) AS VERIFIED BY ARCHITECT IS:

1. AN ACCESSIBLE P.O.T. SHALL BE MAINTAINED AND COMPLIANT AS REQ. BY CBC CHAPTER 11B 202.4 / 402 & 403 TYP.
2. A COMMON BARRIER FREE ACCESSIBLE ROUTE AT LEAST 48" WIDE WITHOUT ANY ABRUPT VERTICAL CHANGES EXCEEDING 1/2" BEVELED AT 1:2 MAX. SLOPE, EXCEPT THAT LEVEL CHANGES DO NOT EXCEED 1/4" VERTICAL
3. THE PATH SURFACE IS SLIP RESISTANT, STABLE, FIRM AND SMOOTH
4. PASSING SPACES AT LEAST 60" X 60" ARE LOCATED NOT MORE THAN 200' APART.
5. CONTINUOUS GRADIENTS HAVE 60" LEVEL AREAS NOT MORE THAN 400' APART.
6. CROSS SLOPE DOES NOT EXCEED 2%
7. SLOPE IN THE DIRECTION OF TRAVEL IS LESS THAN 5% UNLESS OTHERWISE INDICATED AS A RAMP
8. MAINTAIN P.O.T. FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM & PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM WALL OR EDGE AND 27" ABOVE FINISH GRADE

DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE IN CHARGE STATEMENT (PER DSA PR 15-01)

DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE: THE P.O.T. IDENTIFIED IN THESE CONSTRUCTION DOCUMENTS IS COMPLIANT WITH THE CURRENT APPLICABLE CALIFORNIA BUILDING CODE ACCESSIBILITY PROVISIONS FOR PATH OF TRAVEL REQUIREMENTS FOR ALTERATIONS, ADDITIONS AND STRUCTURAL REPAIRS. AS PART OF THE DESIGN OF THIS PROJECT, THE P.O.T. WAS EXAMINED AND ANY ELEMENTS, COMPONENTS OR PORTIONS OF THE P.O.T. THAT WERE DETERMINED TO BE NONCOMPLIANT: 1) HAVE BEEN IDENTIFIED AND 2) THE CORRECTIVE WORK NECESSARY TO BRING THEM INTO COMPLIANCE HAS BEEN INCLUDED WITHIN THE SCOPE OF THIS PROJECTS WORK THROUGH DETAILS, DRAWINGS, AND SPECIFICATIONS INCORPORATED INTO THESE CONSTRUCTION DOCUMENTS.

DURING CONSTRUCTION, IF P.O.T. ITEMS WITHIN THE SCOPE OF THE PROJECT REPRESENTED AS CODE COMPLIANT ARE FOUND TO BE NONCONFORMING BEYOND REASONABLE CONSTRUCTION TOLERANCES, THEY SHALL BE BROUGHT INTO COMPLIANCE WITH THE CBC AS PART OF THIS PROJECT BY MEANS OF A CONSTRUCTION CHANGE DOCUMENT.

ASSISTIVE LISTENING DEVICE

ASSEMBLY AREA	SIZE
MUSIC AND MOVEMENT PLATFORM:	301 SQFT
GATHERING AREA:	732 SQFT

TOTAL:
TOTAL OCCUPANTS = 1033/7 = 147
ASSISTIVE LISTENING DEVICE = 147 * 4% = 5.9
PROVIDE 6 DEVICE

GENERAL BUILDING PLANS NOTE

A. SEE MECHANICAL DRAWINGS FOR EXISTING AND PROPOSED WALL MOUNTED AND CEILING MOUNTED EQUIPMENTS LOCATION PLANS, SCHEDULES AND REQUIREMENTS.

B. WHERE EQUIPMENTS ARE DEMOLISHED OR INSTALLED INTO EXISTING WALLS, PATCH AND PAINT WALLS TO MATCH EXISTING, TYPICAL.

C. WHERE EQUIPMENTS ARE DEMOLISHED OR INSTALLED INTO EXISTING DRYWALL CEILINGS, PATCH AND PAINT DRYWALL CEILINGS TO MATCH EXISTING, TYPICAL.

D. WHERE EQUIPMENTS ARE DEMOLISHED OR INSTALLED INTO EXISTING DROP CEILINGS, REMOVE AND REPLACE ANY DAMAGED EXISTING CEILING TILE. NEW CEILING TILE SHOULD MATCH EXISTING IN COLOR, TEXTURE, AND MATERIAL.

E. PROVIDE NEW ROOM ID SIGN FOR ALL ROOMS, SEE 9/A-506 .

F. ANY FINISHES KEYNOTED TO BE REMOVED/REPLACED IE DRYWALL/PLASTER AND IS NOT IDENTIFIED AS TO WHAT IT IS, CONTRACTOR IS TO ESTIMATE THE MORE COSTLY FINISH APPLICATION IN LIEU OF THE LEAST COSTLY.

G. NO DEMOLITION SHALL BEGIN UNTIL ALL PLANS HAVE BEEN APPROVED BY DSA.

KEYNOTES

1	FACULTY RESTROOM MODIFICATION, SEE ENLARGED PLANS 1, 2, 5, 6/A-204
2	(N) ALL GENDER RESTROOM, SEE ENLARGED PLANS 1, 2, 5, 6/A- 205
3	(N) ACCESS WALK, SEE ENLARGED PLANS 1&2/A-201
4	(N) STAIR, SEE ENLARGED PLANS 1&2/A-201
5	(N) PLAY MAT, SEE ENLARGED PLANS 1/LS-142
6	(E) SHADE STRUCTURES PER DSA #03-109449. PROVIDE NEW PROTECTIVE PADDING AT ALL EXISTING SHADE STRUTURE POST COLUMNS BY PORTER - MODEL #97061
7	(E) PLAY STRUCTURES, DSA #38674, TO REMAIN.
8	(E) SHADE STRUCTURES PER DSA #38674. PROVIDE NEW PROTECTIVE PADDING AT ALL EXISTING SHADE STRUTURE POST COLUMNS BY PORTER - MODEL #97061
9	PROVIDE NEW PROTECTIVE PADDING (PORTER - MODEL#97061) AT UPPER LEVEL OF TWO EXISTING PLAY STRUTURE POST COLUMNS.
10	(E) C.L. GATE TO BE REMOVED, (E) C.L. FENCE TO BE MODIFIED; PROVIDE (N) 4'-0" W x 7'-0" H ACCESSIBLE GATE, SEE DETAIL 1/A-503 AND 13/A-501
11	(E) C.L. SERVICE GATE TO REMAIN; PROVIDE (N) C.L.TOP PANEL OVER (E) C.L. GATE, SEE DETAIL 11/A-501
12	(E) C.L. FENCE TO BE MODERFIED; PROVIDE (N) 3-0" W x 7'-0" H ACCESSIBLE GATE, SEE DETAIL 3/A-503 AND 13/A-501
13	(N) ACCESS WALK, SEE ENLARGE PLAN 1/A-203
14	(N) DETECTABLE WARNING SURFACE, SEE ENLARGED PLAN 1/A-203
15	(N) ACCESSIBLE PARKING , SEE ENLARGED PLAN 1/A-203
16	(N) ACCESSIBLE DRINKING FOUNTAIN, SEE ENLARGED PLAN 1, 2/A-505
17	(N) NEW MUSIC AND MOVEMENT PLATFORM, 301 SQFT; SEE ENLARGED PLAN 1/LS- 141.
18	PROVIDE (N) ASSISTIVE LISTENING SYSTEM SIGN, MOUNT AT EXISTING SHADE STRUCTURE POST, SEE DETAIL 9/A-505. FOR RECEIVER COUNT BASED ON TOTAL OCCUPANTS, SEE ASSISTIVE LISTENING DEVICE CALCULATION. PROVIDE NEW ASSISTIVE LISTENING PORTABLE SPEAKER SYSTEM BY JBL - MODEL #EON208P.
19	(N) GATHERING AREA, 730 SQFT; SEE LANDSCAPE PLAN FOR DETAIL.
20	(N) ACCESS WALK. SEE ENLARGED PLAN 1/LS- 141 AND 7/S-200
21	(N) AI PHONE ACTIVATION CALL BUTTON, SEE DETAIL 12/A-501
22	(N) BOLLARD, SEE CIVIL DWGS
23	(N) ROOM ID SIGN, SEE 12/A- 505
24	(N) ENTRANCE SIGN, SEE 20/A- 505
25	(E) OVERHEAD ROOFLINE, SEE 1&2/A- 205 FOR ROOF PLAN
26	(N) ACCESSIBLE DOOR, SEE 9/A-508
27	(E) DOOR UPGRAD TO ACCESSIBLE DOOR, SEE DOOR SCHEDULE 9/A-508
28	(E) C.L. SERVICE GATE TO REMAIN IN PLACE
29	REMOVE SURFACE PORTION OF (E) DRYWALL & DRYWALL CEILINGS; INSTALL (N) PIPE ; INSTALL (N) GYP. BD. TO REPAIR (E) DRYWALL & CEILING; PAINT AND FINISH TO MATCH EXISTING.
30	(E) C.L. SERVICE GATE TO BE REMOVED AND REINSTALL ,(E) C.L. FENCE TO BE MODIFIED; SEE CIVIL CD-102

PARKING TABULATION

PARKING TYPE	PROVIDED	REQUIRED
STANDARD PARKING STALLS:	11	
REGULAR ACCESSIBLE STALLS:	0	0
VAN ACCESSIBLE STALLS:	1	1
TOTAL:	12	

DIVISION OF THE STATE ARCHITECT

LOS ANGELES UNIFIED SCHOOL DISTRICT

M&O - A/E SERVICES
FACILITIES SERVICES DIVISION

333 S. BEAUDRY AVENUE, 22ND FLOOR
LOS ANGELES, CALIFORNIA 90017
TEL: (213) 241-3952
EMAIL: HERRICK.AU@LAUSD.NET

PROJECT TITLE AND SCHOOL LOCATION

OUTDOOR CLASSROOM AND CAMPUS UPGRADE

COLIN # 10374546

DSA # 03-125367

SYLVAN PARK EARLY EDUCATION CENTER

15011 DELANO ST
VAN NUYS, CA 91411

COMMISSIONED ARCHITECT

CONSULTANT

DESCRIPTION	DATE
50% CD	12.20.2024
100% CD	04.10.2025

SHEET TITLE:

PROPOSED ARCHITECTURAL SITE PLAN

COLIN NO.: 10374049	PROJECT ARCH: HA
DRAWN: JM	CHECKED: HA

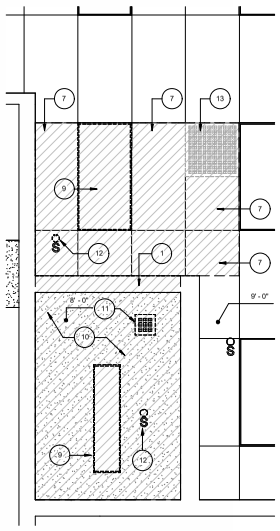
SHEET NUMBER

A-101

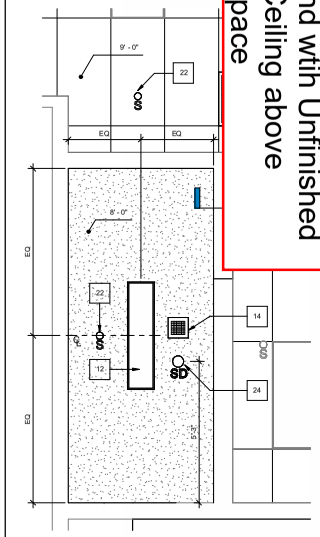
SHEET: 54 OF: 119

Staff Restroom:
ACCM - Joint Compound
asst. with Drywall Walls
Assumed ACM - Fire Doors
Assumed ACM - Flooring
Material with Associated
Mastic underneath Sink
Cabinet

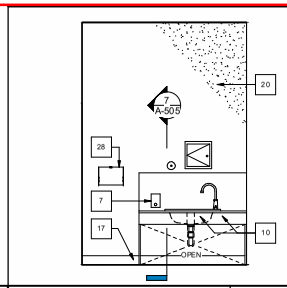
Note: ACM - Joint
Compound wtih Unfinished
Drywall Ceiling above
Ceiling Space



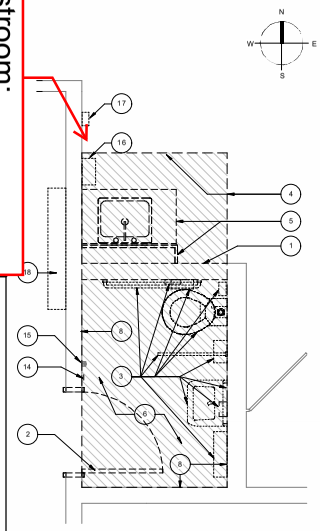
EXISTING CEILING PLAN - FACULTY RESTROOM | SCALE: 1/2" = 1'-0" | 6



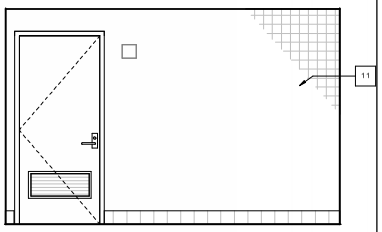
PROPOSED CEILING PLAN - FACULTY RESTROOM | SCALE: 1/2" = 1'-0" | 5



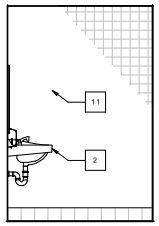
ELEVATION AT SINK | SCALE: 1/2" = 1'-0" | 4



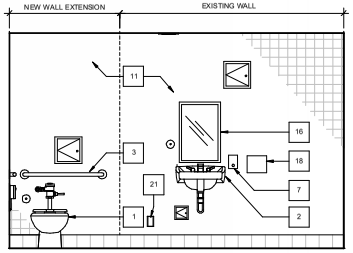
EXISTING PLAN - FACULTY RESTROOM | SCALE: 1/2" = 1'-0" | 2



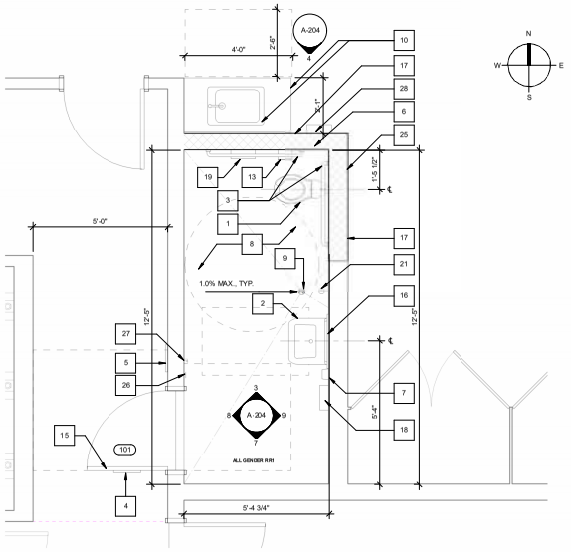
ELEVATION WEST | SCALE: 1/2" = 1'-0" | 8



ELEVATION SOUTH | SCALE: 1/2" = 1'-0" | 7



ELEVATION EAST | SCALE: 1/2" = 1'-0" | 9



PROPOSED PLAN - FACULTY RESTROOM | SCALE: 1/2" = 1'-0" | 1

DEMOLITION KEYNOTES

1. REMOVE AND DISPOSE PORTION OF NON-BEARING 2x4 WOOD STUD PARTITION WALLS W/ GWB ON BOTH SIDES.
2. REMOVE AND DISPOSE DOOR AND DOOR FRAME AND DOOR TRESHOLD
3. REMOVE AND DISPOSE RESTROOM FIXTURES AND ACCESSORIES (GRAB BARS, ALL DISPENSERS, SHELVING, CHANGING STATION & MIRROR)
4. REMOVE AND DISPOSE VINYL TILE FLOOR FINISH AND CONCRETE SLAB AT INTERIOR WALL LINES OF NEW FACULTY RESTROOM TO PREP AREA FOR NEW PLUMBING HOOK UPS. SEE S STRUCTURAL PLANS C/S-210 FOR EXTENT OF CONCRETE SLAB REMOVAL/REPAIR/REPLACEMENT INFORMATION
5. REMOVE AND DISPOSE OF SINK AND CABINET
6. REMOVE AND DISPOSE MOSAIC TILE FLOOR FINISH INCLUDING MORTAR BED AND CONCRETE SLAB. REFER TO C/S-210 FOR EXTENT OF REPLACEMENT
7. REMOVE AND DISPOSE PORTION OF EXISTING DROP CEILING PANELS AT WALL LINES OF NEW FACULTY RESTROOM AREA.
8. REMOVE AND DISPOSE EXISTING DRYWALL
9. REMOVE AND DISPOSE LIGHT FIXTURE
10. REMOVE AND DISPOSE OF GYP. BOARD CEILING TO EXPOSE (E) CEILING JOISTS
11. REMOVE AND REPLACE (E) EXHAUST FAN GRILLE. EXISTING FAN TO REMAIN AT CURRENT LOCATION.
12. REMOVE AND RELOCATE (E) SPRINKLER HEADS
13. REMOVE AND RELOCATE (E) RETURN AIR GRILLE
14. (E) LIGHT SWITCH TO REMAIN IN PLACE
15. (E) FIRE ALARM STROBE TO REMAIN IN PLACE
16. REMOVE AND RELOCATE PAPER TOWEL DISPENSER
17. REMOVE AND DISPOSE (E) TEMPERATURE STAT
18. REMOVE EXISTING MAILBOXES AND PATCH/PAINT WALL

CONSTRUCTION KEYNOTES

1. NEW ACCESSIBLE WATER CLOSET - WC-4 PER SPECIFICATIONS. SEE ALSO DETAILS 4/A-507
2. NEW ACCESSIBLE LAVATORY - L-4 PER SPECIFICATIONS. ALSO SEE DETAILS 3& 11/A-607 AND 12/S-110
3. NEW GRAB BARS. SEE 4 & 12/A-507 FOR MOUNTING DETAILS
4. NEW DOOR MOUNTED ACCESSIBLE SIGNAGE. SEE 6/A-506
5. NEW WALL MOUNTED ACCESSIBLE SIGNAGE. SEE 6/A-506
6. NEW PARTITION WALL - 2x6 WOOD STUDS @ 16" O.C. SEE DETAIL 13/A-510 AND STRUCTURAL SHEET S-120
7. NEW SOAP DISPENSER. SEE DETAIL 14/A-507
8. NEW CERAMIC MOSAIC FLOOR TILE FINISH IN MORTAR SET. 1"x 1" SLIP RESISTANT. SEE 5/A-507 AND SPEC SECTION 09 3013 FOR MORE DETAILS
9. NEW FLOOR DRAIN. SEE PLUMBING PLANS
10. NEW ACCESSIBLE SINK AND CASEWORK. SEE DETAIL 7/A-505
11. NEW FULL HEIGHT CERAMIC TILE WALL FINISH. 4 1/4"x 4 1/4" FACE DIMENSIONS BY 5/16" THK. SEE DETAIL 7/A-507 AND SPEC SECTION 09 3013 FOR MORE DETAILS.
12. NEW SURFACE MOUNTED LIGHT FIXTURE. PROVIDE NECESSARY MOUNTING SUPPORT BLOCKING. SEE ELECTRICAL 1/E-301
13. NEW SANITARY NAPKIN DISPOSAL. SEE 14/A-507 FOR MOUNTING HEIGHT REQUIREMENTS.
14. (N) EXHAUST FAN GRILLE. SEE MECH.
15. NEW DOOR. SEE DOOR SCHEDULE ON SHEET A-508
16. NEW MIRROR. SEE DETAIL 14/A-507
17. NEW RUBBER BASE BOARD ALONG NEW WALL TO MATCH EXISTING
18. NEW PAPER TOWEL DISPENSER. SEE DETAIL 14/A-507
19. NEW TOILET PAPER DISPENSER SEE DETAIL 4/A-507
20. NEW 5/8" THK. GYP. BD. PAINT AND FINISH TO MATCH EXISTING
21. NEW ELECTRICAL OUTLET/RECEPTACLE
22. RELOCATE (E) SPRINKLER HEADS TO NEW LOCATION
23. NEW LOCATION OF (E) RETURN AIR GRILLE
24. NEW SMOKE DETECTOR, SEE FIRE ALARM PLAN 1/FA-301
25. NEW PARTITION WALL - 2x6 WOOD STUDS @ 16" O.C. SEE DETAIL 13/A-510 AND STRUCTURAL SHEET
26. (E) LIGHT SWITCH TO REMAIN IN PLACE
27. (E) FIRE ALARM STROBE TO REMAIN IN PLACE
28. (N) PAPER TOWEL DISPENSER. SEE DETAIL 14/A-507

DIVISION OF THE STATE ARCHITECT

LOS ANGELES UNIFIED SCHOOL DISTRICT

M&O - A/E SERVICES
FACILITIES SERVICES DIVISION

333 S. BEAUDRY AVENUE, 22ND FLOOR
LOS ANGELES, CALIFORNIA 90017
TEL: (213) 241-3952
EMAIL: HERRICK.AU@LAUSD.NET

PROJECT TITLE AND SCHOOL LOCATION

OUTDOOR CLASSROOM AND CAMPUS UPGRADE
COLIN # 10374546
DSA # 03-125367
SYLVAN PARK EARLY EDUCATION CENTER
15011 DELANO ST
VAN NUYS, CA 91411

COMMISSIONED ARCHITECT

LICENSED ARCHITECT HERRICK AU No. C26770 Ren. 1.31.27 STATE OF CALIFORNIA

CONSULTANT

DESCRIPTION	DATE
50% CD	12.20.2024
100% CD	04.10.2025

SHEET TITLE:

ENLARGED PLAN FACULTY RESTROOM

COLIN NO.: 10374049	PROJECT ARCH: HA
DRAWN: JM	CHECKED: HA

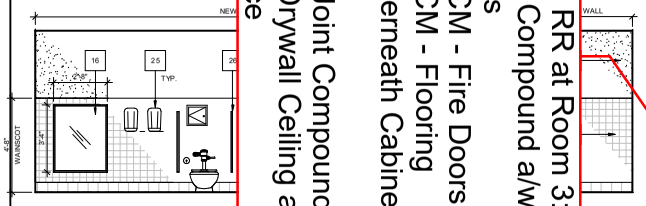
SHEET NUMBER

A-204

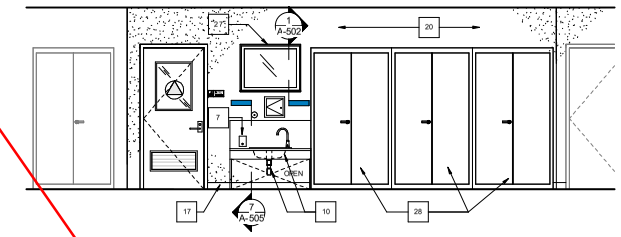
SHEET: 60 OF

Boys & Girls RR at Room 3:
ACCM Joint Compound a/w
Drywall Walls
Assumed ACM - Fire Doors
Assumed ACM - Flooring
Material underneath Cabinets

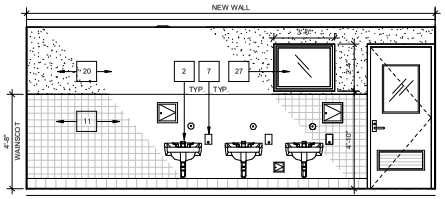
Note: ACM Joint Compound a/w
Unfinished Drywall Ceiling at
Ceiling Space



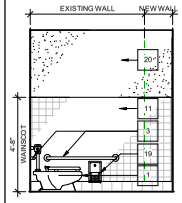
ELEV. SOUTH — SCALE: 3/8" = 1'-0" — 9



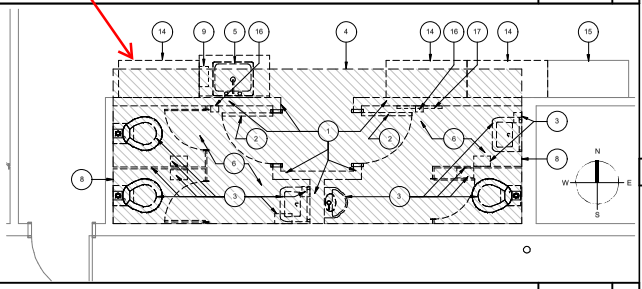
ELEV. AT SINK AND CABINET — SCALE: 3/8" = 1'-0" — 3



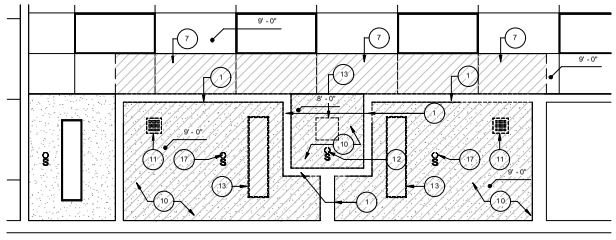
ELEV. NORTH — SCALE: 3/8" = 1'-0" — 8



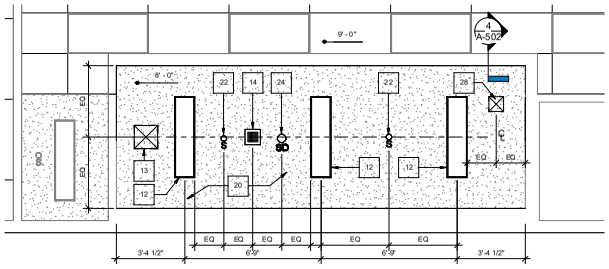
ELEV. WEST — SCALE: 3/8" = 1'-0" — 7



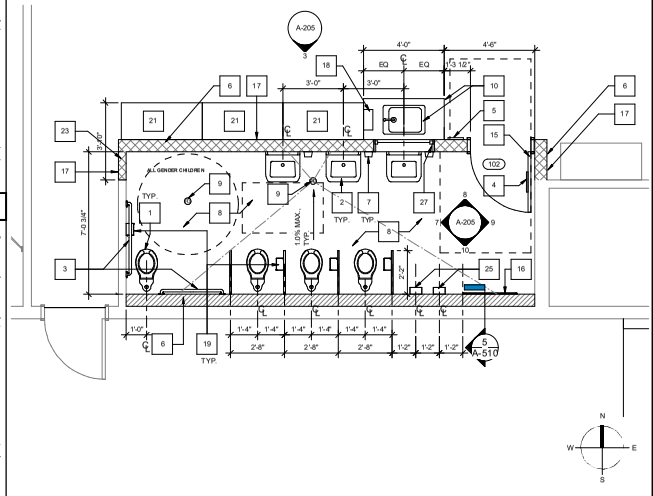
EXISTING PLAN - GIRLS AND BOYS RESTROOM — SCALE: 3/8" = 1'-0" — 2



EXISTING CEILING PLAN - GIRLS AND BOYS RESTROOM — SCALE: 3/8" = 1'-0" — 6



PROPOSED CEILING PLAN - GIRLS AND BOYS RESTROOM — SCALE: 3/8" = 1'-0" — 5



PROPOSED PLAN - GIRLS AND BOYS RESTROOM — SCALE: 3/8" = 1'-0" — 1

DEMOLITION KEYNOTES

1. REMOVE AND DISPOSE PORTION OF NON-BEARING 2x4 WOOD STUD PARTITION WALL(GYPSUM PLASTER ON BOTH SIDE).
2. REMOVE AND DISPOSE DOOR AND DOOR FRAME AND DOOR TRESHOLD
3. REMOVE AND DISPOSE RESTROOM FIXTURES AND ACCESSORIES (GRAB BARS, ALL DISPENSERS, SHELVING, CHANGING STATION & MIRROR)
4. REMOVE AND DISPOSE VINYL TILE FLOOR FINISH AND CONCRETE SLAB AT INTERIOR WALL LINES OF NEW STUDENT RESTROOM TO PREP AREA FOR NEW PLUMBING HOOK UPS. SEE S TRUCTURAL PLANS A/S2.1 FOR EXTENT OF CONCRETE SLAB REMOVAL/REPAIRR EPLACEMENT INFORMATION
5. REMOVE AND DISPOSE OF SINK AND CABINET
6. REMOVE AND DISPOSE MOSAIC TILE FLOOR FINISH INCLUDING MORTAR BED AND CONCRETE SLAB. REFER TO A/S-210 FOR EXTENT OF R EPLACEMENT
7. REMOVE AND DISPOSE PORTION OF EXISTING DROP CEILING PANELS AT WALL LINES OF NEW F ACILITY RESTROOM AREA.
8. REMOVE AND DISPOSE EXISTING DRYWALL
9. REMOVE AND RELOCATE (E) PAPER TOWEL DISPENSER
10. REMOVE AND DISPOSE OF GYP. BOARD CEILING AND (E) CEILING JOISTS
11. REMOVE AND DISPOSE (E) EXHAUST FAN GRILLE
12. REMOVE AND DISPOSE (E) SPRINKLER HEADS
13. REMOVE AND DISPOSE (E) LIGHT FIXTURE
14. REMOVE AND RELOCATE (E) STORAGE CABINETS
15. (E) STORAGE CABINETS TO REMAIN IN PLACE
16. REMOVE AND DISPOSE (E) FIRE ALARM STROBE
17. DISCONNECT (E) WATER LINE, REMOVE AND DISPOSE (E) WATER ACCESS PANEL
17. REMOVE AND RELOCATE (E) SPRINKLER HEADS

CONSTRUCTION KEYNOTES

1. NEW WATER CLOSET AND ACCESSIBLE WATER CLOSET - SEE 1/P-401 AND 4/A-507 FOR INSTALLATION DETAILS
2. NEW LAVATORY AND ACCESSIBLE LAVATORY - SEE 1/P-401 AND 3&1 1/A-507 FOR INSTALLATION DETAILS
3. (N) GRAB BARS. SEE 4 & 12/A-507 FOR MOUNTING DETAILS
4. (N) DOOR MOUNTED ACCESSIBLE SIGNAGE. SEE 6/A-506
5. (N) WALL MOUNTED ACCESSIBLE SIGNAGE. SEE 6/A-506
6. NEW PARTITION WALL - 2x6 WOOD STUDS @ 16" O.C. SEE DETAIL 5, 13/A-510 AND STRUCTURAL SHEET S-120
7. (N) SOAP DISPENSER. SEE DETAIL 14/A-507
8. NEW CERAMIC MOSAIC FLOOR TILE FINISH IN MORTAR SET. 1"x 1" SLIP RESISTANT. SEE 5/A-507 AND SPEC SECTION 09 3013 FOR MORE DETAILS
9. (N) FLOOR DRAIN. SEE PLUMBING PLANS
10. (N) ACCESSIBLE SINK AND CASEWORK. SEE DETAIL 7/A-505
11. NEW 4'-8" HEIGHT CERAMIC TILE WALL FINISH. 4 1/4"x 4 1/4" FACE DIMENSIONS BY 5/16" THK. SEE DETAIL 7/A-507 AND SPEC SECTION 09 3013 FOR MORE DETAILS.
12. (N) SURFACE MOUNTED LIGHT FIXTURE. PROVIDE NECESSARY MOUNTING SUPPORT BLOCKING. SEE ELECTRICAL 1/E-301
13. (N) ATTIC ACCESS. SEE 9 /A- 510
14. (N) EXHAUST FAN GRILLE. SEE MECH.
15. (N) DOOR. SEE DOOR SCHEDULE ON SHEET A-508
16. (N) MIRROR. SEE DETAIL 14/A- 507
17. NEW RUBBER BASE BOARD ALONG NEW WALL TO MATCH EXISTING
18. RELOCATE (E) PAPER TOWEL DISPENSER. SEE DETAIL 14/A- 507
19. (N) TOILET PAPER DISPENSER. SEE DETAIL 4/A-507
20. NEW 5/8 " THK. GYP. BD. PAINT AND FINISH TO MATCH EXISTING
21. RELOCATE (E) STORAGE CABINETS, SEE 2,3 /A- 502 FOR WALL AND FLOOR MOUNTING DETAIL
22. RELOCATE (E) SPRINKLER HEADS TO NEW LOCATION
23. (N) PARTITION WALL - 2 x4 WOOD STUDS @ 16" O.C. SEE DETAIL 13/A-510 AND STRUCTURAL SHEET
24. (N) SMOKE DETECTOR. SEE FIRE ALARM PLAN 1/ FA-301
25. (N) ELECTRIC HAND DRYERS. SEE ELECTRICAL DRAWINGS FOR POWER PLAN AND DETAIL 14/A- 507
26. (N) PHENOLIC TOILET PARTITIONS. SEE DETAIL 6 /A-507
27. (N) VISION PANEL
28. (N) CEILING WATER ACCESS PANEL

DIVISION OF THE STATE ARCHITECT

LOS ANGELES UNIFIED SCHOOL DISTRICT

M&O - A/E SERVICES
FACILITIES SERVICES DIVISION

333 S. BEAUDRY AVENUE, 22ND FLOOR
LOS ANGELES, CALIFORNIA 90017
TEL: (213) 241-3952
EMAIL: HERRICK.AU@LAUSD.NET

PROJECT TITLE AND SCHOOL LOCATION

OUTDOOR CLASSROOM AND CAMPUS UPGRADE
COLIN # 10374546
DSA # 03-125367
SYLVAN PARK EARLY EDUCATION CENTER
15011 DELANO ST
VAN NUYS, CA 91411

COMMISSIONED ARCHITECT

LICENSED ARCHITECT — No. C26770 — Ren 1.31.27 — STATE OF CALIFORNIA

CONSULTANT

DESCRIPTION	DATE
50% CD	12.20.2024
100% CD	04.10.2025

SHEET TITLE:

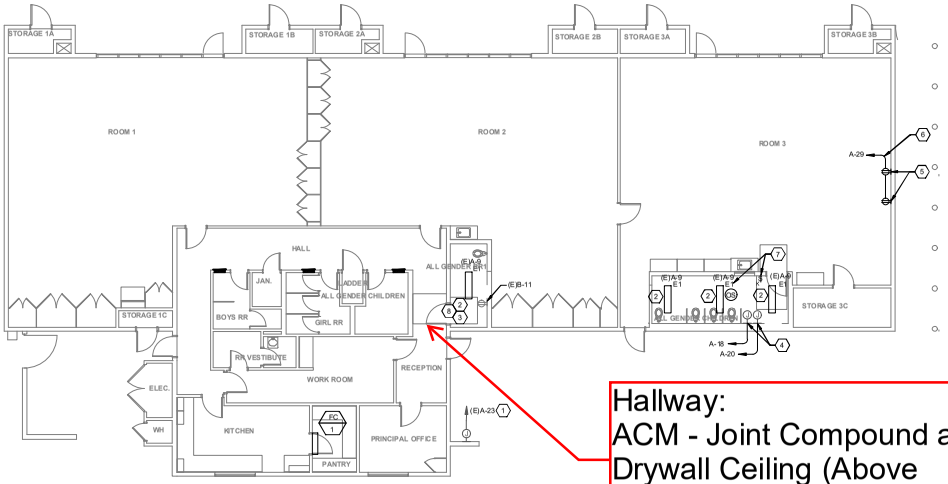
ENLARGED PLAN GIRLS AND BOYS RESTROOM

COLIN NO.: 10374049	PROJECT ARCH: HA
DRAWN: JM	CHECKED: HA

SHEET NUMBER

A-205

SHEET: 61 OF



Hallway:
ACM - Joint Compound a/w Drywall Ceiling (Above Ceiling Tiles)

Note:
ACM - Joint Compound a/w Unfinished Drywall Ceiling at Ceiling Space throughout

ELECTRICAL FLOOR PLAN - CHILD CARE CENTER | SCALE: 1/8" = 1'-0" | 1

GENERAL NOTES

1. THESE DRAWINGS ARE PREPARED BASED ON AVAILABLE RECORD DRAWINGS AND NONINVASIVE, NON-INSTRUMENT ASSISTED, FIELD OBSERVATION ONLY. THE INTENT OF THESE DRAWINGS IS TO DEFINE THE SCOPE OF WORK AND CONVEY THE DESIGN CONCEPTS ONLY.
2. INSTALLER CONTRACTOR SHALL VERIFY CONDITIONS, EXACT LOCATION AND DIMENSIONS OF EXISTING PRIOR TO BEGINNING WORK.
3. INFORMATION GIVEN ON THE DRAWING IS DIAGRAMMATIC. WHILE IT PROVIDES AS CLOSE AS POSSIBLE TO CURRENT CONDITIONS. ABSOLUTE ACCURACY IS NOT GUARANTEED, AND THE INSTALLER CONTRACTOR SHALL OBTAIN AND VERIFY EXACT LOCATIONS, MEASUREMENTS, LEVEL AND SPACE REQUIREMENTS. POTENTIAL CONFLICTS WITH OTHER TRADES AT THE SITE AND SHALL SATISFACTORILY ADAPT HIS WORK TO ACTUAL CONDITIONS AT THE BUILDING.

KEY NOTES

1. EXISTING IRRIGATION CONTROLLER/ SPRINKLER CONTROL.
2. CONTRACTOR TO RE-USE EXISTING CIRCUIT. INTERCEPT AND EXTEND EXISTING CONDUIT AND WIRING TO NEW FIXTURE AS REQUIRED.
3. CONNECT TO EXISTING LIGHTING CONTROL SYSTEM IN THE AREA.
4. PROVIDE 120V POWER TO NEW HAND DRYER. REFER TO ARCHITECTURAL PLANS FOR MOUNTING HEIGHT AND LOCATION.
5. PROVIDE 120V, SURFACE MOUNTED RECEPTACLE TO NEW 3D PRINTER.
6. SURFACE MOUNT CONDUIT VERTICAL. RUN ALONG THE WALL TO THE CEILING SPACE.
7. INTERLOCK EXHAUST FAN EF-3 ON ROOF TO LIGHTS AND LIGHTING CONTROL IN ALL GENDER CHILDREN RESTROOM. REFER TO SHEET E-303.
8. REFER TO DETAIL #2 ON SHEET E-502 FOR LIGHT FIXTURE MOUNTING DETAIL.

DIVISION OF THE STATE ARCHITECT

DSA #: FILE #:

LOS ANGELES UNIFIED SCHOOL DISTRICT

M&O - A/E SERVICES
FACILITIES SERVICES DIVISION
333 S. BEAUDRY AVENUE, 22ND FLOOR
LOS ANGELES, CALIFORNIA 90017
TEL: (213)241-3952
EMAIL: HERRICK.AU@LAUSD.NET

PROJECT TITLE AND SCHOOL LOCATION

OUTDOOR CLASSROOM AND CAMPUS UPGRADE
COLIN # 10374049
DSA # 03-125367
SYLVAN PARK EARLY EDUCATION CENTER

15011 DELANO ST
VAN NUYS, CA 91411

COMMISSIONED ARCHITECT

CONSULTANT

capital engineering

STAMPS/SEALS

REGISTERED PROFESSIONAL ENGINEER — RICHARD D. CURETON — E 24197 — ELECTRICAL — STATE OF CALIFORNIA

Date Signed: 06-13-2025

DESCRIPTION	DATE
50% CD	12.23.2024
100% CD	04.10.2025

SHEET TITLE:
ELECTRICAL FLOOR PLAN - CHILDRENS CENTER BLDG.

COLIN NO.: 10374049	PROJECT ENG: SL
DRAWN: RD	CHECKED: RR

SHEET NUMBER
E-301

DATE: SHEET: OF:

SECTION 02 8333

LEAD ABATEMENT AND LEAD RELATED CONSTRUCTION WORK

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. Abatement, Lead Related Construction Work or painting of lead-containing materials and/or Lead Based Paint.

2. Transportation and disposal of lead-containing materials and/or Lead Based Paint.

B. Related Requirements:

2. Division 01 - General Requirements.

3. Cal/OSHA Title 8, California Code of Regulations (CCR).

4. California Air Resources Board Ambient Air Quality Standard, Title 24 CCR.

5. California Department of Public Health, Title 17, CCR.

6. Cal/EPA, Title 22 CCR.

7. California Labor Code, Division 5, Part 1, as it pertains to safety in employment and with the applicable provisions of the Title 8, CCR as it pertains to Occupational Safety and Health in the work place.

8. Environmental Protection Agency, 40CFR, Part 745.

9. UD – Title X, Residential Lead-Based Paint Hazard Reduction Act of 1992.

10. Los Angeles County Public Health Code (Chapter 11).

1.02 DEFINITIONS AND ACRONYMS

A. AAS - Atomic Absorption Spectrophotometry used for lead paint chip and dust wipe sample analysis.

B. Abatement – Any set of measures designed to reduce or eliminate lead hazards or Lead Based Paint for public and residential buildings, but does not include containment or cleaning.

C. Action Level – Means the Action Level as defined in Title 8, California Code of Regulations, Section 1532.1.

D. ANSI – American National Standards Institute.

E. ASTM – American Society for Testing and Materials.

F. Building ID number or code (Maximo) – A six digit alphanumeric identification code assigned to each building on an Owner site, also referred to as the insurance code, ID number or similar terms.

G. Certificate – Means the document issued by CDPH to an individual meeting the certification requirements as described in CCR Title 17, Sections 35083, 35085, 35087, 35089, or 35091.

H. Clean Room – An uncontaminated area or room which is a part of the worker Decontamination Enclosure System with provisions for storage of worker's street clothes and clean protective equipment.

I. Clearance Inspection – Means visual examination and, as applicable, collection of environmental samples upon completion of the Work of this section.

J. Component – Means a structural element or fixture, including but not limited to, walls, floors, ceilings, doors, window molding, trim, trestles, tanks, stairs, railings, cabinets, gutters, or downspouts.

K. Curtained doorway – A device to allow ingress and egress from one room to another while permitting minimal air movement between the rooms, typically constructed by placing two overlapping sheets of plastic over an exiting or temporarily framed doorway, securing each along the top of the doorway, securing the vertical edge of one sheet along one vertical side of the doorway and securing the vertical edge of the other sheet along the opposite vertical side of the doorway. Other effective designs may be submitted for review.

L. Decontamination – The process of eliminating lead contamination from building surfaces, and property by cloths, mops, or other utensils dampened with water and disposed of as lead contaminated waste.

M. Decontamination Enclosure System – A minimum a two-stage Decontamination unit consisting of a compartment for Decontamination, and a Clean Room. Unless otherwise specified, it shall be adjacent to the Abatement area.

N. Demolition – The wrecking or taking out of any load supporting structural member of a facility together with any related handling operations.

O. Deteriorated Lead Based Paint – Means Lead Based Paint or a surface coating that is cracking, chalking, flaking, chipping, peeling, non-intact, failed, or otherwise separating from the substrate to which it is applied to.

P. CDPH– California Department of Public Health.

Q. CDPH-Approved Course – Means any lead construction course that satisfies the requirements specified in CCR Title 17, Sections 35056, 35061, 35066, or 35067 as determined by CDPH pursuant to Sections 35076 and 35078.

R. DOSH – California Division of Occupational Safety & Health or Cal/OSHA.

S. DOT – Department of Transportation.

T. DTSC – California Department of Toxic Substances Control.

U. Encapsulating Material – Are coatings or rigid materials adhesively applied to Lead Based Painted surfaces in the Encapsulation process.

V. Encapsulation – The application of an Encapsulating Material to Lead Based Paint to provide a barrier between the Lead Based Paint and the environment.

W. Enclosure – A rigid durable barrier mechanically attached to building Component, with edges and seams sealed with caulk or other sealant.

X. EPA; Renovation, Repair and Painting (RRP) – Means a lead-related construction course that satisfies the requirements specified in 40 CFR, Part 745, Section 745.90.

Y. FETU – Facilities Environmental Technical Unit.

Z. Firm – Means a company, partnership, corporation, sole proprietorship or individual doing business, association, or other business entity; a Federal, State, Tribal, or local government agency; or a nonprofit organization and satisfies the requirements specified in 40 CFR, Part 745, Section 745.89.

AA. Fixed Object – A piece of equipment, furniture, or improvement in the Work Area, which cannot be removed from the Work Area.

BB. Hazardous Waste – Means any waste stream determined by an Owner approved laboratory to exceed the regulatory thresholds for lead hazardous waste.

CC. HEPA Filter – Means a filtering system capable of trapping and retaining at least 99.97 percent of mono-dispersed particles 0.3 micrometers in diameter or larger.

DD. HEPA Vacuum – A vacuum system furnished with HEPA filtration.

EE. HUD – United States Department of Housing and Urban Development

FF. HVAC – Heating, Ventilation, and Air Conditioning system.

GG. ICP-AES – Means Inductively Coupled Plasma-Atomic Emission Spectroscopy used for heavy metal analysis, including lead.

HH. Lead Based Paint – Means paint or other surface coatings that contain an amount of lead equal to or greater than 0.7 milligrams per square centimeter (0.7 mg/cm^2) or equal to or greater than 0.5 percent by weight.

II. Lead Containing Paint – Means paint or other surface coatings that contain lead in an amount equal to or greater than 0.06 percent lead dry weight (600 ppm) but does not meet the definition of Lead Based Paint. In the absence of paint chip or surface coating bulk sample results, any surface coating shall be assumed to be above 0.06 percent lead dry

weight (600 ppm) until surface coating samples are collected and analyzed that indicate otherwise. Lead concentration shall be determined by a method that has an accuracy of not less than plus or minus 25 percent at 0.06 percent lead dry weight, to a confidence level of 95 percent.

JJ. Lead Contaminated Dust – Means dust that contains an amount of lead equal to, or greater than, forty micrograms per square foot (40 $\mu g/ft^2$) for interior floor surfaces; two hundred and fifty micrograms per square foot (250 $\mu g/ft^2$) for interior horizontal window surfaces; and eight hundred micrograms per square foot (800 $\mu g/ft^2$) for exterior floor and exterior horizontal window surfaces.

KK. Lead Contaminated Soil – Means bare soil that contains an amount of lead equal to, or greater than, four hundred parts per million (400ppm).

LL. Lead Hazard – Means deteriorated Lead Based Paint, Lead Contaminated Dust, Lead Contaminated Soil, the disturbance of Lead Based Paint or Presumed Lead Based Paint without containment, or any other operation that may result in persistent and quantifiable lead exposure.

MM. Lead Inspection – Means a surface by surface investigation to determine the presence of Lead Based Paint as described in Chapter 7: Lead Based Paint Inspection, " Guidelines for the Evaluation and Control of Lead Based Paint Hazards in Housing," U.S. Department of Housing and Urban Development, 1997 Revision.

NN. Lead Related Construction Work – Means any construction, alteration, painting, Demolition, salvage, Renovation, repair, or maintenance of any residential or public building, including preparation and cleanup that, by using or disturbing lead-containing material or soil, may result in significant exposure of adults or children to lead.

OO. Lead Safe Schools Program – Means the training program for lead safe working practices as developed by the Labor Occupational Health Program at U.C. Berkley.

PP. Location Code (Maximo) – Refers to a unique four digit numeric code assigned by the Owner to each of its Project sites.

QQ. Member – A Component part of a structure complete in itself.

RR. Movable Object – A piece of portable equipment or furniture in the Work Area, which can be removed from the Work Area.

SS. NESHAP – The National Emission Standards for Hazardous Air Pollutants (40 CFR Part 50.12).

TT. NIOSH – The National Institute for Occupational Safety and Health.

UU. Owner Consultant (OC) – Refers to the firm, company or individual designated by the Owner.

VV. Painting Contract – For purposes of this section, a painting contract is a Contract with the Owner to perform painting on existing facilities where Lead Based Paint, Lead

Containing Paint, Presumed Lead Based or Presumed Lead Containing Paint will be disturbed or abated.

WW. P.E.L. – Means permissible exposure limits as defined in Title 8, California Code of Regulations, Section 1532.1.

XX. Plasticize – To cover floors, walls, and equipment with plastic sheeting as specified herein.

YY. Portable Mechanical Ventilation System – A portable exhaust system furnished with HEPA filtration and capable of providing a constant air flow into regulated Work Area from adjacent areas and exhausted outside the regulated area.

ZZ. Presumed Lead Based Paint – Means paint or surface coating affixed to a Component in or on a structure, excluding paint or surface coating affixed to a Component in or on a residential dwelling constructed on or after January 1, 1979, or a school constructed on or after January 1, 1993.

AAA. Removal – Means operations where Lead Based Paint is removed or stripped from structures or substrates including Demolition.

BBB. Renovation – Means the modifying of any existing structure, facility, or portion thereof.

CCC. Replacement – Means Removal of an entire building Component coated with Lead Based Paint and replacing it with a lead free Component.

DDD. SCAQMD – South Coast Air Quality Management District.

EEE. STLC – Means Soluble Threshold Limit Concentration used in the State of California in conjunction with TTLC to determine lead hazardous waste limits. If the STLC result is equal to or exceeds 5 mg/L the waste is deemed to be hazardous.

FFF. Surfactant - A chemical wetting agent added to water.

GGG. TCLP – Means Toxicity Characteristic Leaching Procedure used to determine the federal Resources Conservation Recovery Act (RCRA) lead hazardous waste limits. If the results equal or exceed 5 mg/L the waste is deemed to be hazardous.

HHH. TTLC – Means Total Threshold Limit Concentration used in the State of California in conjunction with STLC to determine lead hazardous waste limits. If the results are equal to or exceeds 1000 mg/kg, the waste is deemed to be hazardous.

III. Visible Emissions – Any emissions from a known or suspected lead-containing material that is visually discernible.

JJJ. Wet Cleaning – The process of eliminating lead contamination from building surfaces and/or objects by cloths, mops, or other utensils dampened with amended water and afterwards being disposed of as hazardous waste.

KKK. Work Area – Means an area where known or Presumed Lead Based Paint is disturbed or Abatement is conducted.

LLL. X-Ray Fluorescense (XRF) Analyzer – Means a direct reading instrument that determines the lead content of the surface coatings in milligrams per square centimeter (mg/cm^2) using the principle of x-ray fluorescence.

1.03 POLICIES AND PROCEDURES

A. The Owner has a zero-tolerance policy for uncontrolled lead releases during Lead Related Construction Work, Lead Containing Paint disturbance, or Abatement activities. A lead release requiring an emergency response is any disturbance resulting in the uncontrolled release of lead containing materials. Upon observation of any visual emissions, immediately stop the Work, vacate the Work Area, and provide written notification to the Owner Consultant.

B. Pre-qualified Abatement Subcontractors are not permitted to subcontract any Abatement Work to a lower tier Subcontractor without the prior written approval of the Owner.

C. Do not furnish a reduced pressurization and filtration system in violation of, or in infringement upon, any patent.

D. Owner Consultant shall provide oversight for Projects that have the potential to disturb lead containing or Lead Based Paint. Prior to the commencement of such Work, provide written notification to the Owner Consultant.

E. The following paragraph regarding impacts to coated surfaces shall be part of the contract:

1. "Renovation, repair or painting work performed on buildings constructed prior to 1978 require special handling and environmental monitoring when coated surfaces including, but not limited to, painted, varnished, and glazed surfaces are impacted. Coated surfaces applied prior to 1978 are assumed to be lead-based. All work shall be performed in compliance with Specification, Section 02 8333, "Lead Abatement and Lead Related Construction Work." XRF testing methodology is not acceptable in determining negative for lead content for Cal/OSHA compliance purposes, except for notification requirements. XRF may be used in determining lead-based paint for compliance with the U.S.E.P.A. Renovator, Repair, and Painting Rule. Disturbance of coated surfaces by contractors will be monitored by qualified District staff or Environmental Consultant sufficient to ensure that proper training and work procedures, cleanup, and waste handling are employed."

1.04 COORDINATION

A. Coordinate the Work of this section directly with the Owner and/or Owner Consultant.

1.05 SITE SECURITY

A. The Work Area is restricted to authorized, trained, and protected personnel. A list of authorized personnel shall be established and posted at the entrance of the Work Area by the Owner Consultant prior to commencement of the Work.

B. Report to the Owner Consultant any unauthorized entry into the Work Area. Following notification, a written report of the incident shall be provided to the Owner Consultant.

C. A logbook shall be maintained at the entrance of the Work Area. Persons entering the Work Area shall record name, company affiliation, time in, and time out for each entry and exit.

D. Access to the Abatement Work Area shall be through the Decontamination Enclosure System only. Other means of access shall be blocked or locked so as to prevent entry to or exit from the Work Area. Emergency exits shall be operable from inside the Work Area.

E. Maintain Work Area security during Abatement and/or Lead Related Construction Work. Work Areas and ancillary equipment accessible to non-authorized personnel shall be protected from unauthorized access by constructing a minimum barrier of 3/8 inch CDX plywood supported by 2 by 4 studs, 16 inches on center. An access door shall be provided with hasp and padlock sufficient to prevent unauthorized entry. A key shall be provided to the Owner and Owner Consultant. Required barriers within an occupied building shall be furnished with sheathing as required by state and local fire protection regulations.

F. Remove barriers upon the completion of the Work of this section and unless otherwise specified, repair and/or replace to its original condition, damage resulting from installation, use, and removal of the barriers.

1.06 EMERGENCY PLANNING

A. Emergency planning and procedures shall be developed, submitted, reviewed, and agreed to by the Owner Consultant prior to the commencement of lead-related construction and/or Abatement Work.

B. Emergency procedures shall be provided in the written languages understood by employees working on the Project and shall be prominently posted at the entrance of the Decontamination Enclosure System. Prior to entering the Work Area, parties must read and sign these procedures to acknowledge receipt and understanding of the Work Area layout, location of emergency exits, and emergency procedures.

C. Emergency planning shall consider the effects of fire, explosion, toxic atmospheres, electrical hazards, slips, trips and falls, confined spaces, and heat related injury. Develop and provide written procedures and training to employees.

D. Employees shall be trained in evacuation procedures in the event of workplace emergencies.

E. In the event of non-life threatening situations requiring medical treatment, injured or otherwise incapacitated employees shall decontaminate following normal procedures with assistance from fellow workers if necessary, before exiting the Work Area.

F. In the event of life threatening injury or illness requiring immediate medical treatment, worker Decontamination shall be given minimum priority. Provide measures to stabilize

the injured worker remove them from the Work Area and secure proper medical treatment.

G. Telephone numbers of emergency response personnel shall be prominently posted at the entrance of the Decontamination Enclosure System along with the location of the nearest telephone. In addition to the 911 emergency number, post the address and telephone number of the nearest emergency medical services provider.

H. Provide at least one employee on the Project site at times during progress of the Work that is trained and certified in first aid and cardiopulmonary resuscitation (CPR). This employee shall be identified by name and proof of training shall be provided to the Owner Consultant prior to the commencement of the Work of this section.

I. Provide at least one 4A/60BC dry chemical extinguisher in the Decontamination compartment. Workers shall be trained in the proper operation of fire extinguishers.

J. Emergency exits shall be provided and clearly marked with arrows or other clearly visible markings to permit easy identification from anywhere within the Work Area. Exits shall be secured to prevent access from uncontaminated areas while still permitting emergency egress. Exits shall be properly sealed with polyethylene sheeting, which can be cut to permit emergency egress. Emergency exits may lead through the Decontamination Enclosure System or other alternative exits as required by fire officials.

1.07 LICENSING

A. The Work of this section shall be performed by an entity duly licensed in the State of California in accordance with the provisions of Chapter 9 of Division 3 of the Business and Professions Code, as amended.

1.08 QUALIFICATIONS

A. Only safety pre-qualified bidders on the pre-approved bidders list are qualified to be awarded an Abatement Contract or Painting Contract be listed as a Subcontractor for lead Abatement Work or Painting Contract.

B. Where the scope of the Work includes the painting and/or refinishing of existing surfaces, only safety pre-qualified bidders on the pre-approved bidders list are qualified to be awarded a painting Contract or be listed as a Subcontractor for painting Work.

C. Before any workers perform Abatement Work or Work of this section where the P.E.L. is exceeded, submit proof of CDPH training and certification. No Work shall be performed until the Owner Consultant has reviewed and approved CDPH training and certifications.

D. Workers shall be in personal possession of a wallet CDPH certification card at times while they are performing Abatement Work on the Project site.

E. Workers performing lead Abatement, Lead Related Construction Work, or disturbance of Lead Containing Paint where the exposure level exceeds the P.E.L., shall possess current CDPH certification and at least one CDPH Certified supervisor shall be available as required by Title 17, CCR subsection 36100.

1.09 TRAINING

A. Lead Related Construction Work shall be performed by personnel with the following training, as applicable:

1. The Lead Related Construction Work, specified herein, shall be performed by individuals trained and qualified in the techniques of lead-related construction, handling, disposal of lead-based and Lead Containing Paint, and the subsequent cleaning of contaminated areas. These individuals must comply with the applicable Environmental Protection Agency (EPA), Renovation, Repair and Painting (RRP) programs lead-related construction course that satisfies the requirements specified in 40 CFR, Part 745, Section 745., and must be capable of and willing to perform the Work of this section.

2. The Lead Related Construction Work, specified herein, shall be performed by a company, partnership, corporation, sole proprietorship or individual doing business, association, or other business entity; a Federal, State, Tribal, or local government agency; or a nonprofit organization, shall satisfy the requirements specified in 40 CFR, Part 745, Section 745.89, as a Lead-Safe Certified Firm.

3. Lead Abatement Work, specified herein, shall be performed by individuals trained and qualified in the techniques of lead abatement and will receive CDPH accredited training and certification, and must be capable of and willing to perform the Work of this section.

2. Training specific to the performance of Lead Related Construction Work shall be provided to employees prior to performing the Work of this section.

3. Training specific to the operation and use of fire extinguishers.

1.10 EXPOSURE ASSESSMENT

A. Disturbance of Lead Containing Paint, as defined in this Specification, disturbed by tasks not included in Title 8, CCR Section 1532.1, Subsection (d)(2), shall require worker-exposure monitoring upon initiation of the Work. The workers performing these tasks shall be trained in accordance with the Hazard Communications Standard, Section 5194, including but not limited to, the requirements concerning warning signs and labels, Safety Data Sheets (SDS), and employee information and training.

B. Provide an exposure assessment where the workers are performing Lead Related Construction Work. If historical data, collected within the 12 months prior to the Work performed, indicates worker exposure is below the P.E.L. , and the Work being performed closely resembles the process, type of material, control methods, work practices, and environmental conditions, additional exposure assessment is not required.

C. For Lead Related Construction Work where there is objective data or an exposure assessment demonstrating that the Lead Based Paint, or a specific process, operation or activity other than Abatement involving lead cannot result in employee exposure to lead at or above the P.E.L. during the specific process or handling, employees trained as

required by Title 8, CCR Section 1532.1, including the training topics of the Lead-Safe Schools Program, may perform the Lead Related Construction Work.

D. Where Work being performed indicates an exposure above the Action Level, each employee is required to have current blood lead level and Zinc Protoporphorin testing, medical clearance for negative pressure respirator use, and respirator fit testing.

E. If there is no objective data or a negative exposure assessment fulfilling the above requirements, Lead Related Construction Work identified as a trigger task by Title 8, CCR 1532.1 shall be performed by workers who have received training as required by Title 8 CCR, Section 1532.1. This training shall, at a minimum, include the training topics of the Lead Safe Schools Program. An exposure assessment is required to be performed upon initiation of Work.

F. The required exposure assessment shall not exceed 12 months from the date the samples were collected to the date the Lead Related Construction Work or disturbance of Lead Containing Paint is performed.

G. The submission and review by the Owner Consultant of the objective data or exposure assessment is required prior to performing Lead Related Construction Work.

1.11 SUBMITTALS

A. Provide in accordance with Division 01 and this section.

B. Prior to performing the Work of this section, submit the following procedures to the Owner Consultant:

1. An abatement plan including, but not limited to:

   a. A detailed written description of the measures and management procedures, including the containment that will be utilized during Abatement to prevent exposure to lead hazards. Shop Drawings shall indicate the containment locations.

   b. A detailed written description of the Abatement, including methods of Abatement, locations of rooms and building Component where Abatement is planned.

2. Required air monitoring procedures (Cal/OSHA mandatory and SCAQMD permits for air filtering equipment).

3. Decontamination procedures for personnel, Work Area, and equipment.

4. Procedures for handling and disposing of waste materials, including disposal facility.

5. Provide the procedures to be used for capturing debris while disturbing overhead materials.

6. Procedures for final Decontamination and cleanup.

7. Procedures for dealing with heat stress during Abatement.

8. Emergency procedures during Abatement.

C. Prior to performing Abatement Work of this section, submit the following Shop Drawings to the Owner Consultant:

1. Preparation of Work Area.

2. Layout and construction of Decontamination Enclosure System and barriers for isolation of the Work Area described in this Specification and required by applicable regulations.

D. Prior to performing the Work of this section, submit the following Product Data to the Owner Consultant:

1. Product Data relative to personal protective equipment including respiratory protection and protective clothing.

2. Material safety data sheets and technical specifications for proposed materials.

E. Prior to performing the Work of this section, submit the following notifications to the Owner Consultant:

1. Evidence of notification to Cal/OSHA as required by Title 8 CCR, Section 1532.1, where applicable.

2. Notify CDPHno less than five days in advance of Abatement by submitting an Abatement of Lead Hazard Notification, CDPHForm 8551.

F. Prior to performing the Work of this section, submit the following documentation to the Owner Consultant:

1. A list of employees who will participate in the Project, including delineation of experience, training, and assigned responsibilities during the Project.

2. Submit proof satisfactory to the Owner Consultant that required permits, site location, and arrangements for transport and disposal of lead containing waste has been performed in accordance with Federal, State, and local regulations.

3. Submit proof of training for each worker who will perform Abatement or Lead Related Construction Work.

4. Submit manufacturer’s certification that HEPA Vacuums, air filtration units and other local exhaust ventilation equipment conform to ANSI Z9.2, as applicable.

5. When HEPA Vacuums are utilized on the Project, provide the maintenance and filter change log for these before they are brought onto the Project site.

6. Provide the current SCAQMD permit for each HEPA Vacuum and Portable Mechanical Ventilation System before they are brought onto the Project site.

7. Where biological monitoring is required, submit test result documentation verifying employees have completed blood lead level and Zinc Protoporphorin tests in accordance with Title 8 CCR, Section 1532.1.

8. Workers are required to submit a signed Code of Conduct form.

G. Prior to performing the Work of this section, submit the following Samples to the Owner Consultant:

1. Submit a Sample of forms to be used in documenting the Work of this section.

H. Prior to performing the Work of this section, submit the following schedule to the Owner Consultant:

1. An intended sequence of Work and construction schedule. Coordinate both the sequence and durations with the Owner.

I. Prior to performing the Work of this section, submit other required items to the Owner Consultant.

J. During the performance of the Work of this section, submit the following documentation to the Owner Consultant:

1. Submit documentation from a physician certifying that employees who wear a negative pressure respirator are medically cleared to do so without suffering adverse health effects as required by DOSH regulations. The certification shall state that the employee or agent may perform Lead Related Construction Work and wear a negative pressure respirator without restrictions. Provide information to the examining physician about unusual conditions in the workplace environment that may impact the employee's ability to perform Work activities.

2. During the performance of the Work of this section, and before additional supervisors or workers are permitted to perform the Work of this section, submit proof of CDPHtraining and certification, where applicable. No additional supervisors or workers are permitted upon the Project site until the Owner Consultant has approved the CDPHtraining and certifications, when required.

3. Submit weekly job progress reports detailing Abatement and Lead Related Construction Work activities for Projects that will exceed thirty days. Include review of progress with respect to previously established Milestones and schedules, major problems and action taken, injury reports, equipment breakdown, and air and/or wipe sampling results.

4. Within five workdays of transport and disposal, submit copies of transport manifests, disposal receipts, analytical data, and weight certificates for hazardous waste removed from the Work Area during the Lead Related Construction Work and/or Abatement Work. Weight certificates shall indicate by pounds the net

weight of waste disposed of from the Project site as indicated on the associated manifest.

5. Submit daily, copies of Abatement Work site entry logbooks with information on worker and visitor access.

6. Submit logs on a weekly basis documenting filter changes on respirators, HEPA vacuums, HEPA filtered ventilation units, water filtration units, and other approved engineering controls, as applicable.

7. Submit results of air and/or wipe sampling data (as applicable) collected during the course of the Abatement and Lead Related Construction Work including DOSH compliance air monitoring results.

K. During the performance of the Work of this section, submit other required items.

1.12 PRE-ABATEMENT MEETING

A. Attend a meeting to be held prior to the commencement of the Work of this section. Attending this meeting shall be representatives of the Owner, the Owner Consultant if applicable, and the testing and monitoring personnel who shall actually participate in the testing and monitoring program. Secure the attendance of the individual who will be the Project site competent person for the Abatement Work.

B. At this meeting provide required submittals except for those to be submitted during progress of the Work. In addition, provide detailed information concerning:

1. Preparation of Work Area and Shop Drawings.

2. Personal protective equipment, including respiratory protection and protective clothing.

3. Employees who will participate in the Project, including delineation of experience, training, and assigned responsibilities during the Work.

4. Decontamination procedures for personnel, Work Area, and equipment.

5. Abatement methods and procedures to be provided.

6. Required air monitoring procedures (pre-Abatement, Cal/OSHA mandatory, and SCAQMD requirement).

7. Procedures for handling and disposing of waste materials, including disposal facility.

8. Procedures for final Decontamination and cleanup.

9. A sequence of Work activities and performance schedule.

10. Procedures for dealing with heat stress.

11. Emergency procedures.

PART 2 – PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Products: The following products have been specifically approved for use ass encapsulants/lock-down or bridging agents for Owner asbestos abatement and asbestos related construction projects and lead abatement and lead abatement related construction projects. Products not approved by the Owner shall not be used.

1. L-B-C Lead Barrier Compound 5400 be Fiberlock Technologies, Inc.; coating encapsulant.

B. Materials:

1. Deliver materials in the original sealed packages, containers, or bundles bearing the name of the manufacturer and brand name.

2. Store materials, subject to damage off the ground, away from wet or damp surfaces, and under cover sufficient enough to prevent damage or contamination. Replacement materials shall be stored outside of the Work Area until area is cleared for normal occupancy.

3. Damaged, deteriorating, or previously used materials shall not be furnished and shall be removed from the Project site and legally disposed of.

4. A sufficient supply of disposable mops, rags, and sponges for Work Area Decontamination shall be provided.

5. Unless otherwise specified, the Owner will provide water for construction purposes. Connect to existing system as required.

6. Products brought onto the Project site shall be accompanied by their respective Material Safety Data Sheet, which shall be maintained on the Project site.

7. Plastic, polyethylene sheeting or visqueen shall be a fire retardant type. Provide documentation from the manufacturer verifying compliance with this requirement.

8. Polyethylene sheeting furnished for the Decontamination Enclosure System shall be opaque white or black in color and shall be a minimum of 6-mil thick.

9. Surfactant (wetting agent) shall be a material that, when tested, demonstrates a surface tension of 29 dynes/cm as tested in its properly mixed concentration, using ASTM method D1331-56-"Surface and Interfacial Tension of Solutions of Surface Active Agents." Where Work Area temperature may cause freezing of the Amended Water solution, the addition of approved antifreeze in a manufacturer recommended amount is permitted.

B. Equipment:

1. Disposal bags shall be of 6-mil polyethylene, pre-printed with labels as required by applicable Cal/OSHA and DOT requirements.

2. Provide labels as per DOT requirements for disposal containers.

3. Provide warning signs as required by Cal/OSHA.

4. Disposal containers shall meet requirements of Title 22, CCR.

5. Provide a sufficient supply of scaffolds, ladders, lifts, and hand tools, as needed to complete the Work.

6. Provide sprayers with pumps capable of providing amended water in sufficient quantity to adequately wet the material to be abated or for Lead Related Construction Work.

7. Provide a sufficient supply of HEPA filtered vacuums to maintain a clean environment in compliance with this section.

8. When an enclosure requiring negative pressure is specified, a sufficient quantity of air-filtration ventilation units furnished with HEPA filtration and operated in accordance with ANSI Z9.2and EPA guidance documents shall be utilized to provide one workplace air change every 15 minutes and creating a pressure differential of -0.02 inches of water everywhere within the enclosure when compared to the area outside the enclosure. A log documenting the filter change history of each unit shall be required before use, and any unit without this log shall have filters changed and the unit decontaminated.

9. When rental equipment is to be used in Abatement areas or to transport lead contaminated waste, a written notification concerning the intended use of the rental equipment shall be provided to the rental agency with a copy submitted to the Owner.

10. When performing chemical Removal, provide portable eyewash station(s) that meet ANSI standards and are accessible to workers within 10 seconds.

11. Additional safety equipment, as necessary, shall be provided to workers and authorized visitors.

12. Equipment delivered to the Project site shall be free of debris suspect of containing lead. No equipment with suspect debris in or on it shall be permitted on Owner properties and/or the Project site.

13. When roll-off disposal containers are delivered to a Project site, four wheels of each container shall be moved and rested upon a minimum size sheet of plywood of 4-foot by 4-foot by ¾ inch.

14. Lighting shall be provided in an amount sufficient to illuminate the Work Area for the purpose of safe visual working conditions and to permit examination of surfaces where Work is performed.

2.02 EMPLOYEE PERSONAL PROTECTIVE EQUIPMENT

A. Respiratory Protection:

1. Submit NIOSH approvals for respiratory protective devices utilized on the Project site. Include manufacturer certification of HEPA filtration capabilities for cartridges and filters. Filter cartridges shall be furnished with the NIOSH P-100 designation.

2. Provide respiratory protection to employees in compliance with CCR Title 8, Sections 1532.1 and 5144, as determined by the employee exposure assessment.

3. In the absence of an exposure assessment, base respiratory protection on the requirements of Title 8, CCR Section 1532.1, specifically subsection (d).

4. In addition to P-100 filters, provide the appropriate respirator filter cartridges for exposure to other airborne contaminants generated during the Abatement process.

5. Provide authorized visitors with a respirator and cartridges sufficient to protect individuals from exposure to hazardous environments generated during the Abatement activity.

B. Fit Testing:

1. Perform fit testing in accordance with Title 8 CCR, Section 5144.

2. Submit documentation of respirator fit testing for individuals entering the Work Area.

3. Maintain and submit to the Owner a copy of the written respiratory protection program.

C. Personal Protective Clothing and Equipment:

1. Provide eye protection to employees sufficient to protect employees from debris during work progress when full-face respirators are not being utilized.

2. Provide and require the use of eye protection when employees are working with a material that may splash or fragment, as specified by the Material Safety Data Sheet for a given product, or as required by Title 8, CCR.

3. Spectacle kits and eyeglasses must be provided for employees who wear glasses and who must wear full-face piece respirators. Provide respirators that have been tested and approved by the National Institute of Occupational Safety and Health for use in lead-contaminated atmospheres.

4. Provide full-body disposable protective clothing, including head, body, and foot coverings to workers and authorized visitors who enter the Work Area, in sizes adequate to accommodate movement without tearing. A new suit shall be provided and donned for each separate entry.

5. If washable clothing is to be worn underneath disposable protective clothing, it shall be provided to Abatement workers.

6. Provide a clean staging area for workers and others to store street clothes and personal protective equipment.

7. Disposal suits shall be collected in an appropriate disposal container at the entrance of the Abatement Work Area.

8. Abatement workers are required to wear nonskid footwear sufficient to protect them from workplace hazards. Disposable clothing shall be adequately sealed to the footwear to prevent body contamination.

9. Hand protection shall be provided, and workers shall be required to use lotion sufficient quantities to protect the worker when chemicals or other physical hazards exist.

10. As required by the Work site and applicable safety regulations, provide head protection and require the use thereof.

11. Worker protection equipment shall be ANSI approved.

PART 3 - EXECUTION

3.01 LEAD RELATED CONSTRUCTION WORK

A. Work Area Preparation and Work Practices:

1. Where exposure monitoring indicates Worker exposure is below the P.E.L., comply with the requirements of this section and the “Monitoring” section of this Specification.

2. Disturbance of lead containing materials shall be performed using wet methods.

3. Work requiring overhead disturbances shall require a means of capturing debris, thus preventing an uncontrolled release on the worker or the surfaces below.

4. For disturbances utilizing local exhaust dust collection devices the equipment shall be designed and furnished with a HEPA filtered vacuum attachment approved by the manufacturer.

5. Where Components are to be removed, loose Lead Based Paint and Lead Containing Paint shall be removed by manual means using wet methods.

6. Where a Component is attached and painted onto another surface and the Component is to be removed from the adjoining surface the paint shall be cut with a razor knife to reduce the potential of paint chip debris during Component removal.

7. If a Component being removed will be disposed of rather than reinstalled, manually cut the Component into manageable sections for disposal using wet methods or mechanically cut using a manufactured approved HEPA filtered local exhaust dust collector.

8. If a Component is to be reused, loose paint or rough edges may require scraping or sanding. Scraping or sanding must be performed manually using wet methods or mechanically with a manufactured approved HEPA filtered local exhaust attachment.

9. For solid core surfaces where penetration or welding are required the lead containing material shall be removed from the area impacted using wet methods. Layers of Paint shall be removed before impact to the surface commences.

B. Clean Up Procedures:

1. During the entire process of Lead Related Construction Work, clean debris generated using wet methods and/or HEPA Vacuuming.

2. At the completion of the Lead Related Construction Work, clean surfaces within the impacted Work Area.

3. When HEPA filtered Vacuums are utilized, vacuum from the area of impact to the outer perimeter of the polyethylene sheeting to remove visible debris. If vacuuming cannot remove visible debris, wet wiping will also be required.

4. When wet wiping the Work Area, wipe from the area of impact to the outer perimeter of the polyethylene sheeting to remove visible debris.

5. Tools and equipment utilized in the Work Area shall be wet wiped to remove visible debris.

3.02 ABATEMENT

A. Work Area Preparation:

1. Clean areas to be isolated by HEPA Vacuum prior to installation of polyethylene sheeting.

2. Seal the Work Area with a layer of 6 mil thick polyethylene sheeting prior to any Lead Based or Lead Containing Paint Removal or disturbance by covering vents, windows, door openings, and any non-Moveable Objects such as lockers, etcetera.

3. Install a minimum of two layers of 6 mil thick polyethylene sheets on floors, fastened by waterproof tape and other means as necessary to secure the sheeting.

4. The covering on windows, exterior doors, and vents shall be installed from the outside to facilitate Work on them from the inside.

B. Decontamination Enclosure System:

1. At a minimum a two-stage Decontamination Enclosure System consisting of a compartment for Decontamination and a Clean Room shall be constructed and used.

2. Unless otherwise specified, the Decontamination Enclosure System shall be adjacent to the Abatement area.

3. Other enclosure methods may be used if submitted and approved by the Owner Consultant.

C. Removal and Replacement Substrates with Lead Based Paint:

1. Except as noted in the Specifications and Drawings, replace substrate with material of the same or better quality. Substrates include, but are not limited to doors, windows, moldings, casements, mantels, trims, skirting, baseboards, and associated hardware and fasteners.

2. Areas adjacent to substrate removal shall be protected from damage. Damages shall be repaired or replaced to original condition.

3. Substrates that are removed for replacement shall be wrapped and stored for disposal. Disposal shall be in accordance with the applicable codes and sections of this Specification.

4. After removal, the areas disturbed shall be cleaned and a Clearance Inspection performed in accordance with the procedures described in this Specification.

D. Abrasive Removers – Machine Sanders:

1. Machine sanders shall be furnished with a HEPA Vacuum system approved by the manufacturer.

2. Sanding shall only be performed on flat surfaces that allow the HEPA Vacuum dust collection attachment to come into tight contact with the surface being sanded.

3. Remove Lead Based Paint down to the bare substrate surface. If the pigment cannot be removed without damaging the substrate, submit a Request for Clarification to the Owner Consultant.

4. Protect adjacent surfaces from damage from machine sanding. Repair and/or replace damaged surfaces.

E. Chemical Removal-On-Site Chemical Removal:

1. No chemical Removal shall be performed on interior surfaces unless specifically called for and designed in the Specifications or the Abatement plan of the Project.

2. Owner approved chemical removers shall be compatible with and harmless to the substrate. On masonry surfaces chemical removers shall contain anti-stain formulation that inhibits discoloration.

3. Chemical Removal Agent Neutralizer: Use chemical Removal agent neutralizers on exterior surfaces only. Neutralizers shall be compatible with and not harmful to the substrate. Neutralizers shall be compatible with the Removal agent that has been applied to the surface substrate.

4. Apply chemical Removal agents and neutralizers in accordance with the recommendations of the manufacturer and the following:

   a. Adhere to health and safety regulations and other Specification section requirements. Stripping agents shall not be allowed to penetrate wood or other fibrous substrates.

   b. Remove the softened paint by scraping or wire brushing.

   c. Protect adjacent areas from damage from Removal agent during the course of Work.

F. Chemical Removal – Off-Site Chemical Removal – Structures of Historical Significance Only:

1. Remove and transport Lead Based Painted Component in accordance with this Specification. Transport the Component to an off-site location. Remove Lead Based Paint by chemical Removal. Neutralize and clean the Component. Return Component to the Project site free of lead-containing materials and reinstall.

2. Take extreme care in removing component to be taken off-site, to prevent damage. In addition:

   a. Component shall be marked and identified using an inconspicuous engraving, to insure reinstallation in original location.

   b. Hardware associated with a component shall be bagged and marked.

   c. If required, hardware shall be chemically stripped, cleaned, or reconditioned.

   d. Dispose of hazardous waste generated by the off-site stripping of Lead Based Paint as required by federal, state, and local regulations.

   e. Do not transport hazardous waste to Owner properties and/or facilities.

   f. Protect the component and the adjacent areas from which component are removed from damage by the removal and reinstallation procedures.

G. Water Jet Washing:

1. The purpose of the Water Jet Washing process is to remove Lead-Based and Lead Containing Paint from exterior masonry substrate.

2. If this procedure is selected, submit a Work plan to the Owner Consultant which includes, but is not limited to, interim controls, paint stabilization, and capture of waste water.

H. Encapsulation – Interior and Exterior - Coated Sealer System:

1. Materials: - Elastic acrylic coating shall be heavy bodied and warranted by the manufacturer to be compatible with the substrate. Elastic acrylic coating shall be long lasting and resist cracking, peeling, algae, and fungus.

2. Submittal: - Submit two Samples, 5 ½-inch by 8-inch of the encapsulation material to the Owner Consultant.

3. Encapsulation coatings shall be applied in accordance with the manufacturer's recommendations and the following conditions:

a. Remove surface dust and debris by scrubbing with a non-residue detergent solution, and rinsing. Remove loose paint until a sound, intact edge is achieved. Remove and replace loose plaster prior to the coating application. Proper safety procedures and lead dust control method in this Specification must be utilized.

b. Apply Encapsulation coatings to the substrate in a continuous coat to seal the surface being coated. The number of coats required and coverage rates shall be in accordance with the manufacturer's recommendations.

c. Repair materials that lift and peel after the application of the Encapsulation coating by scraping until a sound surface is obtained. The edges shall be feathered, and a reapplication of an Encapsulation coating shall be applied.

d. Remove, or cover as directed, existing fixtures located on surface to be coated, including but not limited to, electrical receptacles, switches, exhaust fans, and hardware.

e. Protect adjacent surfaces and existing fixtures from damage by coating system. Damages to adjacent surfaces and existing fixtures due to lack of protection or improperly applied protection shall be repaired and/or replaced.

I. Encapsulation – Interior and Exterior - Flexible Wall Covering:

1. Materials: Wall covering shall be a reinforced fiber type that forms a secure bond with the substrate, resistant to peeling and formation of mold. The wall covering system shall form a seal over the substrate to which it is applied and not allow the passage of substrate dust into the environment.

2. Submittal: Prior to the start of Work, submit to the Owner Consultant for approval, manufacturer's descriptive literature, and two 5 ½-inch by 8-inch Samples of each wall covering system.

3. Install Encapsulation covering in accordance with manufacturer's installation instructions and the following provisions:

    a. Remove foreign material by washing surfaces with a detergent solution. Remove loose plaster, loose paint, and loose wallpaper. Utilize dust control methods described in this Specification.

    b. Repair larger damaged areas flush with surrounding wall surfaces prior to installation of wall covering system.

J. Enclosure Procedures - Gypsum Wallboard (interior surfaces only), plywood paneling, other enclosures of exterior substrate:

1. Surface preparation: Remove foreign material by wash-down with a non-residue detergent solution. Remove loose plaster, loose paint, and loose wallpaper in accordance with this Specification to stabilize the painted surfaces.

2. Affix warning labels stating surface contains "LEAD-BASED PAINT" to the surface prior to being enclosed. Labels shall be 3-inch by 5-inch and placed four feet apart at approximately five foot high on the surface being enclosed.

3. Install selected enclosure material in accordance with the relevant section of the Specification. Any disturbance to Lead Based Paint in the execution of this section shall comply with the Lead Related Construction Work section of this Specification.

K. Soil Abatement:

1. Surface Contamination:

    a. Remove Lead Contaminated Soil from the locations and to a depth specified in the scope of Work.

    b. In the absence of a specified depth of soil removal identified in the scope of Work, submit, prior to the bid, a Request for Clarification regarding the quantity of soil to be removed.

    c. Submit a written soil abatement plan prior to initiation of the Project.

    d. No soil abatement shall proceed until the Work plan has written approval by the Owner Consultant.

    e. Refer to the waste handling and transportation section of this Specification for the handling, characterization, and disposal of waste.

L. Alternate Procedures:

1. If specified procedures cannot be utilized, a request must be made in writing to the Owner Consultant establishing details of the problem encountered and recommended alternatives.

2. Alternate procedures shall provide equivalent or greater protection than procedures that they replace.

3. Prior to implementation, alternative procedures shall be submitted and approved in writing by the Owner Consultant.

M. Clean Up Procedures

1. During the entire process of the Work of this section, perform continuous cleaning of debris generated using wet methods and/or HEPA filtered vacuuming.

2. At the completion of the Work of this section, clean surfaces within the impacted Work Area, including but not limited to, tools, equipment, and polyethylene sheeting to remove visible debris from the Work Area.

3. Tools and equipment utilized in the Work Area shall be thoroughly cleaned. Non-electrical tools and equipment shall be cleaned monthly and before Removal from the Work Area by HEPA vacuuming and washing using a lead specific detergent or other suitable cleaning agent.

4. Electrical tools and equipment shall be HEPA vacuumed and cleaned by wet wiping limiting the amount of water used to avoid electrical hazards.

5. Remove polyethylene sheeting, except for critical barriers, by folding it into itself beginning with the higher level polyethylene first.

6. Following Removal of polyethylene sheeting a final cleaning of surfaces in the Abatement workspace shall be performed by HEPA vacuuming, wet wiping, and a final HEPA vacuuming.

7. When HEPA vacuums are utilized, vacuuming shall be performed from the top down and from the area of impact to the outer edge of the polyethylene sheeting.

8. Apply no less than one continuous coat of approved paint or primer to abated surfaces, where applicable.

9. At the completion of the final clean up, the CDPHcertified supervisor shall inspect the Work Area for visible debris. If debris is identified, repeat the final cleaning process.

10. Wet wiping, washing, and cleaning required by this section shall include the Removal of visible debris by cleaning with a lead specific detergent or other suitable cleaning agent in clean water followed by a rinsing with clean water and clean rags, following the same sequence of cleaning as the vacuuming.

11. Refer to the waste handling and transportation section of this Specification for disposal of waste generated by this process.

3.03 WASTE HANDLING AND TRANSPORTATION

A. Characterization of Waste:

1. Until analytical results are available, waste materials (including water containing paint chips) shall be treated as hazardous. Visible paint chips shall be separated from waste water before characterization. Following removal of solids the waste water shall be characterized to determine disposal requirements. The paint chips removed from the waste water may be disposed of as assumed RCRA hazardous waste or characterized to determine disposal requirements.

2. Characterize waste streams as follows:

a. Collect a representative sample of the waste material.

b. For a pile of waste take one sample of a proportionate combination of Component in the pile. If a large quantity of waste is generated no less than four samples may be required.

c. For large wood Component, such as windows, doors, etcetera, a representative sample of each Component of similar characteristics, paint history, etcetera, shall be collected and tested. A full depth core sample, not less than one inch diameter, of the Component is to be collected. The core sample shall include the substrate and paint coatings on both sides of the Component, as applicable.

3. Analysis for the waste characterization samples shall be performed as follows:

a. Waste generated by chemical stripping shall, in addition to the requirements for determining the solid and soluble lead concentrations, shall be tested for corrosiveness and other contaminants, as applicable, resulting from the chemical stripping process.

b. Analyze samples for Total Threshold Limit Concentration (TTLC):

1) If results are less than 50 mg/kg (milligrams/kilogram) the waste is not hazardous and shall be disposed as general construction waste.

2) If sample results are 50 mg/kg or greater, the waste shall be tested for Soluble Threshold Limit Concentration (STLC).

c. Where waste is required to be tested for STLC the following shall apply:

1) If the STLC result is less than 5 mg/L (milligrams/liter) the material shall be disposed at a Class II waste landfill. Evidence of such results of the STLC testing will be required by the landfill before waste is accepted. No further testing is required.

2) If the STLC results are 5 mg/L or greater, the waste is a California regulated waste and the material shall be tested using

the federally mandated Toxicity Characterization Leaching Procedure (TCLP).

d. Where waste is required to be tested by TCLP the following shall apply:

1) If the TCLP is less than 5 mg/L, the waste is a California regulated hazardous solid waste (non-RCRA). This material shall be disposed in a Class I hazardous waste landfill.

2) If the TCLP is equal to or greater than 5 mg/L, the waste is a federally regulated hazardous waste solid (RCRA). The waste shall then be disposed in a Class I hazardous waste landfill.

e. Personal and commercial wash water with lead contamination shall be handled as follows:

1) Filter the waste water through cheesecloth, or other similar filtering media, to remove the gross debris. Separate the waste streams and characterize these in compliance with this Specification.

2) If the waste water is identified as a RCRA or California regulated hazardous waste (Non-RCRA) by STLC and TCLP, filter the waste water by power pumping it through a 20 micron pore size filter. The filtered water shall be tested as described for waste in this Specification.

3) If test results categorize the filtered water as non-hazardous, it may be disposed of in the sewer system.

4) Wastewater, filtered or otherwise, shall not be discharged in storm drains, gutters or allowed to sheet flow over the surface of the ground.

B. Waste Handling:

1. Waste, hazardous and non-hazardous, shall be disposed of at an authorized site in accordance with provisions of this Specification and applicable Federal, State, and local laws.

2. Any waste determined to be hazardous, through analytical testing, shall be kept in a secured area or lockable container that is inaccessible to persons other than authorized personnel working on the Project. Hazardous waste containers shall be labeled “Hazardous-Waste – Contains Lead” and labeled with the date waste collection commenced.

3. Hazardous waste shall not remain on the Project site beyond 90 days of the date it was generated. It shall be removed from the Project site and transported to an approved landfill before the 90 days has elapsed.

4. Waste shall not be transported from the work are to the storage container or waste hauler's vehicle while students or staff are present in the path of travel. Where a path of travel cannot be cordoned off the transportation of waste must be completed prior to of after students and staff are not on site.

5. Once hazardous waste is removed from the Project site, ensure it is disposed of in an approved landfill within 6 days. The waste shall not be transported to another site for commingling of waste from a source other than the site of original generation. This requirement shall be documented by the proper execution of a Uniform Hazardous Waste Manifest signed by the landfill operator.

6. Hazardous and non-hazardous waste shall be kept in different containers and stored in separate locations. Commingling of waste is not permitted.

7. As the Work progresses, to prevent exceeding available storage capacity on the Project site, sealed and labeled containers of lead waste shall be removed and transported to the prearranged disposal location.

8. Containers used for hazardous waste shall meet the requirements of EPA and DOT for hazardous waste storage and transport. At a minimum, disposal packaging of Lead Based Paint fragments, dust, and debris shall be in 6-mil polyethylene (plastic) bags that are airtight and puncture resistant.

9. Any debris or residue observed on containers or surfaces outside of the Work Area resulting from clean up or disposal activities shall immediately be cleaned using HEPA filtered vacuum equipment and/or wet methods as appropriate.

10. Materials not contained in bags or other appropriate disposal containers shall not be placed in lead waste storage containers, nor shall storage containers be used for non-lead waste. To avoid damage, packaged waste shall be placed, not thrown, into the storage containers.

11. Lead Contaminated Soil shall be transported in plastic lined containers.

C. Transportation of Non-Hazardous Waste:

1. Receipts from the disposal facility, trip tickets, transportation manifests, weight certificates or other documentation of disposal shall be delivered to the Owner Consultant within 48 hours of disposal. The waste manifest shall be signed by the generator, the transporter(s), and the disposal site operator each time the responsibility for the waste material is transferred. If a separate hauler is employed, the name, address, and signature of the transporter shall also appear on the manifest.

D. Transportation of Hazardous Waste:

1. Hazardous waste shall be transported by a RCRA/DOT/EPA certified hazardous waste transporter. Provide evidence that the hazardous waste transporter meets the requirements of this Specification.

2. The Work of this section includes responsibility for actions of the hazardous waste transporter as it pertains to waste Removal and disposal related to the Work of this Specification.

3. Identify the facility to which the waste generated by this Specification will be taken. Evidence shall be provided verifying the facility is licensed/permitted to receive and handle non-hazardous lead containing waste and/or hazardous lead containing waste as applicable.

4. Waste disposed as hazardous shall be transported under a Uniform Hazardous Waste Manifest. The generator copy of this manifest shall be submitted to the Owner Consultant within five days of transport.

5. Dump receipts, trip tickets, transportation manifests, weight certificates or other documentation of disposal shall be delivered to the Owner Consultant within 48 hours of disposal. The Uniform Hazardous Waste Manifest shall be signed by the generator (or designee), the transporter(s), and the disposal site operator each time the responsibility for the waste material is transferred. If a separate hauler is employed, the name, address, U.S.E.P.A. ID number and signature of the transporter shall also appear on the manifest.

6. The enclosed cargo area of trucks or containers shall be free of debris and lined with 6-mil polyethylene sheeting to prevent contamination from leaking or spilled containers. Floor sheeting shall be installed first and extend up the walls. Wall sheeting shall be overlapped and taped into place.

7. During transport, drums and other containers shall be placed on level surfaces in the cargo area and packed tightly together to prevent shifting and tipping. Large structural Component shall be secured to prevent shifting and bags placed on top.

3.04 MONITORING

A. Project Management and Inspection:

1. Owner has the right to perform air, wipe, and visual monitoring at any time.

2. Owner shall proceed in accordance with the terms and conditions of the Contract Documents whenever the Work or protective measures are not in compliance with applicable governmental regulations, Contract requirements, and/or threatens the adjoining environment with lead contamination.

3. Where exposure monitoring indicates exposure is at or above the P.E.L. comply with Title 8, CCR Section 1532.1 (e) through (n).

B. Employee – Personal Air Monitoring:

1. Provide air monitoring as required by Title 8 CCR, Section 1532.1. Results shall be provided within ten working days of sampling. If the intent is to utilize

such as exposure assessment documentation, and Work is to commence earlier than ten working days, submit results 24 hours in advance of the start of Work.

C. Clearance Inspection:

1. Clearance Inspection for Lead Related Construction Work shall include:

a. A visual inspection of the Work Area by the Owner Consultant prior to occupancy for normal activity.

b. Do not remove barriers designating a regulated Work Area until a written release from the Owner Consultant is provided.

c. The Owner Consultant has the right to collect wipe samples as part of the Clearance Inspection.

2. Clearance Inspection for Abatement shall include:

a. A visual inspection of the Work Area by the Owner Consultant prior to collection of environmental samples (dust, wipe, and/or soil samples, as applicable).

b. Owner Consultant shall collect environmental samples.

c. Results of samples shall comply with Title 17, CCR before the Work Area is released for normal occupancy.

d. Where samples fail to meet regulated clearance levels of Title 17, CCR, clean the Work Area as required for final cleaning in the Clean Up Procedures section of this Specification.

e. Following cleaning, the visual inspection and environmental sampling will be repeated as described above. This process shall continue until the clearance level of Title 17, CCR is provided.

3.05 RE-ESTABLISHMENT OF THE WORK AREA AND SYSTEMS

A. Re-establishment of the Work Area shall only occur following the completion of clean-up procedures and after a Clearance Inspection has been performed and documented to the satisfaction of the Owner Consultant.

B. Re-secure Moveable Objects removed from their former positions during area preparation activities.

C. Relocate Moveable Objects that were removed to temporary locations back to their original positions.

D. Reestablish HVAC, mechanical and electrical systems to the condition prior to commencement of the Project.

E. Repair areas of damage that occurred as a result of Abatement or Lead Related Construction Work.

3.06 PROJECT COMPLETION DOCUMENTATION

A. Provide to the Owner Consultant of the following close-out documentation:

1. Filter change logs for air filtration units, water filtration units and respirators
2. Foreman's daily job reports
3. Employee entry and exit logs for Work Areas
4. Visitor entry and exit logs for Work Area
5. Air sample results for personnel
6. Copies of hazardous and non-hazardous waste manifest
7. Hazardous waste weight tickets
8. Analytical data and chain of custody for waste characterization
9. Signed Daily Personnel Report Forms

B. Provide Owner Consultant with as-built drawings identifying surfaces where Lead Based Paint has been encapsulated or enclosed.

END OF SECTION

SECTION 02 8400

POLYCHLORINATED BIPHENYL (PCB) REMEDIATION

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. Abatement and PCB-Related Construction Work.

2. Transportation and disposal of PCB-containing materials.

B. Related Requirements:

1. Section 00 3126 - Existing Hazardous Materials Information.

2. Division 01 - General Requirements.

C. Regulatory Requirements:

1. California Division of Occupational Safety & Health (Cal/OSHA) Title 8, California Code of Regulations (CCR).

2. California Air Resources Board Ambient Air Quality Standard, Title 24 CCR.

3. California Department of Health Services, Title 17 CCR.

4. California Department of Environmental Protection (Cal/EPA), Title 22 CCR.

5. Cal/EPA Department of Toxic Substances Control (DTSC). California Health and Safety Code (HSC), Division 20, Chapter 6.5.

6. California Labor Code, Division 5, Part 1, as it pertains to safety in employment and with the applicable provisions of the Title 8, CCR as it pertains to Occupational Safety and Health in the work place.

7. United States Environmental Protection Agency, 40 Code of Federal Regulations (CFR) Part 761.

8. Los Angeles County Public Health Code (Chapter 11).

9. Occupational Safety and Health Administration (OSHA), 29 CFR 1910 and 29 CFR 1926.

10. Department of Transportation (DOT), 49 CFR Parts 171-173.

1.02 DEFINITIONS AND ACRONYMS

A. µg/100 cm^2 – Microgram(s) per 100 square centimeters

B. Abatement – Any set of measures designed to reduce or eliminate PCB hazards or PCB material for public and residential buildings, but does not include containment or cleaning.

C. Abatement Area – Means an area where Abatement is conducted.

D. Air Sampling and/or Dust Suppression Plan – Means a plan as described in paragraph 1.09.A.3 of this Section.

E. ANSI – American National Standards Institute.

F. Building ID number or code (Maximo) – A six-digit alphanumeric identification code assigned to each building on an OWNER site, also referred to as the insurance code, ID number or similar terms.

G. Cal/EPA – California Environmental Protection Agency.

H. CCR – California Code of Regulations.

I. CFR – Code of Federal Regulations.

J. Clean Room – An uncontaminated area or room which is a part of the worker Decontamination Enclosure System with provisions for storage of worker's street clothes and clean protective equipment.

K. Cleanup Level – Means Cleanup Levels as defined in 40 CFR §761.61(a)(4).

L. Clearance Inspection – Means visual examination and, as applicable, collection of environmental samples upon completion of the Abatement Work.

M. Component – Means a structural element or fixture, including but not limited to, walls, floors, ceilings, doors, window molding, trim, trestles, tanks, stairs, railings, cabinets, gutters, or downspouts.

N. CPR – Cardiopulmonary resuscitation.

O. Curtained doorway – A device to allow ingress and egress from one room to another while permitting minimal air movement between the rooms, typically constructed by placing two overlapping sheets of plastic over an existing or temporarily framed doorway, securing each along the top of the doorway, securing the vertical edge of one sheet along one vertical side of the doorway and securing the vertical edge of the other sheet along the opposite vertical side of the doorway. Other effective designs may be submitted for review.

P. Decontamination – The process of eliminating PCB contamination from building surfaces and property using cloths, mops, and/or other utensils dampened with mineral spirits or water.

Q. Decontamination Enclosure System – At minimum a two-stage Decontamination unit consisting of a compartment for Decontamination, and a Clean Room. Unless otherwise specified, it shall be adjacent to the Abatement Area.

R. Demolition – The wrecking or taking out of any load supporting structural member of a facility together with any related handling operations.

S. DOSH – California Division of Occupational Safety and Health or Cal/OSHA.

T. DOT – United State Department of Transportation.

U. DTSC – California Department of Toxic Substances Control.

V. Enclosure – A rigid durable barrier mechanically attached to building Component, with edges and seams sealed with caulk or other sealant.

W. Environmental Consultant – Refers to the firm, company, or individual designated by the OWNER to provide third-party oversight.

X. EPA ID number – Means hazardous waste generator number assigned by the USEPA or DTSC.

Y. Fixed Object – A piece of equipment, furniture, or improvement in the Work Area, which cannot be removed from the Work Area.

Z. FLB – Fluorescent light ballast

AA. Hazardous Materials Survey – A survey conducted to identify and characterize hazardous materials, which may include but is not limited to PCBs, lead, and asbestos, in Site building materials.

BB. Hazardous Waste – Means any waste stream presumed or determined using generator knowledge or based on laboratory analytical results to be hazardous waste, including but not limited to that which exceeds the regulatory thresholds for PCBs for the toxicity characteristic, as specified in 22 CCR § 66261.24.

CC. HAZWOPER – Hazardous Waste Operations and Emergency Response Standard.

DD. HEPA – High-Efficiency Particulate Air.

EE. HEPA Filter – Means a filtering system capable of trapping and retaining at least 99.97 percent of mono-dispersed particles 0.3 micrometers in diameter or larger.

FF. HEPA Vacuum – A vacuum system furnished with HEPA filtration.

GG. HSC – California Health and Safety Code.

HH. HVAC – Heating, Ventilation, and Air Conditioning system.

II. LAUSD – Los Angeles Unified School District.

JJ. Location Code (Maximo) – Refers to a unique four digit numeric code assigned by the OWNER to each of its Project Sites.

KK. Member – A Component part of a structure complete in itself.

LL. Movable Object – A piece of portable equipment or furniture in the Work Area, which can be removed from the Work Area.

MM. mg/kg – milligrams per kilogram (equivalent to parts per million)

NN. mg/l – milligrams per liter (equivalent to parts per million)

OO. MSHA – Mine Safety and Health Administration.

PP. ng/m^3 – nanograms per cubic meter

QQ. NIOSH – The National Institute for Occupational Safety and Health.

RR. Non-Porous Surface – Means a smooth, unpainted solid surface that limits penetration of liquid containing PCBs beyond the immediate surface. Examples include: smooth, uncorroded metal; smooth glass; smooth glazed ceramics; impermeable polished building stone such as marble or granite; and high density plastics, such as polycarbonates and melamines that do not absorb organic solvents.

SS. OAR – OWNER Authorized Representative.

TT. OEHS – LAUSD Office of Environmental Health and Safety.

UU. OSHA – Occupational Safety and Health Administration.

VV. OWNER – LAUSD.

WW. PCB – Polychlorinated Biphenyl.

XX. PCB Bulk Product Waste – Means PCB Bulk Product Waste as defined in 40 CFR §761.3. Generally, PCB bulk product waste is waste derived from manufactured products containing PCBs in a non-liquid state at any concentration, where the concentration at the time of designation for disposal was ≥50 ppm PCBs. PCB bulk product waste includes, but is not limited to:

1. Non-liquid bulk wastes or debris from the demolition of buildings and other man-made structures manufactured, coated, or serviced with PCBs.

2. Applied dried paints, varnishes, waxes or other similar coatings or sealants; caulking and window glazing; adhesives.

3. Fluorescent light ballasts containing PCBs in the potting material.

YY. PCB Cleanup and Disposal Plan ("the Plan") – A plan developed to ensure all applicable Federal, state and local regulatory requirements pertaining to PCB cleanup and disposal, as well as this Section, are met.

ZZ. PCB Materials – Any non-liquid material, item, structure or component that has been determined or is presumed to contain and/or be contaminated with PCBs.

AAA. PCB Remediation Waste – Means PCB Remediation Waste as defined in 40 CFR §761.3. Generally, PCB remediation waste is waste containing PCBs as a result of a spill, release, or other unauthorized disposal, at the concentrations specified in 40 CFR §761.3. PCB remediation waste includes but is not limited to:

1. Soil, rags and other debris generated as a result of any PCB spill cleanup.

2. Buildings and other man-made structures (such as concrete floors, wood floors, or walls contaminated from a leaking PCB or PCB-Contaminated Transformer), porous surfaces, and non-porous surfaces.

BBB. PCB Warning Label – Means the labels described in paragraph 2.01.B of this Section.

CCC. PCB Work –PCB abatement and/or PCB-related construction work. Also referred to as "Work".

DDD. Plasticize – To cover floors, walls, and equipment with plastic sheeting as specified herein.

EEE. PM10 – Particulate matter less than 10 micrometers in diameter.

FFF. Portable Mechanical Ventilation System – A portable exhaust system furnished with HEPA filtration and capable of providing a constant air flow into regulated Work Area from adjacent areas and exhausted outside the regulated area.

GGG. Porous Surface – Means any surface that allows PCBs to penetrate or pass into itself including, but not limited to: paint or other coating on metal; unglazed ceramics or ceramics with a porous glaze; porous building stone such as sandstone, travertine, limestone or coral rock; low-density plastics; coated (varnished or painted) or uncoated wood; concrete or cement; plaster; plasterboard; wallboard, fiberboard; chipboard; asphalt; or tar paper. For the purposes of cleaning and disposing of PCB remediation waste, porous surfaces have different requirements than non-porous surfaces.

HHH. ppm – parts per million (equivalent to milligrams per kilogram or milligrams per liter).

III. Project – Means the specific PCB Work project for which this Section was issued.

JJJ. Project Site – Means a location, identified by a unique four digit numeric Location Code, where a project is taking place or will be carried out.

KKK. Project Supervisor – Means the individual described in paragraph 1.08.B.3 of this Section.

LLL. RCRA – Resource Conservation and Recovery Act.

MMM. Removal – Means operations where PCB materials are removed or stripped from structures or substrates including Demolition.

NNN. Renovation – Means the modifying of any existing structure, facility, or portion thereof.

OOO. Replacement – Means Removal of an entire building Component containing PCBs and replacing it with non-PCB Component.

PPP. SCAQMD – South Coast Air Quality Management District.

QQQ. SDS – Safety Data Sheet (formerly Material Safety Data Sheet)

RRR. STLC – Means Soluble Threshold Limit Concentration used in the State of California in conjunction with TTLC to determine characteristic hazardous waste limits. If the STLC result for PCBs is equal to or exceeds 5 mg/l the waste is deemed to be hazardous.

SSS. Surfactant - A chemical wetting agent added to water.

TTT. TSCA – Toxic Substances Control Act.

UUU. TTLC – Means Total Threshold Limit Concentration used in the State of California in conjunction with STLC to determine characteristic hazardous waste limits. If the results for PCBs are equal to or exceed 50 mg/kg, the waste is deemed to be hazardous.

VVV. Uniform Hazardous Waste Manifest – Means the shipping document that travels with hazardous waste from the point of generation, through transportation, to the final treatment, storage, and disposal facility. Manifest forms must be obtained from an organization approved by the USEPA Manifest Registry to print the RCRA hazardous waste manifest.

WWW. USEPA – United States Environmental Protection Agency.

XXX. Wet Cleaning – The process of eliminating PCB contamination from building surfaces and/or objects by cloths, mops, or other utensils dampened with mineral spirits or water.

YYY. Work Area – Means an area where known or presumed PCB materials are disturbed or Abatement is conducted.

1.03 POLICIES AND PROCEDURES

A. The District policy mandates the use of this procedure to guide various departments to consult with Office of Environmental Health and Safety (OEHS) for any projects where potential PCB-containing building materials will be disturbed. Projects of such are; lighting retrofits, window & door replacements, painting projects, kitchen and restroom

renovations, HVAC upgrade and replacement or any other demolition and renovation projects.

B. OEHS has oversight responsibilities over projects involving PCBs. OEHS will provide direction to environmental consultants and abatement contractors concerning the proper handling and disposal of any PCB-containing building materials.

C. For any project where potential PCB-containing building materials will be disturbed, a PCB Engineering Assessment (Phase 1) must be conducted by an Environmental Consultant prior to starting work to identify any PCB-containing building materials.

D. The Assessment Report (Phase 1) will indicate if abatement is required for the project. If abatement is needed, an Environmental Consultant can be assigned to develop the Design of the Abatement (Phase 2). OEHS will review and approve the Phase 1 and Phase 2 Consultants documents.

E. The Owner Authorized Representative (OAR) will prepare and award the abatement contract to pre-qualified contractors.

F. OWNER has zero-tolerance policy for uncontrolled PCB releases during PCB Work. A PCB release requiring an emergency response is a disturbance resulting in the uncontrolled release of PCB-containing materials. Upon observation of visual emissions, immediately stop the Work, vacate the Work Area, and provide written notification to the Environmental Consultant.

G. Pre-qualified PCB Work subcontractors are not permitted to subcontract any PCB Work to a lower tier subcontractor without the prior written approval of the OWNER.

H. Environmental Consultant shall provide oversight for Projects that have the potential to disturb PCB-containing materials. Prior to the commencement of such Work, the CONTRACTOR shall provide written notification to the Environmental Consultant and the OEHS.

1.04 ROLES, RESPONSIBILITIES, AND COORDINATION

A. CONTRACTOR shall follow the procedures set out in this Section except where they are explicitly indicated to be the responsibility of another individual or group.

B. OAR and/or Environmental Consultant will oversee and/or support the Work in the manner indicated in this Section.

C. CONTRACTOR shall coordinate the Work of this Section directly with the OAR and/or Environmental Consultant.

1.05 SITE SECURITY

A. Work Area shall be restricted to authorized, trained, and protected personnel. A list of authorized personnel shall be established and posted at the entrance of the Work Area by the Environmental Consultant prior to commencement of the Work.

B. Report to the Environmental Consultant unauthorized entries into the Work Area. Following notification, a written report of the incident shall be provided to the Environmental Consultant.

C. A logbook shall be maintained at the entrance of the Work Area. Persons entering the Work Area shall record name, company affiliation, time in, and time out for each entry and exit.

D. Access to the Work Area shall be through the Decontamination Enclosure System only. Other means of access shall be blocked or locked so as to prevent entry to or exit from the Work Area. Emergency exits shall be operable from inside the Work Area.

E. Maintain Work Area security during PCB Work. Work Areas and ancillary equipment accessible to non-authorized personnel shall be protected from unauthorized access using appropriate barriers with lockable access doors as approved by the OAR and/or Environmental Consultant. A key to the access door(s) shall be provided to the OAR and Environmental Consultant. Required barriers within an occupied building shall be furnished with sheathing as required by State and local fire protection regulations.

F. Remove barriers upon the completion of the Work of this Section and unless otherwise specified, repair and/or replace to its original condition damage resulting from installation, use, and removal of the barriers.

1.06 EMERGENCY PLANNING

A. Emergency planning and procedures, as described below, shall be developed, submitted, reviewed, and agreed to by the Environmental Consultant prior to the commencement of PCB Work.

B. Emergency procedures shall be provided in the written languages understood by employees working on the Project and shall be prominently posted at the entrance of the Decontamination Enclosure System. Prior to entering the Work Area, parties must read and sign these procedures to acknowledge receipt and understanding of the Work Area layout, location of emergency exits, and emergency procedures.

C. Emergency planning shall consider the effects of fire, explosion, toxic atmospheres, electrical hazards, slips, trips, and falls, confined spaces, and heat related injury. Develop and provide written procedures and training to employees.

D. Employees shall be trained in evacuation procedures in the event of workplace emergencies.

E. In the event of non-life threatening situations requiring medical treatment, injured or otherwise incapacitated employees shall decontaminate following normal procedures with assistance from fellow workers if necessary, before exiting the Work Area.

F. In the event of life threatening injury or illness requiring immediate medical treatment, worker Decontamination shall be given minimum priority. Provide measures to stabilize the injured worker, remove them from the Work Area, and secure proper medical treatment.

G. Telephone numbers of emergency response personnel shall be prominently posted at the entrance of the Decontamination Enclosure System along with the location of the nearest telephone. In addition to the 911 emergency number, post the address and telephone number of the nearest emergency medical services provider.

H. Provide at least one employee on the Project Site at all times during progress of the Work that is trained and certified in first aid and cardiopulmonary resuscitation (CPR). This employee shall be identified by name and proof of training shall be provided to the Environmental Consultant prior to the commencement of the Work of this Section.

I. Provide at least one 4A/60BC dry chemical extinguisher in the Decontamination compartment. Workers shall be trained in the proper operation of fire extinguishers.

J. Emergency exits shall be provided and clearly marked with arrows or other clearly visible markings to permit easy identification from anywhere within the Work Area. Exits shall be secured to prevent access from uncontaminated areas while still permitting emergency egress. Exits shall be properly sealed with polyethylene sheeting, which can be cut to permit emergency egress. Emergency exits may lead through the Decontamination Enclosure System or other alternative exits as required by fire officials.

1.07 CONTRACTOR'S LICENSE

A. The Work of this Section shall be performed by an entity or entities duly licensed in the State of California in accordance with the provisions of Chapter 9 of Division 3 of the Business and Professions Code, as amended.

1.08 QUALIFICATIONS AND TRAINING

A. Only OWNER approved contractors qualified to perform PCB Work will be awarded a contract.

B. PCB Work shall be performed by personnel with the following training and qualifications, as applicable, which must be completed prior to commencing PCB Work and maintained throughout performance of the Work:

1. Individuals performing PCB Work shall complete the following:

a. Current 40-hour Hazardous Waste Operations and Emergency Response Standard (HAZWOPER) certification.

b. Training and qualifications in the techniques of PCB handling, disposal of PCB-containing materials, and the subsequent cleaning of contaminated areas. Individuals performing the PCB Work specified herein must comply with applicable Federal, State, and Local regulations and must be capable of and willing to perform the Work.

c. Training specific to the operation and use of fire extinguishers.

2. Individuals performing PCB-related construction work must complete training specific to the performance of PCB-related construction work.

3. CONTRACTOR shall designate a full-time Project Supervisor who shall hold the following qualifications:

a. Shall be trained in PCB removal and hazardous waste management, at a minimum via a 40-hour HAZWOPER and an 8-hour Hazardous Waste Supervisor training course.

b. Shall have a minimum of one-year experience as a supervisor for PCB-related projects.

c. Shall be able to read and write English fluently, as well as communicate in the primary language of the workers.

1.09 SUBMITTALS

A. Prior to performing the Work of this Section, submit the following procedures to the OWNER/OAR and Environmental Consultant:

1. PCB Engineering Assessment (Phase1) report, including results of bulk samples, surface wipe samples, collection of “step out “ samples to determine the extent of cross-contamination of PCBs into the substrate materials and any interim measures taken to minimize potential risk of exposures to PCBs and

2. PCB Removal and Disposal Plan (“Phase 2” report) (if not already completed and provided as part of this specification) including, but not limited to:

a. Detailed written description of the PCB Work, including methods of all Work, and locations of room(s) and building components where Work is planned.

b. Detailed written description of the measures and management procedures, including, as necessary or applicable, any containment that will be utilized during PCB Work to prevent the spread of contaminants and occupant exposure to PCBs. Shop Drawings shall indicate the containment locations.

c. Decontamination procedures for personnel, Work Area, and equipment.

d. Procedures for handling and disposing of waste materials, including disposal facility.

e. Procedures to be used for capturing debris while disturbing overhead materials.

f. Procedures for final Decontamination and cleanup.

3. Written Health and Safety Plan (HASP) describing information and procedures necessary to protect workers and others at or near the Project Site from potential hazards associated with performing the PCB Work, including but not limited to:

a. Procedures for dealing with heat stress during PCB Work.

b. Emergency procedures during PCB Work.

c. Respiratory protection and Personal Protective Equipment.

4. Within 30 calendar days before the start of PCB Work, submit an Air Sampling and/or Dust Suppression Plan, which may include one or more of the following:

a. A plan to perform PCB Work using either:

1) Depressurized, contained work area that uses HEPA-filtered air scrubbers to maintain a negative pressure (Primary Option), or

2) Barrier-only work site that includes real-time airborne dust measurements to document effective dust containment (Alternative Option) as approved by the Environmental Consultant and OEHS.

b. Proposed dust air monitoring methods and equipment that will provide real time dust measurement readings in the air of the contained work area and the area immediately outside of the work area;

c. Laboratory extraction and analytical methods for air samples;

d. Real-time aerosol monitoring equipment description(s); monitors shall be capable of data logging at intervals of 1 minute or less, have a lower limit of detection of 10 $\mu g/m^3$, a resolution of 1 $\mu g/m^3$, and an accuracy of ± 5% for PM10.

e. Figures depicting air monitoring locations;

f. Dust suppression methods;

g. Proposed PCB dust levels not to be exceeded in ambient air to prevent exposures to PCBs, and those levels correlated to a volume of dust in air;

h. Air monitor height;

i. Methods to contain, prevent runoff, and containerize water that may be used for dust suppression;

j. Reporting of PCBs as Aroclors; and,

k. Measures to minimize exposure to dust that may contain PCBs if real-time dust levels are exceeded in air.

5. As applicable, required SCAQMD permits or registrations for portable equipment.

B. Prior to performing Work of this Section, submit the following Shop Drawings to the Environmental Consultant:

1. Preparation of Work Area.

2. Layout and construction of the Decontamination Enclosure System and barriers for isolation of the Work Area, as applicable, as described in this Section and required by applicable regulations.

C. Prior to performing the Work of this Section, submit the following documentation to the Environmental Consultant:

1. Product data relative to personal protective equipment including respiratory protection and protective clothing.

2. Safety data sheets (SDSs) and technical specifications for proposed materials.

D. Prior to performing the Work of this Section, submit the following documentation to the Environmental Consultant:

1. List of employees who will participate in the Project, including delineation of experience, training, and assigned responsibilities during the Project.

a. CONTRACTOR shall designate a full-time Project Supervisor who shall hold the qualifications listed in paragraph 1.08.B.3 of this Section.

b. Project Supervisor shall be responsible for the performance of the Work and shall represent the CONTRACTOR in all respects at the Project Site. The Project Supervisor shall be the primary point of contact for the OAR and Environmental Consultant.

c. Project Supervisor's responsibilities shall include, but not be limited to the following:

1) Project Supervisor shall remain on-Site while Work is being conducted until the Project is complete. If the Project Supervisor is not on-Site at any time whatsoever, all Work will be stopped.

2) Project Supervisor shall maintain a bound Daily Project Log that includes the Waste Disposal Log.

d. Project Supervisor cannot be removed from the Project without the consent of the OAR. Project Supervisor shall be removed from the Project if so requested by the OAR.

2. Proof satisfactory to the Environmental Consultant that required permits, site location, and arrangements for transport and disposal of hazardous waste and waste containing or contaminated with PCBs has been performed in accordance with Federal, State, and local regulations.

3. Proof of the required training described in Article 1.08 of this Section for each worker who will perform PCB Work.

4. Manufacturer's certification that HEPA Vacuums, air filtration units, and other local exhaust ventilation equipment conform to ANSI Z9.2, as applicable.

5. When HEPA Vacuums are utilized on the Project, provide the maintenance and filter change log for these before they are brought onto the Project Site.

6. As applicable, provide the current SCAQMD permit or registration for each piece of portable equipment before it is brought onto the Project Site.

7. Workers are required to submit a signed OWNER Code of Conduct form.

E. Prior to performing the Work of this Section, submit the following samples to the Environmental Consultant:

1. Sample of forms to be used in documenting the Work of this Section.

F. Prior to performing the Work of this Section, submit the following schedule to the Environmental Consultant:

1. An intended sequence of Work and construction schedule. Coordinate both the sequence and durations with the OAR.

G. Prior to performing the Work of this Section, submit other required items to the OAR and Environmental Consultant.

H. During the performance of the Work of this Section, submit the following documentation to the Environmental Consultant:

1. Documentation from a physician certifying that employees who wear a negative pressure respirator are medically cleared to do so without suffering adverse health effects as required by DOSH regulations. The certification shall state that the employee or agent may wear a negative pressure respirator without restrictions. Provide information to the examining physician about unusual conditions in the

workplace environment that may impact the employee's ability to perform Work activities.

2. Weekly job progress reports detailing PCB Work activities for Projects that will exceed thirty days. Include review of progress with respect to previously established Milestones and schedules, major problems and action taken, injury reports, equipment breakdown, and air and/or wipe sampling results.

3. Within five workdays of transport and disposal, submit copies of hazardous waste manifests, disposal receipts, analytical data, and weight certificates for waste removed from the Work Area during the PCB Work. Weight certificates shall indicate by pounds the net weight of waste disposed of from the Project Site as indicated on the associated manifest.

4. Daily, copies of the Daily Project Log with information on worker and visitor access.

5. Weekly logs documenting filter changes on respirators, HEPA vacuums, HEPA filtered ventilation units, and other approved engineering controls, as applicable.

6. Results of air and/or wipe sampling data (as applicable) collected during the course of the PCB Work.

I. During the performance of the Work of this Section, submit other required items.

1.10 PRE-WORK MEETING

A. Attend a meeting to be held prior to the commencement of the Work of this Section. Attending this meeting will be representatives of the OWNER, the Environmental Consultant, and the testing and monitoring personnel who shall actually participate in the testing and monitoring program.

B. At this meeting provide required submittals except for those to be submitted during progress of the Work. In addition, provide detailed information concerning:

1. Preparation of Work Area and Shop Drawings.

2. Personal protective equipment, including respiratory protection and protective clothing.

3. Employees who will participate in the Project, including delineation of experience, training, and assigned responsibilities during the Work.

4. Decontamination procedures for personnel, Work Area, and equipment.

5. Abatement methods and procedures.

6. Required air monitoring procedures.

7. Procedures for handling and disposing of waste materials, including disposal facility.

8. Procedures for final Decontamination and cleanup.

9. A sequence of Work activities and performance schedule.

10. Procedures for dealing with heat stress.

11. Emergency procedures.

1.11 DELIVERY, STORAGE AND HANDLLING

A. Deliver materials in the original sealed packages, containers, or bundles bearing the name of the manufacturer and brand name.

B. Store materials subject to damage off the ground, away from wet or damp surfaces, and under cover sufficient to prevent damage or contamination. Movable Objects and replacement materials shall be stored outside of the Work Area until area is cleared for normal occupancy.

C. Damaged, deteriorating, or previously used materials shall not be furnished and shall be removed from the Project Site and legally disposed.

PART 2 – PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Materials:

1. A sufficient supply of disposable mops, rags, and sponges for Work Area Decontamination shall be provided.

2. Unless otherwise specified, the OWNER will provide water for construction purposes. Connect to existing system as required.

3. Products brought onto the Project Site shall be accompanied by their respective Safety Data Sheet, which shall be maintained on the Project Site.

4. Plastic, polyethylene sheeting (or visqueen) shall be a fire retardant type. Provide documentation from the manufacturer verifying compliance with this requirement.

5. Polyethylene sheeting used for the containment barriers shall be a minimum of 6-mil thick, fire retardant, and opaque or white in color. Black polyethylene may not be used for vertical barriers of containment systems.

6. OEHS-approved general purpose cleaner shall be used.

7. USEPA-approved and OEHS-approved solvent shall be used for PCB-spill cleanup.

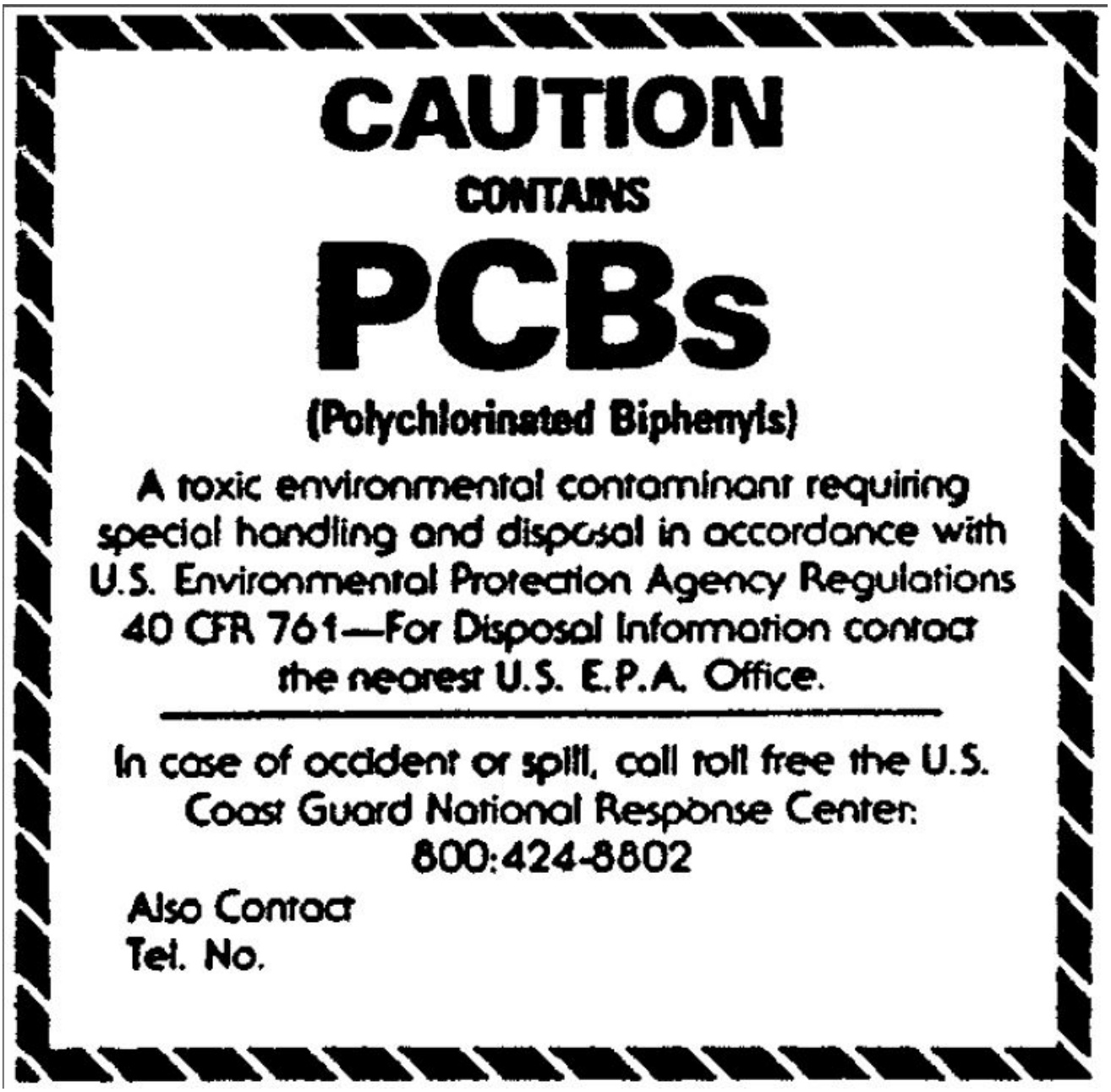
8. Surfactant (wetting agent) used shall be a material that, when tested, demonstrates a surface tension of 29 dynes/cm as tested in its properly mixed concentration, using the current version of ASTM Standard D1331, "Standard Test Methods for Surface and Interfacial Tension of Solutions of Surface Active Agents."

B. Equipment:

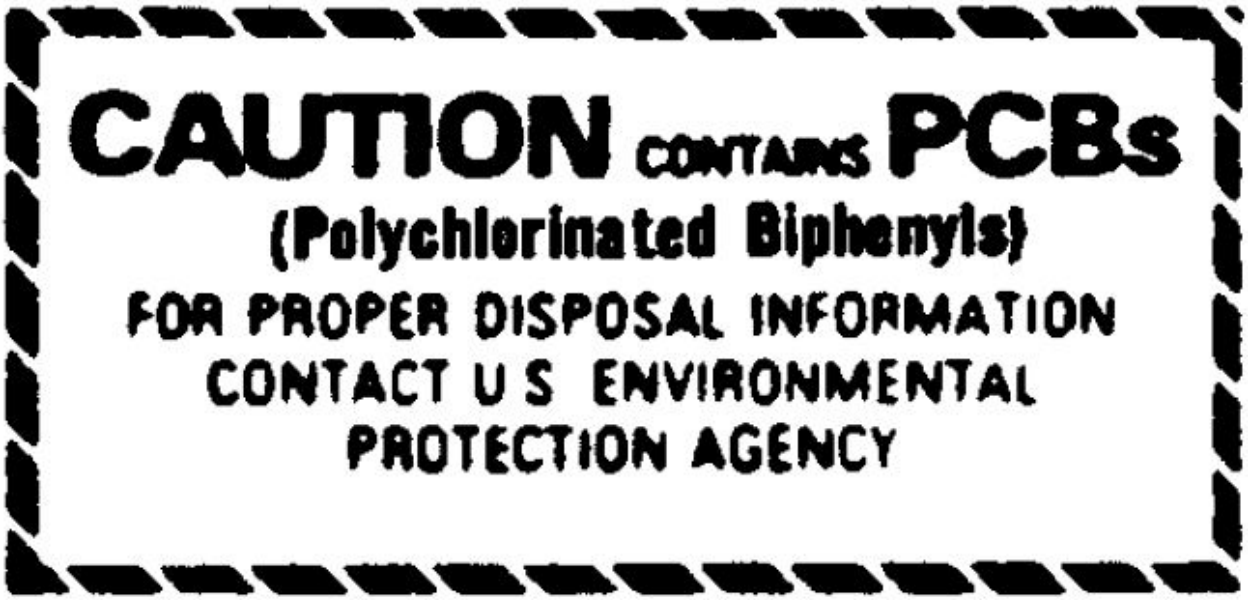
1. Disposal bags shall be of 6-mil polyethylene, pre-printed with labels as required by applicable Cal/OSHA and DOT requirements.

2. Warning signs and barrier tapes, including all those required by Cal/OSHA.

3. “Large PCB Marking” (M_L per 40 CFR 761) or “Small PCB Marking” (M_S per 40 CFR 761) as shown in the figures below, of sufficient size to be clearly legible, for display on waste containers (bags, boxes, roll offs, or drums) which will be used to contain or transport PCB contaminated material, in accordance with 40 CFR 761. In addition, 49 CFR Part §172.301 requires that the proper shipping name and UN number be marked on the non-bulk or bulk containers (as defined at 40 CFR §171.8, generally any container less than or greater than 119-gallon capacity, respectively) must be labeled: “Polychlorinated biphenyls, solid mixture. UN 3432”.



Large PCB Marking (M_L)



Small PCB Marking (M_S)

4. "Hazardous Waste" labels of sufficient size to be clearly legible, for display on waste containers (bags, boxes, roll offs, or drums) which will be used to contain or transport PCB contaminated material, in accordance with 22 CCR 66262.32.

5. Disposal containers shall meet requirements of Title 22, CCR and 49 CFR 171 *et seq*.

6. Provide a sufficient supply of scaffolds, ladders, lifts, and hand tools, as needed to complete the Work.

7. Provide sprayers with pumps capable of providing amended water in sufficient quantity to adequately wet the material to be abated.

8. Provide a sufficient supply of HEPA filtered vacuums to maintain a clean environment in compliance with this Section.

9. When rental equipment is to be used in Work Areas or to transport PCB contaminated waste, a written notification concerning the intended use of the rental equipment shall be provided to the rental agency with a copy submitted to the OWNER.

10. When performing chemical removal, provide portable eyewash station(s) that meet ANSI standards and are accessible to workers within 10 seconds.

11. Additional safety equipment, as necessary, shall be provided to workers and authorized visitors.

12. Equipment delivered to the Project Site shall be free of debris suspected of containing PCBs. No equipment with suspect debris in or on it shall be permitted on OWNER properties and/or the Project Site.

13. When roll-off disposal containers are delivered to a Project Site, four wheels of each container shall be moved and rested upon a minimum size sheet of plywood of 4-foot by 4-foot by ¾ inch.

14. Lighting shall be provided in an amount sufficient to illuminate the Work Area for the purpose of safe visual working conditions and to permit examination of surfaces where Work is performed.

2.02 WORKER PERSONAL PROTECTIVE EQUIPMENT

A. Respiratory Protection:

1. Respirators will be selected from those approved by the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services.

2. Respirators shall be individually fit-tested to personnel under the direction of an Industrial Hygienist on a yearly basis. Fit-tested respirators shall be permanently marked to identify the individual fitted, and use shall be limited to that individual. Fit-test records shall be maintained on Site for each employee.

3. No respirators shall be issued to personnel without such personnel participating in a respirator training program.

4. Air-purifying respirator with combination organic vapor and high-efficiency particulate air [HEPA] cartridges) shall be approved by NIOSH and shall conform to the OSHA requirements in 29 CFR §1910.134.

5. A storage area for respirators shall be provided by the CONTRACTOR in the clean room side of the personnel decontamination enclosure where they will be kept in a clean environment.

6. CONTRACTOR shall provide and make available a sufficient quantity of respirator filters so that filter changes can be made as necessary during the work day. Filters will be removed and discarded whenever they are damaged, soiled, or if breathing becomes difficult.

7. Filters used with negative pressure air purifying respirators shall not be used any longer than their respective Service Life (as defined by OSHA at 29 CFR §1910.134).

8. Any authorized visitor, worker, or supervisor found in the Work Area not wearing the required respiratory protection shall be removed from the Project Site and will not be permitted to return.

B. Fit Testing:

1. Perform fit testing in accordance with Title 8 CCR, Section 5144.

2. Submit documentation of respirator fit testing for individuals entering the Work Area. Authorized visitors must provide documentation of their own respirator fit testing.

3. Maintain and submit to the OAR and Environmental Consultant a copy of the written respiratory protection program.

C. Personal Protective Clothing and Equipment:

1. Provide eye protection to employees sufficient to protect employees from debris during work progress when full-face respirators are not being utilized.

2. Provide and require the use of eye protection when employees are working with a material that may splash or fragment, as specified by the Safety Data Sheet for a given product, or as required by Title 8, CCR.

3. Spectacle kits and eyeglasses must be provided for employees who wear glasses and who must wear full-face piece respirators. Provide respirators that have been tested and approved by NIOSH for use in PCB-contaminated atmospheres.

4. Provide full-body disposable protective clothing, including head, body, and foot coverings to workers who enter the Work Area, in sizes adequate to accommodate movement without tearing. A new suit shall be provided and donned for each separate entry.

5. Provide disposable Nitrile gloves to protect hands.

6. If washable clothing is to be worn underneath disposable protective clothing, it shall be provided to Abatement workers.

7. Provide a clean staging area for workers and others to store street clothes and personal protective equipment.

8. Disposal suits shall be collected in an appropriate disposal container at the entrance of the Abatement Work Area.

9. Abatement workers are required to wear nonskid footwear sufficient to protect them from workplace hazards. Disposable clothing shall be adequately sealed to the footwear to prevent body contamination.

10. As required by the Work site and applicable safety regulations, provide head protection and require the use thereof.

11. Worker protection equipment shall be ANSI approved.

12. Authorized visitors will be provided with suitable protective clothing, headgear, eye protection, and footwear whenever they enter the Work Area. New disposable protective clothing shall be provided and donned for each separate entry.

PART 3 - EXECUTION

3.01 WORK AREA PREPARATION AND GENERAL WORK PRACTICES

A. PCB warning signs shall be posted at all approaches to the Work Area. Post all emergency exits as emergency exits only on the Work Area side and post with PCB warning signs on the non-Work Area side. Provide all non-Work Area stairs and corridors accessible to the Work Area with caution tape at the base of stairs and beginning of corridors.

B. Work involving disturbance of PCB-containing materials shall be performed in accordance with Steps to Safe Renovation and Repair Activities (https://www.epa.gov/pcbs/steps-safe-renovation-and-repair-activities) and Steps to Safe PCB Abatement Activities (https://www.epa.gov/pcbs/steps-safe-pcb-abatement-activities).

C. Moveable Objects (un-affixed to the structure) shall be moved outside the Work Area.

D. Windows within the Work Area shall be closed.

E. Work Area shall be contained and separated from adjoining areas using 6-mil fire retardant polyethylene sheeting. Non-Moveable Objects and openings such as doors, windows, and vents shall be covered and sealed using 6-mil fire retardant polyethylene sheeting. In order to ensure an effective seal between the polyethylene sheets and room surfaces, dust and debris should be cleaned from areas where adhesive tape is used to attach the containment barriers prior to installation of polyethylene sheeting using a HEPA-filtered Vacuum cleaner and/or damp wiping with a wetted rag.

F. HVAC equipment intakes in the vicinity of the Work Area shall be isolated and sealed by temporarily shutting down units (or closing critical dampers) during Work and installing 6-mil fire retardant polyethylene sheeting over the opening(s).

G. If it has been determined that the HVAC system can be cleaned, it shall be cleaned by a contractor who specializes in cleaning ventilation systems and sealed to prevent potential recontamination.

H. For interior (indoor) Work:

1. Two layers of 6-mil polyethylene sheeting shall be installed on floors, fastened by waterproof tape and secured in place.

2. Dust isolation barriers with either a zippered door or a double flap shall be used at all entry points to the containment work area.

3. The containment area shall be maintained under negative air pressure by installing a negative air unit equipped with HEPA filters to prevent dust particles from being carried out of the containment area. The filtered exhaust from the fan shall be routed outside the containment area and vented outside of the building.

4. Contained work areas shall be constructed with a decontamination chamber to facilitate donning and doffing of protective clothing and staging of bagged waste prior to removal from Work Area.

I. For exterior (outdoor) Work:

1. Ground surfaces exterior to the Work Area shall have a layer of 6-mil fire retardant polyethylene sheeting attached to the building face and laid down on the surface below and to each side of the exterior Work Area, at least 10 feet wide or to the furthest point of gravity fall for dislodged debris by methods used, whichever is further.

2. Doors and windows within 20 feet of the Work Area shall be closed.

3. On multi-story buildings, close to the sidewalk, street, or property boundary, or when the building is more than three stories high, scaffolding sides shall be covered with a layer of 6-mil fire retardant polyethylene sheeting.

4. Avoid working in high winds if possible; however, if working when the wind is strong enough to move dust and debris, equipment (e.g., wind screens) shall be used to contain the Work Area.

J. Work requiring overhead disturbances shall require a means of capturing debris, thus preventing an uncontrolled release on the worker or the surfaces below.

3.02 REMOVAL OF PCB-CONTAINING MATERIALS - GENERAL

A. PCB-containing materials shall be removed in accordance with the existing State, Federal, and Local regulations.

B. Within a contained work area surfaces immediately adjacent to PCB-containing items not covered by containment barriers shall be decontaminated using a double wash-rinse technique as specified in 40 CFR 761, Subpart S and described below. These materials and surfaces typically include windows, doors, masonry, and all other building construction and components from which PCB materials (caulk) are removed:

1. First wash. Cover the surface with mineral spirit in which PCBs are soluble to 5% by weight or more. Scrub rough surfaces with scrubbing pad and mineral spirit such that the entire surface is very wet for 1 minute. Wipe smooth surfaces with a mineral spirit-soaked absorbent pad also for 1 minute. Absorb mineral spirit until no visible traces remain.

2. First rinse. Wet the surface with clean rinse mineral spirit such that the entire surface is very wet for 1 minute. Drain and contain the mineral spirit from the surface. Wipe the residual mineral spirit off the drained surface using a clean, disposable absorbent pad until no liquid is visible on the surface.

3. Second wash. Repeat the procedures in subparagraph 1. The rinse mineral spirit from the first rinse (subparagraph 2) may be used.

4. Second rinse. Repeat the procedures in subparagraph 2.

C. Mechanical cutting or grinding of PCB materials is not permitted unless equipped with HEPA filtered vacuums.

D. Before attempting to remove large components, such as window frames, remove small areas of readily accessible caulk that could be disturbed before cutting building components.

E. Removed material shall be placed into 6 mil plastic disposal bags or other suitable container upon detachment from the substrate.

F. Large components with PCB material that will not be removed shall be wrapped in two layers of 6 mil polyethylene sheeting. Sharp components likely to tear disposal bags shall be placed in fiber drums or boxes and then wrapped with sheeting.

G. Power or pressure washers are not permitted for PCB removal or cleanup procedures.

H. During the entire process of the Work of this Section, continuous cleaning of debris generated shall be performed using wet methods and/or HEPA filtered vacuuming.

I. Construction and demolition debris determined by the OWNER or Environmental Consultant to be contaminated with PCBs shall be handled and disposed of as PCB waste. If the double wash-rinse technique in paragraph 3.02.B is used on non-porous surfaces, sampling is not required and the material may be considered non-PCB.

J. The removal of the PCB materials may require the use of scrapers, solvents, mastic removal chemicals, or other methods/procedures to ensure complete removal. Any liquids generated are to be tested, stored and disposed of in accordance with this Section.

K. PCB waste must be collected in DOT-approved containers. The containers shall be marked, labeled, and/or placarded as required by DOT and discussed above. The date on which waste was first placed into the container shall be legibly marked on the outside of the container. Containers must be stored onsite in accordance with 40 CFR §761.65 and are to be removed for proper disposal as soon as possible and within 90 days of the waste being generated.

L. Temporary protection of the building (i.e., roof, window openings, construction joints, etc.) shall be provided at the end of each Work shift so as to maintain the building in a watertight condition.

M. Personal protective equipment, including respirators, shall be utilized and worn during removal operations until the Work Area is cleared.

N. Following completion of gross abatement and after all accumulations of PCB waste materials have been containerized, the decontamination procedures for immediately adjacent surfaces and containment materials, as described below, shall be performed.

O. Dry sweeping and any other methods that raise dust shall be prohibited.

3.03 WORK AREA CONTAINMENT AND EQUIPMENT AND AREA DECONTAMINATION

A. Work Area Containment for PCB Abatement:

1. Containment of Work areas shall include a Decontamination Enclosure System, which is a minimum two-stage Decontamination unit consisting of a compartment for Decontamination and a Clean Room. Decontamination of tools and packaging containers can take place within the Decontamination unit and workers can don and doff protective clothing.

2. Unless otherwise specified, the containment of work areas shall be depressurized by 0.02 inches of water column (5.0 Pascal) using a HEPA-filtered air scrubber and delivering at least 4 air volume changes per hour for the contained work area.

3. Barrier-only methods may be used if submitted and approved by the Environmental Consultant and OEHS and supplementary dust monitoring and sampling are used.

B. When removal of PCB-containing materials is completed, the decontamination process shall consist of vacuuming (with a HEPA-filtered vacuum), wet wiping/mopping, and a repeated vacuuming (with a HEPA-filtered vacuum) of the entire Work Area. If visible dust is present, vacuum from the area of impact to the outer perimeter of the polyethylene sheeting to remove visible debris and wet wipe until space is clean. All surfaces inside the Work Area must be free of visible dust generated during the Work.

C. Tools and equipment shall be decontaminated before removal from the Work Area. Non-electrical tools and equipment shall be cleaned before removal from the Work Area by HEPA vacuuming and washing using a PCB-specific solvent or other suitable cleaning agent. Electrical tools and equipment shall be HEPA vacuumed and cleaned by wet wiping, limiting the amount of water used to avoid electrical hazards.

D. If dust or debris has migrated to areas beyond the contained Work Area, those areas shall be incorporated into the Work Area (as defined by the Environmental Consultant at their sole discretion) and thoroughly decontaminated to ensure all visible dust generated by the abatement activity is eliminated.

E. Dust barriers and other protective sheeting shall be removed, placed in disposable construction bags, and disposed. Remove polyethylene sheeting by folding it inward so that the clean side is facing out and taping the edges shut.

F. The area shall be visually inspected for any remaining dust or debris and additional decontamination performed if needed as described in paragraph A.

G. Upon completion of decontamination and removing temporary dust barriers, a final inspection shall be performed by the OWNER or Environmental Consultant. Cleaning or re-cleaning of affected areas identified during any visual inspection shall be completed at no additional expense to the OWNER.

H. Any liquids generated shall be tested, stored, and disposed according to regulations.

I. Refer to the waste handling and transportation part of this Section for disposal of waste generated by this process.

3.04 WASTE HANDLING AND TRANSPORTATION

A. Characterization of Waste:

1. Waste characterization will be documented in the Hazardous Materials Survey ("Phase 1" report provided by the OWNER) and the PCB Removal and Disposal Plan (Phase 2 report).

2. Characterize waste streams as follows:

a. PCB-Containing Fluorescent Light Ballasts (FLBs).

1) Leaking PCB-Containing FLBs.

2) Non-Leaking PCB-Containing FLBs.

b. Non-PCB-Containing FLBs.

c. Caulk Containing ≥ 50 ppm PCBs and Associated Building Materials.

d. Other Materials Contaminated with PCBs.

3. Personal and commercial wash water with PCB contamination shall be handled as follows:

a. Contaminated waste water shall be tested, stored, and disposed of in accordance with applicable regulations (22 CCR and HSC Division 20, Chapter 6.5) and the waste handling procedures described below.

b. If the waste water is identified as a RCRA or California regulated hazardous waste (Non-RCRA) by STLC and TCLP, dispose of it accordingly.

c. If test results categorize the filtered water as non-hazardous, it may be disposed of in the sanitary sewer system.

d. Wastewater shall not be discharged in storm drains, gutters or allowed to sheet flow over the surface of the ground.

B. Waste Handling:

1. CONTRACTOR shall submit for approval by the Environmental Consultant and OEHS a plan for disposing of all waste generated by the PCB Work. Waste shall be disposed of only in accordance with the approved disposal plan.

2. PCB bulk product waste shall be handled in accordance with 40 CFR part 761.62 while PCB remediation waste shall be handled in accordance with 40 CFR part 761.61.

3. Waste, hazardous and non-hazardous, shall be disposed of at an authorized site in accordance with provisions of this Section and applicable Federal, State, and local laws.

4. Any waste determined to be hazardous through analytical testing shall be kept in a secured area or lockable container that is inaccessible to persons other than authorized personnel working on the Project. Hazardous waste containers shall be labeled "Hazardous-Waste – Contains PCBs" and labeled with the date waste collection commenced.

5. Hazardous waste shall not remain on the Project site beyond 90 days of the date it was generated. It shall be removed from the Project site and transported to an approved landfill before the 90 days has elapsed.

6. Waste shall not be transported from the work area to the storage container or waste hauler's vehicle while students or staff are present in the path of travel. Where a path of travel cannot be cordoned off the transportation of waste must be completed prior to or after students and staff are on site.

7. Waste shall not be transported to another site for commingling of waste from a source other than the site of original generation. This requirement shall be documented by the proper execution of a Uniform Hazardous Waste Manifest signed by the landfill operator.

8. Hazardous and non-hazardous waste shall be kept in different containers and stored in separate locations. Commingling of waste is not permitted.

9. As the Work progresses, to prevent exceeding available storage capacity on the Project Site, sealed and labeled containers of PCB waste shall be removed and transported to the prearranged disposal location.

10. Containers used for hazardous waste shall meet the requirements of USEPA/DTSC and DOT for hazardous waste storage and transport.

11. Debris or residue observed on containers or surfaces outside of the Work Area resulting from clean up or disposal activities shall immediately be cleaned using HEPA filtered vacuum equipment and/or wet methods as appropriate.

12. Materials not contained in bags or other appropriate disposal containers shall not be placed in waste storage containers, nor shall storage containers be used for non-PCB waste. To avoid damage, packaged waste shall be placed, not thrown, into the storage containers.

C. Transportation of Non-Hazardous Waste:

1. Identify the facility to which the non-hazardous waste generated by this Section will be taken. Evidence shall be provided verifying the facility is licensed/permitted to receive and handle non-hazardous PCB-containing waste as applicable.

2. Receipts from the disposal facility, trip tickets, transportation manifests, weight certificates or other documentation of disposal shall be delivered to the Environmental Consultant within 10 days of disposal. The waste manifest/trip ticket shall be signed by the generator, the transporter(s), and the disposal site operator each time the responsibility for the waste material is transferred. If a separate hauler is employed, the name, address, and signature of the transporter shall also appear on the associated paperwork.

D. Transportation of Hazardous Waste:

1. Hazardous waste shall be transported by a RCRA/DOT/USEPA certified hazardous waste transporter. Provide evidence that the hazardous waste transporter meets the requirements of this Section.

2. The Work of this Section includes responsibility for actions of the hazardous waste transporter as it pertains to waste Removal and disposal related to the Work of this Section.

3. Identify the facility to which the waste generated by this Section will be taken. Evidence shall be provided verifying the facility is licensed/permitted to receive and handle hazardous PCB-containing waste as applicable.

4. Waste disposed as hazardous shall be transported under a Uniform Hazardous Waste Manifest. The generator copy of this manifest shall be submitted to the Environmental Consultant within five days of transport.

5. Dump receipts, trip tickets, transportation manifests, weight certificates or other documentation of disposal shall be delivered to the Environmental Consultant within 10 days of disposal. The Uniform Hazardous Waste Manifest shall be signed by the generator (or designee), the transporter(s), and the disposal site operator each time the responsibility for the waste material is transferred. If a separate hauler is employed, the name, address, EPA ID number and signature of the transporter shall also appear on the manifest.

6. During transport, drums and other containers shall be placed on level surfaces in the cargo area and packed tightly together to prevent shifting and tipping. Large structural Components shall be secured to prevent shifting and bags placed on top.

3.05 MONITORING

A. Project Management and Inspection:

1. OWNER or Environmental Consultant has the right to perform air, wipe, and visual monitoring at any time.

2. OWNER may act in accordance with the terms and conditions of the Contract Documents whenever the Work or protective measures are not in compliance with applicable governmental regulations, Contract requirements, and/or threaten the adjoining environment with PCB contamination.

B. Clearance Inspection:

1. Clearance Inspection for PCB-Related Construction Work shall include:

a. A visual inspection of the Work Area by the Environmental Consultant prior to occupancy for normal activity.

b. Do not remove barriers designating a regulated Work Area until a written release from the Environmental Consultant is provided.

c. The Environmental Consultant has the right to collect wipe samples as part of the Clearance Inspection.

2. Clearance Inspection for PCB Abatement shall include:

a. A visual inspection of the Work Area by the Environmental Consultant prior to collection of environmental samples (air, dust, wipe, and/or soil samples, as applicable).

b. Environmental Consultant shall collect environmental samples.

c. Results of samples shall comply with 40 CFR 761 before the Work Area is released for normal occupancy.

d. Where samples fail to meet regulated clearance levels of 40 CFR 761 for surfaces (10 µg/100 cm^2) clean the Work Area as required for final cleaning in the Equipment and Area Decontamination part of this Section.

e. Following cleaning, the visual inspection and environmental sampling will be repeated as described above. This process shall continue until the clearance level of 40 CFR 761 is achieved for the surfaces.

f. For air samples, exposure levels from USEPA will be used as summarized in the following table.

Age	**Exposure Level**
1-<2 years	100 ng/m^3
2-<3 years	100 ng/m^3

3-<6 years	200 ng/m^3
6-<12 years Elementary School	300 ng/m^3
12-<15 years Middle School	500 ng/m^3
15-<19 years High School	600 ng/m^3
19+ years Adult	500 ng/m^3

Source: https://www.epa.gov/pcbs/exposure-levels-evaluation-polychlorinated-biphenyls-pcbs-indoor-school-air

3.06 RE-ESTABLISHMENT OF THE WORK AREA AND SYSTEMS

A. Re-establishment of the Work Area shall only occur following the completion of decontamination procedures and after a Clearance Inspection has been performed and documented to the satisfaction of the Environmental Consultant.

B. Re-secure Moveable Objects removed from their former positions during Work Area preparation activities.

C. Relocate Moveable Objects that were removed to temporary locations back to their original positions.

D. Reestablish HVAC, mechanical, and electrical systems to the condition prior to commencement of the Project.

E. Repair areas of damage that occurred as a result of PCB Work.

3.07 PROJECT COMPLETION DOCUMENTATION

A. Provide to the Environmental Consultant the following close-out documentation:

1. Filter change logs for air filtration units, water filtration units, and respirators.

2. Project Supervisor's daily job reports.

3. Employee entry and exit logs for Work Areas.

4. Visitor entry and exit logs for Work Areas.
5. Air sample results for project.
6. Copies of hazardous and non-hazardous waste manifests.
7. Hazardous waste weight tickets.
8. Analytical data and chain of custody for waste characterization, if applicable.
9. Signed Daily Personnel Report Forms.

END OF SECTION

SECTION 03 1000

CONCRETE FORMING AND ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Formwork for cast-in-place concrete as indicated.

2. Installation of items to be embedded in concrete, such as anchor bolts, inserts, embeds, and sleeves.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 03 2000: Concrete Reinforcing.

3. Section 03 3000: Cast-In-Place Concrete.

1.02 REFERENCES

A. American Concrete Institute (ACI) Publication:

1. ACI 318 – Building Code Requirements for Structural Concrete, Chapter 6, Formwork, Embedded Pipes, and Construction Joints.

2. ACI 347 – Guide to Formwork for Concrete.

B. American Plywood Association (APA):

1. Form No. V345 - Concrete Forming Design/Construction Guide.

C. National Institute of Standards and Technology (NIST):

1. NIST Voluntary Product Standard PS 1.

1.03 SUBMITTALS

A. Submit detailed structural calculations and drawings approved and signed by a California registered Civil Engineer where the height of the falsework or vertical shoring, as measured from the top of the sills to the soffit of the superstructure exceeds 14 feet, or where individual horizontal span lengths exceed 16 feet, or where provision for vehicular traffic through falsework or shoring occurs. For all other falsework and shoring submit layout signed by California registered Civil Engineer, manufacturer's authorized representative or a licensed contractor experienced in the usage and

erection of falsework and vertical shoring. A copy of the plans and calculation shall be available at the jobsite at all times.

B. Shop Drawings: Submit Shop Drawings indicating locations of forms, construction and expansion joints, embedded items, and accessories.

C. Product Data: Submit manufacturer's Product Data for form materials and accessories.

1.04 REGULATORY REQUIREMENTS

A. California Building Code (CBC), Chapter 19A.

B. California Code of Regulations, Title 8, Division 1, Chapter 4, Subchapter 4, Construction Safety Orders, Article 6, Excavations, Sections 1713 and 1717.

1.05 DELIVERY, STORAGE AND HANDLING

A. Storage shall prevent damage and permit access to materials for inspection and identification.

PART 2 - PRODUCTS

2.01 GENERAL

A. Form materials may be reused during progress of the Work provided they are completely cleaned and reconditioned, recoated for each use, capable of producing formwork of required quality, and are structurally sound.

B. Form Lumber: WCLIB Construction Grade or Better, WWPA No. 1 or Better.

C. Plywood: NIST Voluntary Product Standard PS 1, Group 1, Exterior Grade B-B Plyform or better, minimum 5-ply and 3/4 inch thick for exposed locations and at least 5/8 inch thick for unexposed locations, grade marked, not mill oiled. Furnished plywood with medium or high density overlay is permitted.

D. Coated Form Plywood: For exposed painted concrete, plastic overlaid plywood of grade specified above, factory coated with a form coating and release agent Nox-crete", or equal.

E. Tube Forms: Sonoco "Seamless Sonotubes," Ceme-Tube, Quik-Tube, or equal, of the type leaving no marks in concrete, one-piece lengths for required heights.

F. Joist Forms: Code recognized steel or molded plastic types as required.

G. Special Forms: For exposed integrally-colored concrete, plywood as above with high density overlay, plywood with integral structural hardboard facing or fibrous glass reinforced plastic facing, providing specified finish.

H. For Exposed Concrete Finish:

1. Plywood: New, waterproof, synthetic resin bonded, exterior type Douglas fir or Southern pine plywood manufactured especially for concrete formwork and conforming to NIST Voluntary Product Standard PS 1, Grade B-B grade, Class I.

2. Glass-Fiber-Fabric Reinforced Plastic Forms: Matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to structural tolerances and appearance of finished concrete surfaces.

3. Steel: Minimum 16 gage sheet, well matched, tight fitting, stiffened to support weight of concrete, without deflection detrimental to tolerances and appearances of finished concrete surfaces.

4. Plywood: "Finland Form,," "Combi Form" by North American Plywood Corporation, “Plyform” by Roy O. Martin, “ProForm” by Pacific Wood Laminates, or equal. The material shall be furnished with hard smooth birch face veneers with phenolic resin thermally fused onto panel sides. Edges shall be factory sealed.

I. Form Ties: Prefabricated rod, flat band, wire, internally threaded disconnecting type, not leaving metal within 1 1/2-inch of concrete surface.

J. Form Coating: Non-staining clear coating free from oil, silicone, wax, not grain-raising, "Formshield" by A.C. Horn, Inc., "Release" by Edoco/Dayton Superior, "Cast-Off" by Sonneborn/BASF Building Systems or equal. Where form liners are furnished, provide form coatings recommended by form liner manufacturer.

K. Form Liner: Rigid or resilient type by L.M. Scofield, Symons, Greenstreak, or equal.

L. Void Forms: Manufactured by SureVoid Products, Inc., Sonotube, Void Form International, or equal. Forms shall be "WallVoid" for temporary support of concrete walls and grade beams spanning between supports, and "SlabVoid" for creating gaps between concrete slabs or steps and underlying soils. Void forms shall be fabricated of corrugated paper with moisture resistant exterior, and shall be capable of withstanding working load of 1,500 psf. Provide accessories as required.

PART 3 - EXECUTION

3.01 GENERAL

A. Forms shall be constructed so as to shape final concrete structure conforming to shape, lines and dimensions of members required by Drawings and Specifications, and shall be sufficiently tight to prevent leakage of mortar. They shall be properly braced or tied together to maintain position and shape. Forms and their supports shall be designed so that previously placed structures will not be damaged.

B. Use form coating at all surfaces in contact with concrete.

3.02 TOLERANCES

A. Permitted abrupt or gradual irregularities in formed surfaces as measured within a 5 feet length with a straightedge shall per ACI 347, Table 3.1:

Class of Surface			
A	B	C	D
1/8 inch	1/4 inch	1/2 inch	1 inch

1. Class A: Use for concrete surfaces prominently exposed to public view.

2. Class B: Use for coarse-textured concrete-formed surfaces intended to receive plaster, stucco or wainscoting.

3. Class C: Use as a general standard for permanently exposed surfaces where other finishes are not specified.

4. Class D: Use for surfaces where roughness is not objectionable and will be permanently concealed.

3.03 ERECTION

A. Plywood shall be installed with horizontal joints level, vertical joints plumb and with joints tight. Back joints by studs or solid blocking, and fill where necessary for smoothness. Reused plywood shall be thoroughly cleaned, damaged edges or surfaces repaired and both sides and edges oiled with colorless form oil. Nail plywood along edges, and to intermediate supports, with common wire nails spaced as necessary to maintain alignment and prevent warping.

B. Openings for Cleaning: Provide temporary openings at points in formwork to facilitate cleaning and inspection. At base of walls and wide piers, bottom form board on one face for entire length shall be omitted until form has been cleaned and inspected.

C. Chamfers: Provide 3/4 inch by 3/4 inch chamfer strips for all exposed concrete corners and edges unless otherwise indicated.

D. Reglets and Rebates: As specified in Section 03 3000: Cast-In-Place Concrete.

3.04 REMOVAL OF FORMS

A. Forms shall not be removed until concrete has sufficiently hydrated to maintain its integrity and not be damaged by form removal operations. Unless noted otherwise and/or permitted by the Architect, columns and wall forms shall not be removed in less than five days, floor slabs in less than seven days, beams and girders in less than 15 days, pan forms for joists may be removed after three days, but joist centering shall not be removed until after 15 days, and ramp, landing, steps and floor slabs shall not be removed in less than seven days. Shoring shall not be removed until member has

acquired sufficient strength to support its weight, load upon it, and added load of construction.

B. Compressive strength of in-place concrete shall be determined by testing field-cured specimens representative of concrete location or members, as specified in Section 03 3000: Cast-In-Place Concrete.

3.05 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.06 CLEAN UP

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 03 2000

CONCRETE REINFORCING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Concrete steel reinforcement.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 01 4523: Testing and Inspection.

3. Section 03 1000: Concrete Forming.

4. Section 03 3000: Cast-In-Place Concrete.

1.02 REGULATORY REQUIREMENTS

A. Fabrication and placement of reinforcing shall be in accordance with requirements of CBC, Chapter 19A.

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM A82 - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.

2. ASTM A184 - Standard Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.

3. ASTM A185 - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.

4. ASTM A496 - Standard Specification for Steel Wire, Deformed, for Concrete Reinforcement.

5. ASTM A497 - Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete.

6. ASTM A615 - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.

7. ASTM A706 - Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.

B. American Concrete Institute (ACI) Publication:

1. ACI SP-66 – ACI Detailing Manual.

2. ACI 318 – Building Code Requirements for Structural Concrete, as modified by CBC.

C. American Welding Society (AWS):

1. AWS D1.4 – Structural Welding Code – Reinforcing Steel.

1.04 SUBMITTALS

A. Shop Drawings: Submit steel reinforcement Shop Drawings in accordance with ACI 315. Include assembly diagrams, bending charts and slab plans. Indicate lengths and location of splices, size and lengths of reinforcing steel.

B. Closeout Submittals: Record exact locations of reinforcing that vary from Shop Drawings.

1.05 QUALITY ASSURANCE

A. Comply with the following as a minimum requirement:

1. Concrete Reinforcing Steel Institute (CRSI) Manual of Standard Practice.

2. American Welding Society (AWS).

3. American Concrete Institute (ACI).

4. CBC, Chapter 19A, Concrete.

B. Source Quality Control: Refer to Division 01 Sections for general requirements and to the following paragraphs for specific procedures. Testing laboratory retained by the OWNER shall select test Samples of bars, ties, and stirrups from the material at the Project Site or from the place of distribution, with each Sample consisting of not less than two 18 inch long pieces, and perform the following tests according to ASTM A615, or ASTM A706, as applicable:

1. Identified Bars: If Samples are obtained from bundles as delivered from the mill, identified as to heat number, accompanied by mill analyses and mill test reports, and properly tagged with the identification certificate so as to be

readily identified, perform one tensile and one bend test for each 10 tons or fraction thereof of each size of bars. Submit mill reports when Samples are selected.

2. Unidentified Bars: When positive identification of reinforcing bars cannot be performed and when random Samples are obtained; perform tests for each 2.5 tons or fraction thereof, one tensile and one bend test from each size of bars.

C. Certification of Welders: Shop and Project site welding shall be performed by welding operators certified by AWS.

1.06 DELIVERY, STORAGE AND HANDLING

A. Avoid exposure to dirt, moisture or conditions harmful to reinforcing.

B. Reinforcing steel bars, wire, and wire fabric shall be stored on the Project site to permit easy access for examination and identification of each shipment. Material of each shipment shall be separated for size and shape.

PART 2 - PRODUCTS

2.01 GENERAL

A. Provide reinforcing of sizes, gages and lengths indicated, bent to indicated shapes.

2.02 MATERIALS

A. Steel Reinforcing Bars: ASTM A615, or ASTM A706 deformed grade 60 billet steel unless otherwise specified or indicated.

B. Bars or Rod Mats: ASTM A184.

C. Tie Wire: ASTM A82, fully annealed, copper-bearing steel wire, 16 gage minimum.

D. Chairs, Spacers, Supports, and Other Accessories: Standard manufacture conforming to ACI 315 fabricated from steel wire of required types and sizes. For reinforcement supported from grade, provide properly sized dense precast blocks of concrete.

2.03 FABRICATION OF REINFORCING BARS

A. Comply with CRSI Manual of Standard Practice for Reinforced Concrete Construction for fabrication of reinforcing steel.

B. Bending and Forming: Fabricate bars of the indicated sizes and bend and form to required shapes and lengths by methods not injurious to materials. Do not heat reinforcement for bending. Bend bars No. 6 size and larger in the shop only. Bars

with unscheduled kinks or bends are not permitted. Provide only tested and permitted bar materials.

C. Welding: Provide only ASTM A706 steel where welding is indicated. Perform welding by the direct electric arc process in accordance with AWS D1.4 and specified low-hydrogen electrodes. Preheat 6 inches each side of joint. Protect joints from drafts during the cooling process; accelerated cooling is not permitted. Do not tack weld bars. Clean metal surfaces to be welded of loose scale and foreign material. Clean welds each time electrode is changed and chip burned edges before placing welds. When wire brushed, the completed welds must exhibit uniform section, smooth welded metal, feather edges without undercuts or overlays, freedom from porosity and clinkers, and good fusion and penetration into the base metal. Cut out welds or parts of welds deemed defective, using chisel, and replace with proper welding. Prequalification of welds shall be in accordance with CBC requirements.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Bars shall be bent cold. Bars partially embedded in concrete shall not be field bent except as indicated on reviewed Shop Drawings.

B. Before installation and just prior to placing concrete, clean reinforcing of loose scale, rust, oil, dirt and any coating that could reduce bond.

C. Accurately position, install, and secure reinforcing to prevent displacement during the placement of concrete.

D. Provide metal chairs to hold reinforcement the required distance above form bottoms. In beams and slab construction, provide chairs under top slab reinforcement as well as under bottom reinforcement. Space chairs so that reinforcement will not be displaced during installation. Provide metal spacers to secure proper spacing. Stirrups shall be accurately and securely wired to bars at both top and bottom. At slabs, footings, and beams in contact with earth, provide concrete blocks to support reinforcement at required distance above grade.

E. Install and secure reinforcement to maintain required clearance between parallel bars and between bars and forms. Lapped splices shall be installed wherever possible in a manner to provide required clearance between sets of bars. Stagger lapped splices. Dowels and bars extending through construction joints shall be secured in position against displacement before concrete is installed and subsequently cleaned of concrete encrustations while they are still soft.

F. Do not install reinforcing in supported slabs and beams until walls and columns have been installed to underside of slabs and beams or until construction joints have been thoroughly cleaned. Reinforcing shall be inspected before placement of concrete and cleaned as required.

G. Use deformed bars unless otherwise indicated, except for spiral reinforcement.

3.02 CLEAN UP

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

3.03 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 03 3000

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Cast-in-place normal weight and lightweight concrete, placement and finishing.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 03 1000: Concrete Forming and Accessories.

3. Section 03 2000: Concrete Reinforcing.

4. Section 32 1313: Site Concrete Work.

1.02 REFERENCES

A. American Concrete Institute (ACI) Publication:

1. ACI 117 – Specifications for Tolerances for Concrete Construction and Materials.

2. ACI 301 – Specifications for Structural Concrete.

3. ACI 302.1R – Guide for Concrete Floor and Slab Construction.

4. ACI 305R - Specification for Hot Weather Concreting.

5. ACI 306.1 – Standard Specification for Cold Weather Concreting.

6. ACI 308R – Guide to External Curing of Concrete.

7. ACI 318 - Building Code Requirements for Structural Concrete, as modified by CBC Sections 1903A and 1905A.

B. American Society for Testing and Materials (ASTM) Standards:

1. ASTM C31 – Standard Specification for Making and Curing Concrete Test Specimens in the Field.

2. ASTM C33 - Standard Specification for Concrete Aggregates.

3. ASTM C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.

4. ASTM C42 - Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.

5. ASTM C88 - Standard Test Method for Soundness of Aggregates by use of Sodium Sulphate or Magnesium Sulphate.

6. ASTM C94 - Standard Specification for Ready-Mixed Concrete.

7. ASTM C143 - Standard Test Method for Slump of Hydraulic Cement Concrete.

8. ASTM C150 - Standard Specification for Portland Cement.

9. ASTM C156 – Standard Test Method for Water Loss (from a Mortar Specimen) Through Liquid membrane-Forming Curing Compounds for Concrete.

10. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete.

11. ASTM C172 – Standard Practice for Sampling Freshly Mixed Concrete.

12. ASTM C173 – Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.

13. ASTM C260 – Standard Specification for Air-Entraining Admixtures for Concrete.

14. ASTM C289 - Standard Test Method for Potential Alkali-Silica Reactivity of Aggregates (Chemical Method).

15. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

16. ASTM C330 - Standard Specification for Lightweight Aggregates for Structural Concrete.

17. ASTM C494 - Standard Specification for Chemical Admixtures for Concrete.

18. ASTM C567 - Standard Test Method for Determining Density of Structural Lightweight Concrete.

19. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.

20. ASTM C845 - Standard Specification for Expansive Hydraulic Cement

21. ASTM C989 - Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars.

22. ASTM C1107 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).

23. ASTM C1064 - Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete.

24. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures.

25. ASTM C1315 – Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.

26. ASTM D1308 – Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes.

27. ASTM C1567 - Standard Test Method for Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method).

28. ASTM D1751 - Standard Test Method for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).

29. ASTM D7234 – Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers.

30. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials.

31. ASTM E1155 - Standard Test Method for Determining F_F Floor Flatness and F_L Floor Levelness Numbers.

32. ASTM E1643 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill under Concrete Slabs.

33. ASTM E1745 - Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.

34. ASTM F710 – Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.

35. ASTM F1869 – Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.

36. ASTM F2170 – Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using In Situ Probes.

37. ASTM F3010 – Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use under Resilient Floor Coverings.

1.03 SUBMITTALS

A. Shop Drawings: Submit Shop Drawings indicating locations of cast-in-place concrete Work and accessory items such as vapor barriers. Include details and locations of reinforcing, embedded items, and interfacing with other Work.

B. Mix Design Data: Submit concrete mix designs as specified herein and in Article 2.02.

1. Submit name, address and telephone number of the concrete production facility which the contractor intends to engage to design the concrete mixes. Submit name and qualifications of the proposed concrete technologist.

2. Mix Design: Submit a concrete mix design for each strength and type of concrete indicated in the drawings or specified. Include water/cement ratio, source, size and amount of coarse aggregate and admixtures. Predict minimum compressive strength, maximum slump and air content percentage. Clearly indicate locations where each mix design will be used.

a. Water/cement ration for concrete slabs on grade shall be 0.50 maximum.

3. Test Reports: Submit copies of test reports showing that the proposed mixes produce concrete with the strengths and properties specified. Include tests for cement, aggregates and admixtures. Provide gradation analysis.

C. Material Samples: Submit Samples illustrating concrete finishes and hardeners, minimum 12-inch by 12-inch.

D. Certificates: Submit certification that each of the following conforms to the standards indicated:

1. Portland cement: ASTM C150.

2. Normal weight concrete aggregates: ASTM C33.

3. Lightweight concrete aggregates: ASTM C330.

4. Aggregates: Submit evidence that the aggregate is not reactive in the presence of cement alkalis. In the absence of evidence, aggregate shall be tested by one of the methods in ASTM C33 Appendix XI, Methods for Evaluating Potential for Deleterious Expansion Due to Alkali Reactivity of an Aggregate. . Aggregates deemed to be deleterious or potentially deleterious may be used with the addition of a material that has been shown to prevent harmful expansion in accordance

with Appendix XI of ASTM C33, when approved by the building official, in accordance to CBC Section 1903A5A.

5. Curing materials: ASTM C171.

E. Admixtures: Submit product data for proposed concrete admixtures.

1.04 QUALITY ASSURANCE

A. Continuous inspection shall be provided at the batch plant and for transit-mixed concrete to run check sieve analysis of aggregate, check moisture content of fine aggregate, check design of mix, check cement being used with test reports, check loading of mixer trucks, and certify to quantities of materials placed in each mixer truck.

B. Inspection shall be performed by a representative of a testing laboratory selected by the OWNER. OWNER will pay for inspection costs. Notify the laboratory 24 hours in advance of time concrete is to be mixed. Notify the laboratory of postponement or cancellation of mixing within at least 24 hours of scheduling time.

C. CONTRACTOR shall assist the testing laboratory in obtaining and handling samples at the project site and at the source of materials.

D. Continuous batch plant inspection requirement may be waived in accordance with CBC Section 1705A.3.3.1. Waiver shall be in writing, including DSA approval. When batch plant inspection is waived by DSA, the following requirements shall be met:

1. Approved inspector of the testing laboratory shall check the first batching at the start of work and furnish mix proportions to the licensed weightmaster.

2. Licensed weightmaster shall positively identify materials as to quantity and certify to each load by a ticket.

3. Tickets shall be transmitted to the Inspector by a truck driver with load identified thereon. The Inspector will not accept the load without a load ticket identifying the mix and will keep a daily record of placements, identifying each truck, its load and time of receipt and approximate location of deposit in the structure and will transmit a copy of the daily record to DSA.

4. At the end of the project, the weightmaster shall furnish an affidavit to DSA certifying that all concrete furnished conforms in every particular to proportions established by mix designs.

E. Special Inspections and Tests shall be in accordance with CBC Chapter 17A, Reinforcement and Anchor testing per CBC Section 1910A and Specification Section 01 4523.

1.05 DELIVERY, STORAGE AND HANDLING

A. Store cement and aggregate materials so as to prevent their deterioration or intrusion by foreign matter. Deteriorated or contaminated materials shall not be furnished.

B. Packaged materials shall bear the manufacturers and brand name label, and shall be stored in their original unbroken package in a weather tight place until ready for use in the work.

1.06 PROJECT CONDITIONS

A. Cold Weather Requirements: Batching, mixing, delivering and placing of concrete in cold weather shall comply with the applicable requirements of ACI 306.1.

B. Hot Weather Requirements: Batching, mixing, delivering and placing of concrete in hot weather shall comply with the applicable requirements of ACI 305R.

C. Concrete temperature of freshly mixed concrete shall be determined per ASTM C1064.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Cement: ASTM C150. Portland Cement.

B. Aggregates: Conform to the following standards:

1. Normal weight concrete: ASTM C33.

2. Lightweight concrete: ASTM C330, with fine aggregates per ASTM C33.

3. Aggregate shall be tested for Potential Alkali Reactivity of Cement-Aggregate Combinations per ASTM C289.

4. Nominal maximum size of coarse aggregate shall be 1” and no larger than:

a. 1/5 the narrowest dimension between sides of forms, norpp

b. 1/3 the depth of slabs, nor

c. 3/4 the clear spacing between individual reinforcing bars or wires, bundles of bars, individual tendons, or ducts.

d. CONTRACTOR may request the ARCHITECT and DSA waiver of the above limitations reported per ACI 318, provided that the workability and methods of consolidation are such that the concrete can be placed without honeycombs or voids.

C. Water: Water for concrete mixes, curing and cleaning shall be potable and free from deleterious matter.

D. Admixtures: Shall be shown capable of maintaining essentially the same composition and performance throughout the work as the product used in establishing concrete proportions in accordance with ACI 318, Section 3.6.

1. Admixtures containing chlorides or sulfides are not permitted.

2. Air-entraining admixtures shall comply with ASTM C260. Air-entrained admixtures shall not be used for floor slabs to receive steel trowel finish.

3. Admixtures for water reduction and setting time modification shall conform to ASTM C494.

4. Admixtures for producing flowing concrete shall conform to ASTM C1017.Admixtures containing ASTM C845 expansive cements shall be compatible with the cement and produce no deleterious effects.

5. Silica fumes used as an admixture shall conform to ASTM C1240.

E. Reinforcement Fibers: Chop strands of alkali-resistant polypropylene or nylon fibers added to the concrete mix for protection against shrinkage cracks.

F. Expansion Joint Fillers: Preformed strips, non-extruding and resilient bituminous type, of thickness indicated, conforming to ASTM D1751.

G. Curing:

1. Curing Paper: Shall conform to ASTM C171 and consist of two sheets of kraft paper cemented together with a bituminous material in which are embedded cords or strands of fiber running in both directions. The paper shall be light in color, shall be free of visible defects, with uniform appearance.

2. Elevated slabs and slabs on grade may be cured at CONTRACTOR's option with curing and proactive water vapor emission and alkalinity control system. Products shall be approved by OWNER's Office of Environmental Health and Safety.

a. VaporSeal 309, by Floor Seal Technology, Inc., or equal.

1) ASTM C156: 0.39 kg/m².

2) ASTM C309: Exceeds requirements.

3) ASTM C1315: Exceeds requirements.

4) ACI 308R-01 Compliant.

b. Remedial Treatment: Water vapor emission and alkalinity control treatment, MES 100 by Floor Seal Technology, Inc. or equal.

1) ASTM E96: <0.1 Perms.

2) ASTM D1308: 14pH Resistant.

3) ASTM D7234: 500+psi 100% concrete failure.

4) ASTM F2170: 100%RH resistant.

5) VOC Content: <100 g/L, meets SCAQMD Rule #1113.

6) ASTM F3010: Meets Requirements.

c. Self-leveling Compounds: Ardex Engineered Cements, K15, or V1200, Schonox ZM Rapid, US Self Leveler Armstrong, S-194, or equal.

H. Floor Hardener: Water soluble, inorganic, silicate-based curing, hardening, sealing and dustproofing compound. Aquaseal W20 by Monopole Inc., Kure-N-Harden by BASF, Chem Hard by L&M, Liqui-Hard by W. R. Meadows, or equal.

I. Underlayment: Two component latex underlayment for filling low spots in concrete for both interior and exterior applications, from featheredge to a maximum of 3/8 inch in thickness. Underlayment shall be non-shrink and suitable for repairing exposed concrete surfaces and for underlayment of carpet, resilient, tile and quarry floor coverings. La-O-Tex by TexRite, Underlay C, RS by Mer-Krete Systems, Underlayment 962 by C-Cure, or equal.

J. Grout: ASTM C1107, non-shrink type, pre-mixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing additives, capable of developing a minimum compressive strength of 4,000 psi at 28 days; of consistency suitable for application and a 30 minute working time.

2.02 CONCRETE MIX

A. Mix shall be signed and sealed by a Civil or Structural Engineer currently registered in the State of California.

B. Strength of Concrete: Strengths and types of concretes shall be as indicated in the Drawings. Unless otherwise indicated or specified, concrete shall be provided with minimum 28-day strength of 3000 psi (f'c).

C. Concrete mix shall meet the durability requirements of ACI 318, Chapter 4.

D. Concrete proportioning shall be determined on the basis of field experience and/or trial mixtures shall in accordance with ACI 318, Section 5.3. Proportions of materials shall provide workability and consistency to permit concrete to be placed readily into forms and around reinforcement under conditions of placement to be employed, without segregation or excessive bleeding.

E. Ready-Mixed Concrete: Mix and deliver in accordance with requirements of ASTM C94.

PART 3 - EXECUTION

3.01 GENERAL

A. Surfaces to receive concrete shall be free of debris, standing water, and any other deleterious substances before start of concrete placing.

B. Time of Placing: Do not place concrete until reinforcement, conduits, outlet boxes, anchors, hangers, sleeves, bolts, and other embedded materials are securely fastened in place. Contact the Inspector at least 24 hours before placing concrete; do not place concrete until inspected by the Project Inspector.

C. Pouring Record: A record shall be kept on the Project site of time and date of placing concrete in each portion of structure. Such record shall be maintained on the Project site until Substantial Completion and shall be available for examination by the ARCHITECT and DSA.

3.02 TOLERANCES

A. Concrete construction tolerances shall be as specified in ACI 117 and as modified herein.

C. Refer to ACI 302.1R, Tables 8.1 and 8.2 Slab on Ground and Suspended Flatness/Levelness Construction Guide, for recommended concrete placing and finishing methods.

D. Floor Flatness and Floor Levelness shall be tested in accordance to ASTM E1155. Floor measurements shall be made within 48 hours after slab installation, and shall precede removal of shores and forms.

3.03 PREPARATION

A. For installation of vapor barrier refer to Section 07 2600, Vapor Barriers.

B. Reglets and Rebates:

1. Form reglets and rebates in concrete to receive flashing, frames and other equipment as detailed and required. Coordinate dimensions and locations required with other related Work.

2. If concrete slabs on grade adjoin a wall or other perpendicular concrete surface, form a reglet in wall to receive and carry horizontal concrete Work. Reglet shall be full thickness of the slab and shall be 3/4 inch wide, unless otherwise indicated. Requirement does not apply to exterior walks, unless specifically indicated.

C. Screeds: Install screeds accurately and maintain at required grade or slab elevations after steel reinforcement has been installed, but before starting to place concrete. Install screeds adjacent to walls and in parallel rows not to exceed 8 feet on centers.

3.04 INSTALLATION

A. Conveying and Placing:

1. Concrete shall be placed only under direct observation of the Project Inspector. Do not place concrete outside of regular working hours, unless the Inspector has been notified at least 48 hours in advance.

2. Concrete shall be conveyed from mixer to location of final placement by methods that will prevent separation or loss of materials.

3. Concrete shall be placed as nearly as practicable to its final position to avoid segregation due to re-handling or flowing. No concrete that has partially hydrated or has been contaminated by foreign materials shall be placed, nor shall re-tempered concrete or concrete which has been remixed after initial set be placed.

4. In placing concrete in columns, walls or thin sections, provide openings in forms, elephant trunks, tremies or other recognized devices, to prevent segregation and accumulation of partially hydrated concrete on forms or metal reinforcement above level of concrete being placed. Such devices shall be installed so that concrete will be dropped vertically. Unconfined vertical drop of concrete from end of such devices to final placement surface shall not exceed 6 feet.

5. Concrete shall be placed as a continuous operation until placing of panel or section is completed. Top surfaces of vertically formed lifts shall be level.

6. Concrete shall be thoroughly consolidated by suitable means during placement, and shall be thoroughly worked around reinforcement and embedded fixtures and into corners of forms.

7. Where conditions make consolidation difficult or where reinforcement is congested, batches of mortar containing same proportions of cement, sand, and water as provided in the concrete, shall first be deposited in the forms to a depth of at least one inch.

B. Cold Weather:

1. Provide adequate equipment for heating concrete materials and protecting concrete during freezing or near-freezing weather. All ground with which concrete is to come in contact shall be free from frost. No frozen materials or materials containing ice shall be used.

2. The temperature of concrete at the time of placement shall not be below the minimum temperatures given in Table 3.1 of ACI 306.1.

3. Concrete shall be maintained at a temperature of at least 50° F. for not less than 72 hours after placing or until it has thoroughly hardened. Cover concrete and provide sufficient heat as required. When necessary, aggregates shall be heated before mixing. Special precautions shall be taken for protection of transit-mixed concrete.

C. Hot Weather:

1. Concrete to be placed during hot weather shall comply with the requirements of ACI 318, Section 5.13.

2. Maintain concrete temperatures indicated in Table 2.1.5 of ACI 305R to prevent the evaporation rate from exceeding 0.2 pound of water per square feet of exposed concrete per hour.

3. Cool concrete using methods indicated in ACI 305R Appendix B.

4. Place and cure concrete as specified in ACI 305R Chapter 4.

D. Compaction and Screeding:

1. Tamp freshly placed concrete with a heavy tamper until at least 3/8 inch of mortar is brought to surface. Concrete shall then be tamped with a light tamper and screeded with a heavy straightedge until depressions and irregularities are eliminated, and surface is true to finish grades or elevations. Remove excess water and debris.

2. Where slabs are to receive separate cement finish or mortar setting bed, continued tamping to raise mortar to surface is not performed. Laitance shall be removed by brushing with a stiff brush or by light sandblasting to expose clean top surface of coarse aggregate.

E. Floating and Troweling:

1. When concrete has hydrated sufficiently, it shall be floated to a compact and smooth surface. After floating, wait until concrete has reached proper consistency before troweling. Top surfaces shall receive at least 2 troweling operations with steel hand trowel. Prior to and during final troweling, apply a fine mist of water frequently with an atomizing type fog sprayer. Omit troweling for slabs to receive a separate cement finish.

2. For interior finish slabs, final troweling shall provide a hard, impervious, and non-slip surfaces, free from defects and blemishes. Finished surface shall be within tolerances indicated in Article 3.02. Avoid burnishing. Do not add cement or sand to absorb excess moisture.

a. Floor of Walk-In Refrigerator: Finish as specified above, to a smooth finish.

b. Floor of Gymnasium Locker Rooms: After floating, and while the surface is still plastic, provide a fine textured finish by drawing a fine fiber bristle broom uniformly over the surface in one direction only. Floors sloped for drainage should be brushed in the direction of flow.

3. Vertical concrete surfaces shall be finished smooth and free from marks or other surface defects.

3.05 CURING

A. Length of time, temperature and moisture conditions for curing concrete shall be in accordance with ACI 318, Section 5.11.

B. Forms containing concrete, top of concrete between forms, and exposed concrete surfaces after removal of forms shall be maintained in a thoroughly wet condition for at least 7 consecutive days after placing.

C. If weather is hot or surface has dried out, spray surface of concrete slabs and paving with fine mist of water, starting not later than 2 hours after final troweling and continuing until sunset. Surface of finish shall be kept continuously wet until curing medium has been installed.

D. Immediately after finishing, monolithic floor slabs shall be covered with curing paper. Paper shall be lapped 4 inches at joints and sealed with waterproof sealer. Edges shall be cemented to finish. Repair or replace paper damaged during construction operations.

E. When curing slabs with proactive water vapor emission and alkalinity control system:

1. Coordinate and schedule application of curing compound with concrete pour schedule, while conforming to manufacturer's application instructions.

2. When the surface of the concrete has hardened sufficiently to sustain foot traffic pre-cure slabs with liquefied product application following manufacturer's written instructions. Application shall be by trained applicators.

3. Monitor Environmental Conditions: Set up weather station 20 to 30 inches above freshly placed concrete. Record temperature, humidity and wind velocity measurements at 15 minute maximum intervals.

4. Calculate Evaporation Rate: Use recorded weather information in combination with nomograph per ACI 308R, Figure 4.1, Guide to Curing Concrete, to evaluate relevant evaporation rate.

5. When the bleed water rate of the concrete is approximately equal to the surface water evaporation rate, spray curing compound material throughout surface of slabs and decks, following manufacturer's written instructions. Application shall be by trained applicators.

6. Perform the following tests at least 28 days after placement of concrete and prior to floor covering installation. Submit to OAR test results indicating locations that do not comply with scheduled flooring installation requirements.

    a. Calcium chloride testing per ASTM F1869.

    b. Relative humidity testing per ASTM F2170.

    c. Alkalinity testing per ASTM F710.

    d. Perform concrete bond layer humidity meter testing to determine substrate surface acceptability.

7. Areas emitting moisture and alkalinity at rates exceeding floor covering manufacturer's published ASTM F1869 limits, shall receive a corrective coating, at no cost to the OWNER, as follows:

    a) Mask and protect adjacent walls and floor surfaces from effects of scarification and application of remedial treatment.

    b) Scarify slab surface in area of application by shot blasting or other method acceptable to corrective coating manufacturer.

    c) Prepare and fill cracks, control joints and cold joints.

    d) Apply two-component modified epoxy penetrant and coating with roller and squeegee over required treatment area; saturate surfaces to ensure a through mechanical bond.

e) Clean and fill divots, chips, voids and other surface irregularities with one hundred percent Portland cement based patching compound or cementitious fill.

f) Apply cementitious surfacing over coating in areas to receive resilient and wood floor coverings to facilitate adhesion; apply to a thickness of 1/8 inch.

3.06 FILLING, LEVELING AND PATCHING

A. Concrete slabs exhibiting high or low spots and indicated to receive resilient floor covering or soft floor covering, shall have surfaces repaired. High spots shall be honed, or ground with power-driven machines to required tolerances. Low spots shall be filled with latex underlayment, installed in strict accordance with manufacturer's written recommendations.

B. Holes resulting from form ties or sleeve nuts shall be solidly packed, through exterior walls, by pressure grouting with cement grout, as specified. Grouted holes on exposed surfaces shall be screeded flush and finished to match adjoining surfaces.

C. Cement Base: Cement base shall be of the height, thickness, and shape detailed. Base shall be reinforced with one inch mesh, 18 gage, zinc-coated wire fabric. Base finish mixture shall be one part Portland cement, 2 parts of fine aggregate and one part pea gravel. Colored cement base shall include a chemically inert mineral oxide pigment in the mix.

3.07 FINISHING

A. Soda and Acid Wash: Concrete surfaces to receive plaster, paint or other finish, and which have been formed by oil coated forms, shall be scrubbed with a solution of 1-1/2 pounds of caustic soda to one gallon of water. Surfaces where smooth wood or waste molds have been furnished shall be scrubbed with a solution of 20 percent muriatic acid. Wash with clean water after scrubbing.

B. Sacking: Exposed concrete curbs, walls, and other surfaces shall be sacked by an application of Portland cement grout, floated, and rubbed. Sacking shall not be performed until patching and filling of holes has been completed. Entire sacking operation for any continuous area shall be started and completed within the same day.

1. Mix one part Portland cement and 1-1/2 parts fine sand with sufficient water to produce a grout having consistency of thick paint. Wet surface of concrete sufficiently to prevent absorption of water from grout. Apply grout uniformly with a brush or spray gun, then immediately float surface with a cork or other suitable float, scouring wall vigorously.

2. While grout is still plastic, finish surface with a sponge-rubber float, removing excess grout. Allow surface to dry thoroughly, then rub vigorously with dry

burlap to completely remove dried grout. No visible film or grout shall remain after rubbing with burlap.

C. Sandblasting: Exterior concrete surfaces to receive stucco dash coat finish, where plywood or other smooth forms have been furnished, shall be uniformly sand-blasted with sharp quartz sand under sufficient air pressure to remove dirt, form oil and other foreign materials, and roughen surface to provide a proper bond. Such surfaces shall be thoroughly washed with clean water after sandblasting.

D. Abrasive: Concrete stair treads, landings, ramps and steps on interior and exterior of buildings, and interior exposed concrete floors in shop buildings shall receive an abrasive finish.

E. Floor Hardener: Exposed interior concrete floors throughout shall be treated with floor hardener.

1. Protect adjacent surfaces. Clean surfaces to receive treatment in accordance with manufacturer's instructions, ensuring that all stains, oil, grease, form release agents, laitance, dust and dirt are removed prior to application.

2. Apply hardener in accordance with manufacturer’s instructions as soon as concrete is firm enough to work on after final troweling.

F. Cement Grout and Dry-Pack Concrete: Cement grout shall be mixed at the Project site and shall be composed of one volume of Portland cement and 2-1/2 volumes of fine aggregate. Materials shall be mixed dry with sufficient water added to make mixture flow under its own weight. When grout is used as a dry pack concrete, add sufficient water to provide a stiff mixture, which can be molded into a sphere.

G. Broom Finish: Exterior stair treads and landings shall be provided with a non-slip broom finish in addition to abrasive finish specified.

H. Abrasive Stair Nosing: Nosing shall be installed according to manufacturers written recommendations.

3.08 EXPANSION AND CONSTRUCTION JOINTS

A. Construction Joints: Details and proposed location of construction joints shall be as indicated on the Drawings, located to least impair strength of structure, in accordance with the following:

1. Thoroughly clean contact surface by sand blasting entire surface not earlier than 5 days after initial placement.

2. A mix containing same proportion of sand and cement provided in concrete plus a maximum of 50 percent of coarse aggregate shall be placed to a depth of at least one inch on horizontal joints. Vertical joints shall be wetted and coated with a neat cement grout immediately before placing of new concrete.

3. Should contact surface become coated with earth, sawdust, or deleterious material of any kind after being cleaned, entire surface shall be re-cleaned before applying mix.

B. Expansion Joints: Provide expansion joints where indicated in walks and exterior slabs. Space approximately 20 feet apart, unless otherwise indicated. Joints shall extend entirely through slab with joint filler in one piece for width of walk or slab. Joint filler shall be 3/8 inch thick, unless otherwise indicated.

C. Tooled Joints: Slabs, walks and paving shall be marked into areas as indicated with markings made with a V-grooving tool. Marks shall be round-edged, free from burrs or obstructions, with clean cut angles and shall be straight and true. Walks, if not indicated, shall be marked off into rectangles of not more than 12 square feet and shall have a center marking where more than 5 feet wide.

3.09 TESTING

A. Molded Cylinder Tests:

1. Inspector or testing lab personnel will prepare cylinders and perform slump tests. Samples for concrete strength shall be taken in accordance to ASTM C172. Each cylinder shall be dated, given a number, point in structure from which sample was obtained, mix design number, mix design strength and result of accompanying slump test noted.

2. Separate tests of molded concrete cylinders obtained at same place and time shall be made at age of three days, seven days, and 28 days. A strength test shall be the average of the compressive strength of two cylinders, obtained from the same sample of concrete and tested at 28 days or at test age designated for determination of f'c.

3. Test cylinders shall be prepared at the Project site and stored in testing laboratory in accordance with ASTM C31, and tested in accordance with ASTM C39.

B. Core Test: At request of the ARCHITECT, cores of hardened concrete shall be cut from portions of hydrated structures for testing, in accordance with CBC and ASTM C42.

1. Provide 4 inch diameter cores at representative places throughout the structure as designated by the ARCHITECT.

2. In general, provide sufficient cores to represent concrete placed with at least one core for each 4,000 square feet of building area, and at least 3 cores total for each Project.

3. Where cores have been removed, fill voids with drypack, and patch the finish to match the adjacent existing surfaces.

C. Concrete Consistency: Measure consistency according to ASTM C143. Test twice each day or partial day's run of the mixer.

D. Adjustment of Mix: If the strength of any grade of concrete for any portion of Work, as indicated by molded test cylinders, falls below minimum 28 days compressive strength specified or indicated, adjust mix design for remaining portion of construction so that resulting concrete meets minimum strength requirements.

E. Air Content Testing: Measure in accordance to ASTM C173 or ASTM C231, for each composite sample taken in accordance to ASTM C172.

F. Defective Concrete:

1. Should strength of any grade of concrete, for any portion of Work indicated by tests of molded cylinders and core tests, fall below minimum 28 days strength specified or indicated, concrete will be deemed defective Work and shall be replaced or adequately strengthened in a manner acceptable to the ARCHITECT and DSA.

2. Concrete Work that is not formed as indicated, is not true within 1/250 of span, not true to intended alignment, not plumb or level where so intended, not true to intended grades and levels, contains sawdust shavings, wood or embedded debris, or does not fully conform to Contract provisions, shall be deemed to be defective Work and shall be removed and replaced.

G. Concrete for Equipment Pads, Mechanical and Electrical Work: Unless otherwise indicated, strength shall have a minimum $f'c$ = 3,000 psi. Exposed concrete shall be provided with a hand trowel finish with radius corners and edges. Form and place concrete where necessary as described in Section 03 1000 Concrete Forming and Accessories, and reinforced as described in Section 03 2000 Concrete Reinforcing. Calcium chloride shall not be furnished in any concrete mix provided for the installation of underground electrical conduits. For concrete encasement of more than one conduit, furnish 3/4 inch maximum aggregate.

3.10 CLEAN UP

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

3.11 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 05 0513

HOT-DIP GALVANIZING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Hot-dip galvanizing of structural steel articles.
2. Hot-dip galvanizing of steel stairs and railings.
3. Hot-dip galvanizing of fabricated steel assemblies.
4. Preparation of galvanized steel fabrications for painting.

B. Related Sections:

1. Division 01 - General Requirements.
2. Section 05 1200: Structural Steel Framing.
3. Section 05 5000: Metal Fabrications.
4. Section 05 5100: Metal Stairs and Railings.
5. Section 09 9000: Painting and Coating.

1.02 REFERENCES

A. American Galvanizers Association (AGA):

1. Inspection of Products Hot-dip Galvanized after Fabrication.
2. The Design of Products to be Hot-dip Galvanized after Fabrication.
3. Recommended Details of Galvanized Structures.
4. Suggested Specifications for Paint Preparation Galvanized Structures.
5. Preparing Hot Dip Galvanizing for Paint.
6. Preparing Hot-Dip Galvanized Steel for Powder Coating.
7. Wet Storage Stain.

B. ASTM International (ASTM):

1. ASTM A123 – Standard Specification for Zinc (Hot-Dipped Galvanized) Coatings on Iron and Steel Products.

2. ASTM A143 – Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement.

3. ASTM A153 – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

4. ASTM A384 – Standard Practice for Safeguarding Against Warpage and Distortion during Hot-Dip Galvanizing of Steel Assemblies.

5. ASTM A385 – Standard Practice for Providing High-Quality Zinc Coatings (Hot-Dip).

6. ASTM A780 – Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.

7. ASTM B6 – Standard Specification for Zinc.

8. ASTM B201 – Standard Practice for Testing Chromate Coatings on Zinc and Cadmium Surfaces.

9. ASTM D6386 – Standard Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Painting.

10. ASTM D7803 - Standard Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Powder Coating.

11. ASTM E376 - Measuring Coating Thickness by Magnetic-Field or Eddy-Current (Electromagnetic) Test Methods.

C. The Society for Protective Coatings (SSPC):

1. SSPC-SP1 – Solvent Cleaning.

2. SSPC-SP2 – Hand Tool Cleaning.

3. SSPC-SP3 – Power Tool Cleaning, for surfaces to receive paint or powder coating.

4. SSPC-SP5 – White Metal Blast Cleaning.

5. SSPC-SP10 – Near White Blast Cleaning.

6. SSPC-SP16 - Brush-Off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals.

1.03 COORDINATION WITH STEEL FABRICATOR

A. Prior to fabrication, steel fabricators shall submit approved fabrication shop drawings to the galvanizer. The Galvanizer shall review fabricator shop drawings for suitability of materials for galvanizing and coatings and coordinate required fabrication modifications.

B. Steel Fabricator shall notify the galvanizer of steel fabrications that exceed the ASTM A385 recommended percentages for carbon, phosphorus, manganese and silicon, so special galvanizing processing techniques are used. Galvanizer may request material test reports (MTRs) or metallurgical assays from fabricator.

C. Coordinate with steel fabricator appropriate marking and masking materials.

D. Coordinate modifications needed to the fabrications to accommodate lifting and handling during galvanizing.

1.04 QUALITY ASSURANCE

A. Coating Applicator: Company specializing in hot-dip galvanizing after fabrication following the procedures in the Quality Assurance Manual of the American Galvanizers Association.

B. Galvanizer shall have an in-plant inspection program designed to maintain the coating thickness, finish, and appearance within the requirements of this Section.

1.05 SUBMITTALS

A. Galvanizing Certificate of Compliance: Submit to OAR notarized Certificate of Compliance with ASTM standards and specifications herein listed, noting exception for intentional bare areas. The Certificate shall be signed by the galvanizer and contain a detailed description of the material processed.

B. When galvanizer prepares the surfaces of fabrications that will receive paint or powder coating over galvanizing provide statement indicating conformance with ASTM D6386 or D7803, as applicable.

1.06 DELIVERY, STORAGE AND HANDLING

A. Package and handle galvanized material in a manner which will avoid damage to the zinc coating.

B. Store in dry, well-ventilated conditions until shipping.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Steel for Galvanizing: As specified in Sections:

1. Section 05 1200: Structural Steel Framing.

2. Section 05 5000: Metal Fabrications.

3. Section 05 5100: Metal Stairs and Railings.

B. Zinc for Galvanizing: Conform to ASTM B6, as specified in ASTM A123.

PART 3 – EXECUTION

3.01 PREPARATION

A. Remove welding slag, splatter, anti-splatter compounds and burrs remaining in steel articles. If anti-spatter sprays are utilized, they shall be water-soluble or solvent-based.

B. Provide drainage and venting holes in tubular assemblies. In thicker material drill holes in place of punching. Holes shall have a relatively uniform circumference. Punched holes or burned holes with a plasma torch shall be treated with a drill to even the diameter to appropriate size.

C. Masking installed by steel fabricator shall remain in place through galvanizing process completion.

D. Provide lifting holes or lugs to allow for handling during galvanizing. Avoid the use of chains or wires directly connected to steel articles to be duplexed or architecturally exposed.

E. Safeguard against warpage or distortion of steel members in accordance with ASTM A384.

F. Pre-clean steel work in accordance with accepted methods to produce an acceptable surface for quality hot-dip galvanizing. Remove surface contaminants and coatings that are not removable by the normal chemical cleaning process in the galvanizing operation by grit-blasting, sand-blasting, or other mechanical means.

G. Markings and stickers from fabrication or shipping that will interfere with galvanizing adhesion shall be removed prior to beginning the galvanizing process.

3.02 COATING APPLICATION

A. Galvanize steel articles, fabrications and assemblies by the hot-dip process in accordance with ASTM A123. The zinc used in the galvanizing bath shall conform to ASTM Specification B6. The molten metal in the working volume of the galvanizing bath shall contain at least 98.0 % zinc by weight.

B. Galvanize bolts, nuts, washers and iron and steel hardware components in accordance with ASTM A153.

C. Safeguard products against steel embrittlement in conformance with ASTM A143.

D. Surface preparation requirements shall be performed in accordance to ASTM D7803 or D6386 but also in accordance with the paint manufacturer's requirements and recommendations.

3.03 COATING REQUIREMENTS

A. Conform to paragraph 6.1 of ASTM A123, or Table 1 of ASTM A153, as applicable.

B. Surface Finish: Conform to paragraph 6.2 of ASTM A123, or Paragraph 5 of ASTM A153, as applicable.

C. Adhesion: Withstand normal handling consistent with the nature and thickness of the coating and normal use of the article.

3.04 TESTS

A. Inspection and testing of hot-dip galvanized coatings shall be done under the guidelines provided in the AGA publication Inspection of Products Hot-dip Galvanized after Fabrication.

B. Test in accordance with ASTM A123, or A153, as applicable, to determine the thickness of the zinc coating on the metal surface.

C. During the visual inspection, if adhesion concerns are suspected, such as peeling or flaking of the galvanized coating, then adhesion testing using the stout knife method shall be conducted. Embrittlement testing is required when there is evidence of embrittlement and shall be conducted per the requirements of ASTM A143.

D. Upon completion of tests furnish notarized Certificate of Compliance with ASTM standards and specifications as indicated in Article 1.05 Submittals.

3.05 REPAIR OF DAMAGED COATINGS

A. Smooth out icicles by hand filing or power sanding the area without removing any more zinc coating than necessary. Smooth out rough and bumpy surface of fabrications to be painted, powder coated or are indicated as architecturally exposed.

B. Remove lifting lugs and repair coating as indicated below.

C. Repair areas damaged at the galvanizing facility using zinc rich paints, zinc-based solders or metalizing methods in accordance with ASTM A780, and meeting the minimum repair thickness in accordance with ASTM A123 and ASTM A153.

3.06 PREPARATION FOR TOP COATING

A. Galvanized fabrications indicated on the drawings to be painted shall be prepared in accordance with ASTM D6386 and the American Galvanizers Association (AGA)

Suggested Specifications for Paint Preparation Galvanized Structures. For field painting refer to Section 09 9000, Painting and Coating.

B. Galvanized fabrications indicated on the drawings to be powder coated shall be prepared in accordance with ASTM D7803.

C. Galvanizer shall ensure water quenching and chromate passivation are not performed. for fabrications scheduled for duplex coatings.

END OF SECTION

SECTION 05 5000

METAL FABRICATIONS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Metal fabrications:

1. Steel thresholds.
2. Steel ladders and ladder safety cages.
3. Ramp and concrete stair railings.
4. Elevator hoist way door sill angles,
5. Steel framing and supports for countertops.
6. Steel tube reinforcement for low partitions.
7. Steel framing and supports for mechanical and electrical equipment.
8. Steel Gates.
9. Gratings, frames and covers.
10. Steel bollards.
11. Embedded edge angles in concrete.
12. Steel supports for coiling doors.
13. Steel framing and supports for operable partitions.
14. Supportive framing for sunshade panels.
15. Miscellaneous steel framing, supporting angles, plates, brackets, clips, anchors and bolts for equipment, and other work which is not specifically included in Section 05 1200, Structural Steel Framing.
16. Miscellaneous fabrications, as indicated on the Drawings.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 01 4523: Testing and Inspection.

3. Section 03 3000 – Cast-in-Place Concrete.

4. Section 04 2200: Concrete Unit Masonry.

5. Section 05 5013: Hot-Dip Galvanizing.

6. Section 05 1200: Structural Steel Framing.

7. Section 05 3000: Metal Decking.

8. Section 05 4100 Structural Cold Rolled Metal Framing.

9. Section 05 5100: Metal Stairs and Railings.

1.02 REFERENCES

A. ASTM International (ASTM):

1. ASTM A27 – Standard Specification for Steel Castings, Carbon, for General Application.

2. ASTM A36 – Standard Specification for Carbon Structural Steel.

3. ASTM A47 - Standard Specification for Ferritic Malleable Iron Castings.

4. ASTM A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

5. ASTM A123 - Standard Specification for Zinc (Hot-Dipped Galvanized) Coatings on Iron and Steel Products.

6. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

7. ASTM A283 - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates.

8. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.

9. ASTM A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

10. ASTM A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.

11. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts.

12. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

13. ASTM A780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.

14. ASTM C1107 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).

15. ASTM D1187 - Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal.

16. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.

17. ASTM F2329 - Standard Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners.

B. American Welding Society (AWS):

1. AWS D1.1 Structural Welding Code - Steel.

2. AWS D1.3 Structural Welding Code - Sheet Steel.

3. AWS D-19.0 Welding Zinc Coated Steel.

1.03 COORDINATION

A. Coordination between Steel Fabricator and Galvanizer:

1. Prior to fabrication, submit approved fabrication shop drawings to the galvanizer. Indicate fabrications to be painted or powder coated.

2. Notify galvanizer of steel fabrications that exceed the ASTM A385 recommended percentages for carbon, phosphorus, manganese and silicon, so special galvanizing processing techniques are used.

3. Coordinate modifications needed to the fabrications to accommodate lifting and handling during galvanizing.

B. Coordinate installation of metal fabrications that are anchored to concrete or masonry, or that receive work specified by other Sections. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry.

C. Field Measurements: Field verify dimensions prior to fabrication.

D. Coordinate selection of shop primers with galvanizing, and with paintings to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and paintings are compatible with one another.

1.04 SUBMITTALS

A. Shop Drawings: Submit Shop Drawings indicating provided materials, grade, dimensions, anchoring detail, and details of termination or connection to adjacent construction. Indicate items that are purchased from a manufacturer and items that are shop fabricated. Indicate component parts requiring Project site fabrication or assembly.

B. Product Data: Submit Product Data for manufactured items. Submit Product Data for primers and finishes.

C. Material Samples: Submit Samples of primers and finishes on fabricated items.

D. Fabricator qualifications per Article “Quality Assurance”.

E. Welding:

1. Welder’s Certificates: Field welders shall be Project certified in accordance with AWS D1.1.

2. Welding Material Certification: Provide certificate that welding material complies with specifications.

F. Research/Evaluation Reports: ICC-ES for post-installed anchors.

1.05 QUALITY ASSURANCE

A. Fabricator Qualifications: Firm with a minimum five year experience in successfully producing metal fabrications similar to that shown on the drawings.

B. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D-1.1– Structural Welding Code – Steel.

2. AWS D1.3 - Structural Welding Code - Sheet Steel.

C. Inspection of Welding: Refer to Section 01 4523: Testing and Inspection.

D. Field applied primers, paintings, sealers and adhesives shall be approved by the OWNER’s Office of Environmental Health and Safety (OEHS).

E. Preassemble items in shop to greatest extent possible to minimize field welding. Mark units for reassembly and coordination of installation. Use marking method compatible with galvanizing.

1.06 DELIVERY, STORAGE AND HANDLING

A. Store miscellaneous metal items above grade on platforms, skids, or other required supports.

B. Protect from damage and from corrosion, dirt, grease and other foreign matter.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Structural Steel Shapes: ASTM A36.

B. Rolled Steel Plates: ASTM A36. Plates to be bent or cold-formed shall conform to ASTM A283, Grade C.

C. Round HSS: ASTM A500 Grade B or C.

D. Square and Rectangular HSS: ASTM A500 Grade B or C.

E. Steel Pipe: ASTM A53 Type E or S, Grade B, standard weight (Schedule 40) minimum, unless otherwise noted or required to satisfy the performance requirements. Black finish.

F. Steel Sheet: ASTM A1008 or ASTM A1011.

G. Steel Bolts: ASTM A307, Grade A, or F3125 with hex steel nuts per ASTM A563 and washers. Galvanized in accordance with ASTM A153 for exterior locations.

H. Steel Bars: Conforming to ASTM A108 or ASTM A575.

I. Concrete Inserts: Threaded or wedge type; galvanized ferrous castings, either malleable iron, ASTM A47, or cast steel, ASTM A27. Provide bolts, washers, and shims, hot-dip galvanized per ASTM A153.

J. Nonshrink, Nonmetallic Grout: Factory-packaged, non-staining, noncorrosive, nongaseous grout complying with ASTM C1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

K. Welding Rods and Bare Electrodes: In conformance with AWS specifications.

L. Concrete Materials:

1. Concrete per Section 03 3000, Cast-in-Place Concrete.

2. Welded wire fabric and reinforcing per section 03 2000, Concrete Reinforcing.

M. Galvanizing Repair Materials:

1. Carbomastic 15 by Carboline, or OEHS approved zinc pains conforming with ASTM A780.

2. Galva-Guard Galvanizing Repair Solder by San Diego Galvanizing Inc. or zinc-based solders conforming with ASTM A780.

3. Metalizing methods in accordance with ASTM A780.

2.02 FABRICATION

A. General:

1. Preassemble items in the shop to greatest extent possible. Use connections that maintain structural value of joined pieces. Mark units for reassembly and installation.

2. Cut, drill, and punch metals cleanly and accurately. Ease exposed edges to a radius of approximately 1/32 inch, unless otherwise indicated or specified. Remove sharp and rough areas on exposed surfaces. Form exposed work with accurate angles and surfaces and straight edges. Form exposed connections with hairline joints, flush and smooth. Locate joints where least conspicuous.

B. Welding:

1. Weld connections unless otherwise indicated.

2. Weld corners and seams continuously and in accordance with requirements of AWS D1.1 Structural Welding Code. Welds shall be inspected as required in Section 05 1200: Structural Steel Framing.

3. Grind exposed welds smooth and flush to match and blend with adjoining surfaces.

1.

2.03 RAILING FABRICATION

A. Pipe Railing: Handrails, posts and pickets shall be fabricated of black ASTM A53 Type E or S, Grade B standard weight steel pipe.

B. Handrail Brackets: Wagner cast iron bracket Style D, or equal.

C. Form elbow bends and wall returns to uniform radius, free from buckles and twists. Close exposed ends of pipe and tubing by welding metal closure in place or by use of pre cased fittings.

D. Accurately miter and cope intersections of posts, pickets and rails and weld all around, grind welds smooth.

E. Connect posts to stair framing by direct welding, unless otherwise indicated.

2.04 PREPARATION FOR GALVANIZING

A. Fabricate to the largest size possible and whenever possible use slip joints to minimize field welding.

B. Fabricate structural steel in accordance with Class I, II, III guidelines as described in AGA's Recommended Details for Galvanized Structures, to facilitate galvanizing process. Corners of gussets, stiffeners, and bracing shall be cropped to allow free flow of zinc during galvanizing process.

C. Remove welding slag, splatter, anti-splatter compounds and burrs prior to delivery for galvanizing.

D. Marking for Identification: Avoid unsuitable marking paints for identification, such as oil based paints and markers and crayon markers. Use water soluble paints or markers acceptable to galvanizer or steel tags wired to the work.

E. Masking: Use masking materials recommended by the American Galvanizers Association (AGA) to produce ungalvanized areas for field welding and at slip critical bolts.

F. Galvanize fabrications per Section 05 5013, Hot-Dip Galvanizing, in accordance with ASTM A123 and ASTM A153.

2.05 SHOP FINISH

A. Metal fabrications shall be provided with a coat of primer, except those indicated to be hot-dip galvanized.

B. Primers:

1. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

2. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.

3. Minimum dry film thickness of primer shall be 2.0 mils.

C. Preparation for Primer Painting: Miscellaneous ferrous metal, except items specified galvanized, shall be thoroughly cleaned and prepared for painting, including removal of shipping oils or protective coatings, mill scale, grease, dirt and rust. Prepare in accordance with SSPC recommendations. Deliver to Project site primed or galvanized as indicated, and ready to receive Project site applied finishes.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine the areas where metal fabrications are to be installed. Notify the OAR in writing of unsatisfactory conditions. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Provide anchorage devices and fasteners as indicated in the drawings and where necessary for securing miscellaneous metal fabrications to in-place construction.

B. Cut, drill, and fit as required for installation of miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

C. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop-welded because of shipping size

limitations. Do not weld, cut, or abrade the surfaces of hot-dip galvanized fabrications intended for bolted or screwed field connections.

D. Alignment: Verify alignment of items with adjacent construction. Coordinate related work.

E. Grout: Follow manufacturer's recommendations for substrate preparation and application.

F. Corrosion Protection: Coat concealed surfaces of metals that will come into contact with grout, concrete, masonry, or wood, with a heavy coat of bituminous paint or zinc chromate primer. Protect dissimilar metals from galvanic corrosion by pressure tapes, coating, or isolators.

3.03 FIELD WELDING

A. Preparation of Weld Area of Galvanized Fabrications: Remove masking from fabrications. Remove remaining zinc coating between one inch and four inches from both sides of members to be welded, by grinding back the zinc coating, burning the zinc away or pushing back the molten zinc from the weld area.

B. Welding: Comply with AWS Code for procedures of manual shielded metal-arch welding, appearance and quality of welds made, methods used in correcting welding work.

1. Weld in accordance to AWS D-1.1.

2. Weld galvanized fabrications in accordance to AWS D-19.0.

C. Remove welding flux immediately. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surfaces matches those adjacent.

D. Upon completion of welding plug vent, drainage and lifting holes of galvanized fabrications with appropriate diameter zinc plugs. Push in about half way by hand, and hammer to a tight fit. With a hand file or an abrasive tool, file away excess material. Repair scratches with a zinc rich coating.

1. Plug railing holes.

2. Plug visible holes of HSS members.

3.04 ADJUSTING AND CLEANING

1. Touch Up Damaged Painted Finishes: Comply with SSPC-PA-1 for touch-up; apply with brush to produce a minimum 2.0 mil dry film thickness.

A. Galvanized Surfaces: Clean field welds, connections and damaged areas.

1. Apply two coats of Carbomastic 15 or a zinc rich coating in conformance with ASTM A780 and approved by OWNER’s OEHS. Brush or roll to a 4 to 6 mil thickness.

2. Apply Galva-Guard Galvanizing Repair Solder or other zinc-based solders in conformance with ASTM A780.

3. Apply metalizing methods in accordance with ASTM A780.

3.05 CLEAN UP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

3.06 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 05 5100

METAL STAIRS AND RAILINGS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:

1. Closed riser steel stairs with concrete filled treads and landings, and steel railings.

2. Balcony railings.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 01 4523: Testing and Inspection.

3. Section 03 2000 – Concrete Reinforcing.

4. Section 03 3000: Cast-in-Place Concrete.

5. Section 05 0513: Hot-Dip Galvanizing.

6. Section 05 1200: Structural Steel Framing.

7. Section 05 5000: Metal Fabrications.

8. Section 09 6518: Rubber Flooring and Stair Covering.

9. Section 09 9000: Painting and Coating.

1.02 REFERENCES

A. ASTM International (ASTM):

1. ASTM A27 - Standard Specification for Steel Castings, Carbon, for General Application.

2. ASTM A36 - Standard Specification for Carbon Structural Steel.

3. ASTM A47 - Standard Specification for Ferritic Malleable Iron Castings.

4. ASTM A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

5. ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished.

6. ASTM A123 – Standard Specification for Zinc (Hot-Dipped Galvanized) Coatings on Iron and Steel Products.

7. ASTM A153 – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

8. ASTM A283 - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates.

9. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.

10. ASTM A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

11. ASTM A501 - Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.

12. ASTM A513 - Standard Specification for Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing.

13. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts.

14. ASTM A575 - Standard Specification for Steel Bars, Carbon, Merchant Quality, M-Grades.

15. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

16. ASTM A780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.

17. ASTM A786 - Standard Specification for Hot-Rolled Carbon, Low-Alloy, High-Strength Low-Alloy, and Alloy Steel Floor Plates.

18. ASTM A1008 - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.

19. ASTM A1011 - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.

20. ASTM C1107 – Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).

21. ASTM D1187 - Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal.

22. ASTM D6386 – Standard Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Painting.

23. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.

24. ASTM F2329 - Standard Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners.

25. ASTM F3125 - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions.

B. American Welding Society (AWS):

1. AWS D1.1 Structural Welding Code - Steel.

2. AWS D1.3 Structural Welding Code - Sheet Steel.

3. AWS D-19.0 Welding Zinc Coated Steel.

C. The Society for Protective Coatings (SSPC):

1. SSPC-SP1 – Solvent Cleaning.

2. SSPC-SP3 – Power Tool Cleaning.

3. SSPC-SP10 – Near White Metal Blast Cleaning.

4. SSPC-SP11 – Power Tool Cleaning to Bare Metal.

5. SSPC-PA-1 – Shop, Field and Maintenance Coating of Metals.

D. Master Painters Institute (MPI):

1. MPI #20 - Primer, Zinc Rich, Epoxy.

2. MPI #79 - Primer, Alkyd, Anti-Corrosive for Metal.

1.03 COORDINATION

A. Coordination between Steel Fabricator and Galvanizer:

1. Prior to fabrication, submit approved fabrication shop drawings to the galvanizer.

2. Notify galvanizer of steel fabrications that exceed the ASTM A385 recommended percentages for carbon, phosphorus, manganese and silicon, so special galvanizing processing techniques are used.

B. Coordinate installation of metal fabrications that are anchored to concrete or masonry, or that receive work specified by other Sections. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry.

C. Field Measurements: Field verify dimensions prior to fabrication.

D. Coordinate selection of shop primers with galvanizing, and with paintings to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and paintings are compatible with one another.

1.04 SUBMITTALS

A. Shop Drawings: Submit detailed Shop Drawings of metal stairs and railings, showing floor plans, elevations, sections and details. Indicate member sizes and thicknesses, methods of assembly, welding, locations of hardware, anchors, and accessories.

B. Product Data: Submit manufacturer’s product data of stair type and corrosion-inhibitive finish system. Include treads, railing system, handrails, and handrail brackets.

C. Manufacturer’s Mill Certificate: Submit, certifying that products meet or exceed specified requirements.

D. Fabricator and Installer qualifications per Article “Quality Assurance”.

E. Welding:

1. Welder’s Certificates: Field welders shall be Project certified in accordance with AWS D1.1.

2. Welding Material Certification: Provide certificate that welding material complies with specifications. Submit to OWNER’s testing laboratory.

F. Research/Evaluation Reports: ICC-ES for post-installed anchors.

1.05 QUALITY ASSURANCE

A. Fabricator and Installer Qualifications: A firm with a minimum of five years’ experience in supplying and installing steel work required by this Section. Submit fabricator and installer qualifications and list of projects with the contact information of owners and architects.

B. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D-1.1– Structural Welding Code – Steel.

2. AWS D1.3 - Structural Welding Code - Sheet Steel.

C. Comply with the following as a minimum requirement:

1. Design, fabricate, and install miscellaneous metals in accordance with AISC - Design, Fabrication, and Erection of Structural Steel for Buildings.

2. AWS D-1.1 Code - Structural Welding Code – Steel and AWS D1.3 - Structural Welding Code - Sheet Steel.

3. Inspection of Welding: Refer to Section 01 4523: Testing and Inspection.

D. Field applied primers, paintings, sealers and adhesives shall be approved by the OWNER's Office of Environmental Health and Safety (OEHS).

E. Preassemble items in shop to greatest extent possible to minimize field welding. Mark units for reassembly and coordination of installation. Use marking method compatible with galvanizing.

1.06 DELIVERY, STORAGE AND HANDLING

A. Store components and materials above grade on platforms, skids, or other required supports.

B. Protect from corrosion or damage, cover with waterproof material.

C. Load, unload, and handle fabrications in a manner that will not damage metal or finishes.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Structural Steel Shapes: ASTM A36.

B. Rolled Steel Plates: ASTM A36. Plates to be bent or cold-formed shall conform to ASTM A283, Grade C.

C. Round HSS: ASTM A500 Grade B or C.

D. Square and Rectangular HSS: ASTM A500 Grade B or C.

E. Steel Pipe: ASTM A53 Type E or S, Grade B, standard weight (Schedule 40), unless otherwise noted. Black finish.

F. Steel Sheet: ASTM A1008 or ASTM A1011.

G. Steel Bolts: ASTM A307, Grade A, or F3125 with hex steel nuts per ASTM A563 and washers. Galvanized in accordance with ASTM A153 for exterior locations.

H. Steel Bars: Conforming to ASTM A108 or ASTM A575.

I. Concrete Inserts: Threaded or wedge type; galvanized ferrous castings, either malleable iron, ASTM A47, or cast steel, ASTM A27. Provide bolts, washers, and shims, hot-dip galvanized per ASTM A153.

J. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

K. Concrete Materials:

1. Concrete per Section 03 3000, Cast-in-Place Concrete.

2. Welded wire fabric and reinforcing per section 03 2000, Concrete Reinforcing.

2.02 GENERAL FABRICATION

A. Field verify dimensions before fabrication. Design units to allow for adjustment and fitting of components during field installation. Preassemble units at shop to minimize mechanical joints, splicing and field assembly of units.

B. Stair components shall be fabricated of metals and shapes indicated on the Drawings and conforming to the requirements of the referenced standards.

C. For fabrication of Work exposed to view, provide only materials smooth and free of blemishes. Remove blemishes by grinding or by welding and grinding, before cleaning, treating, and installation of surface finishes including zinc coatings. Exposed to view surfaces that exhibit pitting seam marks, roller marks, “oil-canning” stains, discoloration or other imperfections on finished units are not acceptable.

D. Fabricate joints that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

E. Cut, drill, or punch holes at right angles to the surface of the metal. Holes shall not be made or enlarged by burning. Holes in base or bearing plates shall be drilled.

F. Ease exposed edges to a radius of approximately 1/32 inch, unless otherwise indicated or specified.

G. Bend metal corners to the smallest radius possible without causing grain separation or otherwise impairing the work.

H. Welding:

1. Weld connections unless otherwise indicated.

2. Weld corners and seams continuously and in accordance with requirements of AWS Code. Welds will be inspected as required in Section 05 1200: Structural Steel Framing.

3. Welds exposed to view shall be ground down and dressed smooth, so that the shape and profile of the item welded are maintained.

2.03 STAIR FABRICATION

A. Provide complete stair assemblies, including metal framing, hangers, struts, railings, clips, brackets, bearing plates, and other components necessary to support and anchor stairs and platforms on supporting structure.

B. Fabricate stringers, risers, sub-treads and platforms to profiles indicated. Form each tread pan and riser in one continuous piece to receive finished tread. Weld or bolt risers and treads to carrier angles. Weld carrier angles to structural steel stringers. Fasten countersunk bolts, or stud weld clips, through pans and platforms to facilitate fastening of welded wire fabric for concrete fill. Provide welded-on clips for support of soffits. Close ends of channel or box stringers.

C. For items bearing on concrete, provide steel bearing plates and anchors. Base or bearing plates shall be leveled by means of adjustment nuts. The space below plates shall be packed solid with full bed of non-shrink grout.

D. At intermediate landings, provide metal bases formed of stringers. Miter and weld internal and external corners of metal bases.

E. Fabricate treads and platforms of structural-steel sheets shaped to configurations indicated. On exterior stairs accommodate slopes to drain

F. Provide uprights and posts of rectangular or round tubing as indicated. Provide members a special shop straightening to eliminate distortion and to provide straight alignment. Correct bends, distortions, and damage. Fill dents and grind smooth.

G. Fabricate railings of profile indicated, fastened to stair stringers.

H. Countersink bolt heads and screws on finished surfaces or cut flush with surfaces.

I. Fit and securely fasten components together, with exposed tight-fitting joints. Cut, drill, punch and tap as required for installation.

J. Furnish joints as strong and rigid as adjoining sections. Weld continuously along entire line of contact, except where spot welding is indicated.

K. Nosing: Provide abrasive cast metal safety nosings along the length of the step. Equip each nosing with integral anchors for embedding in the concrete fill.

2.04 RAILING FABRICATION

1.

A. Pipe Railing: Handrails, posts and pickets shall be fabricated of black ASTM A53 Type E or S, Grade B standard weight steel pipe.

B. Handrail Brackets: Wagner cast iron bracket Style D, or equal.

C. Form elbow bends and wall returns to uniform radius, free from buckles and twists. Close exposed ends of pipe and tubing by welding metal closure in place or by use of pre cased fittings.

D. Accurately miter and cope intersections of posts, pickets and rails and weld all around, grind welds smooth.

E. Connect posts to stair framing by direct welding, unless otherwise indicated. For posts set in concrete, furnish matching sleeves.

2.05 PREPARATION FOR GALVANIZING

A. Fabricate to the largest size possible and whenever possible use slip joints to minimize field welding.

B. Fabricate structural steel in accordance with Class I, II, III guidelines as described in AGA's Recommended Details for Galvanized Structures, to facilitate galvanizing process. Corners of gussets, stiffeners, and bracing shall be cropped to allow free flow of zinc during galvanizing process.

C. Remove welding slag, splatter, anti-splatter compounds and burrs immediately after welding.

D. Remove oil, grease, dirt, mill scale, rust, corrosion products, oxides, paint or other foreign matter from steel surface in accordance with SSPC-SP3.

E. Marking for Identification: Avoid unsuitable marking paints for identification, such as oil based paints and markers and crayon markers. Use water soluble paints or markers acceptable to galvanizer or steel tags wired to the work.

F. Masking: Use masking materials recommended by the American Galvanizers Association (AGA) to produce ungalvanized areas for field welding and at slip critical bolts.

G. Galvanize fabrications per Section 05 5013, Hot-Dip Galvanizing, in accordance with ASTM A123 and ASTM A153.

2.06 SHOP FINISH

A. Metal fabrications, except those to be hot-dip galvanized, shall be provided with a coat of primer.

B. Primers:

1. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI# 79 and compatible with topcoat. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

2. Epoxy Zinc-Rich Primer: Complying with MPI# 20 and compatible with topcoat.

3. Minimum dry film thickness of primer shall be 2.0 mils.

4. Coordinate with Section 09 9000, Painting and Coating, for compatibility of the prime coat and finish coats of paint.

C. Surfaces of metal stairs and railings, including surfaces of pan-filled stairs, not scheduled for hot-dip galvanizing, shall be cleaned and treated to assure maximum paint adherence, prior to application of the shop prime coat, in accordance with SSPC-SP1, SSPC-SP3, SSPC-SP10, and SSPC-SP11 as applicable for the exposure and application.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Field check and verify that structural framing, enclosures, weld plates, blocking, size and location of pockets are as called for in the approved shop drawings. Notify the OAR in writing of unsatisfactory conditions. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Load, unload and handle material in a manner that will not strain, bend, deform or otherwise damage it.

B. Provide anchorage devices and fasteners as indicated in the drawings and where necessary for securing metal stair fabrications to in-place construction.

C. Where stairs are enclosed by gypsum board and shaft-wall assemblies, provide hanger rods or struts to support landings from floor construction above or below. Locate hanger rods and struts where they will not encroach on required stair width and will be within the fire-resistance-rated stair enclosure.

D. Set fabrication accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

E. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop-welded because of shipping size limitations. Do not weld, cut, or abrade the surfaces of hot-dip galvanized fabrications intended for bolted or screwed field connections.

F. Alignment: Verify alignment of items with adjacent construction. Coordinate related work.

G. Support bearing plates at the proper level by means of adjustment nuts on anchor bolts. Set bases and plates accurately using a high-strength, non-shrink grouting mortar to obtain uniform bearing. Follow grout manufacturer's recommendations for substrate preparation and application.

H. Place, compact, finish, and cure concrete poured in treads and landings in accordance with applicable requirements of Section 03 3000, Cast-in-Place Concrete.

I. Corrosion Protection: Coat concealed surfaces of metals that will come into contact with grout, concrete, masonry, or wood, with a heavy coat of bituminous paint or zinc chromate primer. Bituminous Paint shall be cold applied asphalt emulsion complying with ASTM D1187. Protect dissimilar metals from galvanic corrosion by pressure tapes, coating, or isolators.

3.03 FIELD WELDING

A. Preparation of Weld Area of Galvanized Fabrications: Remove masking from fabrications. Remove remaining zinc coating between one inch and four inches from both sides of members to be welded, by grinding back the zinc coating, burning the zinc away or pushing back the molten zinc from the weld area.

B. Welding: Comply with AWS Code for procedures of manual shielded metal-arch welding, appearance and quality of welds made, methods used in correcting welding work.

1. Weld in accordance with AWS D-1.1.

2. Weld galvanized fabrications in accordance with AWS D-19.0.

C. Remove welding flux immediately. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surfaces matches those adjacent.

D. Upon completion of welding plug vent, drainage and lifting holes of galvanized fabrications with appropriate diameter zinc plugs. Push in about halfway by hand, and hammer to a tight fit. With a hand file or an abrasive tool, file away excess material. Repair scratches with a zinc rich coating.

1. Plug railing holes.

2. Plug visible holes of HSS members.

3.04 RAILING INSTALLATION

A. Adjust handrails and railing systems prior to anchoring to ensure matching alignment at abutting joints. Secure brackets, posts and rails to steel by welds, and to masonry or concrete with expansion sleeves and bolts.

B. Set posts plumb and aligned. Set rails horizontal or parallel to rake of stairs.

C. Rails contacting a vertical surface shall be fitted with standard pipe rail flanges, secured to concrete or masonry surfaces with 3/8 inch 2-unit cinch anchor bolts and secured to wood frame surfaces with 3/8 inch lag screws, unless otherwise indicated.

D. Install posts into metal sleeves cast in concrete and extending into it at least 9 inches. Wedge posts true, plumb, and fastened by packing with grout. Finish grout smooth and flush with adjacent surfaces.

3.05 ADJUSTING AND CLEANING

A. Do not cut or abrade finishes which cannot be completely restored in the field. Return items with such finishes to the shop for required alterations, followed by complete refinishing or provide new units as required.

B. Touch Up Damaged Painted Finishes: Comply with SSPC-PA-1 for touch-up; apply with brush to produce a minimum 2.0 mil dry film thickness.

C. Galvanized Surfaces: Clean field welds, connections and damaged areas.

1. Apply two coats of Carbomastic 15 or a zinc rich coating in conformance with ASTM A780 and approved by OWNER's OEHS. Brush or roll to a 4 to 6 mil thickness.

2. Apply Galva-Guard Galvanizing Repair Solder or other zinc-based solders in conformance with ASTM A780.

3. Apply metalizing methods in accordance with ASTM A780.

3.06 CLEAN UP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

3.07 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 06 1000

ROUGH CARPENTRY

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Rough carpentry Work.

2. Installation of glued laminated members, plywood web joists or wood chord metal web joists.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 03 1000: Concrete Forming and Accessories.

3. Section 03 3000: Cast-In-Place Concrete.

4. Section 06 2000: Finish Carpentry.

5. Section 09 2900: Gypsum Board.

1.02 SYSTEM DESCRIPTION

A. Regulatory Requirements:

1. Work of this Section shall comply with CBC Chapter 23.

1.03 QUALITY ASSURANCE

A. Comply with the following as a minimum requirement:

1. Redwood structural and framing lumber shall be graded in accordance with Standard Specifications for Grades of California Redwood Lumber of the Redwood Inspection Service.

2. Douglas fir, larch or hemlock structural and framing lumber shall be graded in accordance with the Standard Grading Rules of the West Coast Lumber Inspection Bureau (WCLIB) or the Western Lumber Grading Rules of the Western Wood Products Association (WWPA).

3. Plywood shall conform to requirements of Product Standard PS 1, and shall be grade marked by a recognized grading agency (APA and PTL).

B. Lumber shall bear official grade mark of the association under whose rules it was graded or official grade mark of another recognized grading agency.

C. Structural and framing members 2-inch thick (nominal) and larger shall be air-dried to moisture content not to exceed 19 percent before installation.

D. Each piece of preservative treated lumber shall be identified by the Quality Mark of an approved inspection agency in accordance with CBC Chapter 23; refer to Section 01 4523: Testing and Inspection.

E. Lumber showing visible signs of mold growth:

1. Lumber showing visible signs of mold growth shall be removed from the project site or cleaned as outlined below.

2. The contractor is responsible for all costs associated with cleaning, post-cleaning testing, and reporting for lumber with mold.

a. Lumber that shows visible signs of mold growth prior to, or after installation, shall be cleaned pursuant to the current edition of USEPA's guidance publication "Mold Remediation in Schools and Commercial Buildings (EPA 402-K-01-001).

b. A minimum of 10 percent of the total locations cleaned must be sampled (tape lift method) post cleaning to ensure cleaning effort was successful. Cleaning will be considered acceptable when tape lift sample results evaluated by direct microscopic examination determine that the general abundance of mold is non-detect or rare (normal trapping to 1+).

c. A report prepared by a Certified Industrial Hygienist (CIH) that details the sampling and cleaning results shall be prepared and submitted to the OAR for review and approval of the LAUSD Office of Environmental Health and Safety.

d. Cleaned lumber shall not be installed or enclosed by finish materials until approval of test results. Cleaned lumber must meet moisture content requirements as required elsewhere in this specification prior to installation or application of finishes.

1.04 STORAGE, HANDLING AND PROTECTION

A. The materials supplied as part of the Work of this section shall be protected from exposure to inclement weather before being covered by other Work.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Lumber: Structural and framing lumber shall be of following species and grades:

Refer to Framing and Lumber notes on Sheet S-1.0

B. Plywood: Plywood furnished for structural purposes, when exposed outdoors, shall be exterior type plywood. Other plywood furnished for structural purposes shall be exterior type, or Exposure 1.

C. OSB Board or Panels:

1. Oriented strand board or panels shall not be furnished as part of the Work of this section.

D. Preservative Treated Wood:

1. Wood and plywood specified; as treated wood shall be pressure treated wood in accordance with CBC requirements.

2. Seasoning: Treated lumber shall be air seasoned after treatment, for a minimum of two weeks before installation. Moisture content shall be 15 percent maximum.

3. Creosote or arsenic is not permitted for treating wood.

4. When treated wood member have been notched, dapped, drilled, or cut, such newly cut surfaces shall be painted with a heavy coat of the same preservative material originally provided for treatment of wood member.

E. Fire Retardant Protection: Wood and plywood specified as fire retardant protected wood shall be treated by approved methods and materials and shall be dried following treatment to maximum moisture content as follows:

1. Solid sawn lumber 2-inch thick or less: 19 percent.

2. Plywood: 15 percent.

F. Plywood Subflooring: Underlayment, Group 1, Exposure 1; of thickness indicated.

G. Mineral Fiber Panels: Asbestos-free, thickness as indicated.

H. Adhesive: Elastomeric adhesive – follow manufacturer’s installation instructions. Product must be approved by OWNER Office of Environmental Health and Safety and conform to ASTM D 3498 or APA-AFG-01.

PART 3 - EXECUTION

3.01 FASTENINGS

A. Nails and Spikes:

1. Furnish only common wire nails or spikes whenever indicated, specified or required.

2. Whenever necessary to prevent splitting, holes shall be pre-drilled for nails and spikes.

3. Nails in plywood shall not be overdriven.

4. Machine Applied Nailing: Use of machine nailing is subject to a satisfactory Project site demonstration for each Project and approval by the Architect or structural engineer retained by the Architect as an Architect Consultant and DSA. Installation is subject to continued satisfactory performance. Machine nailing is not permitted for 5/16 inch plywood. Do not permit nail heads to penetrate outer ply. Maintain minimum allowable edge distances when installing nails.

B. Lag Screws:

1. When installing lag screws in a wood member, pre-drill hole as required by the CBC.

2. Lag screws, which bear on wood, shall be fitted with standard steel plate washers under head. Lag screws shall be screwed and not driven into place.

C. Bolts:

1. Lumber and timber to be fastened together with bolts shall be clamped together with holes for bolts bored true to line.

2. Bolts shall be fitted with steel plates or standard cut washers under heads and nuts. Bolts shall be tightened when installed and again before completion of the Work of this section.

D. Wood Screws: When installing wood screws, pre-drill holes as required by the CBC.

E. Metal Framing Devices: Framing anchors, joist hangers, ties, and other mechanical fastenings shall be galvanized or furnished with a rust inhibitive coating. Nails and fastenings shall be of the type recommended by manufacturer.

F. Powder Driven Fasteners:

1. Loads shall not exceed 75 pounds unless indicated on the Drawings or when reviewed by the Architect.

2. The operator, tool, and fastener shall perform the following as observed by the Inspector.

   a. Observe installation of first 10 fasteners.

   b. Test the first 10 fasteners by performing a pullout test. Load shall be at least twice the design load, or 150 pounds, whichever is greater.

   c. Random testing:

      1) Load less than 75 pounds - approximately 1 in 10 pins.

      2) Load 75 pounds or greater - 1/2 of the pins.

3. Failure of any test will result in testing of all installed pins.

4. Nail heads shall not break the outer skin of sheathing.

5. Non-compliant pins shall be replaced.

3.02 INSTALLATION

A. Stud Walls, Partitions and Furring:

1. Wood stud walls, partitions and vertical furring shall be constructed of members of size and spacing indicated. Provide single treated plate at bottom and double plate at top unless otherwise indicated. Interior, nonbearing non-shear partitions may be framed with a single top plate, installed to provide overlapping at corners and at intersections with other wall and partitions or by metal ties as detailed.

2. Walls and partitions shall be provided with horizontal staggered blocking at least 2 inch nominal thickness and same width as studs, fitted snugly, and nailed into studs. Blocking shall be installed at mid-height of partition or not more than 7 feet on center vertically. Install wood backing on top of top plate wherever necessary for nailing of lath or gypsum board.

3. Walls, partitions and furred spaces shall be provided with 2-inch nominal thickness wood firestops, same width as space to be firestopped, at ceiling line, mid-height of partition and at floor line. Firestops at floor line are not required when floor is concrete. If width of opening is such that more than one piece of lumber is necessary, provide two thicknesses of one inch nominal material installed with staggered joints.

4. Firestops shall be installed in stud walls and partitions, including furred spaces, so the maximum dimension of any concealed space is not over 10 feet.

5. Corners, and where wood stud walls and wood vertical furring meet, shall be constructed of triple studs. Openings in stud walls and partitions shall be provided with headers as indicated and a minimum of 2 studs at jambs, one stud of which may be cut to support header in bearing.

6. Where wood and masonry or concrete walls intersect, end stud shall be fastened at top, bottom and mid-height with one 1/2 inch diameter bolt through stud and embedded in masonry or concrete a minimum of 4 inches. Bolts shall be provided with washers under nuts.

7. Sills under bearing, exterior or shear walls shall be bolted to concrete with 5/8 inch diameter by 12-inch long bolts with nuts and washers, spaced not more than 4 feet on center unless noted otherwise. There shall be a bolt within 9 inches of each end of each piece of sill plate. Sills shall be installed and leveled with shims, washers, with nuts tightened to level bearing. Space between sill and concrete shall be dry packed with cement grout.

B. Floor Joists, Roof and Ceiling Framing:

1. Wood joists shall be of the size and spacing indicated, installed with crown edge up, and shall have at least 4-inch bearing at supports. Provide 2-inch solid blocking, cut in between joists, same depth as joists, at ends and bearings, unless otherwise indicated.

2. Floor joists of more than 4 inches in depth and roof joists of more than 8 inches in depth shall be provided with bridging. Floor joists shall be bridged every 8 feet with solid blocking or metal cross bridging. Roof joists shall be bridged every 10 feet.

3. Joists under and parallel to bearing partitions shall be doubled and nailed or bolted together as detailed. Whenever a partition containing piping runs parallel to floor joists, joists underneath shall be doubled and spaced to permit passage of pipes and blocked with solid blocking spaced at not more than 4 feet intervals.

4. Trimmer and header joists shall be doubled, when span of header exceeds 4 feet. Ends of header joists more than 6 feet long shall be supported by framing anchors or joist hangers unless bearing on a beam, partition, or wall. Tail joists over 12 feet long shall be supported at header by framing anchors or on ledger strips at least 2 by 4.

5. Provide solid blocking between rafters and ceiling joists over partitions and at end supports where indicated.

C. Beams, Girders and Joists:

1. Ends of wood beams, girders and joists which are 2 feet or less above finished outside grade and which abut, but do not enter concrete or masonry walls, as well as wood blocking used in connection with ends of those members shall be treated with wood preservative.

2. Where wood beams, girders and joists enter masonry or concrete walls 2 feet or less above outside wall, metal wall boxes or equivalent moisture barriers shall be provided between wood and masonry or concrete.

D. Subflooring:

1. Floor sheathing: Plywood of thickness and nailing indicated. Install with the face grain direction across supports, end joints staggered and centered over supports. Provide solid blocking under plywood edges where indicated. In addition to nailing, sheets of plywood flooring shall be secured in place with elastomeric adhesive, installed at beams, joints, perimeter supports and panel edges.

E. Roof and Wall Sheathing:

1. Plywood roof sheathing shall be Structural I, Grade C-D, Exposure 1, thickness as indicated.

2. Where exposed roof sheathing is indicated, area shall be sheathed solid with dressed and center matched, V-jointed boards of sizes indicated. Boards shall be installed perpendicular to supports.

3. Soffits of overhanging eaves, where indicated, shall be boxed-in using Group I, Exterior Type, Grade A-C, plywood, thickness as indicated.

4. Plywood for shear walls shall be Structural I, Grade C-D Exterior Type, thickness as indicated. Install with the long dimension parallel or perpendicular to the supports. Blocking shall be provided behind edges not located over supports. Shear wall construction, nailing, and top and bottom anchorage shall be as indicated.

5. Provide and install metal H-clips of required size, midway between rafters at unsupported edge joints of plywood roof sheathing where rafters are spaced at 24 inches on center. Clips shall be Plyclips, by Timber Fasteners Inc., Panel Clips by Simpson Co., USP Structural Connectors, or equal.

F. Attic Space Partitions and Attic Walkways:

1. Attic space partitions shall be constructed of 2 by 4 wood members spaced at 2 feet on center maximum with 5/8 inch gypsum board.

2. Doors in attic space partitions shall be self-closing, of the same sheathing material as partition, constructed with 2 battens and a diagonal brace across back.

3. Shear walls passing through attic space shall be sheathed with 5/8 inch gypsum board on each side.

4. Attic walkways shall be constructed of 2 by 12 planks installed one-inch apart and nailed at each support with three 16d nails.

G. Furring:

1. Rafters or ceiling joists indicated to be furred for support of materials other than acoustical tile shall be furred with 2 by 4 wood members installed at right angles to supports, spaced as indicated and nailed in place. Furring shall be aligned, and bottoms shall be leveled by installing wood shims as required, and nailed as indicated.

2. Furring for protective wall padding in gymnasium shall be 1 by 3 Douglas fir, Construction Boards, S1S1E; applied horizontally to concrete walls at top and bottom of padding panels; and at uniform intermediate spacing not more than 18 inches on center. Stripping shall be shimmed where required, aligned to a true plane, and secured to concrete walls with concrete nails at not more than 18 inches on center.

H. Furring: Where metal furring is not indicated or specified, provide wood furring at points indicated and required for concealing conduit, piping, structural framing or other unfinished materials. Wood furring shall be 2-by studs of required width. Vertical members contacting concrete or masonry shall be attached as specified for anchoring interior wood stud partitions.

I. Grounds:

1. Provide and set wood grounds at points where wood trim occurs and work is to be plastered. Grounds at 3/4 inch metal lath shall be 5/8 inch thick, net, 1 ½-inch wide Douglas Fir, S1S. Grounds shall be doubled where trim member exceeds 5-inch width, or wherever indicated. Grounds shall be applied after lath has been installed set plumb, level and true to line.

2. Apply grounds over wood framed surfaces and lath and securely nail to wood backing at each stud or bearing. Grounds applied over steel channel studs and lath shall be securely nailed at each stud or bearing to nail-blocks provided and installed in metal studs.

3. Grounds applied to concrete surfaces shall be securely nailed to woodblocks provided and built into concrete.

J. Nailing Strips and Plates:

1. Provide wood nailing strips, plates and blocking indicated or required. Nailing strips in connection with metal work shall be bolted to metal. Wood nailing blocks for securing grounds shall be built into concrete, or masonry.

2. Nailing schedule shall comply with CBC requirements.

3. Treated wood nailing strips for lightweight insulated concrete roof decks at eaves, ridges, rakes, base of curbs and wherever else indicated, shall be provided and installed. Strips shall be treated Douglas fir, 4 inches (nominal) width by thickness of insulated concrete.

K. Wood Backing: Provide wood backing as indicated and as required to receive plumbing, electrical fixtures and equipment, cabinets, door stop plates and other fixed equipment.

L. Wood Bucks: Furnish and set wood bucks to form openings for doors and other openings in concrete or masonry walls and in steel stud or channel partitions and furring. Bucks shall be Douglas fir, S1S2E, 2 inches (nominal) thickness and of width indicated or required. Bucks in connection with concrete shall be bolted thereto, and bucks in masonry walls shall be attached by means of strap anchors embedded in masonry joints. Bucks in connection with steel studs and metal channels shall be secured with nails or screws spaced not to exceed 24 inches on centers.

M. Bench Tops and Backs: Tops and backs shall be 3/4 inch thick asbestos free board, fabricated to minimize number of joints. Edges shall be neatly cut, smoothly finished and joints accurately fitted and butted. Tops and backs shall be secured with countersunk flathead galvanized wood screws. At bench with steel pan, apply with manufacturer's recommended adhesive. Cut and drill as required for Work to be attached to benches.

3.03 CLEAN UP

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

3.04 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 06 2000

FINISH CARPENTRY

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Finish carpentry.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 06 1000: Rough Carpentry.
3. Section 08 1416: Flush Wood Doors.
4. Section 08 7100: Door Hardware.
5. Section 09 2900: Gypsum Board.

1.02 SUBMITTALS

A. Shop Drawings: Submit Shop Drawings of each item of finish carpentry and millwork, indicating materials, dimensions, construction, and anchorage details.

1.03 QUALITY ASSURANCE

A. Comply with the following as a minimum requirement:

1. Douglas fir finish lumber shall be manufactured and graded in accordance with WCLIB - Standard Grading and Dressing Rule No. 17.
2. Redwood finish lumber shall be manufactured and graded in accordance with RIS - Standard Specifications for Grades of California Redwood Lumber.
3. Hardwood finish lumber shall be manufactured and graded in accordance with NHLA - Rules for the Measurement and Inspection of Hardwood and Cypress Lumber.
4. Softwood Plywood: Plywood shall comply with APA - Product Standard PS 1. Plywood shall be grade marked by APA.

5. Products and installation shall comply with the North American Architectural Woodwork Standards (NAAWS) for the Grade or Grades specified.

B. Finish lumber shall be kiln-dried according to recognized methods for the thickness and species. Lumber one inch thick or less shall be dried to an average moisture content of not more than 13 percent. Lumber 1-1/4 inches to 2 inches in thickness shall be dried to an average moisture content of not more than 15 percent.

1.04 DELIVERY, STORAGE AND HANDLING

A. Materials shall be delivered to the Project site in undamaged condition, stored in fully covered, well ventilated areas, and protected from extreme changes in temperature and humidity.

B. Interior millwork and finish carpentry shall not be installed unless interior building temperature and humidity levels are within the ranges recommended by the manufacturer and/or recognized standards.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Douglas Fir: Interior trim, solid lumber shelves, partitions, door frames and other concealed members of interior finish; NAAWS Economy Grade.

B. Hardwood: Birch, maple firsts and seconds.

1. Birch: NAAWS Custom Grade.

2. Maple: NAAWS Custom Grade.

C. Softwood Plywood: Except where otherwise specified, AWI Custom Grade, Douglas fir unless otherwise indicated.

D. Hardwood Plywood: NAAWS Premium Grade, species as indicated.

E. Redwood: Exterior millwork, except framing lumber, shall be clear heartwood redwood. Where installed in direct contact with earth or provided for exterior storage units, install Foundation Grade.

F. Perforated Hardboard Panels: Panels shall be 1/4 inch thick tempered hardboard, SIS with 1/4 inch diameter holes spaced one inch on center.

2.02 FABRICATION

A. The means of fastening various parts together shall be concealed in finished Work. Work which is curved shall be fabricated from solid stock, or if veneered, shall be bent to a uniform radius.

PART 3 - EXECUTION

3.01 GENERAL

A. Interior and exterior wood, millwork, blocking, and lumber shall be installed level, plumb, and true to line. Members shall be neatly and accurately scribed in place, maintaining full widths of end members, wherever possible. Trim shall be installed in full lengths, without piecing, except where use of single lengths is not required. Butt joints, if necessary, shall be beveled. Exterior angles shall be mitered, and interior angles of molding parts coped. Nails shall be set for putty. Grain and color of adjoining interior finish shall match adjacent finishes. Where Work specified in this section adjoins other Work, provide a neat tight joint.

B. Interior and exterior finish carpentry and other fixed wooden equipment having hammer marks or other visible damage will be deemed defective Work.

C. Staff or brick moulds of exterior wood doorframes shall be attached to frames after frames have been set and caulked. Moulds shall be mitered at corners and coped to sills, accurately secured in place with finish nails, and nails set.

3.02 INSTALLATION

A. Install Work of this section as specified in the North American Architectural Woodwork Standards.

B. Wood shoe base shall be fitted and temporarily tacked in place until floor covering is installed. Provide and install corner fillets, same contour and materials as shoe base, in corners where shoe base is installed.

C. Platform Front: Plywood at platform front and adjoining steps in Multi-Purpose Building shall be provided with face veneers of unselect birch. Trim and frames shall match face veneer of panels. Joints shall be V-shaped where indicated.

D. Door Frames: Frames shall be installed plumb and true, solidly blocked, reinforced for butts and hardware, and shall be fastened to structural frame with 16d set finish nails at not more than 24 inches on centers. Nails securing exterior door and window frames shall be cement coated. Doorframes shall be dadoed together at the head.

E. Sealing of Joints: Joints between exterior frames and adjoining surfaces shall be primed before sealing.

3.03 CLEAN UP

A. Remove debris, rubbish and waste material and legally dispose of off the Project site.

3.04 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 06 4000

ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Architectural woodwork, casework, trim, hardware, countertops, and shelving as indicated on Drawings.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 06 1000: Rough Carpentry.

3. Section 06 2000: Finish Carpentry.

4. Section 09 9000: Painting and Coating.

1.02 DEFINITIONS

A. "Sustainably managed" is defined as "forests that are being managed through a professionally administered forestry management plan in which timber growth equals or exceeds harvesting rates in both quantity and quality, protecting rivers and streams from degradation, minimizing damage to the forest when harvesting and promoting biodiversity".

1.03 SYSTEM DESCRIPTION

A. Design Requirements: Provide wood products from certified sustainably harvested sources.

1.04 SUBMITTALS

A. Shop Drawings: Submit Shop Drawings of casework indicating materials and hardware, details of construction, dimensions, methods of fastening and installation details. Shop Drawings shall bear a Woodwork Institute (WI) Certified Compliance Label indicating that Shop Drawings fully meet requirements of the North American Architectural Woodwork Standards (NAAWS) grade or grades specified. Shop Drawings shall indicate grounds, backing, blocking, sleepers and other items required for installation of casework, which are to be provided and installed as part of the Work.

B. Certificates: Provide a WI Certified Compliance Certificate certifying that materials, fabrication and installation will comply with the specified requirements.

C. Material Samples: Submit 2-inch by 3-inch plastic laminate and solid surfaces color Samples of manufacturer's entire color range.

D. Submit manufacturer’s product data for adhesives and finishes. Indicate VOC limits of the product. Submit MSDS highlighting VOC limits.

E. Forest Stewardship Council (FSC): Provide letter of certification signed by lumber supplier. Indicate compliance with FSC "Principles for Natural Forest Management" and identify certifying organization.

F. Closeout Submittals: Provide a WI Certified Compliance Certificate for Installation.

1.05 QUALITY ASSURANCE

A. Comply with the North American Architectural Woodwork Standards (NAAWS), latest edition, published jointly by the Architectural Woodwork Manufacturer’s Association of Canada and the Woodwork Institute of California, grades as specified herein.

B. Each elevation of casework shall bear a WI Certified Compliance Label indicating that casework fully meets requirements of the AWS grade specified.

C. Each plastic laminate countertop and/or solid surface top shall bear a WI Certified Compliance Label indicating tops fully meet requirements of the AWS grade specified.

D. Mock-ups: When required by the Architect, submit a full-scale base cabinet, countertop, and wall-hung cabinet, illustrating joinery and plastic laminate finish. Base cabinet shall incorporate a drawer, an adjustable shelf, and a door. Wall-hung cabinet shall incorporate two doors, one adjustable shelf and finished end, including required hardware.

1.06 DELIVERY, STORAGE AND HANDLING

A. Materials shall be delivered to the Project site in undamaged condition, stored in fully covered, well ventilated areas, and protected from extreme changes in humidity and temperature. Refer to the North American Architectural Woodwork Standards (NAAWS) for recommended care and storage.

B. In event of damage immediately furnish necessary repairs or replacements.

1.07 PROJECT CONDITIONS

A. Store indoors, in ventilated areas with constant but minimum temperature of 60 degrees F. and maximum relative humidity of 25 percent to 55 percent. Do not install casework until building is enclosed and ambient conditions are within the temperature and humidity range to be expected during occupancy. Acclimatize materials to the installation temperature and humidity for at least 72 hours prior to installation. Maintain conditions until Substantial Completion.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Plastic Laminate Faced Cabinets:

1. Plastic laminate: High pressure plastic laminate conforming to NEMA standard LD-3; Grade HGS 0.048 inches at horizontal surfaces, Grade VGS 0.028 inches at exposed vertical surfaces and edge bands, and HGP 0.039 inch minimum for post-formed countertops.

2. Particle Board Core Material: 45 lb. density, conforming to ANSI A208.1, Table 1, Grade 1-M-2.

3. Solid Lumber:

   a. Solid lumber for exposed members, drawers, trays and special details shall be Clear birch or maple.

   b. Unexposed solid lumber for concealed webs or structural members shall be of Douglas Fir., alder or birch.

4. Softwood Plywood: Rotary cut exterior type A-C grade softwood plywood complying with PS1.

5. Hardboard: Factory finished pressure sealed hardboard conforming to the requirements of PS 58. Oil tempered hardboard shall conform to CS 251.

6. Cabinet Liner: Semi-exposed surfaces shall be finished with 0.020 inch high-pressure laminate cabinet liner, conforming to NEMA Standard LD-3.

7. Edge Banding:

   a. T-type extruded tenite-butyrate 1/16 inch minimum thickness, with serrated leg 3/8 inch in length. Use only when matching existing.

   b. 0.028 inch minimum thickness plastic laminate.

   c. PVC, 0.6 mm at cabinet sides, top, bottom divisions and shelves, 3 mm at doors, drawer fronts and false fronts.

8. Adhesive: Type II water-resistant, rigid type glue of formula conforming to PS 51.

9. Sealer: Thompson Water Seal 101, Watco Oil, Zinsser, or equal.

10. The Owner will supply tote trays unless otherwise indicated.

11. Base: Cover toe spaces with typical wall base unless otherwise indicated.

B. Wood Casework:

1. Sheets:

a. Medium Density Overlay (MDO): APA PS-1.

2. Solid Lumber:

a. Concealed portions: Any species of sound, dry, solid stock.

b. Semi-exposed portions: Hardwood veneer of the same species as exposed material with a specific gravity in excess of 0.37.

c. Exposed portions: Select White Birch, well matched for color and grain.

3. Hardboard: Factory finished, pressure sealed hardboard conforming to requirements of PS 58.

4. Edge Banding: Same species of wood as adjacent to exposed surfaces.

C. Countertops:

1. 3/4 inch 1-M-2 grade particleboard, ANSI A208.1.

2. Medium Density Fiberboard (MDF): ANSI A208.2.

3. Solid Surfaces: Filled cast polymeric resin panel, with homogeneous composition throughout its thickness.

a. Corian.

b. Formica.

c. Wilsonart.

d. Equal.

D. Hardware:

1. Drawer Slides for Custom Grade Cabinetry:

a. Pencil drawers: Full extension type: Accuride 2006, Blum, Hafele, or equal.

b. Drawers and box drawers, up to 24 inches wide: Accuride 3832E, Blum, Hafele, or equal.

c. Lateral file drawers, up to 30 inches wide: Accuride 4034 overtravel or 4033 equal travel, Blum, Hafele, or equal.

d. Lateral file drawers, more than 30 inches wide: Accuride 3640, Blum, Hafele,

or equal.

2. Drawer Slides for Premium Grade Cabinetry:

   a. Pencil drawers: Full extension type: Accuride 2632, Blum, Hafele, or equal.

   b. Drawers and box drawers, up to 24 inches wide: Accuride 7432, Blum, Hafele, or equal.

   c. Lateral file drawers, up to 30 inches wide: Accuride 4034 overetravel or 4033 equal travel, Blum, Hafele, or equal.

   d. Lateral file drawers, more than 30 inches wide: Accuride 3641, Blum, Hafele, or equal.

3. Flipper Door Slides for Premium and Custom Grade Cabinetry:

   a. For vertically mounted retracting cabinet doors up to 75 pounds and 72 inches tall: Accuride 1432, Blum, Hafele, or equal, with hinge carrier strip.

4. Door Mutes: Rubber, approximately 1/4 inch diameter, colors to match adjacent finish.

5. Plastic Grommets: Doug Mockett, Alliance Express, Rockler, or equal; color as selected by Architect.

6. Adjustable Shelves with Clips: Adjustable shelf supports (EDP type, unless otherwise noted) set in 5 mm holes spaced 32 mm on center:

   a. Hafele America, Co., No. 282.04.711, Blum, Hettich, or equal.

   b. Hafele America, Co., No. 282.24.13, Blum, Hettich, or equal.

7. Hinges: Five-knuckle overlay hinge with hospital tip - Rockford 376, or equal.

8. Cabinet Locks:

   a. Door Locks: Pin tumbler type – CompX National No. C8173, Olympus 100DR x 12-1 strike, CCL Security Products, or equal.

   b. Locks for Sliding Doors: National No. C8142 x thimble strike, Olympus 300 SD x thimble strike, CCL Security Products, or equal.

   c. Drawer Locks: CompX National C8179brass strike, Olympus 200 DW x 12-1 strike, CCL Security Products, or equal.

   d. Cabinet locks shall be flush with surface of door and protrude no greater than 3/16 inch.

9. Top-hung Hardware Assembly for Sliding Doors: Grant No. 6064, Hafele, Blum, or equal.

10. Track for Sliding Doors: K & V 455 x or 455.55, Hafele, Blum, or equal.

11. Pull Flush Ring at Drawers behind Doors: Safe No. 6116, Trimco 24, Quality, or equal.

12. Pulls: Quality No. 179 x 180, Trimco No. 553P, Hafele, or equal.

13. Catches: Magnetic type - Epco No. 592, Lawrence No. SC1364-AL, or equal.

14. Four-way Tension Catch: Glynn-Johnson GJ21A, Trimco, Quality, or equal.

15. Noiseless Catch:

16. Elbow Catch: Schlage SP2A3, or equal.

17. Bolts: Surface type, Quality B6, Trimco No. 4856-6, or equal.

18. Brackets and Shelf Strip for Glass Shelves: K & V No. 80 x 180, Garcy 604 x 686, or equal.

19. Shelf Standards and Brackets: K & V No. 255 x 256, line bored holes for pins as approved by AWI Standards Stanley No. 798 x 799, steel zinc plated, or equal.

20. Card Holders for Drawers: Corbin No. 1913-1/4H, Garcy No. 853, or equal.

21. Hanger Rods: 1-1/16 inches minimum diameter metal tubing, aluminum or stainless steel clad, KV660; heavy wall steel tubing KV770, Stanley, or equal.

22. Hanger Rod Flanges: KV757, or flanges KV734, KV735; Ronther Reiss R44-55; or equal.

23. Hardware Finish: With exception of finish hardware items which have finishes specified, hardware shall be furnished with dull chrome US 26D or dull stainless steel US 32D finish.

24. Keying:

    a. Key locks inside one room alike. Furnish three keys for each lock keyed separately, and 2 keys for each lock in keyed alike groups. Master keys shall be tagged and delivered to the Inspector. Locks and keys shall be stamped with coded set number / direct digit.

    b. Master keys shall be National GM2.

2.02 FABRICATION

A. Plastic Laminated Casework: Construction of plastic laminated casework shall conform to the material and construction requirements for North American Architectural Woodwork Standards Custom grade, flush overlay construction, except, modified as follows:

1. Exposed Exterior surfaces shall be High Pressure Decorative Laminate grade VGS.

    a. Edge Band: PVC 1 mm. for cabinet body and 3 mm. at doors and drawer fronts.

2. Exposed Interior surfaces: Interior surfaces of open cabinets shall be laminated to match exteriors. Cabinets with glass doors shall use cabinet liner grade CLS.

3. Semi-exposed Surfaces: Shall be cabinet liner grade CLS and edges of panels shall be edge banded per 2.01 A.

4. Cabinet bases may be integral or separate. Bases shall be 3/4 inch thick plywood securely jointed at four corners to a supporting block 1 ½-inch thick.

5. Adjustable shelving shall be 3/4 inch thickness particleboard for spans up to 25 inches and one inch thickness for spans over 25 inches up to 34 inches. Adjustable shelving over 34 inches in span shall be one inch thick plywood core with 0.020 inch cabinet liner grade CLS both sides. Shelving hardware shall be adjustable to 1 1/4 inch centers. Faces of shelving shall be finished with 0.020 inch thickness cabinet liner grade CLS both sides.

6. Drawers:

    a. Drawers shall be of dovetail or dowel construction. Sides, backs and sub-fronts shall be made of 1/2 inch thick clear birch or maple solid stock, or 9 ply plywood without knots or interior voids. Drawer bottoms shall be in accordance with AWI requirements, glued and nailed.

    b. Drawers shall be fitted with ball bearing slides accurately installed for smooth drawer operation.

    c. Drawer fronts shall be of 3/4 inch thick plastic laminate construction, fully edge-banded with plastic laminate T-banding to be used when matching existing. T-banding joint shall occur at center of bottom edge of panel.

7. Doors:

    a. Doors shall be of flush overlay type. Doors shall be fully edge-banded. Doors of cabinets within any group of adjacent units shall be in alignment.

    b. Wrap around hinges shall be routed into edge of door.

8. Back Priming: Seal unfinished materials installed for backs, bases, self-edge backing, stripping and other concealed portions with a water-repellent sealer.

9. Banding:

a. Edge banding shall be accurately fitted. Where edge band joins plastic surfaces, there shall be no open spaces, voids, or chipping of plastic laminate surface.

b. Exposed cabinet surfaces shall be flush, and any protruding edges of banding shall be machined or trimmed to provide a flat smooth corner at intersection of banding and adjoining surfaces. Plastic laminate edge banding shall be installed on tops, webs, bottoms, ends, and inside partitions. T banding may only be installed on drawer fronts and door edges and when required to match existing.

B. Wood Casework: Manufacture in accordance with AWI Architectural Woodwork Standards, Custom Grade, except, modified as follows:

1. Exposed surfaces for transparent finish shall be plain sliced select white birch.

2. Exposed Interiors: surfaces at the interiors of open cabinets and cabinets with glass doors shall be of the same species and grade as exposed portions.

3. Semi-exposed surfaces shall be natural birch.

4. Edge banding shall be wood edge bands of same species as adjacent exposed faces.

5. Cabinet doors shall be particleboard core a minimum of 3/4 inch thickness, unless otherwise noted. Interior faces of cabinet doors shall be same species and grade as exposed surfaces. Cabinet doors shall be flush overlay.

C. Countertops:

1. Plastic Laminate Tops: Each plastic laminate countertop shall bear the WI Certified Compliance Label.

a. Laminated plastic countertops shall be self-edged. Edge shall rise 1/8 inch above counter surface and back and return splashes shall be 6 inches high measured from exposed countertop surface, unless otherwise indicated.

b. Cove and roll front sticking, for plastic laminate back-up, shall be kiln dried clear sugar pine glued to core material. c. Square butt splashes, including end splashes shall be Deck Mount. Splashes shall be end applied and be set in mastic and secured to top with screws 8 inches on centers. Splash edges shall be self-edged and scribed to wall.

c. Joints shall be splined and fastened with screw clip fasteners on at least 8 inch centers. Water resisting mastic or glue shall be applied in joints. Joints shall not occur at sink cutouts. Sink cutouts shall be sealed.

d. Core material for counters and splashes shall be 3/4 inch thick Grade 130 MR50 MDF.

e. Installation of plastic laminate shall be in accordance with published specifications and recommended practices of the plastic laminate manufacturer.

2. Hardwood Countertops:

a. Hardwood counters shall be fabricated of Number One Clear birch or maple boards from 6 inches to 10 inches wide, of thickness indicated, tongued and grooved, and glued together with waterproof glue, reinforced with cleats or other method to prevent warping or opening of joints. Top surfaces where indicated shall be shaped to drain towards sink, with slope of 1/4 inch.

b. Back, ends and caps shall be 3/4 inch thick, with wide sections constructed same as top without reinforcing strips. Joints between top, back, and vertical corners of back where indicated, shall be fabricated of tongue and groove cove members and glued. Sinks, where indicated, shall be set flush with bottom of drainboards and caulked continuously.

3. Tempered Hardboard Tops: Countertops, backs and ends where indicated hardboard shall be covered with 1/8 inch thick tempered hardboard, installed on both sides of 1/2 inch softwood plywood core. Material shall be installed under pressure with waterproof cement of type recommended by hardboard manufacturer.

4. Solid Surface Material: Homogeneous solid sheets of filled plastic resin complying with ANSI SS1.

a. Manufacturers:

1. Avonite Surfaces.

2. E. I. du Pont de Nemours and Company.

3. Formica Corporation.

4. Wilsonart International.

5. Equal.

b. Type: Provide Standard Type.

c. Integral Sink Bowls: Comply with ISSFA-2 and ANSI Z124.3, Type 5 or Type 6, without a precoated finish.

d. Colors and Patterns: As selected by Architect from manufacturer's full range.

e. Butt splash or seamless (coved) backsplash.

f. Provide drip groove.

2.03 FINISHING

A. Wood casework and wood components of laminated plastic casework shall be factory finished. Exposed surfaces shall be finished with one coat of lacquer sealer and 2 coats of finish lacquer. Unexposed materials such as backs, webs, back of tops, and the like, shall be sealed with one oil base prime coat. Semi-exposed wood surfaces such as drawers shall be finished with one coat of sanding sealer and one coat of clear gloss lacquer.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install Work of this section as specified in the North American Architectural Woodwork Standards (NAAWS), grade to match the grade of the work to be installed.

B. Cabinets: Install cabinets level, plumb, and secure to walls. Exposed screws shall have finish washers.

C. End Panels and Fillers: Furnish to match exposed surfaces and accurately scribe to walls and neatly and securely fit to cabinets.

D. Completion: Upon completion of installation, cabinets including drawers and shelves shall be cleaned. Doors and drawers shall operate easily and freely.

E. Scribe plastic laminated cabinets to walls. Installation of surface-applied moldings is not permitted.

F. Coordinate sink and penetration locations with 22 1000 Plumbing.

G. Install solid surface countertops per NAAWS custom grade.

3.02 CLEAN UP

A. Remove debris, rubbish and waste material and legally dispose of off the Project site.

3.03 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 07 0150

ROOF REPAIR

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Repair of existing roofing system disturbed as a result of construction work that is a part of new additions and remodeling including the following:

   a. Areas adjacent to new additions.

   b. At new openings.

   c. At existing openings being filled in.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 02 2819 – Asbestos Abatement of Non-Friable Roofing Material.

3. Section 05 3000 – Metal Decking.

4. Section 06 1000 - Rough Carpentry.

5. Section 07 6000 - Flashing and Sheet Metal.

6. Division 07 - Thermal and Moisture Protection.

1.02 SUBMITTALS

A. Comply with requirements of Section 01 3300 Submittal Procedures.

B. Product Data: Manufacturer's specifications and technical data including the following:

1. Detailed specification of construction and fabrication.

2. Manufacturer's installation instructions, specifically written for this Project.

C. Shop Drawings: Indicate dimensions, description of materials and finishes, general construction, specific modifications, component connections, anchorage methods, hardware, and installation procedures.

D. Roofing Work Program:

1. Written outline indicating methods and materials proposed for accomplishing the Work.

2. Base program upon requirements inspection of existing field conditions made jointly by roofing installer and representative of the manufacturer of the roofing materials to be installed.

1.03 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Not less than five years experience in the actual production of specified products.

B. Installer's Qualifications: Firm experienced in installation or application of systems similar in complexity to those required for this Project, plus the following.

1. Acceptable to or licensed by manufacturer.

2. Not less than three years experience with systems.

3. Successfully completed not less than five comparable scale projects using this system.

C. Pre-installation Conference: Contractor, installer, manufacturer's representative, and representatives of other affected trades shall meet at Site to review procedures, acceptance of substrate surfaces, and coordination with other trades.

1. Schedule meeting at least one week before start of installation.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Storage and Protection: Comply with manufacturer's recommendations.

1.05 WARRANTY

A. Prior to start of work, confirm warranty status of existing roof with OAR.

B. If the roof is covered by warranty, make repairs in compliance with the warrantor’s requirements to maintain the warranty.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Insulation: Match existing. Provide tapered insulation as required.

B. Roofing System: Match existing.

C. Sheet Metal: Match existing.

D. Roof Accessories: Reinstall removed existing roofing accessories or provide new to match existing.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Examine areas and conditions under which Work is to be performed and identify conditions detrimental to proper or timely completion.

1. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Protection:

1. During installation of new materials and until openings are completely closed, protect building interior from damage by weather.

2. Apply materials to roof deck using methods that will protect building interior from damage.

3.03 INSTALLATION

A. Remove gravel, built-up roofing and insulation.

B. Perform cutting required in existing roofing membrane.

C. Install tapered insulation to provide slope of roof surface to drains. Install to match existing roof system construction.

D. Repair existing roofing membrane and flashings where new openings are installed, and where existing openings are closed.

E. Install curbs as detailed.

F. Install top of new blocking and roof insulation flush with top of existing roof insulation.

G. Form and install flashings as indicated or if not indicated to match existing.

H. Strip in flashing at roof penetrations to match roof system.

I. Install flashings and counter flashings at adjacent walls to match existing.

J. Roof Accessory Installation: Install accessories into roofing system to comply with manufacturer's recommendations

END OF SECTION

SECTION 07 2200

ROOF AND DECK INSULATION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Roof and non-tapered polyisocyanurate roof insulation.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 06 1000 - Rough Carpentry.

1.02 REGULATORY REQUIREMENTS

A. Comply with requirements of DSA and authorities having jurisdiction over the Work.

1.03 SUBMITTALS

A. Shop Drawings: Submit roof plans and details. Include roof dimensions, drain and scupper locations, gutter locations, and the layout of insulation boards. Provide details indicating components, attachment and insulation thickness. Provide calculations indicating the average R-value for the system. Indicate drainage patterns and slopes required.

B. Product Data: Submit manufacturer’s data substantiating the insulation complies with specified requirements.

C. Installation Instructions: Submit manufacturer’s installation instructions.

1.04 QUALITY ASSURANCE

A. Comply with the following as a minimum requirement:

1. ASTM C 1289 - Faced Rigid Cell Polyisocyanurate Thermal Insulation Board; Type II Class 1 Grade 2.

2. Provide systems complying with requirements for FM Class 1.

3. Provide systems complying with requirements for UL Class A.

4. Achieve a minimum thermal resistance value of R-10 for re-roofing projects, unless noted otherwise.

5. UL 2818 Green Guard Gold certification. Gold Standard for Chemical Emissions for Building Materials.

B. Installer Qualifications: Minimum five years experience installing specified type of insulation under roofing systems, and certified by the insulation manufacturer to install the Work of this section.

C. Pre-installation Meetings: In accordance with related Division 01 sections, conduct a pre-installation meeting on the Project site.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in manufacturer's original sealed and labeled containers.

B. Avoid exposure to sunlight and the elements.

C. Handle materials in a manner to avoid damage or contamination with moisture or foreign matter.

1.06 PROJECT CONDITIONS

A. Environmental requirements:

1. Install products in strict accordance with manufacturer's recommendations.

2. Do not install any materials when water in any form is present on the deck or materials are wet. Do not install any materials if precipitation is forecast and partially completed Work will be left unprotected.

3. Do not install the Work of this section if the temperature of the roof deck is below 40 degrees F.

PART 2 - PRODUCTS

2.01 GENERAL

A. Insulation: Rigid polyisocyanurate foam insulation, with specially formulated facers as manufactured by:

1. Dyplast Products.
2. Celotex Insulation.
3. GAFTEMP.
4. Sarnatherm (Atlas ACII).
5. Equal.

2.02 DESCRIPTION

A. Tapered Roof insulation shall provide minimum per foot slope and provide minimum insulation values as indicated on drawings.

B. Roof and Deck insulation shall consist of polyisocyanurate foam panels, chemically bonded during the foaming process to special organic/inorganic facers on the top and bottom surfaces, and shall conform to the following:

PROPERTIES	**TEST METHOD**	**VALUE**
Compressive Strength	ASTM D 1621	20PSI min.
Dimensional Stability (Thermal and Humid Aging)	ASTM D 2126 (-4 degrees F, amb RH) (158 degrees F, 97 percent RH) (200 degrees F, ambient RH)	 Less than 2 percent linear change Less than 2 percent Linear change Less than 2 percent linear change
Flexural Strength (Modulus of Rupture) (Break load)	ASTM C 203	40 PSI min. 17 PSI min.
Tensile Strength (Perpendicular to surface)	ASTM C 203	500 PSF min.
Water Absorption	ASTM C 209	
Water Vapor Transmission	ASTM E 96	
Core Foam Flame Spread	ASTM E 84	

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify suitability of substrates to receive the Work. Do not proceed until unsatisfactory conditions have been corrected.

B. Verify suitability of related Work such as the following:

1. Roof drains and scuppers are properly installed.

2. Roof curbs, nailers, equipment supports, vents, and other items penetrating the roof are of the proper height, properly prepared and fastened to the substrate.

3. Concrete surface are sufficiently dry, free from extremes in pH, properly primed and free of fines, edges, or voids.

3.02 INSULATION APPLICATION

A. General:

1. Install the Roof and Deck insulation in accordance with the manufacturer's recommendations and to provide the R values indicated. Butt the panels snugly together.

2. Start boards from either the roof drain or the high point depending on the insulation system. Stencil direction of slope on each board. Stagger joints of underlayment boards from insulation boards.

3. Cut valleys and hips. Field cut crickets from insulation boards. Install valleys, hips, and crickets as required for R values and drainage.

B. Roofing Systems: Fasten insulation with a method recommended by the manufacturer. Method of attachment shall provide a minimum FM I-90 Wind Uplift Rating.

3.03 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.04 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 07 5413

POLYVINYL-CHLORIDE ROOFING
(MECHANICALLY ATTACHED FOR EXISTING FACILITIES)

PART 1 – GENERAL

1.01 SUMMARY

A. Mechanically-attached Thermoplastic Polyvinyl Chloride (PVC) roofing system with flashings and other components to comprise a roofing system.

1. One layer, smooth back PVC over one layer barrier board mechanically attached to existing plywood or wood planks decking.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 06 1000 - Rough Carpentry.

1.02 SUBMITTALS

A. Shop Drawings: Submit roof plans and details. Include roof dimensions, drain and scupper locations, gutter locations, and the layout of insulation boards. Provide details indicating components, attachment, and insulation thickness; include a complete set of detail drawings from roofing manufacturer, including one set in a digital format acceptable to OAR. Provide calculations indicating the average R-value for the system. Indicate drainage patterns and slopes required.

B. Product Data:

1. List of each component to be used in roof system and Manufacturer’s current literature for each component, indicating physical and mechanical properties.
2. Manufacturer’s current installation literature.
3. Evidence that proposed products are compatible with PVC.
4. Safety Data Sheets (SDS).

C. Evidence that proposed roof system meets requirements of local building code and has been tested and approved or listed by the following test organizations.

1. FM Global, I-90 wind uplift rating.
2. Underwriters Laboratory, Class A assembly.

D. Sample copy of Roofing Manufacturer’s warranty, including no exclusion for ponding water with no time limit for any such ponding water.

E. Sample copy of Installers’ warranty.

F. Letter from Roofing Manufacturer confirming that installer is an authorized applicator of specified roof system.

G. Samples: Submit Physical samples of membrane components, with the manufacturer name and product name clearly identified for each item. Samples shall be no smaller than 6 inches square. Submit samples of fasteners.

1.03 QUALITY ASSURANCE

A. Unless otherwise specified, roofing shall be installed in accordance with the National Roofing Contractors Association Manual.

B. Qualifications of Manufacturer: Roofing materials shall be product of a manufacturer regularly engaged in manufacture of this product for not less than five years.

C. Qualifications of Installer: Minimum of 5 years experience in successfully installing the same or similar roofing materials. Work pertaining to the installation of the PVC membrane and flashings shall be completed by CONTRACTOR personnel trained and authorized by Roofing Manufacturer in those procedures.

D. Pre-Installation Conference and Inspection: After review of submittals, but prior to starting installation of the Work of this section, conduct a meeting at the Project site attended by the ARCHITECT, Project Inspector, OAR, CONTRACTOR, roofing materials installer, and a technical representative of the roofing material manufacturer. The installer and material manufacturer's technical representative shall inspect the substrates to receive the Work of this section, and report defective conditions to the ARCHITECT, Project Inspector, OAR, and CONTRACTOR.

E. Manufacturer's Representative: Provide arrangements necessary to have a trained representative of the manufacturer visit the Project site on a weekly basis during the application of roofing materials to review installation procedures.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver materials to Project site in unopened packages bearing manufacturer's labels.

B. Store materials above grade and protected from moisture and humidity, in accordance with manufacturer's recommendations.

1.05 JOB CONDITIONS

A. PVC materials may be installed under certain adverse weather conditions but only after consultation with the Roofing Manufacturer, as installation time and system integrity may be affected.

B. Only as much new roofing as can be made weather tight each day, including flashing and detail work, shall be installed. Seams shall be cleaned and heat-welded before leaving job site that day.

C. Work shall be scheduled and executed without exposing building's interior areas to effects of inclement weather. Building and its content shall be protected.

D. Surfaces to receive new cover board, membrane or flashings shall be dry. Should surface moisture occur provide necessary equipment to dry surface prior to installation.

E. New and temporary construction, including equipment and accessories, shall be secured to prevent damage by wind or other elements.

F. Uninterrupted waterstops shall be installed at the end of each day's work and shall be completely removed before proceeding with next day's work. Waterstops shall not emit dangerous or unsafe fumes and shall not remain in contact with finished roof as installation progresses. Contaminated membrane shall be replaced at no cost to OWNER.

G. Certain PVC membranes are incompatible with asphalt, coal tar, heavy oils, roofing cements, creosote and some preservative materials. Such materials shall not remain in contact with PVC membranes. CONTRACTOR shall consult Roofing Manufacturer regarding compatibility, precautions and recommendations.

H. Do not overload roof deck or building structure.

I. Rooftop contamination that is anticipated or that is occurring shall be reported to OAR and Project Inspector to determine corrective steps to be taken.

J. Verify that roof drain lines are functioning correctly (not clogged or blocked) before starting work and after completion. CONTRACTOR shall report any such blockages in writing to OAR for corrective action prior to installation of roof system.

K. Immediately stop work if any unusual or concealed condition is discovered. Notify OWNER of condition in writing, on appropriate project form, for direction.

L. Conduct fastener pullout tests in accordance with latest revision of SPRI/ANSI Fastener Pullout Standard to help verify condition of deck/substrate and to confirm expected pullout values. Testing shall be performed in the presence of the Project Inspector and OAR.

1.06 WARRANTIES

A. Roofing Manufacturer's Standard 10 year No Dollar Limit (NDL) Material and Labor Warranty: Warranty shall be issued at Substantial Completion. Warranty shall be Non-Prorated, shall not exclude ponding water and no time limit shall be assigned for any ponding.

B. Installer's five Year Warranty: CONTRACTOR's Performance Bond shall cover the first 2 years of warranty period only.

1. Installer shall supply OWNER with a separate Five year installation warranty. In the event any work related to roofing, flashing, or metal is found to be within CONTRACTOR warranty's term, defective or otherwise not in accordance with Contract Documents, CONTRACTOR shall repair defect at no cost to OWNER. CONTRACTOR's warranty obligation shall run directly to OWNER. Repair shall comply with this specification.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. PVC roofing system shall be as manufactured by one of the following manufacturers:

1. Sika – Corporation - Roofing.
2. Johns Manville.
3. Carlisle.
4. Equal.

2.02 MEMBRANE

A. Membrane, Sarnafil S327, thermoplastic membrane as the basis of design for use over cover board.

B. Membrane shall conform to the following:

1. ASTM D4434 (latest revision) Standard Specification for Polyvinyl Chloride (PVC) Sheet Roofing.
2. California Energy Code, Section 118 for “Cool Roof Requirements”. Reflective values shall be as follows when tested in accordance to CRRC-1.

a. Minimum initial total solar reflectance of 0.70.

b. Minimum thermal emittance of 0.75 when tested in accordance with ASTM E408: Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques.

C. Membrane shall conform to following physical properties:

1. Color: White.
2. Thickness: Minimum of 60 mil (0.060 inch) without fleece backing.

D. Membrane shall be field fabricated. Blanket type systems will not be accepted.

2.03 FLASHING MATERIALS

A. Wall/Curb Flashing:

1. PVC Membrane Flashing (Fiberglass): Fiberglass reinforced membrane attached to substrate using approved mechanical attachment.
2. Manufacturers Self Adhered 60 mils fiberglass reinforced PVC membrane adhered to approved substrates.

B. Perimeter Edge Flashing PVC Clad Metal: PVC-coated, heat-weldable sheet metal capable of being formed into a variety of shapes and profiles. Clad metal shall be 25 gage, G90 galvanized metal sheet with a 20 mil unsupported PVC membrane laminated on one side.

C. Miscellaneous Flashing:

1. Reglet/Termination Bar: Reglets shall be heavy-duty, extruded aluminum flashing termination reglet used at walls and large curbs. Reglet shall be produced from 6063-T5, 0.10 inch – 0.12 inch thick extruded aluminum.
2. PVC Prefabricated Pipe Flashing: Prefabricated vent pipe flashing made from 0.050 inch thick PVC membrane.
3. PVC Prefabricated Corners: Prefabricated outside and inside flashing corners made of 0.060 inch (60 mil) thick membrane that are heat-welded to membrane or clad metal base flashings.
4. Multi-Purpose Sealant: Sika-Flex 1A sealant used at flashing terminations.
5. PVC Cover-strip: Precut flashing made from PVC polyester reinforced membrane. Used to Coverstrip attachment bars and attachment discs.

2.04 COVER BOARD

A. ASTM C1177, minimum ¼ inch thick, siliconized gypsum, Type X core with fiberglass-mat facers. Georgia-Pacific DensDeck, Temple-Inland, National Gypsum, or equal. Board must comply with roofing manufacturer's system warranty.

2.05 ATTACHMENT COMPONENTS

A. Cover Board Attachment Plate: Provide heavy duty fasteners to attach insulation/cover boards to roof deck. Attachment plate shall be 3 inch square or round, 26 gage stamping of SAE 1010 steel with an AZ 55 Galvalume coating.

B. Heavy Duty Fastener: CONTRACTOR to submit appropriate fastener, approved by systems manufacturer for given, existing substrate conditions, in order to meet specified code requirements.

C. Membrane Attachment Plate: High strength plate used with heavy duty fasteners to attach PVC roof membrane directly to roof deck. Plates shall be 20 gage, 2-inch diameter corrosion resistant steel plate.

2.06 WALKWAY PROTECTION

A. PVC Walk Tread: Polyester reinforced, 0.096 inch, weldable membrane with surface embossment.

2.07 MISCELLANEOUS ACCESSORIES

A. Aluminum Tape: 2-inch wide pressure-sensitive aluminum tape used as a separation layer between small areas of asphalt contamination and membrane and as a bond-breaker under cover-strip at clad metal joints.

B. Sealing Tape Strip: Manufacturers multi purpose self adhesive butyl tape. Used with metal flashings as a preventive measure against air and wind blown moisture entry.

C. Membrane Cleaner: High quality solvent cleaner used for general cleaning of residual asphalt, scuff marks, etc., from membrane surface. Membrane cleaner shall also be

used daily to clean seam areas prior to hot-air welding in tear off or dirty conditions or if membrane is not welded same day it is unrolled.

2.08 SEALANTS

A. Multi-Purpose Sealant (for termination details): Sika-Flex 1A.

B. Depending on substrates, for temporary overnight tie-ins provide one of the following:

1. Multiple layers of roofing cement and felt conforming to ASTM D4586.

2. Mechanical attachment with rigid bars and compressed sealant.

2.09 MISCELLANEOUS FASTENERS AND ANCHORS

A. Fasteners shall be pre-approved by the roofing system manufacturer. Avoid galvanic corrosion. Fasteners for attachment of metal to masonry shall be expansion type fasteners with stainless steel pins. Concrete fasteners and anchors shall have a minimum embedment of 1.25 inch and shall be approved for such use by fastener manufacturer. Miscellaneous wood fasteners and anchors used for flashings shall have a minimum embedment of 1 inch and shall be approved for such use by fastener manufacturer.

PART 3 – EXECUTION

3.01 SUBSTRATE CONDITION

A. CONTRACTOR shall be responsible for acceptance or provision of proper substrate to receive new roofing materials.

B. CONTRACTOR is responsible for following:

1. Roof drains shall be reconditioned and scuppers replaced with new and manufactured from PVC clad metal, and installed properly. Replace broken or missing compression rings and strainers with new. Plastic will not be accepted.

2. Roof curbs, nailers, equipment supports, vents and other roof penetrations shall be properly secured and prepared to receive new roofing materials.

3. Surfaces shall be smooth and free of dirt, debris and incompatible materials.

4. Roof surfaces shall be free of water.

3.02 SUBSTRATE PREPARATION

A. Dry, clean and smooth substrate shall be prepared to receive PVC mechanically-attached roof system. Inspect substrate for defects such as excessive surface roughness, contamination, structural inadequacy, or any other condition that will adversely affect quality of work. Substrate shall be free of flaws, sharp edges, loose granules and foreign material, oil and grease. Roofing shall not start until defects have been corrected. PVC membrane shall be applied over compatible and accepted substrates only.

B. Prior to and during application, dirt, debris and dust shall be removed from surfaces either by vacuuming, sweeping, blowing with compressed air or similar methods.

C. Gravel surfaced roofs shall be vacuumed, power broomed and vacuumed again prior to installation of barrier board.

3.03 INSULATION AND COVER INSTALLATION

A. Insulation and cover board shall be installed according to manufacturer's instructions.

B. Insulation and cover board shall be neatly cut to fit around penetrations and projections.

C. Do not install more barrier board than can be covered with PVC membrane by end of day or onset of inclement weather.

D. Mechanical Attachment:

1. Cover board shall be mechanically fastened to deck with approved fasteners and plates at a rate of six per four-foot by eight-foot board. The location of the fasteners and plates shall cause the cover board to rest evenly on roof deck or substrate so there is no significant and avoidable air spaces between boards and substrate. Each board shall be installed tightly without deformation against adjacent boards on all sides.

2. Fasteners shall be installed in accordance with manufacturer's instructions. Fasteners shall have a minimum penetration into structural deck as recommended by manufacturer.

3.04 INSTALLATION OF POLYVINYL CHLORIDE (PVC) MEMBRANE

A. The surface of substrate shall be inspected prior to installation of PVC roof membrane. The substrate shall be clean, dry, and free from debris and smooth, with no surface roughness or contamination. Broken, delaminated, wet or damaged cover boards shall be removed and replaced.

B. General:

1. PVC membrane shall be attached with fasteners and discs according to Roofing Manufacturer and FM Global requirements.

2. Membrane overlaps shall be shingled with flow of water where possible.

3. Tack welding of PVC membrane for purposes of temporary restraint during installation on windy days is not permitted.

4. PVC membrane shall extend over edge of roof and be turned down face a minimum of 2 inches wherever clad metal edging is to be installed.

C. Perimeter and Corner Areas:

1. Over properly installed and prepared substrate surface, install PVC half-width rolls parallel to perimeter. Number of adjacent half-rolls shall be determined according to FM Global guidelines and Roofing Manufacturer's Technical

Specifications. Fasteners and discs shall be installed along edge of membrane on fastening line at a spacing of 6 inches on center.

2. Perimeter area is defined as outer boundary of roof. If roof is composed of different levels, each area shall be treated as an individual roof. Internal expansion joints and firewalls are not full perimeters. Refer to FM Global Data Sheet 1-28 for more information.

3. The ridge area is defined as high point in roof area formed by two intersecting planes. When sum of slopes is a minimum of 4 inches in 12 inches (30 degrees), each side of ridge shall be treated as a perimeter area.

4. Hot-air weld overlaps according to Roofing Manufacturer's requirements. Take test cuts at least three times per day.

D. Interior Area:

1. Install full-width rolls over properly installed and prepared substrate. Fasteners and discs shall be installed at perimeter at 6 inches on center. Fasteners shall clamp PVC membrane tightly to substrate.

2. Hot-air weld overlaps according to Roofing Manufacturer's recommendations. Take test cuts at least three times per day.

E. Secure Perimeter and Rooftop Penetrations

1. Install fasteners and discs around perimeters, at base of walls, drains, curbs, vent pipes, or any other roof penetrations. Fasteners and discs shall be installed at a spacing equal to perimeter and according to manufacturer's instructions. Fasteners shall be installed using fastener manufacturer's recommended torque-sensitive fastening tools with depth locators. Fasteners shall clamp PVC membrane tightly to substrate.

2. PVC membrane flashings shall extend 2 ½ inches past discs and be hot-air welded to PVC deck membrane.

3.05 WELDING OF SEAMS

A. General

1. Seams shall be hot-air welded. Seam overlaps shall be a minimum of 3-inch wide when automatic machine welding and a minimum of 4-inch wide when hand-welding.

2. Welding equipment shall be approved by Roofing Manufacturer. Mechanics intending to use the equipment shall have successfully completed a training course provided by the Roofing Manufacturer's Technical Representative prior to welding.

3. Membrane to be welded shall be clean and dry.

B. Quality Control of Welded Seams: CONTRACTOR shall check welded seams for continuity. On-site evaluation of welded seams shall be made daily by CONTRACTOR at locations directed by OAR. One inch wide cross-section samples

of welded seams shall be taken three times a day, minimum. Correct welds displaying failure, from shearing of membrane, prior to separation of weld. Each test cut shall be patched by CONTRACTOR at no extra cost to OWNER.

3.06 MEMBRANE FLASHINGS

A. Flashings shall be installed concurrently with roof membrane as job progresses. No temporary flashings shall be allowed without prior written approval of OAR. Approval shall only be for specific locations on specific dates. If water enters under newly completed roofing, affected area shall be removed and replaced at CONTRACTOR's expense. Flashing shall be attached to compatible, dry, smooth, and solvent-resistant surfaces.

B. Install discs according to Drawings submitted by CONTRACTOR and approved by OWNER with approved fasteners into structural deck at base of parapets, walls and curbs. Discs may be required by roofing material manufacturer at base of transitions, peaks, and valleys according to roofing manufacturer's details.

C. Flashings shall extend a minimum of 8 inches above roofing level unless otherwise indicated.

D. Flashing membranes shall be attached consistently to substrates. Interior and exterior corners and miters shall be cut and hot-air welded into place.

E. Flashing membranes over 18 inches tall shall be mechanically fastened with rows of fasteners at 12 inches on center in repeating rows at 18 inches on center.

F. Flashing membranes shall be mechanically fastened along counter-flashed top edge with batten bar at 6 to 8 inches on center

G. PVC flashings shall be terminated according to Roofing Manufacturer's recommended details.

3.07 PVC CLAD METAL BASE FLASHINGS/EDGE METAL

A. Flashings shall be installed concurrently with roof membrane as job progresses. No temporary flashings shall be allowed without prior written approval of OAR and Roofing Manufacturer. Acceptance shall only be for specific locations on specific dates. If any water is allowed to enter under newly completed roofing due to incomplete flashings, affected area shall be removed and replaced at CONTRACTOR's expense.

B. PVC clad metal flashings shall be formed and installed according to detail drawings submitted by CONTRACTOR and approved by OWNER.

1. Metal flashings shall be fastened with two rows of post galvanized flat head annular ring nails, 4 inches on center staggered. Fasteners shall penetrate wood nailers a minimum of 1 inch.

2. Metal shall be installed to provide adequate resistance to bending and allow for normal thermal expansion and contraction.

C. Clad metal shall be installed over field membrane and stripped in with a 6 inch minimum PVC cover strip, prior to installation of the cover.

D. Adjacent sheets of PVC clad shall be spaced ¼ inch apart. The joint shall be covered with 2 inch wide aluminum tape. A 4 inch minimum wide strip of PVC flashing membrane shall be hot-air welded over joint.

E. Clad metal shall be installed over field membrane and stripped in with a 6 inch minimum PVC cover strip, prior to installation of the 8 inch cover plate target.

3.08 METAL FLASHINGS

A. Metal details, fabrication practices and installation methods shall conform to applicable requirements of following:

1. Specification Section 07 6000 - Flashing and Sheet metal.

2. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA).

3. National Roofing Contractor's Association (NRCA) Manual.

B. Metal, other than that provided by Roofing Manufacturer, is not covered under Roofing Manufacturer's warranty, but will be included in CONTRACTOR's warranty.

C. Complete metal work in conjunction with roofing and flashings so that a watertight condition exists daily.

D. Metal shall be installed to provide adequate resistance to bending to allow for normal thermal expansion and contraction.

E. Metal joints shall be watertight.

F. Metal flashings shall be securely fastened into solid wood blocking. Fasteners shall penetrate wood nailers a minimum of 1 inch.

G. Airtight and continuous metal cleats are required behind metal fascias. Cleats shall be fastened 12 inches on center into wood nailers or masonry wall.

H. Counter flashings shall overlap base flashings at least 4 inches.

3.09 WALKWAY INSTALLATION

A. PVC Walkway Tread: CONTRACTOR shall not apply walk tread until welded seams in traffic area have been inspected by Project Inspector and any deficiencies repaired. Roofing membrane to receive PVC Walkway Tread shall be clean and dry. Clean deck membrane in areas to be welded. Hot-air weld entire perimeter of Walkway to PVC deck sheet. Re-weld any inconsistencies.

3.10 ADDRESS ON ROOF

A. On Main/Administration building; using PVC membrane of a contrasting color over roofing, install the numerical address of facility. Font for numbering shall be "Arial" or similar. Numbering shall be facing the street it is addressing, and be located as close to center of roof as possible. Numbers shall be three -feet in height and have a

six-inch line width. A pre-manufactured stencil shall be used to mark membrane material prior to cutting.

3.11 COMPLETION

A. Single ply roofing shall be washed with running water, mild (environmentally safe) detergent, and clean brooms after completion of minor punch list items, with cleaning being the final item.

3.12 CLEANUP

A. Remove rubbish, debris, and waste materials on a daily basis and legally dispose of off Project site.

3.13 PROTECTION

A. Protect new roofing from damage by walking or for equipment movement and storage.

B. Protect Work of this section until Substantial Completion.

END OF SECTION

SECTION 07 6000

FLASHING AND SHEET METAL

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Sheet metal flashings in connection with roofing.
2. Reglet and counter flashing assemblies.
3. Miscellaneous metal flashing and counter flashing as required, except where provided under Divisions 22, Plumbing, 23, HVAC, or 26, Electrical.
4. Coping caps.
5. Gravel stops and metal edging.
6. Gutters and downspouts.
7. Splash pans where downspouts empty onto roofing.
8. Conductor heads.
9. Drip flashings.
10. Sheet metal covering at outside storage units.
11. Sheet metal wall coverings.
12. Roof pipe flashings.
13. Roof expansion joint covers.
14. Other sheet metal items not necessarily specified herein or in other sections but required to prevent penetration of water into building.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 07 2200 - Roof and Deck Insulation.
3. Section 07 5413 - Polyvinyl-Chloride Roofing (Mechanically Attached For Existing Facilities).
4. Section 07 9200 - Joint Sealants.
5. Division 22 –- Plumbing.
6. Division 23 - HVAC.
7. Division 26 - Electrical.

1.02 SUBMITTALS

A. Shop Drawings: Submit for fabricated sheet metal indicating shapes, details, methods of joining, anchoring and fastening, thicknesses and gages of metals, concealed reinforcement, expansion joint details, sections, and profiles.

B. Samples: Submit Samples for materials or assemblies as requested.

C. Product Data: Submit brochures of manufactured items.

1.03 QUALITY ASSURANCE

A. Drawings and requirements specified govern. Provide the Work of this section in conformance with the Architectural Sheet Metal Manual published by SMACNA for conditions not indicated or specified and for general fabrication of sheet metal items.

B. Materials shall conform to following standards:

1. ASTM A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.

2. ASTM A653 - Sheet Steel, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

3. ASTM B370 - Copper Sheet and Strip for Building Construction.

C. Pre-installation Meetings: Refer to Division 07 roofing sections as appropriate. Attend the pre-installation and inspection meetings for roofing Work.

1.04 DELIVERY, STORAGE AND HANDLING

A. Do not install bent or otherwise damaged materials.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Galvanized Sheet Steel: ASTM A653, coating designation G90, hot-dip galvanized.

B. Copper Plate, Sheet and Strip: ASTM B370, cold-rolled, tempered. Copper sheet and strip shall be cold-rolled-temper.

C. Stainless Steel: Plate, sheet and strip shall conform to ASTM A167, Type 304 or Type 316, No. 4 finish on exposed surfaces and No. 2 finish on concealed surfaces unless otherwise specified or indicated. Furnish Type 304 for general applications and Type 316 where exposed to acidic or alkaline conditions.

D. Aluminum Sheet: ASTM B 209, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required; with smooth, flat surface.

1. As-Milled Finish: **[Mill] [One-side bright mill] [Standard one-side bright] [Standard two-side bright].**

E. Fastenings:

1. Galvanized Steel: Nails, rivets, and other fastenings furnished in connection with galvanized sheet steel Work shall be sealed with rust resistive coating. Rivets shall be tinned. Nails and other fastenings shall be zinc-coated.

2. Copper: Nails, rivets, and other fastenings furnished in connection with copper sheet metal Work, shall be manufactured from hard-temper copper or hard brass.

3. Stainless Steel: Nails, rivets and other fastenings furnished in connection with stainless steel Work, shall be 300 series alloy to match alloy of stainless steel being fastened.

F. Soldering Flux: Raw muriatic acid for galvanized steel; rosin for tin, and tinned copper; non-corrosive soldering salts for uncoated copper and acid-type flux formulated for soldering stainless steel.

G. Solder: ASTM B32, Grade 5A, composed of 95-5 tin-antimony. Name of product manufacturer and grade designation shall be labeled, stamped or cast onto each coil or bar.

2.02 FABRICATION

A. General:

1. Accurately form sheet metal Work to dimensions and shapes indicated and required. Cope finish molded and brake metal shapes with true, straight, sharp lines and angles and, where intersecting each other, to a precise fit. Unless otherwise specified, all galvanized sheet steel shall be 22 gage. Exposed edges of sheet metal shall have a ½ inch minimum hemmed edge.

2. Soldering of sheet steel or copper shall be performed with well-heated copper soldering iron or soldering torch, joints full flowing, neat and consistent. Fill joint completely with solder. Clean materials at joints before soldering, and tin coppers before soldering. Exposed soldering on finished surfaces shall be scraped smooth. Lock seam work shall be fabricated flat and true to line and soldered along its entire length. Acid-fluxed Work shall be neutralized after fabrication.

3. Form and install sheet metal Work to provide proper allowances for expansion and contraction, without causing undue stresses in any part of completed Work. Installation shall be water and weathertight.

B. Gutters and Downspouts:

1. Gutters: Fabricate from 22 gage galvanized steel to match existing size and design unless otherwise indicated. Maximum length of gutter shall be 40 feet between end or expansion joints unless the system is specially designed to accommodate the greater expansion, the larger flow and the need for special supports. Drain gutter towards nearest downspout and provide an expansion joint at mid-point between downspout outlets, but not to exceed 40 feet on center. Gutters shall not pond water. Rivet joints and ends with a minimum of 6 rivets per joint or maximum rivet spacing not to exceed 1 ½-inch on center and ½ inch from the edge of the metal, consisting of 3-inch overlap. Sweat solder from inside of gutter and in horizontal position where possible. Neatly fit downspouts to gutter using a slip joint. Provide expansion joints, consisting of 3-inch lap joints at not over feet.

2. Form and install sheet metal Work to provide allowance for expansion and contraction without causing undue stresses in the completed Work.

3. Downspouts: Fabricate downspouts from 3-inch round, or 3-inch by 4-inch rectangular shapes, 16 gage steel tubing with butt joints and mitered elbows, sized as indicated. Downspouts shall be constructed with conductor heads every 40 feet to admit air and prevent vacuum. Keep downspouts offsets to a maximum of 10 feet. Downspout shall be fabricated with elbows at bottom discharge or connected to drains as indicated. Joints, except expansion joints shall be sealed with a continuous weld. Galvanize downspouts after fabrication.

4. Outlets: Fabricate outlets of 22 gage galvanized sheet steel with a 1/4 inch rolled flanged soldered continuously to gutter. Outside diameter shall be 1/8 inch less than the inside diameter of the downspout and extend into downspout 4 inches. Install a removable wire "bulb type" strainer to outlet opening. Strainer shall be fabricated of 22 gage galvanized steel and ½ inch hardware cloth.

C. Conductor Heads: Fabricate conductor heads and outlets from 22 gage galvanized sheet steel. Cover tops of the conductor heads with 22 gage galvanized ¼ inch wire mesh soldered securely to separately fabricated frame and mechanically fastened to top conductor head with a minimum of two fasteners.

D. Gravel Stops: Provide 24 gage galvanized sheet steel gravel stops wherever roof area drops to a lower level; at the eaves and rake of roof, where roof comes to an abrupt edge, and where indicated. Stops shall be of height indicated and shall be fabricated with two flanges. Horizontal flange shall be not less than 4 inches wide, and vertical flange shall extend down over vertical surfaces of trim or gutter. Gravel stops shall lap 4 inches at ends and corners and shall be fabricated by notching and interlocking vertical face flanges. Contact surfaces of lapped flanges, including raised areas, vertical face and corners, shall be completely covered with flashing compound. Fabricate lap joints so that they will be in the direction of water flow. Where flanges are over five inches wide, provide 20 gage continuous cleats fastened at 24 inches on center.

E. Overflow Outlets: Provide galvanized sheet steel overflow outlets at locations and of sizes indicated. Outlets shall extend through full thickness of wall in one continuous piece and completely line the opening. On outside face of wall, top and sides of outlet shall finish 1/2 inch on surface of wall. Bottom of outlet shall project 1 ½ inches beyond face of wall and shall be bent down slightly. Outlets shall be sealed on the surface of the building. On inside face, side and bottom flanges shall extend not less than 8 inches beyond edge of opening, and not less than 6 inches at top. Outlets shall be installed at time roof is being installed.

F. Reglet Type Counterflashing: Where roof comes in contact with vertical surfaces, provide counterflashing. Set top of counter flashing 8 inches above roof deck unless otherwise indicated and extend down at least 5 inches or to top of cant strip. Counterflashing and reglet shall be 22 gage galvanized sheet steel. Lap counter flashing and reglet 3 inches minimum at splices and miter at angles or supply special metal corner fittings. Reglet and method of securing flashing shall be so constructed that flashing is firmly locked in place but may be readily removed for replacement.

G. Splash Pans: Provide splash pans for all downspouts, which empty onto lower roofs. Pans shall be galvanized sheet steel 12-inch by 18-inch, unless otherwise indicated, and turned up 2 inches on at least three sides.

H. Roof Expansion Joint Covers: Fabricate of 22 gage galvanized sheet steel, as detailed. One side of joint shall be zee shaped, with 3-inch standing leg extended over the joint and turned down. The other side shall be box shaped, fabricated to extend over the joint, over the standing leg, and turn down to form a water barrier. Prefabricated bellows type joint covers are not permitted.

I. Miscellaneous Flashing: Unless otherwise indicated, miscellaneous flashing shall be fabricated of galvanized steel. Exterior doors and windows, unless covered by overhangs shall be provided with 22 gage galvanized steel drip flashing as detailed. At wood construction, nail flashing to framing before paper backed lath is installed.

J. Roof Pipe Flashings:

1. PVC roofs: provide PVC flashings or prefabricated welded or seamless flashings.

2. Tile and built up roofs: provide 24 gage galvanized steel flashings with a storm worker.

PART 3 - EXECUTION

3.01 PREPARATION

A. Concrete and masonry materials in contact with sheet metal shall be painted with alkali resistant coating, such as heavy-bodied bituminous paint. Wood in contact with sheet metal shall be painted with two coats of aluminum paint or one coat of heavy-bodied bituminous paint.

3.02 INSTALLATION

A. General: Coordinate with installation of underlayment indicated in the Drawings and specified in Section 09 2423.

B. Gutters and Downspouts:

1. Anchor gutters to structure with 10 gage steel straps, galvanized after fabricating. Secure straps with galvanized fasteners at 3 feet on center. Drill pilot holes and use 12 by 2-inch pan head screws.

2. Install 1/4 inch galvanized wire mesh continuous cover on gutter.

3. Secure downspouts to walls with 1/8 inch by 2-inch galvanized steel straps. Straps shall be located at top, bottom, and at not over 10 feet on center. Block downspouts out ½ inch from the finish wall surfaces and 1 inch from the bottom of downspout grade. Secure straps to wall framing with 1/4 inch by 2-inch long galvanized anchors. Expansion type anchors shall be provided when anchoring to concrete and masonry. Provide toggle bolts for attachment to masonry or plaster. At steel columns, provide fasteners as indicated. Plastic anchors are not permitted.

4. Anchor conductor heads to walls with 1/4 inch diameter by 2 ½-inch long galvanized lag screws or 1/4 inch expansion type anchors.

C. Reglets: Install reglets at constant height above cant or as indicated. Provide minimum 3-inch lap at end splices of reglets. Seal laps watertight.

D. Counterflashing:

1. Install at constant horizontal elevation across roof slope and slope at constant height above cant or as indicated.

2. Provide minimum 3-inch lap at all end splices of counterflashing.

E. Galvanized sheet steel parapet coping and flashing shall be continuous over top of parapet to form a watertight cap, with waterproof seams at approximately 10 feet on center, or as indicated. Anchor coping to outside of wall with a continuous cleat face nailed at 24 inch centers. Coping shall be fastened on inside wall with hex head screws and bonded sealing washers through oversized holes in the back of the coping. Corners and angles shall be lapped and soldered; do not install joint sealant.

3.03 TESTING

A. Perform field water testing to demonstrate installation is watertight. Continue testing with a continuous hose stream applied at base of installation for at least 30 minutes. If leaking is observed, discontinue test and repair installation, then test until satisfactory results are obtained.

3.04 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.05 CLEANING

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 07 9200

JOINT SEALANTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Joint sealants.

2. Preparation for application of sealants.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 06 2000 - Finish Carpentry.

5. Division 08 - Openings.

6. Division 09 - Finishes.

7. Section 10 2813 - Toilet Accessories.

1.02 SUBMITTALS

A. Shop Drawings: Submit Shop Drawings indicating sealant joint locations, with full-size sealant joint details.

B. Product Data: Submit manufacturer's literature for each sealant material.

C. Material Samples: Submit Samples indicating color range available for each sealant material intended for installation in exposed locations.

D. Certifications: Submit manufacturer’s certification materials comply with requirements specified.

E. Site Samples: At locations required, provide a Sample of sealant for each typical installation, approximately 24 inches long, including joint preparation, backing, sealant and tooling. Allow backing to extend 6 inches beyond end of sealant for inspection of substrate.

F. Test Reports: Submit manufacturer's adhesion compatibility test reports according to ASTM C794 for each substrate.

1.03 QUALITY ASSURANCE

A. Qualifications of Installer: The Work of this section shall be installed by a firm which has been in the business of installing similar materials for at least five consecutive years; and

can show evidence of satisfactory completion of five projects of similar size and scope. Installer shall have applicators trained and approved by manufacturer for performing this Work.

1.04 DELIVERY, STORAGE AND HANDLING

A. Store in accordance with manufacturer's recommendations. Provide a uniform ambient temperature between 60 and 80 degrees F.

1.05 WARRANTY

A. Manufacturer: five year material warranty.

B. Installer: two year installation/application warranty.

PART 2 - PRODUCTS

2.01 GENERAL

A. Furnish sealants meeting following in-service requirements:

1. Normal curing schedules are permitted.

2. Non-staining, color fastness (resistance to color change), and durability when subjected to intense actinic (ultraviolet) radiation are required.

B. Furnish the products of only one manufacturer unless otherwise required, sealant colors as selected to match the adjoining surfaces.

2.02 MANUFACTURERS

A. Sealants must be approved by LAUSD's Office of Environmental Health and Safety (OEHS). Check OEHS website for approved products. Not all products by a manufacturer are approved by OEHS.

2.03 MATERIALS

A. Sealants:

1. Sealant 1: Acrylic latex, one-part, non-sag, mildew resistant acrylic emulsion compound complying with ASTM C834, Type S, Grade NS, formulated to be paintable.

a. Tremco Inc., Acrylic Latex Caulk.

b. Pecora Corporation, AC-20.

c. Equal.

2. Sealant 2: Butyl sealant, one-part, non-sag, solvent-release-curing sealant complying with ASTM C1311, gun grade and formulated with a minimum of 75 percent solids.

a. Tremco Inc., Tremco Butyl Sealant.

b. Pecora Corp., BC-158.

c. Equal.

3. Sealant 3: Silicone sealant, one-part non-acid-curing silicone sealant complying with ASTM C920, Type S, Grade NS, Class 25.

a. Dow Corning Corp., Dow Corning 790, 791, 795.

b. General Electric Co., Silpruf.

c. Tremco, Inc., Spectrem 1.

d. Pecora Corp., 864.

e. Equal.

4. Sealant 4: One-part mildew-resistant silicone sealant, complying with ASTM C920, Type S, Grade NS, Class 25.

a. Dow Corning Corp., Dow Corning 786.

b. General Electric Co., Sanitary 1700.

c. Tremco, Inc., Proglaze White.

d. Equal.

5. Sealant 5: One-part non-sag urethane sealant, complying with ASTM C920, Type S, Grade NS, Class 25.

a. Sika Corporation, Sikaflex -221e.

b. Equal.

C. .Joint Backing: ASTM D1056; round, closed cell Polyethylene Foam Rod; oversized 30 to 50 percent larger than joint width, reticulated polyolefin foam.

D. Primer: Non-Staining Type. Provide primer as required and shall be product of manufacturer of installed sealant.

E. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer.

F. Sealants shall have normal curing schedules, shall be nonstaining, color fast and shall resist deterioration due to ultraviolet radiation.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that joint openings are ready to receive Work and field tolerances are within the guidelines recommended by sealant manufacturer.

3.02 SURFACE PREPARATION

A. Joints and spaces to be sealed shall be completely cleaned of all dirt, dust, mortar, oil, and other foreign materials which might adversely affect sealing Work. Where necessary, degrease with a solvent or commercial degreasing agent. Surfaces shall be thoroughly dry before application of sealants.

B. If recommended by manufacturer, remove paint and other protective coatings from surfaces to be sealed before priming and installation of sealants.

C. Preparation of surfaces to receive sealant shall conform to the sealant manufacturer's specifications. Provide air pressure or other methods to achieve required results. Provide masking tape to keep sealants off surfaces that will be exposed in finished Work.

D. Etch concrete or masonry surfaces to remove excess alkalinity, unless sealant manufacturer's printed instructions indicate that alkalinity does not interfere with sealant bond and performance. Etch with 5 percent solution of muriatic acid; neutralize with dilute ammonia solution, rinse thoroughly with water and allow to dry before sealant installation.

E. Perform preparation in accordance with ASTM C804 for solvent release sealants, and ASTM C962 for elastomeric sealants.

F. Protect elements surrounding Work of this section from damage or disfiguration.

3.03 SEALANT APPLICATION SCHEDULE

	Location	Type	Color
A.	Exterior and Interior joints in horizontal surfaces of concrete; between metal and concrete masonry and mortar.	Sealant 6	To match adjacent material
B.	Exterior door, entrance and window frames. Exterior and interior vertical joints in concrete and masonry metal flashing.	Sealant 3 or 5	To match adjacent material
D.	Interior joints in ceramic tile and at plumbing fixtures.	Sealant 4	Translucent or White
E.	Under thresholds.	Sealant 2	Black

F.	All interior joints not otherwise scheduled	Sealant 1	To Match Adjacent Surfaces

3.04 APPLICATION

A. Provide sealant around all openings in exterior walls, and any other locations indicated or required for structure weatherproofing and/or waterproofing.

B. Sealants shall be installed by experienced mechanics using specified materials and proper tools. Preparatory Work (cleaning, etc.) and installation of sealant shall be as specified and in accordance with manufacturer's printed instructions and recommendations.

C. Concrete, masonry, and other porous surfaces, and any other surfaces if recommended by manufacturer, shall be primed before installing sealants. Primer shall be installed with a brush that will reach all parts of joints to be filled with sealant.

D. Sealants shall be stored and installed at temperatures as recommended by manufacturer. Sealants shall not be installed when they become too jelled to be discharged in a continuous flow from gun. Modification of sealants by addition of liquids, solvents, or powders is not permitted.

E. Sealants shall be installed with guns furnished with proper size nozzles. Sufficient pressure shall be furnished to fill all voids and joints solid. In sealing around openings, include entire perimeter of each opening, unless indicated or specified otherwise. Where gun installation is impracticable, suitable hand tools shall be provided.

F. Sealed joints shall be neatly pointed on flush surfaces with beading tool, and internal corners with a special tool. Excess material shall be cleanly removed. Sealant, where exposed, shall be free of wrinkles and uniformly smooth. Sealing shall be complete before final coats of paint are installed.

G. Comply with sealant manufacturer's printed instructions except where more stringent requirements are indicated on Drawings or specified.

H. Partially fill joints with joint backing material, furnishing only compatible materials, until joint depth does not exceed 1/2 inch joint width. Minimum joint width for metal to metal joints shall be 1/4 inch. Joint depth, shall be not less than 1/4 inch and not greater than 1/2 inch.

I. Install sealant under sufficient pressure to completely fill voids. Finish exposed joints smooth, flush with surfaces or recessed as indicated. Install non-tracking sealant to concrete expansion joints subject to foot or vehicular traffic.

J. Where joint depth prevents installation of standard bond breaker backing rod, furnish non-adhering tape covering to prevent bonding of sealant to back of joint. Under no circumstances shall sealant depth exceed 1/2 inch maximum, unless specifically indicated on Drawings.

K. Prime porous surfaces after cleaning. Pack joints deeper than 3/4 inch with joint backing to within 3/4 inch of surface. Completely fill joints and spaces with gun applied compound, forming a neat, smooth bead.

3.05 MISCELLANEOUS WORK

A. Sealing shall be provided wherever required to prevent light leakage as well as moisture leakage. Refer to Drawings for condition and related parts of Work.

B. Install sealants to depths as indicated or, if not indicated, as recommended by sealant manufacturer but within following general limitations:

1. For joints in concrete walks, slab and paving subject to traffic, fill joints to a depth equal to 75 percent of joint width, but not more than 3/4 inch deep or less than 3/8 inch deep, depending on joint width.

2. For building joints, fill joints to a depth equal to 50 percent of joint width, but not more than 1/2 inch deep or less than 1/4 inch deep.

3.06 CLEANING

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

3.07 CURING

A. Sealants shall cure in accordance with manufacturer's printed recommendations. Do not disturb seal until completely cured.

3.08 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 08 1113

HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Hollow metal doors and frames or hollow metal doors as indicated.

2. Hollow metal window frames or hollow metal door and window frames.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 08 1416 - Flush Wood Doors.

3. Section 08 7100 - Door Hardware.

4. Section 09 9000 - Painting and Coating.

1.02 DESIGN REQUIREMENTS

A. Door-and-frame assemblies or frames shall include reinforcing and provisions for hardware as shown and specified. Drawings indicate profile and general details of steel frame fabrication and installation.

1.03 SUBMITTALS

A. Shop Drawings: Submit composite Shop Drawings indicating detailed relationships of installation including Work of adjacent construction, finish hardware, security, fire and life safety devices, glazing, sealing, and requirements for field installation. Include elevations of each hollow metal door type, details of each frame type, location schedule of doors and frames indicating same reference for details and openings as indicated on Drawings, conditions of openings of various wall sections and materials, typical and special details of construction, methods of assembling sections, location and installation requirements for hardware, material size, shape, and thickness, and joints and connections.

B. Product Data: Submit manufacturer's Product Data indicating composition and construction for each fabricated item including louvers, coatings, finishes, and other components demonstrating compliance with referenced standards.

C. Certification: Submit certification of compliance with referenced standards and specified criteria, including but not limited to fire ratings in accordance with UL 10C, Physical Endurance in accordance with ANSI A250.4 and Prime Paint performance in accordance with ANSI A250.10.

D. Samples:

1. Hollow Metal Frame: Corner section of typical exterior and interior frame, of sufficient composite size to illustrate corner joint construction, hinge reinforcement, closer re-enforcement, floor anchor, dust cover, and jamb anchors, and showing galvanizing and prime coat finishes.

2. Hollow Metal Door: Section of typical interior door of sufficient composite size to illustrate edge, top, bottom, and core construction, hinge reinforcement and face stiffening, closer reinforcement and kick plate reinforcement, and corner of vision opening construction with glazing beads.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum documented experience of more than five years in work of this section.

B. Installer Qualifications: Minimum documented experience of more than five years in work of this section

C. Coordinate with hardware supplier for fabrication of doors and frames to receive hardware items.

D. Coordinate with intrusion alarm supplier for fabrication of doors and frames to receive intrusion detection devices.

E. References: Work shall comply with physical and performance requirements of following standards, including standards referenced in them, except for more stringent provisions specified herein or required by regulatory agencies:

1. ANSI/SDI A250.8, SDI 100 Recommended Specifications for Standard Steel Doors and Fames.

2. ANSI/NFPA 252, Fire Tests of Door Assemblies.

3. ANSI/UL 10B, Fire Tests of Door Assemblies.

4. ANSI/UL 10C, Positive-Pressure Fire Tests of Door Assemblies.

5. ANSI/NFPA 80, Fire Doors and Fire Windows

6. HMMA, Guide Specifications for Commercial Hollow Metal Doors & Frames (Standard of National Association of Architectural Metal Manufacturers).

7. ANSI/SDI A250.4, Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frame Anchors and Hardware Reinforcings.

8. ANSI A250.10, Test Procedure and Acceptance Criteria for Prime Painted Steel Doors and Frames.

9. ANSI A250.6, Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.

F. Standards of Fabrication and Installation:

1. Finished Work shall be of uniform profile, accurately fabricated, rigid and strong, square and true, neat in appearance, smooth and free from dents, waves, warps, buckles, open joints, tool marks and/or other defects.

2. Steel sheet shall be clean with smooth surfaces free of scale, pitting or other defects.

3. Construction joints shall be flush, tight and welded their full length, ground flush and smooth on exposed surfaces.

4. Frame and door reinforcing and hardware provisions shall be performed in fabrication shop. Provide cuts, welds, and other fabrications before galvanizing or shop priming.

5. Lines and molded members shall be straight and true with angles as sharp as practical for thickness involved, surfaces flat, and fastenings concealed.

1.05 DELIVERY, STORAGE AND HANDLING

A. Frames: Before shipment, install temporary spreaders at bottom of bucks and do not remove until frames are installed.

B. Doors: Provide protection as required to protect doors during shipping and storage. Damaged doors will be rejected.

C. Inspect hollow metal Work upon delivery for damage. Remove and replace damaged items with new Work as required.

D. Store doors and frames in an upright position at Project Site under cover and protected from weather-related elements. Store units on minimum 4-inch high wood blocking with ½ inch air spaces between stacked doors to provide circulation. Do not store doors and frames under plastic or canvas shelters that can create a humidity chamber. If shipping packaging becomes wet, immediately remove packaging.

1.06 WARRANTY

A. Manufacturer shall provide a five year material warranty.

B. Installer shall provide a two year fabrication and installation warranty.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Doors and frames shall be products of a single manufacturer.

B. The following are acceptable manufacturers, as are others that can demonstrate their products are equivalent in quality, performance and compliance with these specifications.

1. Security Metal Products Corp.
2. Curries Manufacturing, Inc.
3. Steelcraft.
4. Amweld Metal Doors and Frames.
5. Stiles Custom Metal, Inc.
6. Door Components Inc.
7. CECO Door.
8. Equal.

C. Materials, fabrication and installation must comply with requirements of standards referenced in Section 1.04, Quality Assurance.

2.02 MATERIALS

A. Steel:

1. Exterior Doors and Frames: Galvanized Carbon Sheet Steel, Commercial Quality, A60 zinc coating (0.30 ounces per square foot per side), ASTM A653.
2. Interior Doors and Frames: Cold-Rolled Steel Sheets, Commercial Quality Carbon Steel, ASTM A1008.
3. Steel shall be free of scale, pitting, coil breaks or other surface blemishes, and free of buckles, waves or other defects.

4. Steel thicknesses expressed in steel gages (MSG) is for reference only. Actual steel thicknesses must meet minimum requirements of ASTM standards and as described in ANSI/SDI A250.8.

B. Supports and Anchors: Fabricate from a minimum 16 gauge galvanized sheet steel unless noted otherwise.

C. Fasteners: Provide as shown on Drawings and to suit conditions of secure installations. Furnish 304 Grade stainless steel types at exterior doors.

D. Door Louvers:

1. Louver free air flow shall be 50% free area.

2. Louvers for exterior doors shall be galvanized and furnished with not less than 12 gage frame and security grille welded to 18 gage steel blades, fully galvanized, with removable galvanized or bronze insect screen on inside. Install louver with tamperproof-head through-bolts. Anemostat PLSL, Air Louvers Inc. Model 1500-A, L & L Louvers, or equal.

3. Fusible link louvers: Listed by State Fire Marshal, UL labeled and installed with tamperproof fasteners.

4. Lightproof louvers (at dark rooms): DRDL by Anemostat, Air Louver Model 1000, L & L Louvers, or equal.

5. Louvers shall be comply with SDI 111C and be furnished with factory primer.

E. Vision panels: Manufacturer’s standard, U.L. approved, finished flush with door face, with no visible fasteners on either door face.

F. Shop Paint:

1. Conform to Steel Structures Painting Council (SSPC) for steel components.

2. Pretreatment/priming coatings shall be compatible with Project site finish painting system in accordance with Section 09 9000.

3. At frames to be grouted, surfaces that are inaccessible after installation shall be coated with bituminous or asphaltic base paint.

2.03 FABRICATION GENERAL

A. General: Fabricate hollow metal units to be rigid, neat in appearance, and free from defects including warp or buckle.

1. Accurately form metal to required sizes and profiles. Fit and assemble units in manufacturer's plant. Where practical, factory or shop fit and assemble units for shipment.

2. Weld joints continuously; grind, dress, and make smooth, flush, and invisible. Filler to conceal manufacturing defects or damage is not permitted.

3. Corner Joints: Finish corner joints by mitering, or coping and butting, or a combination of both. Trim and backbend shall be continuous around corner.

4. Continuously weld joints for full depth and width of frame, trim, and backbends.

5. Clearances for Fire-Rated Doors: As required by NFPA 80.

2.04 FRAMES

A. General: Provide fully welded steel frames with integral stops and trim for doors, transoms, sidelights, borrowed lights, and other openings, and with details indicated for type and profile. Use concealed fastenings, unless otherwise indicated.

B. Metal Thickness of Frames (minimum):

1.	Interior hollow metal frames up to 4-foot wide	16 gage
2.	Interior hollow metal frames wider than 4-foot	14 gage
3.	Exterior hollow metal frames	14 gage
4.	Borrowed lights up to 4-foot wide	16 gage

C. Supports and Anchors: Fabricate from at least 16-gage, galvanized steel sheet. Frame anchors shall comply with fire rated label requirements of opening.

1. Floor Anchors:

a. Minimum thickness: 12 gage galvanized steel sheet or bent steel plate, securely fastened inside each jamb, with two holes in anchor at each jamb for 3/8 inch floor anchorage fasteners. For preframed wood stud walls provide and additional wood stud anchor located as close to the bottom of the jamb as is practical.

b. Where required at sloping and uneven floor conditions, or to coordinate adjustments for trim alignments, provide adjustable floor anchors, providing at least 2-inch height adjustments.

2. Jamb Anchors:

a. Locate anchors near top and bottom and at intermediate points not to exceed 24 inches on center. Provide two anchors per head for openings up to 48 inches wide; over 48 inches wide provide anchors at 24 inches on center maximum.

b. Anchors in masonry construction: Provide manufacturers standard jamb anchors. Steel wire complying with ASTM A510, 0.177 inch in diameter, may be furnished.

c. Anchors in Stud Partitions: Provide steel anchors, 16 gage minimum sheet steel, of design to suit partition construction, securely welded inside each jamb.

d. Through-Frame Anchors: At frames indicated to be anchored with bolts through frame, provide countersunk holes for bolts with 16 gauge minimum sheet steel stiffeners full thickness of frame, and securely welded inside each frame at each hole.

D. Inserts, Bolts, and Fasteners: Provide manufacturer's standard units. Where zinc-coated items are to be built into exterior walls, comply with ASTM A153 Class C or D as required.

E. Head Reinforcing: Refer to Detail #2 of this section. Reinforcing shall not act as lintel or load-carrying member and shall comply with fire rating requirements. Provide at frames regardless of whether a closer is called for.

F. Hardware Reinforcement and Accessories:

1. Butt Hinge: 7 gage minimum.

2. Head assemblies: Reinforced internally with, full length, 10 gage angles on each side of frame and bar at bottom of stop for closer reinforcement in frames as shown in Detail #2 of this section.

3. Reinforcing for other items of finish hardware shall be accomplished according to ANSI A250.6.

4. Plaster Guards: Provide 26 gage galvanized steel plaster guards or dust cover boxes, welded to frame, at back of finish hardware cutouts where mortar or other materials might obstruct hardware operation and to close off interior of openings.

G. Mullion and Transom bars: Furnished and fabricated as specified for frames.

H. Door Silencers: Except for exterior doors, drill and punch frames for three silencers at lock jamb of single swing doors or in double doors with astragal and one silencer per leaf in heads of doubled door frames.

I. Where frames are installed in walls sitting on a concrete curb, provide a closure plate or extend backbends to provide closure where frame abuts concrete curb.

2.05 DOORS

A. General: Custom-made, flush-panel "seamless type" with one-piece face panels; continuous weld, seamless edge construction with no visible seams or joints on faces or on vertical edges.

1. Provide type and size of doors shown with louvers and openings for glazing where indicated.

2. Door thickness: 1 ¾ inches.

3. Face Sheet Minimum Gage: 16 gage.

4. Stiffeners: Stiffen door face sheets with continuous vertical-formed steel (rib) sections or back to back hat sections, minimum 20 gage, full thickness of interior space between door faces, spaced 6" on center maximum, and spot welded to both faces 4" on center maximum.

5. Acoustical Insulation: Provide sound deadening and insulating material through entire core of door (full height, width, and thickness of door). Provide STC ratings where indicated on Drawings, scheduled, or for partition ratings indicated on Drawings.

a. Doors shall have a minimum STC of 28 as tested under ASTM E90 and ASTM E413, unless noted otherwise..

6. Thermal Insulation: Exterior doors shall be insulated to R values scheduled or indicated on drawings.

7. Labeled Doors: Where fire-rated openings and conditions are indicated.

a. Labeled doors shall be provided with fire-resistance rating indicated and shall be constructed as tested and approved by Underwriters' Laboratories (UL) for installation in labeled frame and door assemblies.

b. Gaskets: Gaskets are supplied under Section 08 7100 - Door Hardware. Gaskets and installation shall conform to requirements of NFPA 105, "Installation of Smoke and Draft Control Door Assemblies."

c. Fabricate labeled doors with same finished appearance as specified for non-labeled hollow metal doors; with welded door edges, filled and ground smooth; with label affixed to door.

d. Where fire labels are required and continuous hinge is specified, install label on top of door within 6” of hinge side of door.

8. Door Edges: Join door face sheets at vertical edges of door with continuous weld full height of door. Grind, fill, and dress welds smooth to provide invisible seam with smooth, flush surface.

a. Close ends of doors with continuous recessed channels, 16 gage steel minimum, spot welded to both face sheets. Close top and bottom edges of doors with a internal steel channel, screw attached into top and bottom of door. Channel shall be galvanized at exterior doors. No screws are allowed on visible faces of door. Provide openings in bottom closure of exterior doors to permit escape of entrapped moisture.

b. Profile of Door Edges:

1) Single-acting swing doors: Bevel both vertical edges 1/8” in 2”.

2) Pairs of single-acting swing doors: Bevel hinge edge 1/8” in 2”. Provide surface mounted astragals for labeled or unlabeled doors unless otherwise shown on Drawings or required.

3) Double-acting swing doors: Round both vertical edges on 2” minimum radius.

9. Door Louvers: Install according to manufacturers recommendations.

B. Hardware Reinforcement and Accessories:

1. Provide sheet steel or plate reinforcement for finish hardware items wherever necessary. Mortise, drill and tap to template requirements for mortise type hardware.

2. Butt reinforcing: 7 gage minimum, of length 4” longer than length of butt. Minimum 3 spot welds at top and bottom.

3. Door closer reinforcement: 14 gage minimum steel channel, 6” high on each side of door. Reinforcement to extend full width of door in accordance with Detail #1 of this section.

4. Kick plate reinforcement: 14 gage minimum steel plate, 10” high on each side of door. Reinforcement to extend full width of door in accordance with Detail #1 of this section.

5. Other Hardware Requirements: Cut, reinforce, drill, and tap doors and frames for other hardware, including energy management switches or contacts and

security devices, in accordance with furnished hardware templates for accessory items. Thickness and size of reinforcement shall be as required by ANSI A250.6.

2.06 SHOP PRIMING

A. Exposed and concealed metal surfaces of hollow metal doors, frames and other hollow metal Work of this Section shall be bonderized and then shop primed.

B. Exposed surfaces of doors, frames and accessories shall be filled, sanded smooth and cleaned before painting.

C. Exposed surfaces shall be shop primed after assembly.

PART 3 - EXECUTION

3.01 FRAME INSTALLATION

A. Install steel frames accurately in location, perfect alignment, plumb, straight and true. Brace frames to prevent displacement.

B. Anchor frames in concrete and concrete unit masonry with galvanized anchor bolts; 3/8 inch diameter, counter-sunk at 24 inches on center at head and jamb unless noted otherwise.

C. Anchor frames in steel and wood frame partitions with manufacturer recommended anchors.

D. Install frame at fire rated openings in accordance with NFPA Standard No. 80.

E. Furnish filler for anchor attachment screws, and sand smooth.

3.02 DOOR INSTALLATION

A. Install steel doors in accordance with manufacturer's instructions and as indicated on Drawings and in Finish Hardware Specifications. Coordinate with Work of other trades.

B. Ensure that door and jamb clearances comply with requirements of ANSI/NFPA 80. When wood doors are being installed in metal frames constructed pursuant to this section, allowable door and jamb clearances shall be as specified in Specification Section 08 1416.

C. Adjust operable parts for correct function.

D. Remove hardware, except primer-coated items, tag, box and install after finish painting has been completed.

3.03 PRIME COAT TOUCH-UP

A. Immediately after installation, remove rust, repair damaged surfaces to new condition, sand smooth, and install touch-up primer.

3.04 CLEAN UP

A. Remove rubbish, debris and waste materials and legally dispose of off Project site.

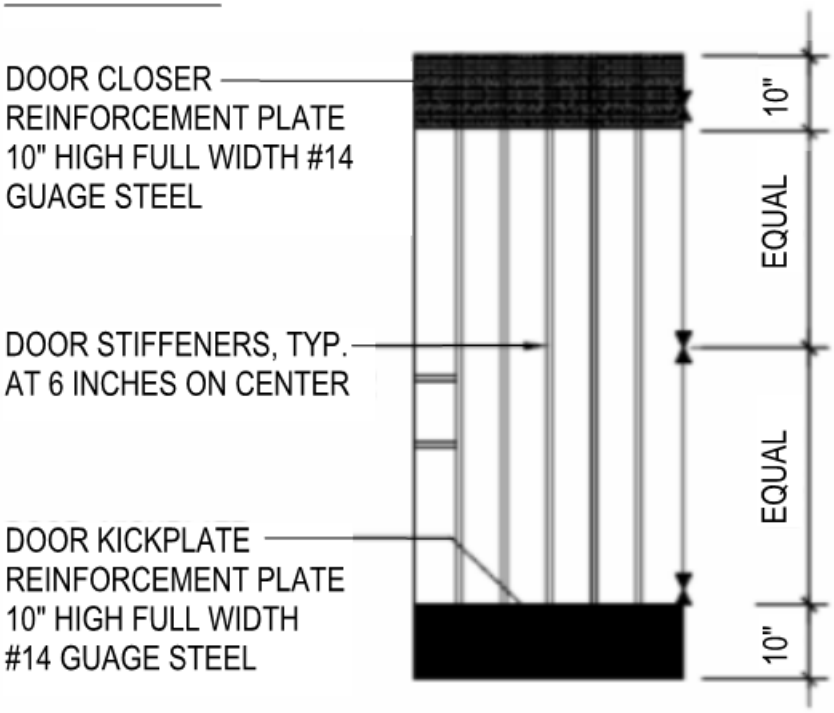
3.05 PROTECTION

A. Protect Work of this section until Substantial Completion.

END OF SECTION

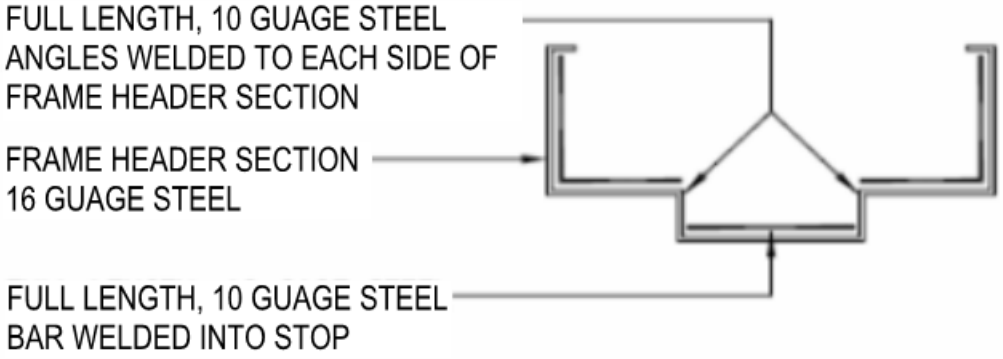
DETAIL #1 - DOOR REINFORCEMENT

ELEVATION



DETAIL #2 - DOOR HARDWARE REINFORCEMENT

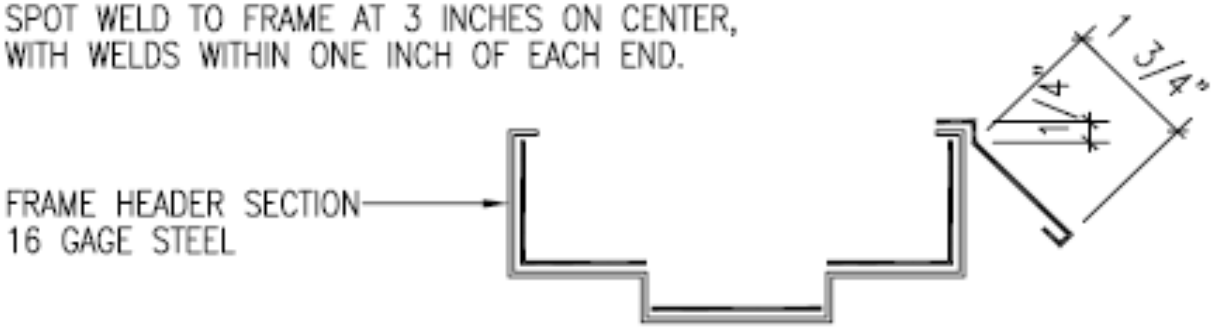
DOOR CLOSER REINFORCEMENT FOR ALL STEEL DOOR FRAMES



DETAIL # 3 – CONCRETE WALL CONDITION

DETAIL FOR EXTERIOR DOOR WHERE RAIN DRIP IS REQUIRED.
EXTERIOR SIDE WITH 22 GAGE GLAVANIZED SHEET METAL OR PAINT LOCK RAIN DRIP WELDED IN PLACE.

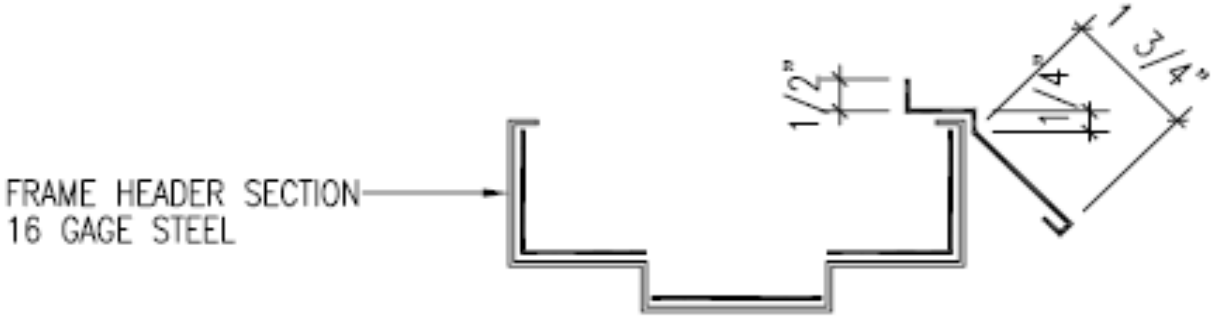
SPOT WELD TO FRAME AT 3 INCHES ON CENTER, WITH WELDS WITHIN ONE INCH OF EACH END.



DETAIL # 3A – PLASTER WALL CONDITION

DETAIL FOR EXTERIOR DOOR WHERE RAIN DRIP IS REQUIRED.
EXTERIOR SIDE WITH 22 GAGE GLAVANIZED SHEET METAL OR PAINT LOCK RAIN DRIP WELDED IN PLACE.

SPOT WELD TO FRAME AT 3 INCHES ON CENTER, WITH WELDS WITHIN ONE INCH OF EACH END.



SECTION 08 1416

FLUSH WOOD DOORS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Wood doors.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 06 2000 - Finish Carpentry.

3. Section 08 1113 - Hollow Metal Doors and Frames

4. Section 08 7100 - Door Hardware.

5. Section 09 9000 - Painting and Coating.

1.02 DESIGN REQUIREMENTS

A. Drawings indicate sizes, locations and general details of wood door construction and installation.

B. Regulatory Requirements:

1. Fire rated doors shall be listed by a nationally recognized testing and certification agency in accordance with local building codes and acceptable to the authorities having jurisdiction. The listed doors shall meet or exceed the requirements of UL10B, NFPA 252 and NFPA 80. All door requiring fire-rating shall carry either a UL or ITS (Intertek Testing Services-Warnock Hersey) label.

2. ASTM E2074 – Standard Test Method for Fire Tests of Door Assemblies, Including Positive Pressure on Side-Hinged and Pivoted Swinging Door Assemblies.

1.03 SUBMITTALS

A. Shop Drawings: Submit schedules, plans, elevations and details indicating door construction details, opening identification symbols, sizes, door type and grade, fire classification, swing, light and louver cutout size and locations, and undercuts.

B. Product Data: Submit manufacturers technical data for each specified door type, including details of wood species, design and construction, factory finishing specifications and installation instructions.

C. Construction Samples: Submit samples of not less than 6-inch by 6-inch for each type of door to be furnished, showing face, edge and core construction.

D. Color/finish Samples: Submit samples of not less than 4-inch by 6-inch on representative door finish and samples of 3-inch by 8-inch for the exposed edges. Each sample shall bear a label identifying the job name, Architect, Contractor and the Woodwork Insitute finish system number.

E. Certificates:

1. Submit Certificate that solid core doors comply with all requirements of ANSI/WDMA I.S. 1-A.

2. Submit certification that fire rated doors comply with CBC Section 715 or UL 10B.

1.04 QUALITY ASSURANCE

A. Wood doors construction, manufacture, and fabrication shall conform to ANSI/WDMA I.S. 1-A, custom grade, extra heavy duty grade including the latest revisions, and special requirements specified.

B. Doors shall be fabricated, hardware factory fitted and machined, and factory finished, unless noted otherwise.

C. Wood Door Finishes shall comply with the North American Architectural Woodwork Standards (NAAWS) latest edition.

D. Doors shall be products of one manufacturer.

E. Door modifications are not permitted, unless reviewed by the OAR.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in manufacturers original, unopened, undamaged containers with identification labels intact.

B. Deliver doors to the Project site only after building has been provided with design temperature and humidity.

C. Store and handle in accordance with ANSI/WDMA I.S.1-A. Store doors protected from exposure to harmful conditions and at temperature and humidity conditions recommended by the manufacturer.

1.06 PROJECT CONDITIONS

A. Do not install doors until building is enclosed and ambient conditions are within the temperature and humidity range to be expected during occupancy.

1.07 WARRANTY

A. Manufacturer shall provide a two year material warranty for exterior doors.

B. Manufacturer shall provide a life time material warranty for interior doors.

C. Installer shall provide a two year fabrication and installation warranty for all doors.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Provide products manufactured by one of the following:

1. Algoma Hardwood Inc.
2. Brentwood Manufacturing.
3. Eggers Industries.
4. Mohawk Flush Door, Inc
5. VT Industries, Inc.
6. Western Oregon Door.
7. Equal.

2.02 DOOR CONSTRUCTION

A. Interior Flush Doors:

1. Interior doors shall be furnished as follows:

   a. Transparent Finished (Stained): NAAWS Custom grade. Solid wood core, 5 ply, veneer faced, fully bonded to core.

   b. Opaque Finished (Painted): Custom grade. Solid wood core, 5 ply, MDO hardboard face, fully bonded to core.

2. Edge strips: Kiln-dried birch, maple or other material as indicated.

   a. Transparent Finished Doors: Same species as face veneer or similar in overall color, grain, character and contrast as the face veneer.

   b. Opaque Finished Doors: Close grain hardwood.

3. Full stile edge strip shall be not less that 1 ½ inches wide, two ply stile. Stiles shall be fully bonded to the core. The outer face stile shall be full length ¾ inch birch or maple. The inner back stile shall be ¾ inch of similar species which may have two finger joints fully bonded to core.

4. Top and bottom edge rails shall be full length and may be of glued up stock of similar species as edge strip, white fir or douglas fir, minimum density 24.33

pounds or higher per cubic foot. Top rail shall be minimum of 2 inches. Bottom rail shall be minimum of 5 inches fully bonded to core.

5. Crossbanding: Doors shall be furnished with full width crossbanding of properly dried hardwood or engineered fiber composite material, 1/16 inch thick, with a density of 52 pounds or higher per cubic foot.

6. Face Veneer for Transparent Finished Doors: Custom grade, veneer shall be Grade"A". Minimum thickness shall be 0.0277 inches before sanding and 0.020 inches after sanding of specified face veneer.

   a. Veneer Species:

   b. Veneer Cut: [Plain]

   c. [Rift-cut]

   d. Veneer Match: [Book]

   e. [Running]

   f. Pairs: [Matched]

7. Opaque Finished Doors: Custom grade medium density overlay hardboard.

8. Adhesive and Bonding: Bonding between veneer plies of wood face panel, and between door faces, frame and core unit shall be fabricated with type I or II waterproof adhesives for interior doors.

9. Openings: Openings for lights, louvers and grilles shall be performed by the manufacturer, or in a certified door service mill in accordance with manufacturer's details, and in compliance with testing agency requirements.

10. Louvers:

    a. Louvers for interior doors shall be furnished with at least 12 gage cold rolled steel frames and security grill welded to 18 gage blades: Anemostat PLSL, Air Louvers Inc. Model 1500-A, L & L Louvers, or equal.

    b. For fire rated doors: Anemostat FLDL-UL-SG2, Air Louvers Inc. Model 1900-ASG, L & L Louvers, or equal.

    c. Light Proof Louvers (at Dark Rooms): Anemostat Model DRDL, Air Louvers Inc. Model 1000, L & L Louvers, or equal.

    d. Install louvers with tamperproof-head through bolts.

B. Fire Rated Doors:

1. Fire doors must meet the requirements of recognized fire door tests and bear certifying labels of an approved independent testing agency.

2. With exception to the requirements that would adversely affect the fire rating, rated doors shall meet the specifications listed in this section.

3. Door shall be constructed that when installed as an assembly and tested it will pass ASTM E2074 “Standard Test Method for Fire Test of Door Assemblies Including Positive Pressure Testing of Side-Hinged and Pivoted Swinging Door Assemblies,” and can be rated as required.

4. Reinforcement Blocking: Provide hardware reinforcement blocking of size as required to secure specified hardware. Reinforcement blocking shall be in compliance with the manufacturer’s labeling requirements and shall not be of mineral material.

2.03 FINISHING:

A. FACTORY FINISHING:

1. Factory finishing shall be NAAWSI Custom Grade and include all necessary preparation, materials and labor to provide an Clear Transparent finish.

2. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on top and bottom edges, edges of cutouts, and mortises.

3. Finish: NAAWS [System 5, conversion varnish] [System 9, UV curable, acrylated epoxy, polyester, or urethane] [System 10, UV curable, water based] [or] [System 11, catalyzed polyurethane].

4. Staining: [Match Architect's sample] [As selected by Architect from manufacturer's full range] [None required].

5. Effect: [Open-grain finish] [Filled finish] [Semifilled finish, produced by applying an additional finish coat to partially fill the wood pores].

6. Sheen: [Satin] [Semigloss].

B. JOB SITE FINISHING:

1. Doors indicated to be job site finished shall be factory back primed.

a. Doors Scheduled for Opaque Paint finish: Prime with one coat of wood primer indicated on Section 09 9000 - Painting and Coating.

b. DoorsSchedules for Transparent Finish: Prime with stain and first coat of finish as indicated in Section 09 9000 - Painting and Coating.

2. Door Finish: Per Section 09 9000 - Painting and Coating.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install Work of this section as specified in ANSI/WDMA I.S. 1-A. Install fire doors in accordance with NFPA 80.

B. Provide each door accurately cut, trimmed, and fitted to its frame and hardware. Clearance at lock and hanging stile and at top shall not exceed 1/8 inch, and bottom shall not exceed 1/4 inch except where otherwise indicated. Arises shall be rounded to a 1/16 inch radius, and lock rail edges shall be slightly beveled. Screws for hardware shall not be driven but screwed into pre-drilled holes.

C. Doors shall operate freely, but not loosely, without sticking or binding, without hinge-bind conditions and with hardware properly adjusted and functioning.

3.02 CLEAN UP

A. Remove rubbish, waste and debris and legally dispose of off the Project site.

3.03 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 08 3116

ACCESS PANELS AND FRAMES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Wall and ceiling steel access panels, except those specified under Divisions 22 Plumbing, 23 HVAC, or 26 Electrical.

2. Acoustical access panels.

B. Related Sections:

1. Division 01 - General Requirements.

2. Section 06 1000 - Rough Carpentry.

3. Section 09 2423 - Cement Plaster and Metal Lath.

4. Section 09 2900 - Gypsum Board.

5. Section 09 3013 - Ceramic Tiling.

6. Section 09 9000 - Painting and Coating.

7. Division 22 - Plumbing.

8. Division 23 - HVAC.

9. Division 26 - Electrical.

10. Division 27 - Communications.

1.02 SUBMITTALS

A. Shop Drawings:

1. Indicate sizes, materials, thickness, fabrication methods, panel door and frame reinforcement, anchorage, and installation details.

2. Provide layout drawings, indicating dimensioned locations of proposed access panels, size of each panel, and installation details. Determine and indicate required access panels in finished surfaces, whether furnished under this section or as part of Work of Divisions 22-Plumbing, 23- HVAC, and 26-Electrical.

1.03 QUALITY ASSURANCE

A. Pre-Installation Conferences:

1. Conform to requirements of Section 01 3119 Project Meetings.

2. Schedule pre-installation conferences before installation of the Work of this Section for coordination with related trades.

B. Panels shall be provided with UL listings and labels where installed in rated assemblies.

C. Access panels and frames shall be products of one manufacturer.

D. Coordinate access panels with plumbing, HVAC, and electrical work.

1.04 DELIVERY, STORAGE AND HANDLING

A. Package and ship in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Provide protection as required by manufacturer to protect panels from damage during storage.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Access Panels:

Non-Rated	Milcor	Karp	Nystrom
Ceramic Tile	MS	DSC214M	NT
Plaster	K	DSC214M	NP
Drywall, Plaster Veneer	DW	DSC214M	NW
Fire Rated			
Ceramic Tile	MS	KRP150FR	IT
Plaster	M	KRP150PR	IP
Drywall, Plaster Veneer	M	KRP150FR	IW

Equal.

B. Unless otherwise indicated, provide brushed stainless-steel finish for panels installed in ceramic tile. Provide prime coat finish suitable for field painting for panels installed in other finishes.

C. Square, 18 gage minimum. Door shall be 16 gage minimum with concealed hinge or be removable, with vandal-proof lock operated by Allen wrench.

EDIT NOTE: INDICATE ON THE DRAWINGS THE STC VALUES FOR THE ACOUSTICALLY RATED ACCESS PANELS.

D. Acoustically Rated access panels shall be specified in STC rated assemblies with performance as indicated on the Drawings.

1. Acudor.

2. Karp.

3. Nystrom.

4. Equal.

PART 3 - EXECUTION

3.01 GENERAL

A. Provide access panels in finish construction, where indicated on Drawings, wherever required for access to concealed mechanical and electrical equipment, and where required by codes. Panels indicated on architectural Drawings shall be furnished under this section. Required panels for access to equipment, but not indicated on architectural Drawings, shall be furnished as part of Work requiring access.

3.02 INSTALLATION

A. Install panels accurately in location, perfect alignment, plumb, straight and true. Brace to prevent displacement by adjacent Work.

B. Examine panels after installation for proper opening, closing and clearances. Replace damaged or defective panels.

3.03 CLEAN UP

A. Remove rubbish, debris and waste materials and legally dispose of off Project site.

3.04 PROTECTION

A. Protect Work of this section until Substantial Completion.

END OF SECTION

SECTION 08 7100

DOOR HARDWARE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Door hardware.
2. Door Hardware Schedule.
3. Fire Department Key Vault.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 06 2000 - Finish Carpentry.
3. Section 08 1113 - Hollow Metal Doors and Frames.
4. Section 08 1416 - Flush Wood Doors.
5. Section 14 2423 - Hydraulic Passenger Elevators.
6. Section 26 0500 - Common Work Results for Electrical.
7. Section 26 0513 - Basic Electrical Materials and Methods
8. Section 28 3100 - Fire Detection and Alarm
9. Section 28 1600 - Intrusion Detection Systems

C. Items listed in other sections and not included herein as “Door Hardware”

1. Cabinet hardware, except keying.
2. Bath accessories, excepting keying.
3. Nameplates, room numbers exit signs.
4. Disabled access signs.
5. Roll-up door hardware, except cylinders and padlocks.
6. Smoke detectors, 120VAC power, wiring, and conduit.

7. Door position switches.

8. Access panels, except padlocks.

9. Gate hardware, except locking devices.

10. Local alarms and annunciators.

1.02 DESIGN REQUIREMENTS

A. Design Requirements:

1. Exit doors, including each leaf of a pair of doors, shall always be operable from the inside by the simple turn of a lever or by pushing an exit device without the use of a key or any special knowledge or effort; this includes doors of toilet and storage rooms.

2. Unless otherwise specified, hand activated levers and pull hardware shall be located 36 inches above the finish floor.

3. Dead bolts are not permitted unless operable with a single effort by a lever type hardware.

4. The force applied to operate exit hardware shall not require more than 5 lbs. applied in the direction of travel.

B. Regulatory Requirements:

1. Comply with CBC requirements.

2. Hardware for fire doors shall conform to requirements of UL - Fire Protection and Accident Hazard Equipment and the California State Fire Marshal listing, NFPA - 80 and CBC requirements for positive pressure testing.

3. Hardware shall meet the requirements of CBC, Chapter 11B.

1.03 SUBMITTALS

A. Shop Drawings:

1. Wiring Diagrams: Submit diagrams, templates, instruction, and installation manuals, for electrical and electronic hardware.

B. Product Data: Finish Hardware Schedule:

1. Submit schedule including recap sheet:

a. Include manufacturer's name, catalog number, relevant dimensions, fasteners, location of item in Work, door index number, frame material, door material, door size and thickness, door type, handing, fire-rating (if any), and sound-rating (if any).

C. Material Samples: Submit Samples of door hardware as required by Architect.

D. Submittal Review Time: In lieu of what is specified in Section 01 3300, allow at least twenty-eight days in the Milestones Schedule for Architect and OAR review following receipt of submittal.

1.04 QUALITY ASSURANCE

A. Each type of finish hardware furnished for the Work shall be of same make or manufacture, unless otherwise specified. Where existing items are being supplemented with new items, match existing items, subject to current code requirements and accessibility recommendations.

B. Coordinate and deliver templates or physical Samples of finish hardware items to manufacturer of interfacing items, such as doors and frames, in a timely manner to insure orderly progress of Work.

C. Comply with the following as a minimum requirement:

1. Conform to Builders Hardware Manufacturers Association (BHMA) Finish Code, latest edition.

2. DHI WDHS.3: Recommended Locations for Architectural Hardware for Wood Flush Doors

3. DHI WDHS.4: Recommended Hardware Reinforcement Locations for Mineral Core Wood Flush Doors.

4. HMMA 831: Recommended Hardware Locations for Custom Hollow Metal Doors and Frames

1.05 DELIVERY, STORAGE AND HANDLING

A. Package each item of hardware and each lockset individually, complete with necessary installation instructions, screws and fastenings, and installation templates; marked with item number corresponding to number on Finish Hardware Schedule.

1.06 WARRANTY

A. Manufacturer shall provide a minimum two year material warranty except as follows:

1. Provide a ten year manufacturer's material warranty for door closers.

2. Provide a five year manufacturer's material warranty for locksets and exit devices.

1.07 MAINTENANCE MATERIALS

A. Extra Materials:

1. If indicated on the plans or detailed scope of work, provide five percent, or a minimum or one, whichever is greater, of the following hardware: locksets, exit devices, closers, fire rated smoke seals, seals, and electric or electronic hardware, as indicated by the Architect. Transmit to OAR before Substantial Completion.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Butts and Hinges:

1. Width of hinges shall be of sufficient size to clear trim. Where provided with magnetic holders, hinge width shall be of sufficient size to ensure door is parallel to wall when magnetic holders are engaged.

2. Furnish one pair of hinges for door leaves up to 5-foot high. Furnish one additional hinge for every additional 30 inches or fraction thereof.

3. Butts for doors shall be non-rising, loose pins, with button tip.

4. Exterior out-swinging doors with butt hinges shall be furnished with non-ferrous hinges with a set screw in hinge barrel to make pin non-removable (NRP); Butt hinges at exterior out-swinging doors shall have stainless steel pins and bearings. (Spec #1)

5. Hinges installed on painted doors or stained and varnished doors shall be BHMA 626 for bronze/brass base metals and BHMA 652 for steel base metal. Exterior doors shall have non-ferrous hinges. Fire-rated doors shall have steel or stainless steel hinges.

B. Locksets and Trim:

1. Unless otherwise specified, locks shall be of mortise type, complying with ANSI A156.13, grade 1.

2. All Classrooms, Student Restrooms, Offices, and any room with a minimum of 100 square feet (5 person occupancy) must have a classroom security lockset with an interior cylinder to allow staff to lock and unlock the exterior lever (Spec #5). Per AB-211, AB3205, & DSA Bulletin 19-05. If the room is 1000 square feet or larger (50 persons occupancy) then all exits must have exit devices on doors swinging in the path of egress (NFPA-80)

3. Levers shall be flat, and shall return to within ½ inch of face of door.

4. Levers shall be cast of non-ferrous material, satin plated brass or stainless steel.

5. Lock strikes shall be curved lip type, with exposed edges and corners rounded, of sufficient length to protect jamb and trim, and shall not extend more than ¼" beyond trim, jambs or face of doors in pairs. At out-swinging pairs with overlapping astragal, strike shall have a 7/8 inch lip-to-center dimension. Dust box shall be provided for door locks with Hollow Metal frames. Wood jambs cannot accept dust boxes.

6. Locksets throughout shall be lever type of same manufacture.

C. Exit Devices:

1. Unless otherwise specified, exterior double doors to be furnished with rim exit devices; right hand reverse active leaf - night latch function by cylinder in hardened cylinder ring with anti-vandal or wire pull. Left-hand reverse inactive leaf - exit only by anti-vandal or wire pull no cylinder required. Unequal pairs require outside trim on active door only.

2. Unless otherwise specified, interior double doors shall be furnished with surface mount vertical rod exit device, less bottom rod (LBR); right hand reverse active leaf with lever handle and cylinder, left hand reverse inactive leaf; exit only, no trim or cylinder. Fire rated pairs with exit devices cannot have dogging feature per NFPA-80

3. Fire labeled exit devices shall conform to UL label requirements and be listed by the California State Fire Marshal. Install at all exits of rooms with an occupancy load of 50 or more (1000 sq. ft.)

4. Exit devices throughout shall be touch bar types of same manufacture. Exit devices shall meet ANSI BHMA, A153.3 Grade 1.

5. Lever design shall match lock levers, flat style and return to with ½" of the face of the door.

6. Exit devices shall be furnished sized for the specific door width and height; the length of the push pad must be at least ½ the width of the door.

D. Door Closers: door closers to comply with CBC 11B-404.2.8.1

1. Door closers shall conform to ANSI A156.4, Grade 1.

2. Door closers shall be heavy duty, rigid parallel arm; provide regular arm for in-swinging doors.

3. Door closer shall be full rack and pinion type, adjustable back check, and sweep and latch speed with key regulating screws.

4. Door closer shall have full fitted cover of plastic or stainless steel, attached to door closer body.

5. Provide spacer block or support bracket for securing fifth screw on closer arm shoe. Provide special brackets, shoes, or other attachment devices as required.

6. Maximum pressure to operate doors shall not exceed following:

   a. Fire rated doors: The authority having jurisdiction may determine the maximum force, not to exceed 15.0 pounds to operate fire doors to achieve positive latching.

   b. Exterior doors: 5.0 pounds.

   c. Interior doors: 5.0 pounds.

7. Door closers shall be installed at the following:

   a. Exterior doors from air conditioned spaces.

   b. Fire rated doors.

   c. Corridor doors.

   d. Multiple occupancy restroom doors.

   e. Exceptions; Office doors, Single Occupancy Restroom Doors, interior or exterior non-rated doors

E. Protection Plates: Protection plates to comply with CBC 11B-404.2.10. Furnish kick plates of 10-inch high by 2-inch less door width on single doors, 10-inch high by 1 inch less door width on pairs of doors. Provide one plate for push side of closer-equipped doors. Furnish mop plates 4-inch high by 1 inch less door width on doors swinging into toilet rooms.

1. Kick and mop plates shall be a minimum 0.050 inch thick; Type 304 stainless steel, with finished beveled edges (B4E).

F. Stops:

1. Floor stops shall be mounted to protect door and trim.

2. Furnish stop of appropriate height, minimum ¾ inch above undercut of door.

3. Where the specified floor stop cannot be installed or would present a pedestrian hazard, omit and furnish a heavy-duty overhead stop (Spec 34); if closer is specified, furnish closer with integral spring-cushion stop arm.

G. Weather stripping/Gasketing:

1. Install gaskets and intumescent seals on fire rated doors and frames.

2. Unless otherwise specified, install weather stripping on doors from air-conditioned spaces to the exterior: fastener-applied frame seals, nylon-brush door sweeps, and, at pairs, meeting stiles or astragals.

H. Thresholds: Unless otherwise specified, thresholds shall conform to CBC Chapter 11B-404.2.5 accessibility standards and ADAAG.

I. Push Plates: Plates shall be 0.050 thick, 6-inch by 16-inch minimum, with beveled edges.

1. Door Pulls: Pulls shall have protective plate mounted under pull, 0.050 inches thick, 4-inch by 16-inch beveled on four edges. Screws to be mounted through the door into the pull.

2. Pull plates and push plates cannot be mounted on doors with locking hardware or on fire-rated openings.

J. Automatic Flush Bolts:

1. Strike plates for automatic bolts shall be provided for active door.

2. Provide dust proof strikes for bottom bolts.

K. Coordinators:

1. Provide brackets as required for items fastened to coordinators.

2. Provide door strike plates for both doors with coordinators.

L. Smoke Detectors and Magnetic Holders: Coordinate electrical devices with Division 26 and the Drawings.

M. Fasteners: Shall match finish of hardware. Install manufacturer provided fasteners for all hardware. At exterior doors provide and install stainless steel, zinc plated, or satin plated brass screws and fasteners for satin chrome, aluminum, or stainless finish hardware; brass or bronze for brass or bronze finish hardware.

N. Key vault: Locate box as indicated on drawings.

1. Knox Box: Model 4400 series for low rise buildings with recessed mounting kit, or other as approved by local fire authority.

2. Construction: High Security Industrial/Government key box. UL listed double-action rotating tumblers and hardened steel pins accessed by a biased cut key. ¼" thick steel housing with ½ inch thick steel door with interior gasket seal and stainless steel door hinge. Lock shall have a 1/8 inch thick steel dust cover with tamper seal mounting capability.

3. Installation of Key Vault: Refer to manufacturer's printed instructions and LA City Fire Department's Fire Prevention Bureau's Requirement 75. Connect wiring conduit through one of the holes provided.

4. Labeling: The word “FIRE” shall be placed on the Key Box door in ¾ inch contrasting letters

2.02 FINISH

A. Unless otherwise specified, finish of hardware shall be dull chromium-plated BHMA 652 for steel-based metals, BHMA 626 for brass-based metals, except for kickplate, escutcheons, push plates, lock strike plates, and exit device touch bars, which shall be BHMA 630. Levers for locksets and exit devices shall be BHMA 626.

B. Unless otherwise specified, overhead door closers and brackets shall be BHMA 689, to match other finish hardware in same room or space.

2.03 CYLINDERS AND KEYING

A. Project shall be keyed in accordance with keying schedule, prepared and furnished by the OAR.

B. Provide a cylinder security collar (SPEC. NO. 42) at each exterior door cylinder. Provide cylinder collars and spacers at all cylinders as needed to provide a neat, tight and secure fit of the cylinder to the locking hardware.

C. Permanent Cylinders:

1. Permanent cylinders shall be standard core type, 7-pins maximum.

   a. Permanent cylinders as manufactured by Schlage shall be Owner furnished. The Work of this section includes obtaining the permanent cylinders from the Owner, and pinning, stamping, and installing.

   b. OAR to provide a line of funding to M&O Lock Shop to Provide, Pin, and Install all permanent cylinders upon substantial completion of the project.

2. Permanent cylinders shall be pinned with third-party (e.g., “LAB”) 0.005 inch increment pins.

3. Pin cylinders according to OAR-furnished sample set of permanent keys, OAR-furnished bitting chart and OAR-furnished key schedule.

4. Change keys and master keys shall operate inside and outside cylinder on two cylinder locks, unless otherwise indicated.

5. Provide the set number of change key only stamped on cylinder faces.

D. Key Control:

1. Permanent cylinders and sample set of permanent keys shall be not used during the construction phase of the Project. Temporary construction cylinders and keys used for securing the Work is included as part of the Work of this section and will not be provided by the Owner.

2. Temporary construction cylinders are to be used during construction phase and are to be returned to the Contractor upon installation of permanent cylinders by M&O.

3. Temporary cylinders are only required on the exterior side of the opening where an existing permanent cylinder is unavailable. Temporary cylinders are not required where they are not required to secure the door to a room.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Finish hardware shall be installed as specified in Finish Hardware Schedule.

1. Placement of Hardware: Finish hardware shall be installed as indicated on hardware placement sheets attached to end of this section.

2. Provide necessary screws, bolts, anchors, and fastenings, of required sizes and type for proper installation of hardware. Exposed screws shall have Phillips heads, and wood screws shall be fully threaded.

3. Fitting: Hardware shall be accurately fitted and, with exception of prime-coated butt hinges, bar-type coordinators, and flat astragals, shall be removed before finish painting is installed. Upon completion of finish painting and/or sealing, permanently install the hardware.

4. Anchorage of Hardware: Hardware fastened to doors, frames, concrete or wood floors, shall be installed per manufacture’s recommended installation instructions using manufacture furnished fasteners and hardware, or as otherwise required by hardware manufacturer. Pilot holes of suitably lesser diameter shall be drilled prior to the insertion of wood and sheet metal screws.

5. Door escutcheons and push plates shall be installed with stainless steel or bronze, oval, "Phillips Head", fully threaded screws, not less than 3/4 inch - No. 6.

6. Surface mounted vertical rod exit device top latches shall be mounted with non-ferrous sex nuts and fully threaded machine screws. Mullion strike shall be installed with fully threaded machine screws.

7. Door closer shall be installed for maximum degree of opening of each door.

8. Following shall be installed with sex nuts and fully threaded machine screws on mineral core fire-rated doors, per NFPA-80.

a. Door Closers.

b. Exit Devices.

9. Install exterior doorstops as required. On new concrete, stops shall be installed with manufacturer provided screws. On asphalt concrete, stops shall be installed on to an anchor plate set in a concrete monument. Anchor plate shall be Trimco 1268, or equal. Floor stops shall not be located in the path of travel and shall be located no more than 4 inches from walls and preferably 6" from outside edge of door.

10. Kickplate:

a. Kickplates shall be installed with screws at each corner, and screws evenly spaced along each side per approved manufacture's submittal.

b. Except on wood doors, screws shall be undercut pan head.

11. Thresholds shall be installed with manufacturer recommended screws and anchors, set in a bead of moisture barrier mastic per section 07 9200, or equal, i.e.; Sikaflex 1A, and coped to trim, per manufacturers installation instructions.

12. Sound Seals and Weather stripping / Gasketing:

a. A mounting screw shall be installed within 2 inches of cuts or corners of weather stripping and/or gasketing.

b. Sound seals and weather stripping and/or gasketing shall be installed with No. 8 – ¾" Tek Phillips pan head screws on a hollow metal frame, or #8 - ¾" sheet-metal screws.

13. Exterior doors not otherwise specified shall be provided with SPECS.1, 5, 28, 33, 36, 39, 42, 46, 54.

14. Interior doors not otherwise specified shall be provided with SPECS 2, 5, 28, 33, 35, 39, 54.

3.02 ADJUSTING AND CLEANING

A. Before Substantial Completion, hardware shall be cleaned and inspected. Where hardware is deemed defective, repair or replace as required.

B. Door Closers: Final adjustments shall be performed before Substantial Completion, with mechanical system balanced and in operation.

3.03 EXAMINATION

A. Upon completion of installation, verify correct installation of hardware, according to reviewed Hardware Schedule and Keying Schedule. Verify that finish hardware is in optimum working condition.

3.04 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.05 LIST OF FINISH HARDWARE

A. Following items designated by "SPEC NO." comprise the list of Finish Hardware, from which hardware shall be furnished as specified and required to complete the Work:

1. HINGES

SPEC. NO. 1 --Full Mortise Hinges -- Non-Ferrous -- For Exterior Reverse Bevel Doors

Ball bearings, 4 ½" by 4 ½", or as required to clear projections, non-ferrous stainless steel (BHMA 630) required. For out-swinging exterior doors, furnish with non-removable pin. Provide heavy weight hinges at hollow metal doors

	Bommer	Hager	Mc Kinney
Reg. Wt. -	BB5001-A	BB1191-NRP-SH	TA2314-NRP-SSF
Heavy Wt. -	BB5005-A	BB1199-NRP-SH	T4A3386-NRP-SSF

	Stanley	Ives	PBB
Reg. Wt. -	FBB191-NRP-Sec. St.	5BB1 NRP/SS	BB51-NRP
Heavy Wt.	FBB199-NRP-Sec. St.	5BB1HW NRP/SS	4B51-NRP

SPEC. NO. 2 -- Full Mortise -- General Interior Doors

Steel, ball bearings, 4 ½" by 4 ½", or as required to clear projections, satin-steel plated (BHMA 626).

Bommer	Hager	Mc Kinney	Stanley	Ives	PBB
BB5000	BB-1279	TA-2714	FBB-179	5BB1	BB81

SPEC. NO. 3 --Full Mortise Continuous Hinges -- Non-Ferrous Stainless Steel For Reverse Swing Doors on existing HM Frames and Wood Jambs where Butts cannot be installed.

Hager	Markar	McKinney	Stanley	PBB	ABH	Ives
790-900	FM-300	MCK-FM300	651	CH51	A500	700

2. LOCKSETS

SPEC. NO. 4 -- Lock -- Interior Doors

One cylinder: Key in cylinder locks or unlocks outside lever, inside lever always free. Protected front and deadlocking latch.

Corbin/Russwin	Sargent	Schlage	Marks	Townsteel
ML2055NSM	8237LW1L	L-9070-06N	LA118-J	MSE-R-05-S

SPEC. NO. 5 -- Lock – Interior Classroom Security w/ Indicator

Two cylinders: Inside cylinder locks or unlocks outside lever, outside cylinder retracts latch, inside lever always free. Protected front and deadlocking latch.

Corbin/Russwin	Sargent	Schlage	Marks	Townsteel
ML2002NS-VN	V03-EMB-8238	L-9071-06N	LA318-GJ	MSE-R-32-L-S
V03-EMB	VN1L	L283-714		

SPEC. NO. 6 -- Lock – Exterior Classroom Security Holdback w/ Indicator

Two cylinders: Exterior Anti-Vandal Pull w/ Cylinder x Inside Lever. Latch bolt retracted by exterior cylinder or inside lever. Latch bolt can be locked in retracted position by inside lever and inside cylinder. Outside trim is an anti-vandal pull (Spec 46). Protected front and deadlocking latch, inside lever always free. For use exclusively on Exterior Classroom Doors with an occupancy load of less than 50, or less than 1000 square feet.

Corbin/Russwin	Sargent	Schlage	Marks	Townsteel
ML2056NS-VN	V03-EMB-8291	L-9077-06N	LA318-JM	MSE-R-06-L-S
V03-EMB	VN1L-AV	L283-714	VR	LOSTxSPEC#46
LOSTxSPEC#46		L283-150		
		LOSTxSPEC#46		

SPEC. NO. 7 -- Latchset

Latch bolt retracted by lever from either side. Protected front.

Corbin/Russwin	Sargent	Schlage	Marks	Townsteel
ML2010NSM	8215LW1L	L-9010-06N	LA118-N	MSE-R-01-S

SPEC. NO. 8 -- Lock -- Single Occupancy Faculty Toilets (Monitored)

Latch bolt retracted by lever from either side, except when deadbolt is projected by turn inside, turning inside lever retracts both deadbolt and latch bolt simultaneously. In emergency, bolt can be operated by emergency key from outside. For use in Nurse's Office, Principal's Office, Staff Lounge, and Unisex Restrooms in MPRs.

Corbin/Russwin	Sargent	Schlage	Marks	Townsteel
ML2065NS-VN	8265LW1L	L-9040-06N	LA118-FW	MSE-R-13-O-S
V20		XL11-761	A40	

SPEC. NO. 9 -- Lock – Storage/Mechanical/Electrical, and Multi Occupancy Staff Restrooms

One cylinder: Key in cylinder retracts latch bolt. Outside lever always rigid, inside lever always free. Protected front and deadlocking latch.

Corbin/Russwin	Sargent	Schlage	Marks	Townsteel
ML2057NSM	8204LW1L	L-9080-06N	LA118-EW	MSE-R-07-S

SPEC. NO. 10 -- Lock -- Single Occupancy Faculty Toilets (Unmonitored)

Lockset contains a lever handle on each side with an oval shaped privacy thumb turn on the inside. Single outside cylinder retracts latch-both only when privacy thumb turn is not projected. Cylinder is locked out when thumb turn is projected, coin slot or special key required to pull back privacy thumb turn. Interior lever retracts privacy thumb turn and latch bolt simultaneously. For Unisex Staff, Single Occupancy Restrooms only.

Corbin/Russwin	Sargent	Schlage	Marks	Townsteel
ML2029 NS-VN V20	8250LW1L	L-9486-06N L538-375	LA118-LH A42	MSE-R-15-O-S

SPEC. NO. 11 -- Lock -- Connecting Room and Perimeter Gate Lock

Two cylinders: Key in cylinder locks or unlocks both levers. Protected front and deadlocking latch. Recommend for perimeter gates and corridor restroom doors where restroom has egress door to exterior, do not install at egress doors.

Corbin/Russwin	Sargent	Schlage	Marks	Townsteel
ML2022-NSM	8259LW1L	L-9066-06N XL11-897	LA118-JC	MSE-R-14-S

SPEC. NO. 12 -- Lock -- Special Gate Lock

Two cylinders: Latchbolt by key from either. Both levers always rigid. Auxiliary latch deadlocks latchbolt. Must use key at all times, on either side, to open the door/gate. Do not install at egress doors or gates.

Corbin/Russwin	Sargent	Schlage	Marks	Townsteel
ML2032 NSM	8217LW1L	L-9082-06N	LA118-WW	MSE-R-30-S

SPEC. NO. 13 – Deadbolt Lock – Lever Retraction Deadbolt

Two cylinders: Both cylinders throw and retract deadbolt. Outside lever always rigid, inside lever is always free and retracts deadbolt only. Used primarily on multi-use student restrooms where 12” of ADA push side clearance cannot be met. This is not considered a latch and cannot be installed on fire-rated openings.

Corbin/Russwin	Sargent	Schlage	Marks	Townsteel
			LA118ATF	

SPEC. NO. 14 -- Lock – Hold Back Function

One cylinder: Key in cylinder locks retracts latch, inside lever always free. Latchbolt can be held in a retracted position by key, or released by key. Protected front and deadlocking latch. No exterior lever trim. To be used in conjunction with anti-vandal pull (Spec. No. 46). Cannot be installed on fire-rated doors

Corbin/Russwin	Sargent	Schlage	Marks	Townsteel
ML2056 NSM-M30	8291LW1L	L9076-06N	LA118-JM	MSE-R-06-LO

SPEC. NO. - 15 – Electronic Lock – Single Occupancy Public-Use Toilets

Lock is standalone, operable by keypad or HID Corp 1000 35 bit card. Keypad or HID card unlocks lever. Privacy deadbolt projected by turn inside a minimum 1 ¾" x 1" at center with 1 ¼" projection. HID or keypad is disabled when deadbolt is activated. Shall include small format interchangeable core (SFIC Best/Falcon type) less core.

Alarmlock: PDL4500 DB

3. PANIC HARDWARE AND FIRE LABELED HARDWARE

SPEC. NO. 16 -- Exit Device – Single or Double Exterior Aluminum Doors

Exit device shall be rim night latch function with a 3/4 inch latch bolt, dead latch, dogging device and a stainless steel or aluminum touch pad. Furnish standard Allen-type dogging key with suitable hole for key ring. Furnish with offset wire pulls (see SPEC. NO. 49) and Removable Mullion (SPEC NO. 23).

Single or Active Double Door

Corbin Russwin	Precision	Sargent	Von Duprin	Dorma	Detex
ED4200 x K157	2403	8504	35A-NL-OP	5303 x JP03	4003 x CBK

Inactive Double Door

Corbin Russwin	Precision	Sargent	Von Duprin	Dorma	Detex
ED4200	2401	8510	35A-EO	5303	4003

SPEC. NO. 17 – Exit Devices – Exterior Double Doors Non-Rated

Exit devices shall be rim night latch function with a 3/4 inch latch bolt, dead latch, dogging device and a stainless steel or aluminum touch pad. Furnish standard Allen-type dogging key with suitable hole for key ring. Furnish 2 Exit Devices with Anti-Vandal Pulls (SPEC NO. 46) or Offset Wire Pulls (see SPEC. NO. 49) and a Removable Mullion (SPEC NO. 23).

Corbin/Russwin	Precision	Dorma
ED5200xK157	2103	9300 x HRT03

Sargent	Von Duprin	Detex
8804	98NL-OP	1003 X CBK

SPEC. NO. 18 -- Exit Device -- Single Door Non-Rated

Exit device shall be rim night latch function with a 3/4 inch latch bolt, dead latch, dogging device and a stainless steel or aluminum touch pad. Furnish standard Allen-type dogging key with suitable hole for key ring. Interior Openings, furnish with Lever Trim, exterior openings, furnish panic device with Anti-Vandal Pulls (SPEC NO. 46) or Offset Wire Pulls (see SPEC. NO. 49).

	Corbin/Russwin	Precision	Dorma
Int.	ED5202xN955ET	2110x4908A	9300 x 08/08
Ext.	ED5202xK157	2103x(Spec #46)	9300 x HRT03

	Sargent	Von Duprin	Detex
Int.	8816-743-8ETL	98L-06-2	1010DS
Ext.	8804X Less Pull	98NL-OP	1003 X Z

Adams Rite 8800 Series at aluminum doors.

SPEC. NO. 18P – Exit Devices – Interior Non-Rated Pair

Devices shall be surface-mounted vertical rod type, less bottom rods (LBR), ANSI 08 function, key locks and unlocks lever at active trim only. Furnish standard Allen-type dogging key with suitable hole for key ring. Install at manufacturers recommended elevation so lever trim is at ADA compliance.

	Corbin Russwin	Precision	Detex
Active Door	ED5470xN955xM55	2208xLBRx4908A	2108 DA
Inactive Door	ED5470xM55	2201xLBR	2101

	Sargent	Von Duprin	Dorma
Active Door	8713-743ETL-LBR	9827L-LBRx996L-06	9400 LB x YR08
Inactive Door	8710-LBR	9827EO-LBR	9400 LB

SPEC. NO. 19 -- Exit Device -- Exit Only -- Single Door – Non-Rated

Exit device shall be rim exit only function with 3/4 inch latches bolt, dogging device and a stainless steel or aluminum touch pad. No outside trim.

Corbin/Russwin	Precision	Sargent	Von Duprin	Dorma	Detex
ED5200	2101	8810	98EO	9300	1001

SPEC. NO. 20 -- Exit Device -- Single Door -- Fire Rated

Exit device shall be ANSI 08 function with Lever Trim, key locks and unlocks lever, less dogging feature. Install at manufacturers recommended elevation so lever trim is at ADA compliance.

Corbin/Russwin	Precision	Detex
ED5202AxN955	FL2110 x 4908A	F1010 DS

Sargent	Von Duprin	Dorma
12-8816-743-8ETL	98LF-06-2	F9300 x 08/08

SPEC. NO. 21 -- Exit Device – Interior Pair Doors -- Fire Rated

Exit devices shall be self-latching with lever trim at active door, less dogging feature. Provide less bottom rod (LBR). Install at manufacturers recommended elevation so lever trim is at ADA compliance.

Active Door

Corbin/Russwin	Precision	Detex	Sargent	Von Duprin	Dorma
ED5470B/Fx-LBRxN955xM55	FL2208-LBRx4908A	F2108LD LBR	12-8713-LBR 743ETL	9827LF-LBR 996L-06	F9300x YR08

Inactive Door

Corbin/Russwin	Precision	Detex	Sargent	Von Duprin	Dorma
ED5470B/FxM55	FL2201-LBR	F2101 LD	12-8710	9827EO-F-LBR	F9300

SPEC. NO. 21DE – Exit Devices – Interior Fire Rated Double Egress Pair Wood or Hollow Metal Doors

Exit devices shall be surface-vertical rod type less bottom rods, exit only function. Exit devices shall be self-latching, less dogging feature. Furnish two exit devices per double egress pair.

Corbin Russwin	Dorma	Precision	Sargent
ED5470B/FxM55	F9400 LB	FL2201xLBR	12-8710-LBR

Von Duprin	Detex
9827EO-FxLBR	F2101 LD

SPEC. NO. 22 – Mortise Panic Exit Devices – Interior Pair Wood or Hollow Metal Doors

Devices shall be at active door a mortise panic device with open back strike with Inactive door with surface-vertical rod types less bottom rods, ANSI 08 function, key locks and unlocks lever by exit only function.

	Corbin Russwin	Precision
Active Door	ED5657xN955xM55	2308x4908A

Inactive Door	ED5470xM55	2201xLBR	2203-LBR

	Sargent	VonDuprin	Dorma
Active Door	8913-743ETL	9875L-994L-06	9500 x YR08
Inactive Door	8710-LBR	9827EO-LBR	9400 LBR

SPEC. NO. 23 -- Removable Mullion Non-labeled -- Pairs of Doors with Exit Devices

14 gage steel, approximately 2-inch by 3-inch. Furnish complete with soffit and sill fittings and fastenings as required. For Keyed Removable, add "KR" to product number

Corbin/Russwin	Precision	Sargent	Von Duprin	Dorma	Detex
707A(7')708A(8')	822	980	4954	1330	90KR

SPEC. NO. 24 -- Removable Mullion Labeled -- Pairs of Doors Exit Devices

Listed as Fire Exit Hardware. Furnish complete with soffit and sill fittings and fastenings as required.

Corbin/Russwin	Precision	Sargent	Von Duprin	Dorma	Detex
707A(7')708A(8')	FL822	12-980	9954	F1300	F90KR

SPEC. NO. 25 -- Automatic Flush Bolts -- Labeled and Non-labeled Doors

Complete with necessary strikes and screws. Furnish 2 each inactive leaf.

	Door Controls	Ives	Rockwood
Wood or Composite	942 NH x 80	FB40P x DP2	1942NHx80
Hollow Metal	842 NH x 80	FB30P x DP2	1842NHx80

SPEC. NO. 26 -- Coordinator -- Labeled and Non-labeled Doors

Bar-type, complete with necessary strikes, bars, brackets, and screws.

Door Controls	Ives	Dorma	Rockwood
600 Series	COR Series	TS 93 GSR	1600

4. AUXILIARY LOCKS

SPEC. NO. 27 -- Padlock

Bronze or brass case, hardened steel shackle, length to fit condition; plated, brass chain, master-keyed. Furnish by same manufacturer as lock cylinder key system.

5. DOOR CLOSERS

SPEC. NO. 28 -- Door Closer – 90 - 180 Degree, with Hold Open Arm

	L.C.N.		Stanley
Out swing	4041-H-EDA		D-4551 HCS/PH
In-swing	4041-H / TJ-H	Top Jamb (80” Doors)	D-4551 H/TJ-H

	Norton	Sargent	Dorma
Out swing	CPS7500T	281 PH10	8916 SP8T
In-swing	7500	281 H	8916 PH

SPEC. NO. 29 -- Door Closer – Non Hold-Open

	L.C.N.	Dorma	Stanley
Out-swing	4041 EDA	8916 AF	D-4551 EDA
In-swing	4041 Rw/Pa	8916 SPA	D-4551 Rw/Pa

	Norton	Sargent
Out-swing	PR7500	281 P10
In-swing	R7500	281

SPEC. NO. 30 –Door Operator – Maximum 90° Electronic

For use on ADA openings where the side clearance or the landings are not ADA Compliant.

LCN 4642-REG AL Operator (Push Side Mount)
BEA 10LPR36-HW Actuator (Install at Barrier Side of Opening)
SOLA HD SDU 500/850 UPS (Field Verify Load)
FlexPower LSI – 4E Enclosure
HES 1500C/1600C Electronic Strike
HES 9500 Electronic Strike (Panic) for Fire-Rated Opening
HES 9600 Electronic Strike (Panic) for Non-Rated Opening

6. DOOR STOPS AND HOLDERS

SPEC. NO. 31 -- Door Type Holder

Cast bronze made to template, secured to door with oval head bronze machine screws and washers; when door has kickplate, mount sex bolts under kickplate. Provide strike of recommended height; install short strike whenever possible.

Ives	Trimco	Rockwood
FS40 Series	1267	491 Series x Floor Strike

SPEC. NO. 32 – Interior Floor-Mounted Door Stop

1-3/4 inches high, secured rubber.

Don-Jo	Trimco	Rockwood
1448	1214	481

SPEC. NO. 33 – Exterior Floor-Mounted Door Stop

Cast bronze, 2-1/4 inches high, secured rubber.

Trimco	Rockwood
1214CK	481H

SPEC. NO. 34 -- Overhead Door Holder, 180° Swing (max.), no stop feature. Provide auxiliary floor stop, and up to 110° Swing (max.) and Stop/Hold-open.

180 Degrees		**110 Degrees w/ Stop & Hold-Open**		
L.C.N.	Norton	Rixson	Glenn Johnson	Dorma
PAH 60	No. 2	9-325 (Stop & H.O.)	90H (Stop & H.O.)	902H (Stop & H.O)
		9-336 (Stop Only)	90S (Stop Only)	902S (Stop Only)

7. THRESHOLDS (For Interior Restroom Transition, See Marble Threshold Spec Sect)

SPEC. NO. 35 -- Aluminum Offset-Saddle Threshold – Exterior Door

Offset Saddle, Width 3-inch, height ¼" & ½". For use at ¼" or ½" Transitions where exterior landing meets interior, field verify for correct application

	NGP	Pemko	Reese
¼" Offset	315A	273A	S-814A
½" Offset	322A	168A	S-283A

SPEC. NO. 36 -- Aluminum Half-Saddle Threshold – Interior or Exterior Door

Half-saddle, height ½" to ¼" transition where the threshold is required to protect/cover the inside floor covering, ceramic tile, VCT, etc.. Full width of opening, and coped to trim. For ¼ inch rise usually installed at restrooms with tile.

NGP	Pemko
653	158A

SPEC. NO. 37 -- Aluminum Full-Saddle Threshold – Interior or Exterior Door

Full Saddle ¼" Threshold where the floor transitions are flat from the exterior to the interior. Only required at interior openings where floor coverings transitions (VCT to Ceramic Tile). Field verify for proper depth of threshold to properly cover each floor. Depth of threshold can range from 4" to 10".

NGP	Pemko	Reese
413/513/613/713	270A/271A/272A/276A	S404A/S405A/S406A
813/913/1013	2748A/2749A/2750A	S407A/S408A

SPEC. NO. 38 – Not Used

8. MISC. AUXILIARY HARDWARE

SPEC. NO. 39 – Kick and Mop Plates

Ives	Trimco	Don-Jo	Rockwood
8400	KO050/KM0050	90	K1050

SPEC. NO. 40 – Lock Guard

9 ½ to 10-inch by 1 ½ to 2 1/8-inch with lugs to receive flat-head Phillips through-bolts.

Don-Jo	Markar	Trimco	Rockwood
NLP-110	M-930LG	5000	321 x 630

SPEC. NO. 41 -- Astragal

Stainless steel, 2 inches by height of door, secured by Phillips flat head through-bolts.

N.G.P.	Pemko	Reese	Anemostat
139SS	357SS	183SS	FBA x SS

SPEC. NO. 42 -- Cylinder Guard Ring

Manufactured of hardened materials to resist removal by wrenches and other devices. Furnish of sufficient length for cylinder. Provide appropriate filler rings as required. Furnish plated versions only. Install with all cylinders exposed to the exterior of the building, but not necessarily limited to that application.

Corbin/Russwin	Keedex	Major
416F39	K-24	CG

SPEC. NO. 43 – Automatic Door Bottom

At exterior doors with surface applied walk off mats in lieu of Spec 101 door sweep. To ensure ADA 5 pound door pressure opening.

	Pemko	NGP	Reese
Semi-mortise Wood	430MRL	421NA	521C
Full-mortise Wood	411RL	335N	370A
Hollow Metal	420PKL	320N	372A

SPEC. NO. 44 – Not Used

SPEC. NO. 45 – Push/Pull Plate

Provide at non-rated openings that do not require a locking device, usually installed with a closer on interior restroom doors. Provide beveled on all four edges, US28/628 Clear Anodized Aluminum.

	Ives	Trimco	Don-Jo	Rockwood
Pull Plate	8311 4x16	1010-3	7110	132-70C
Push Plate	8302 4x16	1001-3	71	70C-RKW

SPEC. NO. 46 -- Anti-Vandal Pull

Stainless steel pull used with exit devices or multi-occupancy restroom doors at exterior heavy traffic openings. When used at equal pairs, only provide a cylinder hole on the RHRA door leaf. When used with lockset, specify hold-back function lockset (see Spec #14)

Rockwood
BF94 – black coating at wood doors

Trimco
1096HA–SP at exterior single out-swinging doors
1097HA–SP at exterior pairs of out-swinging doors and at single in-swinging doors. Order with 2” backset to allow for astragals (Spec 51)

Ives
VR900 - at exterior single out-swinging doors
VR900LLP - at exterior pairs of out-swinging doors and at single in-swinging doors. Order with 2” backset to allow for astragals (Spec 51)

SPEC. NO. 47 -- Coat and Hat Hook

Cast aluminum, Two prong, 1 1/8-inch inches projection, suitable for behind door application. Furnish three for teacher’s wardrobes. Furnish quantities as indicated at other locations.

Ives	Don-Jo	Rockwood
582	302	796

SPEC. NO. 48 -- Cane Bolt

Steel, zinc-plated, 18 inches, with padlock eyes welded to bolt to lock in closed position. Two strikes each bolt to hold gate in open or closed position.

Hager	Richards-Wilcox	Stanley
1408	524-P21	1009

SPEC. NO. 49 – Offset Tube Door Pull

For installation on exterior doors with exit devices. Pulls shall be satin stainless steel (BHMA 630) or brass (BHMA 606) and be mounted with through-bolts.

Don-Jo	Forms+Surfaces	Trimco	Rockwood
1158	DT1021-10”	1191-3	BF158

SPEC. NO. 50 – Wall-mounted Electro-magnetic Door Holder

For installation on fire-rated doors requiring hold-open and wired to fire-alarm

LCN	Norton	Rixson	Dorma	RSG
SEM7850	R6933	FM998	EM-F24120	DH1224 Series

SPEC. NO. 51 – Meeting Stile Astragals – Fire-rated Pairs with Vertical Rod Exit Devices

N.G.P.	Pemko	Reese
140PA(set)	351Cx351CS	95Cx95CP

SPEC. NO. 52 – Adhesive Smoke Seals – Fire-rated Metal Doors

N.G.P.	Pemko	Reese
5050B	S88D	797B

SPEC. NO. 53 – Adhesive Intumescent Seals – Fire-Rated HM Doors

At single doors, furnish frame seals only. At pairs, furnish both frame seals and astragal seal.

	N.G.P.	Pemko	Reese
Frame	9440B	HSS2000 x S88D	GIS x 797B
Astragal	9500B x 2525B	HSS2000 x S77D	GIS x 798B

SPEC. NO. 54 – Exterior Door Seals. Furnish frame seals and door sweeps at exterior doors. At pairs, furnish astragal in addition to frame seals and door sweep. Furnish factory-cut for narrow frames where occurs. Furnish exterior door seals with stainless steel fasteners.

	N.G.P.	Pemko	Reese
Frame Seals	700SA	2891AS	755A
Door Sweep/Drip	C627A	3452CNB	354C
Astragal	140PA (SET)	351C x 351CS	95C x 95CP

SPEC. NO. 55 -- Padlock Hasp

Steel, zinc plated, secured with galvanized bolts, nuts, and washers, 6 inches, 3 ½-inch for lead-lined cabinet doors.

Hager	Stanley
WS-1941	SP-941

SPEC. NO. 56 -- Padlock Eyes

Steel, zinc plated.

Stanley
1245

SPEC. NO. 57 -- Key Tags

Furnish one fiber marker for each new file key, marked, attached, and placed as required.

Aladdin	Ke-Master	Lund	Telkee
OG	K9002	C-1507	2GF

HARDWARE PLACEMENT

MORTISE LOCKSET (HP-ML)

NOTES:

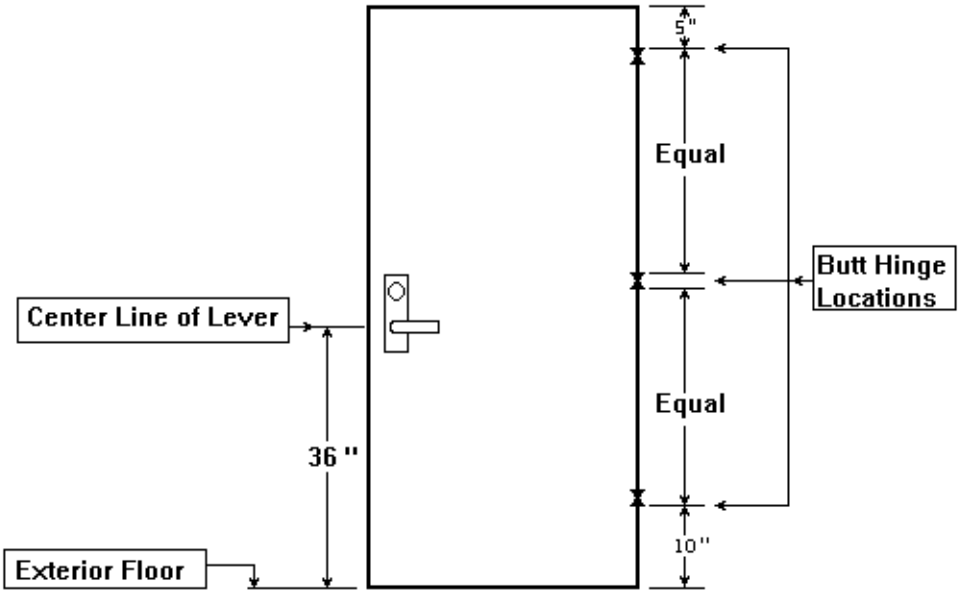
Lock Strikes: Strikes shall be boxed, with curved lip of sufficient length to protect the trim and jamb.

Hinges Reinforcement of steel doors and frames shall be per Specification Section 08110.

All Frames Head shall have door closer reinforcement, full length of head, whether or not closers are called for. Reinforcement shall be per Specification Section 08 1113. No mutes or mute holes.

Door Closer Install according to manufacturers' template. With closer installed, doors shall have maximum swing possible, 90 degrees minimum.

Doorstop Unless otherwise directed, doorstop or spike shall be mounted within 4 inches of the wall.

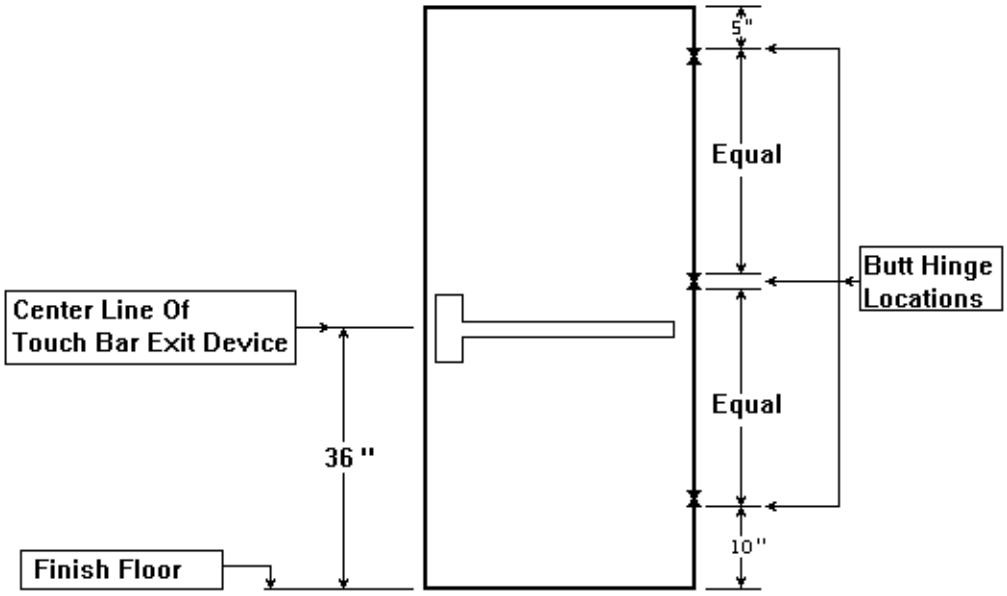


HARDWARE PLACEMENT

EXIT DEVICE (HP-ED)

NOTES:

Kickplate	Where specified 10 inches height, width 1 inch less than total width of door between stops. Secured with flat head undercut, full thread screws
Hinges	Reinforcement of steel doors and frames shall be per Specification Section 08 1113.
All Frames	Head shall have door closer reinforcement full length of head, whether or not closers are called for. Reinforcement shall be per Specification Section 08 1113. No mutes or mute holes.
Door Closer	Install according to manufacturers' template. With closer installed, doors shall have maximum swing possible, 90 degrees minimum.
Door stop	Unless otherwise directed, doorstop or spike shall be mounted within 4 inches of the wall.
Exit Lever	If door calls out for a Panic with Lever Trim, use the Manufacturer's recommended elevations so that the lever trim is ADA Compliant.



HARDWARE PLACEMENT

IDENTIFICATION SYMBOL (HP-RR)

NOTES:

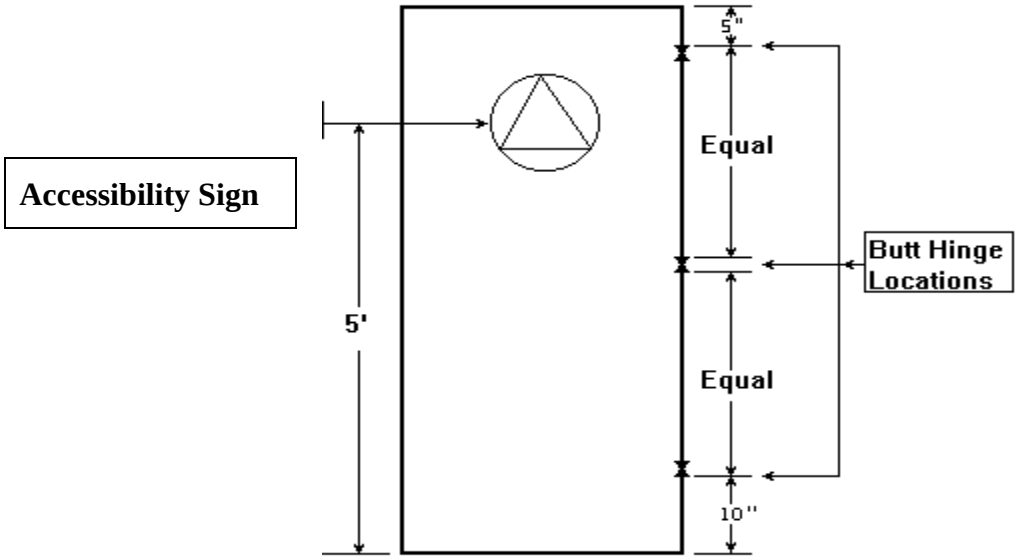
Hinges Reinforcement of steel doors and frames shall be per Specification Section 08 1113.

All Frames Head shall have door closer reinforcement full length of head, whether or not closers are called for. Reinforcement shall be per Specification Section 08 1113. No mutes or mute holes.

Door Closer Install according to manufacturers' template. With closer installed, doors shall have maximum swing possible, 90 degrees minimum.

Door stop Unless otherwise required doorstop or spike shall be mounted within 4 inches of the wall.

IDENTIFICATION SYMBOLS - To be installed per CBC Chapter 11B.



END OF SECTION

SECTION 08 8000

GLAZING

PART 1 - GENERAL

1.01. SUMMARY

A. Section Includes:

1. Glass and glazing as indicated.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 08 1416 - Flush Wood Doors.

3. Section 08 7100 - Door Hardware.

1.02. SUBMITTALS

A. Product Data: Submit manufacturer's descriptive literature and installation recommendations for glass, glazing, and accessories.

B. Material Samples: Submit 6-inch square units of each type of glass specified.

1.03. QUALITY ASSURANCE

A. Labeling: Label each piece of glass and glazing and mirrors with manufacturer's name, and the grade or quality of the material. Labels shall be intact before and after installation. Fire-protection-rated glazing shall bear a label or other identification in accordance to the CBC.

B. Comply with the following as a minimum requirement:

1. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.

2. ASTM C1036 - Standard Specification for Flat Glass.

3. ASTM C1048 - Standard Specification For Heat-Strengthened and Fully Tempered Flat Glass.

4. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass.

5. CPSC 16 CFR 1201 - Safety Standards for Architectural Glazing Materials issued by the Consumer Products Safety Commission.

6. ANSI Z97.1 – Safety Glazing Materials Used in Buildings.

7. GANA - Glazing Manual.

C. Qualifications of Installer: Minimum five years experience installing glass in projects of similar scope and complexity.

1.04. DELIVERY, STORAGE AND HANDLING

A. Deliver glass and glazing materials with manufacturer's labels intact.

B. Do not remove labels until glass has been installed and inspected by the Project Inspector.

C. Protect glass from staining, marking, and damage.

D. Putty and glazing compound shall be delivered to the Project site in manufacturer's original unbroken containers labeled to identify contents.

1.05. PROJECT CONDITIONS

A. Perform glazing when ambient temperature is above 40 degrees F.

B. Perform glazing on clean, dry surfaces only.

1.06. WARRANTY

A. Manufacturer shall provide a five year material warranty.

B. Manufacturer shall provide a five year material warranty for coatings and thermally or acoustically rated insulation units against deterioration in acoustic or thermal rating.

C. Installer shall provide a three year fabrications and installation warranty.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS AND FABRICATORS

A. To maximum extent possible, provide domestically manufactured and fabricated glass, and provide glass from one manufacturer.

B. Types of glass specified or indicated shall be manufactured or fabricated by one of the following:

1. Pilkington LOF (fire rated glazing).

2. PPG Glass Technology.

3. Visteon Float Glass Operations.

4. Viracon.

5. Southwest Technologies.

6. Equal.

2.02 GLASS MATERIALS

A. General: Conform to ASTM C1036, ASTM C1048, ASTM C1172 and to ANSI Z97.1. Label factory cut panes.

B. Float Glass: Type I, (transparent glass flat), Class 1 (clear), Quality q3, (glazing select), minimum 1/4 inch thickness unless otherwise indicated or required.

C. Tinted Float Glass: Type I (transparent glass), Class 2 (tinted heat absorbing and light reducing), quality q3 (glazing select), manufactured by PPG or LOF, color as selected by Architect, minimum 1/4 inch thickness unless otherwise indicated or required.

D. Tempered Glass: Condition A (uncoated surfaces), Type I or II, Class 1, Quality q3 (glazing select), Kind FT (fully tempered glass), match color of clear or tinted glass as applicable; fully thermal tempered, heat strengthening or chemical tempering is not permitted. Perform tempering by horizontal oscillating roller hearth or high speed roller hearth process. Do not permit fabrication processes leaving gripper or tong marks. Handle and size glass according to manufacturer's written instructions.

E. Clear Laminated Glass: Two layers of 1/8 inch clear float glass with 0.030 inch thick high strength .

F. Tinted Laminated Glass: One layer of 1/8 inch clear float glass and one layer of tinted glass to match other windows, with 0.030 inch thick high strength polyvinyl butyral laminating sheet. Edges of laminated glass shall be treated with Argotec, Argo Edge Seal Plus, or equal, edge protection to prevent contact of laminating sheet with sealants.

G. Low Emissivity Glass (Low E Glass): Provide units with thin metallic high-transmittance coating applied to the number 3 surface of the unit, unless otherwise indicated. The U-value for the IGU shall be no greater than 0.34, unless otherwise indicated.

H. Wire Glass: Type II (patterned and wired glass, flat), Class 1 (clear glass), Quality q8 (glazing), Category II, Form 1 (wired, polished both sides), mesh m2 (square). Wire glass for fire rated openings shall bear an identifying UL label or the label of a recognized testing agency and shall be installed in a steel fire rated window frame assembly in compliance with CBC section 715.5. Wire glass shall be provided with fire-rated safety film meeting CPSC 16 CFR Part 1201, Category II for impact safety; Superlite I-W, or equal. Safety film shall be installed on interior side of glass. Wire Glass Category I is not acceptable.

I. Obscure Glass: Type II (patterned), Class 1 (clear), Form 3 (patterned), Quality q7 (decorative), patterned one side, pattern as indicated or selected.

J. Unframed Mirrors: Category II safety backed mirror-quality float glass, ¼ inch thick, , edges finished and polished, double silvered with electro-deposited copper coating plus an organic protective coating, equal to Palmer Products Mirro-Bac Paint. Include polished stainless steel edge channels at top and bottom edges, plus mirror adhesive bonding to wall.

K. Framed Mirrors: Fabricated of one-piece Type 304 stainless steel angle frame, ¾ inch by ¾ inch, with continuous integral stiffener on sides and beveled front to hold frame tightly against mirror. Corners shall be heliarc welded, ground and polished smooth. Exposed surfaces shall have stain finish with vertical grain. Mirror shall be fabricated of 1/4 inch Category II safety backed mirror quality float glass, free from tong marks. Edges shall be protected by plastic filler strips. Full-size, shock-absorbing, water-resisting, non-abrasive 1/8 inch thick polyethylene padding shall protect backs of mirrors. Mirrors shall be provided with 24 gage galvanized steel back with integral hanging brackets for mounting on concealed, rectangular wall hangers, and shall be secured with concealed Phillips head locking screws on bottom of frame.

L. Thermoplastic Glazing: Polycarbonate sheet shall be ultra-violet stabilized material, clear or glare reducing as indicated, 1/4 inch thick as manufactured by General Electric Company “Lexan”, DuPont, or equal. Glare reducing glazing shall be gray in color, providing a light transmission of 14 percent.

2.03 GLASS SETTING MATERIALS

A. Glazing materials and accessories shall be fully compatible with the materials and finishes with which they are in contact.

B. Setting Blocks: ASTM C864, channel shape; having ¼ inch internal depth, Shore A hardness of 80 to 90 Durometer. Blocks shall be a minimum 2 inch long. Block width shall be approximately 1/16 inch less than the full width of the rabbet. Block thickness shall be at least 3/16 inch, sized for rabbet depth as required.

C. Spacers: ASTM C864, channel shape, with ¼ inch internal depth, 3/32 inch flanges, eb, 1/8 inch thick, one to 3 inches long. Spacers shall provide Shore A hardness of 40 to 50 Durometer.

D. Vinyl Glazing Channels: Profile compatible with framing system and designed to accommodate glass of specified thickness, light gray in color. Provide for dry glazing aluminum frames where indicated or permitted.

E. Glazing Tape: Poly-isobutylene based sealant tape, conforming to AAMA 804.1, with adhesive one side protected by temporary paper cover, Extru-Seal manufactured by Pecora Corp., No. 303 by Protective Treatments, Inc., or equal.

F. Spring Steel Spacers: Galvanized steel wire or strip designed to position glazing in channel or rabbet sash with stops.

G. Glazing Clips: Galvanized steel spring wire designed to hold glass in position in rabbet sash without stops.

H. Glazing Points (Sprigs): Pure zinc stock, thin, flat, triangular or diamond-shaped pieces, 1/4 inch minimum size.

I. Glazing Sealants for Metal Sash: GE Silicones Silglaze II 2800, GE Silicones Silpruf, GE Silicones 1200 Silicone, and Dow Corning 999A. Polybutylene, oleoresinous, asphalt, and oil base sealants are not permitted. Provide sealant of same color as structural silicone sealant unless otherwise required.

J. Glazing Compound for Wood Sash: Provide acrylic latex glazing compound for bedding and sealing glass in wood frames

K. Glazing Compounds and Sealants for Thermoplastic: Provide silicone, butyl, or polysulfide glazing compound.

L. Mirror Setting Materials: Manufactured by Palmer Products Corporation, or equal, for installation of mirrors, and as follows:

1. Mirror backing paint: Mirro-Bac Paint, or equal, formulated to protect mirror silvering.

2. Mirror bond coat: Mirro-Mastic Bond, or equal, formulated to isolate deleterious backing materials from mastic and mirror.

3. Mirror mastic: Palmers Super Set Mirro-Mastic PM290.

2.04 SPEAK HOLES

A. Speak holes shall be stock No. 444, 4 to 6-inch diameter for 1/4-inch tempered float glass, stainless steel as manufactured by Nissen and Co., N666 by C.R. Laurence Co., or equal.

PART 3 - EXECUTION

3.01 TOLERANCES

A. Thickness indicated or specified are nominal within standard tolerances. Maximum size of vertical panes shall not exceed the following:

Float Thickness:	1/8 inch	3/16 inch	1/4 inch
Maximum Areas in Square Feet:	9	16	20

When exceeding these square foot measurements glass is to be safety glazed.

3.02 INSTALLATION, GENERAL

A. Glazed cabinet doors, windows, transoms, and fixtures, not otherwise noted or indicated, shall be glazed with clear float glass. Room or entrance doors shall be glazed with clear wire glass with impact film.

B. Obscure glass in exterior openings shall be installed with smooth side of glass to weather. Patterned glass shall be installed with pattern running vertically, unless otherwise indicated.

C. Glazing tapes or sealants shall be installed wherever glass contacts wood or metal surfaces. Width of strips shall be as required.

D. Glazing compound shall be neatly and cleanly installed in straight lines, even with inside edge of sash members. Thumb puttying is not permitted.

E. Display Cases and Sliding Glass Doors in Casework: Glass in display cases shall be ¼ inch clear laminated glass as indicated. Edges of glass shall be rounded and polished.

F. Serving windows in cafeterias with speak holes shall be laminated safety glass.

G. Glazing Aluminum Sash: Glazing material in aluminum sash shall be installed in compound and secured in place with aluminum glazing beads. In addition, horizontal beads shall be installed with 6-inch by 1 inch, type A, self-tapping, stainless steel, Phillips-head screws, installed into pre-drilled, counter-sunk holes and spaced 2 inches from each end and 9 inches on centers.

H. Speak holes shall be installed according to glass manufacturer's written recommendations.

3.03 INSTALLATION OF GLASS

A. Conform to requirements of GANA Glazing Manual.

B. Provide edge blocking to comply with requirements of referenced glazing standard, except where otherwise required by glass unit manufacturer.

C. Provide compressible filler rods or equivalent back-up material to prevent sealant from extruding into glass channel weep systems, from adhering to back surface of joints and to control depth of sealant for optimum performance.

D. Force sealants into glazing channels, in manner to eliminate voids and to ensure complete bond of sealant to glass and channel surfaces.

E. Tool exposed surfaces of sealants to provide for drainage away from glass. Install pressurized tapes and gaskets to protrude slightly out of channel to eliminate dirt and moisture pockets.

F. Where dry glazing of aluminum frame is indicated or permitted, provide vinyl glazing channels installed in accordance with frame manufacturers written recommendations. Do not stretch channels. Miter corners.

G. For tape glazing, furnish tape of thickness to provide approximately 30 percent compression. Cut tape to proper length and install to permanent stops, the entire length of the head and sill first, then to jambs. Butt tape together with no overlap and remove paper backing. Install glass on setting blocks at quarter points and maintain uniform glass edge clearance around entire perimeter of glass. Maintain manufacturer's

recommended edge clearance and bite on glass. Install glass firmly into tape with a slight lateral movement to assure proper adhesion. Install tape to removable stop with evenly distributed firmness, smoothing out wrinkles in tape. Secure removable stop in proper position so tape makes contact with glass as stop is installed, forcing contact with glass and completely sealing joint. Remove excess tape from both sides at slight angle oversight line. Do not undercut.

H. Glass in Wood Frames: Install glass with glazing points and setting blocks as required. Seal glass with glazing compound and secure with wood stops. Install stops with fine finishing nails and set for putty stopping.

I. Patterned Glass: Install glass with one patterned smooth surface on the weather side.

J. Wire Glass: Install glass for fire doors in accordance with installation requirements of NFPA 80.

K. Laminated Glass: Sashes, which are to receive laminated glass, shall be weeped to the outside to permit water in the channel to drain from the frame.

L. Unframed Mirrors: Walls shall be clean, dry, plumb, rigid and smooth. Install mirror backing paint to back of mirror and to edges. Install mirror bond coat over painted backing, wood backing, concrete and masonry to receive mirrors. Bond coat is not required over vitreous surfaces. Install sufficient mirror mastic coverage when mirror is installed. Mirror mastic will be applied 4 inches from edge and at a maximum of every 12 inches at the size of a golf ball. Install mirror into place, providing 3/16 inch clearance between mirror and substrate. Support mirrors with temporary edge channels to allow mastic set-up and provide permanent top and bottom edge channels.

M. Framed Mirrors: Walls shall be clean, dry, plumb, rigid and smooth. Install mirrors with concealed mounting devices, and secure with concealed screws on bottom of mirror. Conform to manufacturers written recommendations.

3.04 PROTECTION AND CLEANING

A. Protect exterior glass from breakage by furnishing crossed streamers attached to framing and away from glass surface. Do not directly install markers to glass surfaces. Remove non-permanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove immediately by method recommended by glass manufacturer.

C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less often than once a month, for build-up of dirt, scum, alkali deposits or staining. When examination reveals presence of these forms of residue, remove by method recommended by glass manufacturer. Glazing, which cannot be cleaned to a required condition, shall be deemed defective Work.

D. Remove and replace glass, which is broken, chipped, cracked, abraded, or damaged during construction.

E. Remove protective covering from thermoplastic not more than 4 days before Substantial Completion, and immediately before cleaning. Methods of final cleaning and finishing shall be as prescribed by thermoplastic glazing publications referenced above.

F. Wash glass on both faces not more than four days before Substantial Completion. Wash glass by method recommended by glass manufacturer. Do not furnish harsh cleaning agents, caustics, abrasives, or acids for cleaning. Polish glass both sides and leave free of soil, streaks, and labels.

3.05 CLEAN UP

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

3.06 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 09 2423

CEMENT PLASTER AND METAL LATH

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Lath and Portland cement plaster and stucco.

2. Lath and scratch coat of Portland cement plaster as a substrate for ceramic wall tile.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 03 3000 – Cast-in-Place Concrete.

3. Section 04 2200 – Concrete Unit Masonry.

4. Section 05 4000 - Cold Formed Metal Framing.

5. Section 06 1000 - Rough Carpentry.

6. Section 06 1643 – Gypsum Sheathing.

7. Section 07 2100 – Thermal Insulation.

8. Section 07 2719 – Plastic Sheet Air Barriers.

9. Section 07 6000 – Flashing and Sheet Metal.

10. Section 09 2216 - Non-Structural Metal Framing.

11. Section 09 2427 – Smooth Cement Plaster for Murals.

12. Section 09 3013 - Ceramic Tiling.

1.02 SYSTEM DESCRIPTION

A. Three coat 7/8” cement plaster with a fiberglass reinforcing mesh embedded into a polymer-modified base coat over the cured brown coat on metal lath over water resistive barrier over plastic sheet air barrier over sheathing over metal studs.

B. Soffits and ceilings: Three coat 7/8” cement plaster on metal lath with a fiberglass reinforcing mesh embedded into a polymer-modified base coat over the cured brown coat over suspended metal framing.

C. One coat cement plaster base for ceramic tile installation.

1.03 REFERENCES

A. ASTM International (ASTM):

1. ASTM A153 – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

2. ASTM A510 - Standard Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel, and Alloy Steel.

3. ASTM A641 – Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.

4. ASTM A653 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

5. ASTM C150 – Standard Specification for Portland Cement.

6. ASTM C206 – Standard Specification for Finishing Hydrated Lime.

7. ASTM C841 - Standard Specification for Installation of Interior Lathing and Furring.

8. ASTM C847 - Standard Specification for Metal Lath.

9. ASTM C897 – Standard Specification for Aggregate for Job Mixed Portland Cement-Based Plasters.

10. ASTM C926 – Standard Specification for Application of Portland Cement-Based Plaster.

11. ASTM C932 - Standard Specification for Surface-Applied Bonding Compounds for Exterior Plastering.

12. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.

13. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.

14. ASTM C1063 - Standard Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster.

15. ASTM C1116 – Standard Specification for Fiber-Reinforced Concrete.

16. ASTM E1190 – Standard Test Methods for Power-Actuated Fasteners Installed in Structural members.

B. Federal Specifications (FS):

1. FS FF-N-105: Nails, Brads, Staples and Spikes: Wire, Cut and Wrought.

2. UU-B-790A: Building Paper, Vegetable Fiber: (Kraft, Waterproofed, Water Repellent, and Fire Resistant).

C. International Code Council (ICC):

1. ICC-ES AC11: Acceptance Criteria for Cementitious Exterior Wall Coatings.

2. ICC-ES AC 191: Acceptance Criteria for Metal Plaster Bases (Lath).

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's product data for each material and component proposed for installation.

B. Plaster Samples: Submit minimum 48-inch by 48-inch samples of each stucco and Portland cement plaster texture for review. Samples shall be representative of texture, color, and proposed fabrication and finish quality. Maintain reviewed Samples on Project site for reference.

C. Accessories Samples: Submit 12-inch long samples of metal lath accessories: control joints, expansion joints, corner reinforcements, reveals and screeds.

D. Certificates: Submit test reports or ICC Evaluation Reports indicating that materials are in compliance with CBC requirements. Cementitious materials shall meet the acceptance requirements of ICC AC11, and metal lath the acceptance requirements of ICC AC191.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: A firm which has at least five years-experience working on projects of similar size and scope.

B. Mock-ups:

1. Constructed separately from the building but on Project site.

2. Constructed as part of the building.

3. Provide a mock-up at least 10-foot wide by 10-foot high. Include at least one control joint and, corner condition and one window opening flashing. Locate where indicated by the ARCHITECT.

4. Mock-up shall be constructed by the same personnel who will be erecting the different components of the wall assembly on the project, overseen by the same personnel who will be acting as acting as supervisors during actual construction, and built with the same construction techniques and materials that will be used on the project.

C. Pre-Installation Conference: CONTRACTOR shall coordinate and conduct pre-installation conference in accordance to Section 01 3119, Project Meetings, to review the progress of construction activities and preparations for the installation of metal lath and cement plaster and other related work of this Section.

1.06 DELIVERY, STORAGE AND HANDLING

A. Store weather sensitive materials under cover, off the ground, and kept in a dry condition until ready for use.

B. Deliver materials to the Project site in manufacturer's sealed and labeled packages.

1.07 PROJECT CONDITIONS

A. Conform to the requirements of ASTM C926.

B. Do not apply exterior plaster when the ambient temperature is less than 40 degrees F, or when a drop in temperature below 40 degrees F is expected within 24 hours after application.

C. Do not apply plaster to frozen surfaces or surfaces containing frost.

D. Do not use frozen materials in the mix.

E. Protect plaster coats against freezing for a period of not less than 24 hours after application.

PART 2 - PRODUCTS

2.01 METAL LATH AND WEATHER RESISTIVE BACKING

A. Metal Lath:

1. Walls and Ceilings: Diamond mesh expanded metal lath, in conformance to ASTM C847, without paper backing. 3.4 pounds per square yard, hot-dip galvanized coating G60 in accordance with ASTM A653. Alabama Metal Industries Corporation (AMICO), California Expanded Metal Products Company (CEMCO), ClarkDietrich, Marino-Ware, or equal.

   a. 3.4 Expanded Metal Lath V-grooved self-furring type for installation over sheathing. Lath shall be furred out a minimum of 1/4 inch when installed over a solid surface in accordance with DSAIR 25-4.

   b. Flat type for installation over open stud framing.

2. Walls: Self-furring Welded Wire Lath: Weight 1.95 pounds per square yard, with Class 1 galvanized coating in conformance to ASTM A641. Structa Mega Lath per ICC ESR-2017, as manufactured by Structa Wire Corp, or equal.

3. Walls & Ceilings: Self-furring Welded Wire Lath: Weight 2.2 pounds per square yard, with Class 1 galvanized coating in conformance to ASTM A641 with heavy perforated Kraft paper. V-Truss per ICC ESR-2017, as manufactured by Structa Wire Corp, or equal.

B. Water Resistive Barrier Backing for Metal Lath:

1. Two layer of asphalt saturated, water resistant Kraft paper backing conforming to Fed Spec UU-B-790A and ASTM E2556 Type II, Super JumboTex manufactured by Henry, Davis Wire, GMC Paper Products, or equal. Furnish for exterior plastering (except on soffits and ceilings), and for mortar-set ceramic wall tile.

C. Self-Adhered Flashing:

1. Compatible with the Plastic Sheet Air Barrier, minimum 25 mils thick, self-sealing and waterproof.

2. Adhesives, primers and sealers for self-adhered flashings and water repellant backing shall be as recommended by manufacturer for installation with specified products and substrates and shall be approved by the OWNER's Office of Environmental Health and Safety (OEHS).

2.02 METAL LATH ACCESSORIES

A. Materials: Minimum 0.0172-inch galvanized steel or 0.0207 zinc alloy with expanded wings. PVC is not permitted. Furnish casing beads, expansion and control joints, weep and vent screeds.

B. Manufacturers: Alabama Metal Industries Corporation (AMICO), California Expanded Metal Products Company (CEMCO), ClarkDietrich, Stockton Products, Marino-Ware, equal.

C. Products:

1. Exterior Stress Relief Joints: Sizes and profiles, indicated or required. Control joints shall have expanded wings when attachment flange is installed above the primary water-resistant barrier.

2. Expansion Joints: Two piece sections designed to accommodate expansion, contraction and shear forces. Industry generic name: M-Slide Expansion Joint 2 piece joint.

3. Control Joints: One-piece sections, with flange designed to engage plaster. Grounds shall provide full 7/8-inch thickness of cement plaster. Industry generic name: XJ-15.

4. Soffit Drip Screed: Similar to Stockton Products No. 5, with key holes.

5. Casing Beads: Expanded or standard flange type with 7/8-inch grounds to establish plaster thickness. Industry generic names: J-Mold or # 66.

6. Welded Wire Corner Reinforcement: 2-1/2-inch wire wings square or bullnose. Industry generic name: CornerAid.

7. Inner Corner Reinforcement: Shaped reinforcing expanded metal with 3-inch legs, for angle reinforcement. Industry generic name: Cornerite.

8. Lath Reinforcement: Flat expanded metal lath reinforcing units. Industry generic name: Striplath.

9. Outside Corner Reinforcing: 2 1/2" legs Class 1 Galvanized Coating complying with ASTM A641. VTruss Straight Corner per ICC ESR-2017, as manufactured by Structa Wire Corp, or equal.

10. Ventilating Screeds: Soffit, attic, fascia, edge, channel and expansion channel vent screeds, perforated web type, with integral plaster grounds, of sizes indicated on drawings.

11. Foundation Weep Screeds: Integral plaster ground and weep screed; 3-1/2" minimum attachment flange. Industry generic name: #7 Weep Screed.

12. Foundation Casing at Walls with Continuous Insulation: Custom shaped galvanized steel "J" mold with weep holes. Width shall be sized to accommodate insulation thickness plus 7/8-inch plaster.

2.03 LATH FASTENERS

A. Fasteners through Continuous Insulation: Fastener spacing as indicated on drawings.

1. Wood Studs: Fasteners shall be corrosion resistant screws in conformance to CBC Chapter 26.

2. Metal Studs: Corrosion resistant coated wafer head steel **[#8] [#10]** screws with length that penetrates framing steel thickness plus three threads minimum.

B. Fasteners at Locations with no Continuous Insulation:

1. Wood Studs: Fasteners shall be corrosion resistant.

a. Nails: In accordance with FS FF-N-105, 0.113 with a 3/8-inch diameter head with length that penetrates wood framing (exclusive of sheathing) 3/4 inch minimum.

b. Screws: Type A, in accordance with ASTM C1002, length that penetrates wood framing (exclusive of sheathing) 3/4 inch minimum.

c. Staples: In accordance with FS FF-N-105. Minimum ¾-inch crown, 0.053-inch steel. Staples shall have sufficient length to penetrate studs at least 3/4 inch.

2. Metal Studs: Wafer head type S or S-12, or modified truss (with large head and low profile with surface area needed to attach wire lath to metal studs), corrosion

resistant, with length to penetrate framing steel thickness plus three threads minimum.

a. Screws for fastening to steel members from 0.033 inch to 0.112 inch in thickness shall be in accordance with ASTM C954.

b. Screws for fastening to steel members 0.033 inch in thickness and less shall be in accordance with ASTM C1002.

C. Fasteners for Concrete and CMU Substrates: Power Actuated Fasteners: For attachment of lath to concrete and concrete masonry, recommended by manufacturer for the specific use intended. Minimum 3/4-inch long hardened drive style pin with a 1/2-inch diameter style washer. Fasteners shall be Fasteners shall be corrosion resistant and provide minimum withdrawal resistance of 50 pounds minimum.

D. Wire: Wire for fastening lath to supports, tying ends and edges of lath sheets, and securing accessories to lath, 0.0475-inch diameter (# 18 wire). Galvanized soft-annealed steel wire in conformance to ASTM A641.

2.04 MATERIALS FOR SUSPENDED CEILLINGS

A. Main Runners and Cross Furring Channels: Cold-formed channels made from steel with minimum 33,000 psi yield strength 0.0538-inch minimum bare steel thickness. Channel shall have a protective G60 galvanized coating conforming to ASTM A653.

1. Main Runners: [**in depth indicated**] [**1-1/2 inches deep**] [**2 inches deep**] [**2-1/2 inches deep**].

2. Cross Furring: 3/4 inch deep.

B. Wire: Galvanized soft-annealed mild steel wire in conformance to ASTM A641, Class 1 coating. Ultimate stress value of 60,000 psi and design value not to exceed 24,000 psi per DSA IR 25-1.

1. Hanger wire for suspended ceilings, minimum 0.1620 (8 gauge), 0.135-inch diameter (10 gauge), and 0.106 (12 gauge).

2. Wire for saddle-tying cross furring to main runners, 0.0625-inch diameter (16 gauge) for single strand tying and 0.0475 (18 gauge) for double strand tying.

C. Hangers:

1. Rod Hangers: ASTM A510, mild carbon steel, hot dip galvanized per ASTM A153.

2. Flat Hangers: Commercial-steel sheet, 1 by 3/16 inch with G60, hot-dip galvanized zinc coating per ASTM A653.

3. Ceiling Clips: Commercial steel sheet, 3/4-inch wide minimum by 12 gauge minimum, with G60, hot-dip galvanized zinc coating per ASTM A653.

D. Hanger Attachments to Concrete: Power-actuated fasteners that use explosive powder, gas combustion, or compressed air or other gas to embed fasteners in concrete and that are suitable for application indicated. Fabricated from corrosion-resistant materials, with clips or other devices for attaching hangers. Capable of sustaining, without failure, a load equal to 10 times that imposed by construction as determined by testing according to ASTM E1190 by a qualified independent testing agency.

2.05 PLASTER MATERIALS

A. Factory Blended Portland Cement Plaster Basecoats and Finish: Products as fabricated by California Stucco, La Habra, Parex, Shamrock Stucco, Merlex, Omega Stucco, Inc., , Spec Mix, Quikrete, CTS, Sika, or other manufacturer member of the Stucco Manufacturer's Association (SMA).

1. Material Standards: Shall conform to ASTM C926.

2. Three Coat Systems:

   a. Scratch and Brown Coats: Factory blended fiber reinforced plaster and sand mix conforming to ASTM C926, and requiring only the addition of water. Total thickness of coats: 3/4 inch.

   b. Finish Coat: Factory blended cementitious stucco color coat, integrally colored with fade-resistant pigments. Coat thickness 1/8 inch.

      1) Finish: **[Light Dash] [Light Sand]**

      2) Color: As selected by ARCHITECT.

3. Two Coat Systems:

   a. Brown Coat: Factory blended fiber reinforced plaster and pre-mixed with sand conforming to ASTM C926, and requiring only the addition of water. Coat thickness 3/8 to ½ inch.

   b. Finish Coat: Factory blended cementitious stucco color coat, integrally colored with fade-resistant pigments. Coat thickness 1/8 inch.

      1) Finish: **[Light Dash] [Light Sand]**

      2) Color: As selected by ARCHITECT.

4. Crack Isolation System:

   a. Fiberglass Reinforcing Mesh (Lamina): 4.5 oz. Mesh, alkali resistant, compatible with plaster finish.

   b. Base Coat: Polymer-modified cement base/skim coat, compatible and approved by plaster finish coat manufacturer.

B. Water: Clean, potable and from domestic source.

C. Plaster Bonding Agent: In conformance to ASTM C932 and formulated for exterior use. "Weld-Crete", manufactured by Larsen Products Co., or equal.

D. Bonding Agent: 100% acrylic emulsion additive, Parex USA Adacryl Admix & Bonder or equal.

E. Flashing: Single ply self-adhesive waterproofing membrane as manufactured by W.R. Grace Company, Jiffy-Seal by Protecto Wrap, W.R. Meadows, Inc., or equal. Furnish for installation behind stress relief joints and backing on horizontal and vertical surfaces exposed to weather; under metal copings and flashings; and window jambs and sills.

F. Continuous Insulation: Refer to Section 07 2100, Thermal Insulation.

G. Miscellaneous Materials: Provide additional components and materials required for a complete installation.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that installation of plastic sheet air barrier and flashings, per Section 07 2719, and continuous insulation per Section 07 2100 are complete before starting Work of this Section.

3.02 INSTALLATION-OF WATER RESISTIVE BARRIER

A. Install one layer of water resistant barrier over air barrier. Install Kraft paper horizontally with each course weather lapped 2 inches over layer below and 6 inches on ends.

B. Repair and seal tears and holes in water resistive barrier prior to installing lath.

C. Install single ply self-adhesive flashing per manufacturer‘s recommendations in areas indicated on the Drawings and at locations where the plaster will be in less than a 60 degree plane or where water can pond, with a six inches extension onto the vertical wall surface. Apply self-adhesive flashing in a “shingle fashion”.

3.03 INSTALLATION OF SUSPENDED CEILING METAL FURRING

A. Install ceiling metal furring in conformance to drawings and ASTM C1063.

B. Space **[hanger wires],[rod hangers], [flat hangers]** as indicated on drawings along carrying channels and within 6 inches of ends of carrying channel run. Connect to underside of structure as indicated on drawings.

C. Install 1-1/2 inch carrying channels at spacing indicated on drawings and within 6 inches of walls, positioned for proper ceiling height. Level and secure with hanger wire saddle-tied along channel. Provide one inch clearance between runners and abutting walls. At channel splices interlock flanges, overlap ends 12 inches and secure each end with 16 gauge tie wire or double-strand 18 gauge tie wire.

D. When flat hangers are used, bend tightly hanger around main runners and carried up and above the runners and fasten through with 3/8-inch round-head stove bolts. Nuts of bolts shall be drawn up tight. Smooth or threaded rod hangers shall be fastened to the runners with special attachments appropriate to the design.

E. Erect 3/4 inch cold-rolled furring channels at right angles to 1-1/2 inch carrying channels, and secure to furring channels by wire-tying with double-strand 18-gauge wire. At splices nest furring channels eight inches and securely wire-tie each end with single strand 16-gauge wire or double-strand 18 gauge wire.

F. Fasten wires with four (4) tight turns. Make all tight turns within a distance of one and one-half (1-1/2) inches.

3.04 INSTALLATION OF LATH AND LATH ACCESSORIES

A. Exterior Lathing, General: Install in conformance to ASTM C1063 and CBC Chapter 25.

B. Install longest length of metal lath as possible. Do not use pieces shorter than six feet in length. Attach lath to framing supports not more than seven (7) inches apart along framing supports only.

C. Apply metal lath with long dimension at right angles to framing or furring supports and lap lath a minimum 1/2 inch at sides and minimum 1 inch on ends. Lap wire lath minimum one mesh on sides and ends. Stagger vertical laps at least 16 inches. Lath shall lap flanges of solid flanged trim accessories by a minimum of 50%.

D. Ends of lath on open framing (unsheathed) shall occur over supports. Where necessary, install additional studs to provide support for lath ends and support for separate flanges of stress relief joints.

E. Install trim accessories plumb, level and straight, attachments should not exceed 24 inches on center.

F. Lath shall not be continuous through control joints. Two-piece Expansion Joints shall have the lath cut, be attached to framing and lath lap the flanges. Place horizontal and vertical control joints as indicated on elevations. Water resistant barrier shall be continuous behind all control joints and vertical reveals.

1. An expansion or control joint occurs in surface of construction directly behind plaster membrane.

2. Distance between control joints exceed 10-feet in either direction.

3. Area within panels exceed 100 square feet.

G. Install a weep screed at or below foundation plate line on exterior stud walls in conformance to CBC section 2512. Screed shall be of a type permitting water to drain to exterior of building. Weather-resistant barrier and exterior lath shall cover and terminate on attachment flange of screed.

H. Powder Actuated Fasteners shall be used on concrete/masonry substrates when lath is applied. Fasteners shall be driven home and avoid spalling of concrete. Pattern shall simulate that of framed walls.

I. Interior Lathing, General: Install in conformance to ASTM C841 and CBC Chapter 25.

J. Metal lath shall be fastened to metal supports with specified fastener spaced not more than 6 inches apart or with other recognized fasteners.

3.05 PLASTER APPLICATION - GENERAL

A. Verify that installation of lath is complete prior to start plastering. Notify the Technical Service Information Bureau upon completion of lath and prior to start of plaster to schedule a lathing installation compliance meeting. TSIB will submit a written field observation report delineating any deficiencies. Site meeting shall be coordinated with OAR.

B. Proportion, mix, apply, and cure plaster in conformance with ASTM C926 and CBC Chapter 25.

C. Install each plaster coat to an entire wall or ceiling panel without interruption to avoid cold joints and abrupt changes in uniform appearance of succeeding coats. Wet plaster shall abut existing plaster at naturally occurring interruptions in plane of plaster (such as corner angles, openings and control joints) wherever possible. Cut joining, where necessary, square and straight and at least 6 inches away from a joining in preceding coat.

D. Provide sufficient moisture or curing methods to permit continuous and complete hydration of cementitious materials, considering climatic and Project site conditions. If water cured, each basecoat shall be continuously damp for at least 48 hours, including weekends and holidays. Other curing methods, spray applied curing compounds, or OEHS approved equal are permitted.

E. Provide sufficient time between coats to permit each coat to cure or develop enough rigidity to resist cracking or other damage when next coat is installed.

3.06 EXTERIOR PLASTERING

A. Concrete surfaces, except where noted as "Exposed Concrete" or "Painted Concrete," shall be finished with stucco **[light dash] [light sand]** finish coats, as specified.

B. Preparation of Concrete and Masonry Surfaces:

1. Exterior concrete and masonry surfaces to be plastered shall be free of oily or waxy substances, and loose or foreign material. Uniformly spray with nozzle-type water spray at least 12 hours before installation of plaster or as required to control suction.

2. Concrete and masonry surfaces to receive two coat application of 5/8 inch thick Portland cement plaster shall be treated with bonding agent. This surface preparation shall not be installed instead of a brown coat of plaster.

3. Concrete surfaces to receive stucco dash finish shall be lightly sandblasted to provide a roughened surface.

4. Verify that lath has been installed securely and that grounds, screeds, casing beads and other accessories are straight, in correct position, and securely fastened in place.

C. Mixing: Provide plaster mix: cementitious materials and aggregate in proportions specified, furnishing only sufficient water to obtain proper consistency before installation. Do not mix any more material at any time than can be installed within 1/2 hour after mixing. Do not re-temper. Add only enough water to allow proper application of cement plaster.

D. Application:

1. **[Dash] [Sand]** Bond Coat: on concrete or masonry surfaces, leave undisturbed, and maintain damp for at least 24 hours following installation. Dash bond coat may be omitted when liquid bonding agent is used.

2. Scratch Coat: Install with sufficient material to completely cover laths and scratch across supports.

3. Brown Coat: Rod to a straight, true, even within ¼-inch tolerance in 5 feet of surface and consolidate surface with a wood or neoprene float. Surface shall be left open and course, suitable to receive finish coat.

4. Stucco Finish Coat: Install in two coats to a total thickness of 1/8 inch, each coat covering surface uniformly. First coat shall completely cover basecoat with uniform color. Second color shall provide a uniform texture.

a. First finish coat shall be installed adequately to cover surface and fill minor imperfection in the brown coat.

b. The second coat shall be installed by doubling back same day, when first coat is sufficiently dry.

c. Over concrete surfaces, second coat shall be installed 24 hours after installation of first coat. In warm weather, first coat shall be cured by light water spray after material has set.

d. Protection: Protect those surfaces, which are not to receive dash finish coats. Such surfaces shall be shielded and shall have any sand left from dashing operation removed.

e. Provide smoothed plaster finish to comply with ADA requirements behind handrails.

E. Curing Exterior Plaster: Adhere to current edition of CBC for curing requirements.

F. Option for Machine Application, Scratch and Brown Coats: Instead of hand installed plaster, the furnishing of plastering machines for interior or exterior scratch and brown

coats or single base coat is permitted. Machine installation shall be in accordance with the following:

1. Qualifications: Provide proper equipment and apparatus.

2. Apparatus: Pump shall be equipped with an air pressure gage or factory installed blow-off valve and required safety devices. Hoses and connections shall be tight and pressure shall be maintained constant.

3. Proportion and Application: Proportioning, mixing, number of coats and thickness shall be same as specified for hand application. Cement aggregate and water shall be mixed to plaster machine. Plaster mix shall be projected into and conveyed through a hose to the nozzle at end of hose and deposited by pressure in its final position ready for manual straightening and finishing.

4. Follow-Up: Perform scoring operation of plaster, based on settings and drying conditions at time of installation. Curing shall be as previously specified.

5. Protection: Before installing any plaster, thoroughly protect other adjacent Work.

3.07 INTERIOR PLASTERING

A. Portland Cement Plaster, Scratch Coat: Install to vertical lathed surfaces where ceramic tile is indicated and install Portland cement plaster finishes where indicated.

B. Preparation for Plastering:

1. Verify that lath has been installed securely and that grounds, screeds, casing beads and other accessories are straight, in correct position, and securely fastened in place.

2. Bonding Agent: Install to vertical concrete or masonry surfaces to receive ceramic tile.

3. Concrete and masonry surfaces on which suction must be reduced shall be sufficiently moistened before plastering operations start.

4. Install galvanized expanded metal lath on supports in conformance with requirements of ASTM C1063 and CBC.

C. Number of Coats and Thickness: Interior plastering to receive paint shall consist of the following, with thickness measured from face of supports or surface:

1. On Concrete or Masonry: two coats, brown and finish, 5/8 inch thick.

2. On Metal Lath: three coats, scratch, brown and finish 7/8 inch thick.

D. Proportions for Interior Plaster: Adhere to current edition of CBC for proportions and curing requirements.

1. Admixtures shall be proportioned, mixed and installed in accordance with printed directions of manufacturer.

E. Mix factory blended plaster using only sufficient water to obtain proper consistency before installation. Do not mix any more material at any time than can be installed within ½ hour after mixing. Do not allow material to remain in mixer or mixing boxes overnight.

F. Application:

1. Dash Bond Coat: Dash on surface, leave undisturbed, and maintain damp at least 24 hours following installation. Omit Dash bond coat when liquid bonding agent is used.

2. Scratch Coat: Install with sufficient material to form good keys, thoroughly cover lath, and cross scratch.

3. Brown Coat: Rod to a straight, true and even surface. Brown coat must be 1/16 inch below face of grounds to provide adequate space for finish coat. Float surface to increase density.

4. Smooth Finishes: Install two coats for a thickness of 1/8 inch. Install second coat after finish coat begins to set. Install to a true, even plane and trowel to a smooth finish, free from blemishes.

5. Float Finishes: Install to a thickness between 1/16 inch to 1/8 inch, install and uniformly float to true planes.

6. Plaster Screeds: On metal lath or wire fabric lath, install plaster screeds wherever permanent grounds are too far apart to serve as guides for rodding.

G. Curing Interior Plaster: Adhere to requirements of CBC.

3.08 QUALITY CONTROL

A. Finish interior and exterior plaster to a uniform texture, free of imperfections and flat within 1/4 inch in 5 feet. Form a suitable foundation for paint and other finishing materials. Avoid joining marks in finish coats.

3.09 REPAIR OF DAMAGED PLASTER

A. Plaster Detached from Framing:

1. Remove loose and broken plaster.

2. Repair or replace damaged water-resistant backing and lath in compliance with specified standards.

3. Remove stucco finish from surrounding area in the same plane by sandblasting.

4. Install a scratch coat and a brown coat mixed with liquid bonding agent instead of water to the areas devoid of plaster.

5. Install a coat of liquid bonding agent to entire wall plane.

6. Install a 1/8-inch thick stucco finish coat to entire wall plane and match existing texture and color.

B. Cracked Plaster 1/8 inch to 1/2 inch:

1. Remove loose material from crack with a wire brush.

2. Fill crack with slurry of stucco and liquid bonding agent.

3. Install a coat of liquid bonding agent to entire wall plane.

4. Install 1/8-inch thick stucco finish to entire wall plane and match existing texture and color.

C. Cracks Larger than ½ inch - Painted:

1. Remove loose material from crack with a wire brush.

2. Fill crack with slurry of one part Portland cement to three parts masonry or stucco sand and liquid bonding agent to match existing texture of adjacent surface.

3. Paint entire wall plane, color to match existing.

4. Where patching of plaster over existing lath is feasible, fasten loose lath and install new lath with nails at 6-inch centers. Where metal is furnished, lap new lath over existing 6 inches and tie at 6-inch centers. Install paper backings as required, shingled into existing.

5. Patching of Holes, Cracks, and Gouges: Holes, cracks, gouges, missing sections, and other defects in existing improvements shall be patched. For holes over 1 inch in size, cut small sections of lath and place in opening attached to existing material. Install 3 coats of plaster. For holes one inch and smaller, install bonding agent to existing surfaces and neatly fill hole with plaster, installing necessary coats to match adjacent surfaces, eliminate cracks and match existing surface texture. Cracks, gouges, and other defects shall be filled with plaster or spackle as required and neatly finished to match adjacent existing improvements.

3.10 CLEANING

A. Remove rubbish, debris, and waste material and legally dispose of off the Project site.

3.11 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 09 2900

GYPSUM BOARD

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Gypsum board wall and ceiling systems.

2. Gypsum Liner.

3. Cement Tile Backer Board.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 06 1000 - Rough Carpentry.

1.02 PROJECT REQUIREMENTS

A. Design Requirements: Provide systems capable of resisting deflection as required by CBC and authorities having jurisdiction.

B. Regulatory Requirements: Comply with CBC requirements for design and installation.

1.03 SUBMITTALS

A. Shop Drawings: Submit Shop Drawings indicating complete suspension system including connections, anchorage, and trim features.

B. Material Samples: Submit 18 inch by 18 inch Samples of the texture coat of gypsum board panels with edges taped.

C. Product Data: Submit manufacturer's catalog data for each product proposed for installation.

1.04 QUALITY ASSURANCE

A. Comply with following as a minimum requirement:

1. ASTM C475 – Standard Specification for Joint Compound and Joint Tape for finishing Gypsum Board.

2. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board.

3. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications.

4. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.

5. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.

6. ASTM C1325 - Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cementitious Backer Units.

7. ASTM C1396 - Standard Specification for Gypsum Board.

8. ASTM C1629 - Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels.

9. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.

10. ASTM D3274 – Standard Test Method for Evaluating Degree of Surface Disfigurement of Paint Films by Microbial (Fungal or Algal) Growth or Soil and Dirt Accumulation.

11. Underwriters Laboratories (ULI) requirements and listings for fire-rated materials and products classification.

12. GA 214 - Gypsum wallboard finish shall conform to requirements of GA 214, Application and Finishing of Gypsum Panel Products, published by the Gypsum Association, and as specified herein.

13. GA 600 - Gypsum wallboard shall conform to requirements of GA 600 Fire Resistance Design Manual, published by the Gypsum Association.

14. American National Standards for the Installation of Ceramic Tile.

15. ANSI A118.9 - Specification for Cementitious Backer Units.

B. Qualifications: Installer shall have a minimum 5 years experience in installing and finishing gypsum board.

C. CHPS Low-Emitting Materials table: Materials submitted must meet the CHPS Low-Emitting criteria and be listed as Low-Emitting on the following web site: www.CHPS.net or be listed on UL website Greenguard.org as Greenguard Gold Certified

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original, factory sealed packages, containers or bundles bearing brand name and name of manufacturer.

B. Materials shall be kept dry. Gypsum wallboard shall be neatly stacked flat; avoid sagging and damage to edges, ends, and surfaces.

C. Fire-rated materials shall have fire classifications numbers attached and legible.

D. Provide all means necessary to protect gypsum board systems before, during, and after installation.

E. Gypsum wallboard showing any evidence of water damage shall not be installed. Gypsum wallboard showing evidence of water damage after installation shall be removed and replaced.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Georgia-Pacific.

B. National Gypsum Co.

C. U.S. Gypsum Co.

D. Or equal.

2.02 MATERIALS

A. Gypsum Board Type X (fire-resistant) or Type C or Type ULIX as required by fire rated design and acoustic requirements: 5/8 inch thick, 4-foot wide and up to 16-foot long conforming to ASTM C1396 with long edges tapered.

B. Impact Resistant Gypsum Board, Type X (fire-resistant): 5/8 inch thick or Type C as required by fire rated design and acoustic requirements, 4-foot wide and up to 16-foot long complying with the following:

1. Fire resistant rated gypsum core with additives to enhance impact resistance, faced with moisture and mold resistant paper and reinforcing fiber mesh. Comply with ASTM C1629 level 3 hard body impact resistance.

C. Mold and Water Resistant Gypsum Board, Type X (fire-resistant): (Use at elevator shaft interior), 5/8 inch thick 4-foot wide, up to 16-foot long conforming to ASTM C1396 with long edges tapered.

1. Resistance to Mold Growth: Minimum score of “10” when tested in accordance to ASTM D3273 and evaluated in accordance with ASTM D3274.

D. Gypsum Liner, Type X (fire-resistant): 1 inch thick 24-inch wide, up to 14-foot long, conforming to ASTM C1396 or C1658.

1. Resistance to Mold Growth: Minimum score of “10” when tested in accordance to ASTM D3273 and evaluated in accordance with ASTM D3274.

E. Cement Tile Backer Board: In addition to manufacturers listed in Article 2.01, James Hardie Building Products Inc.

1. Water resistant panels, 1/4 inch thick on horizontal and ½ inch thick on vertical surfaces, 4-foot wide and up to 8-foot long conforming to conforming to one of the following requirements:

a. Aggregated Portland cement board with polymer-coated, woven glass-fiber mesh embedded in front and back surfaces.

b. Cementitious board surfaced with fiberglass reinforcing mesh on front and back and complying with ANSI A118.9 and ASTM C1325.

2. Tile backer boards shall meet the following requirements:

a. Resistance to Mold Growth: Minimum score of "10" when tested in accordance to ASTM D3273 and evaluated in accordance with ASTM D3274.

2.03 ACCESSORIES

A. Metal Trim: Paper-faced metal drywall beads and trim meeting ASTM C1047, as manufactured by USG/Beadex, or equal. Trim units shall be of size and type to fit gypsum board construction and shall include corner beads, casings, edge trim and other shapes indicated and required. Provide 30 year warranty against edge cracking.

B. Joint Compound for gypsum board products: meeting the following requirements:

1. Shall conform to ASTM C475.

2. In areas subject to moisture after installation such as bathrooms and locker areas use setting type joint compound.

3. Interior areas not subject to moisture after installation use drying Type Joint compound.

C. Joint Tapes for gypsum boards: Shall conform to ASTM C475.

D. Joint mortar and Tape for Cement board.

a. Use type as recommended by cement board manufacturer

b. Fiberglass tape: Durock brand tile backer tape

c. Joint Mortar: Meet ANSI 118.4

E. Finishing Materials: Texture coat finish material shall be manufactured by U.S. Gypsum, Hamilton, or Highland Stucco and Lime Products, Inc., or equal.

F. Acoustical Sealant: Non-hardening, non-shrinking, for use in conjunction with gypsum board, as recommended by Board Manufacturer and conforming to ASTM C919. Sealant shall maintain fire and sound rating assembly.

G. Fasteners:

1. Self-drilling, self-tapping bugle-head drywall screws; in conformance to ASTM C1002. No. 6 Type S or S12, 1 5/8-inch long for metal framing,

2. Wood framing: Screws: Type W 1 5/8-inch minimum length for single-layer panels. Screws shall be furnished with a corrosion-resistant treatment.

3. Adhesive: as recommended by board manufacturer and in compliance to ASTM C557.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Metal Trim:

1. Provide corner beads at outside corners and angles, metal casing where gypsum board terminates at uncased openings, metal edge trim where board edges abut horizontal and vertical surfaces of other construction.

2. Install trim in accordance with manufacturer's directions with appropriate joint compound. Install trim in longest practical pieces.

B. Gypsum Board:

1. Install gypsum board in conformance with ASTM C840, fire rated design, and sound rating.

2. Gypsum board shall be cut by scoring and breaking or by sawing, working from face side. Where board meets projecting surfaces it shall be scribed and neatly cut. Unless conditions require otherwise, gypsum board shall be installed first to ceilings, then to walls. End joints shall occur over a support. Install panels of maximum practical length so a minimum number of end joints occur.

3. End joints shall be staggered and joints on opposite sides of a partition shall be arranged to occur on different studs. Joint layout at openings shall be installed so no end joints will align with edges of openings.

4. Except where specified otherwise, fasteners shall be spaced not less than 3/8 inch from edges and ends of gypsum board. Do not stagger fasteners at adjoining edges and ends.

5. Install gypsum board vertically or horizontal as permitted by specific UL Design at walls. Fasten board with drywall screws spaced not to exceed 8 inches on centers around perimeter of boards and 8 inches on centers on intermediate studs. Space screws at 8 inches on centers along top and bottom runners. Screws shall be driven to provide screwhead penetration just below gypsum board surface without breaking surface paper. Where electrical outlet and switch boxes are indicated, provide adjustable attachment brackets between studs.

6. Install gypsum board to ceiling framing with long dimension at right angles to furring channels, or wood framing members, and fasten with specified drywall screws or nails spaced 6 inches to 7 inches on centers across board. Screws or nails shall be not less than 1/2 inch from side joints and 3/8 inch from butt end joints. Abutting end joints shall occur over furring channels and end joints of boards shall be staggered. Support cutouts or openings in ceilings with furring channels.

7. Install access doors, furnished under another section, in correct location, plumb, or level, flush with adjacent construction, and securely fastened to framing.

C. Cement Board Backer System:

1. In shower areas, install water barrier in shingle-like manner to prevent water infiltration into stud cavity. Pre-cut all board to required sizes and make necessary cut-outs.

2. Install cement board in accordance with UL Design and SA-932. Install Cement board plumb and flat. Shim behind board as required.

3. Fasten cement board to steel studs spaced max. 16" o.c. and bottom runners with cement board fasteners spaced 8" o.c. maximum with perimeter fasteners at least 3/8" and less than 5/8" from ends and edges. Studs shall be not less than 20 gage.

4. Tape joints with cement board tape and joint mortar. Finished surface shall be level within 1/8" in 10".

3.02 TOLERANCES

A. System shall appear flat and monolithic with no exposed joints.

3.03 JOINT TREATMENT AND FINISHING

*At completion of specified taping and finishing, install one coat of drywall primer as specified hereafter

B. Levels: Install tape bedding compound, tape, and finishing cement on joints in wallboard as required for specified levels of finish.

C. Levels 2 through 5:

1. Install joint cement and finishing cement over screw heads. Treat all inside corners with joint cement, tape, and finishing cement. Treat outside corners with corner beads and finishing cement.

2. Provide metal casing beads at all edges of gypsum wallboard, which abut ceiling, wall, or column finish, and elsewhere as required, such as openings, offsets, etc. Install all exposed joints, trims, and attachments non-apparent following installation of paint or other finishes. If joints and fasteners are visibly apparent, correct defects as required.

3. Seal raw edges of plumbing openings and boards that have been cut to fit with sealing compound brushed on.

4. When entire installation is completed, correct and repair broken, dented, scratched or damaged wallboard before installation of finish materials by other trades.

D. Levels 3 and 4: Install one coat of drywall primer over entire surface prior to painting.

E. Level 5: Install one coat of skim coat over entire surface, followed by one coat of drywall primer over entire surface prior to painting.

3.04 REQUIRED LEVELS OF FINISH

A. Finishes shall conform to GA 214

B. Unless otherwise indicated or specified, levels of finish required shall be as follows:

1. Level 1: Plenum areas above ceilings, insides of shafts, and other concealed areas. Taping to be as required for fire rated assemblies.

2. Level 2: Water-resistant wallboard backing for high moisture areas to be covered with a water resistant surface other than tile, vinyl or paint, i.e stainless steel cladding etc.

3. Level 3: Backing for vinyl wall covering and adhered acoustic tile. Also, provide where textured finish is indicated.

4. Level 4: Exposed painted wallboard in classrooms, utility rooms, and similar spaces not requiring Level 5 finish.

5. Level 5: Exposed, painted wallboard in offices and corridors.

3.05 TEXTURE COAT

A. Spray install texture coat to interior gypsum board surfaces where indicated on Drawings.

B. Texture coat shall provide a uniform splatter pattern finish with an 80 percent minimum coverage of the entire surface area.

C. Provide protection from spray for interior surfaces of electrical boxes and wiring.

3.06 CLEAN-UP

A. Remove rubbish, debris, and waste materials and legally dispose of off Project site.

3.07 PROTECTION

A. Protect Work of this section until Substantial Completion.

END OF SECTION

SECTION 09 3013

CERAMIC TILING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Ceramic tile, waterproof membrane for tile, stone thresholds, thin set mortar, and mortar setting beds for floor and wall tile.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 03 3000 - Cast-In-Place Concrete.

3. Section 06 1000 - Rough Carpentry.

4. Section 08 1113 – Hollow Metal Doors Frames.

5. Section 09 2900 - Gypsum Board.

1.02 SUBMITTALS

A. Product Data: Manufacturer's product data, standard specifications, Safety Data Sheets, and other technical information for each product specified.

B. Material Samples: Manufacturer’s standard palette, indicating full range of tile colors, textures, and grout colors.

C. Mock-Ups: For each type, color, and texture, minimum one foot square or three full tile courses, on Plexiglas to demonstrate proper bond mortar and coverage; grout color, hardness and depth.

D. Manufacturer’s Instructions:

1. Manufacturer's preparation and installation instructions.

2. Maintenance instructions.

E. Product Certificates: Signed by manufacturer certifying that products furnished comply with requirements of this Specification.

1.03 REFERENCES

A. American National Standards Institute (ANSI)

1. A108, Specifications for the Installation of Ceramic Tile.

2. ANSI A118, Ceramic Tile Installation Materials.

3. ANSI A137.1, Standard Specifications for Ceramic Tile.

B. ASTM International:

1. ASTM A1064 - Standard Specification for Carbon Steel and Welded Wire Reinforcement, Plain and Deformed, for Concrete.

2. ANSI A326.3 - Test Method for Dynamic Coefficient of Friction of Hard Surface Flooring Materials.

1. ASTM C185 - Standard Test Method for Air Content of Hydraulic Cement Mortar.

2. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar.

3. ASTM C150 - Standard Specification for Portland Cement.

4. ASTM C206 - Standard Specification for Finishing Hydrated Lime.

5. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes.

6. ASTM C241 - Standard Test Method for Abrasion Resistance of Stone Subjected to Foot Traffic.

7. ASTM C503 - Standard Specification for Marble Dimension Stone.

8. ASTM C920 - Standard Specification for Elastomeric Joint Sealants

9. ASTM D226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.

C. Tile Council of North America (TCNA) – Current edition of “Handbook for Ceramic, Glass and Stone Tile installation”.

D. CHPS Low-Emitting Materials Table: Materials submitted for tile assemblies shall be listed as low emitting on the CHPS website www.CHPS.net.

1.04 QUALITY ASSURANCE

A. Qualifications:

1. Tile Manufacturer: Company specializing in ceramic tile, mosaics, pavers, trim units, and thresholds with five years minimum experience.

2. Installation System Manufacturer: Company specializing in installation systems/ mortars, grouts/ adhesives with ten years minimum experience.

3. Installer: Company specializing in installation of ceramic tile, mosaics, pavers, trim units and thresholds with five years experience with installations of similar scope, materials, and design.

E. Environmental Requirements: Adhesives, primers, caulk, sealants and liquid applied products shall be approved by the LAUSD Office of Environmental and Health Safety (OEHS), and meet the technical requirements specified in this Section.

F. Grade Certificate and Labeling: With each delivery of tile, furnish manufacturer's "Master Grade Certificate" to the OAR.

B. Source of Materials: Provide materials obtained from one source for each type and color of tile, grout, and setting materials.

C. Consistent Quality: Products shall be consistent in appearance and physical properties.

D. Comply with requirements of California Building Code and ADAAG.

1.05 PRE-CONSTRUCTION MEETINGS:

A. Prior to start of Work of this section and after approval of submittals, schedule an on-site meeting between CONTRACTOR, OAR, Project Inspector, and representatives of the material manufacturer and tile installer to review construction conditions and Drawings for conformance with the requirements of this Section for each substrate.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver tile and other materials in sealed containers, with manufacturer's labels intact.

B. Store materials in clean, dry and secure areas.

1.07 MAINTENANCE

A. Extra Materials: Provide the following in labeled manufacturers' cartons:

1. Five percent of each type and color of tile installed.

2. Ten linear feet of coved base and bullnose tile for each color installed.

3. Six units of each type and color of corner pieces.

1.08 WARRANTY

A. Manufacturer shall provide a five year material warranty. Installer shall provide a five year installation warranty.

B. For waterproofing, manufacturer shall provide a 10 year material warranty for waterproofing installation, tile setting, and grouting materials.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Tile: Standard Grade Products from the following manufacturers conforming to ANSI A137.1:

1. Dal-Tile Corporation.
2. American Olean Company.
3. Florida Tile, Inc.
4. Equal.

B. Installation Materials: Products and methods of the following manufacturers conforming to ANSI A137.1:

1. Laticrete International, Inc.
2. Custom Building Products.
3. MAPEI.
4. Siena Tile and Stone Installation Products.
5. Equal.

2.02 MATERIALS

A. Colors, Textures, and Patterns: Tile shall be from manufacturer's standard product line. 90 percent shall be from "price group 2", and "10 percent from price group 3", unless indicated otherwise. Tile trim and accessories shall match adjoining tile. Grout color shall match tile unless otherwise indicated.

B. Tile sizes: Tile sizes specified are modular dimensions unless otherwise indicated.

C. Portland cement mortar bed for floor, walls and shower areas:

1. Laticrete International, Inc., 3701 Fortified Mortar.
2. Custom Building Products, Quickrete Floor Mud.
3. MAPEI, Modified Mortar Bed.
4. OEHS approved equal mix per ANSI A108.1A.

D. Latex Portland cement bond mortar thin-set for tiles under 15" in one dimension on floor installations:

1. Laticrete International, Inc., 254 Platinum.

2. Custom Building Products, Porcelain Tile Professional Thin Set Mortar.

3. OEHS approved equal mix per ANSI 118.4.

E. Latex Portland cement bond mortar thin-set for tiles over 15” in one dimension on floors. For all tile on wall installations:

1. Laticrete International, Inc., Tri-Lite.

2. Custom Building Products, ProLite Premium LFT Mortar.

3. MAPEI, UltraLite Mortar.

4. OEHS approved equal mix per ANSI 118.15.

F. Waterproof Membrane: Cold-applied, single component liquid with embedded reinforcing fabric where recommended by manufacturer: Laticrete International, Inc. Hydro Ban Waterproof Membrane, Custom Building Products Red Guard Waterproof Membrane, or MAPEI Mapelastic Aqua Defense.

G. Reinforcing Wire Fabric: 2-inch by 2-inch, 16 by 16 gage, galvanized electrically welded wire reinforcing, per ASTM A1064.

H. Latex Portland Cement Grout: Laticrete International, Inc. Sanded Grout (1500 Series), Custom Polyblend Sanded Grout, Laticrete International, Inc. Unsanded Grout 1600 Series (for joints smaller than 1/8”), Custom Polyblend Unsanded Grout, or MAPEI Ultracolor Plus FA.

I. Cleavage Membrane and Wall Backing Paper: Cleavage membrane shall be 15-pound asphalt-saturated felt manufactured according to ASTM D226 Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.

J. Separation Material (for all sealed joints including perimeters): Quality Foam, QF 200 white, 3/8 inch wide by 5-inch high.

K. Backer Rod for sealants (for ceramic mosaic fields): Polyethylene foam, closed-cell, flexible and compressible, 3/16 inch diameter.

L. Cleaner and Sealer:

1. Cleaner and sealer shall be from one manufacturer, acceptable to tile and grout manufacturers. To establish quality, the Specification is based on Aqua Mix Inc. Equivalent products from Miracle Sealants Co., Watco Tile and Brick, MAPEI, or equal may be provided.

2. Cleaner: Aqua Mix Concentrated Tile Cleaner, neutral phosphate-free cleaner, Custom Building Products Tile Lab Concentrated Tile and Stone Cleaner, or Mapei Ultracare cleaner.

3. Sealer: Aqua Mix Penetrating Sealer, fungus- and bacteria-resistant, stain-resistant, and slip-resistant as specified for tile, Custom Building Products Tile Lab Surface Gard, Mapei Ultracare, or equal.

M. Sealants:

1. Sealant and primer shall be from one manufacturer, acceptable to tile and grout manufacturers. See Section 07 9200 - Joint Sealants.

2. Ceramic Mosaic Tile: One-Part, Mildew-Resistant Silicone Sealant: ASTM C920; Type S; Grade NS; Class 25; Uses NT, G, A, and, as applicable to nonporous joint substrates indicated, O; formulated with fungicide, intended for sealing interior ceramic tile joints and other nonporous substrates that are subject to in-service exposures of high humidity and extreme temperatures.

2.03 TILE

A. Unglazed Ceramic Mosaic Floor Tile:

1. Size: 1 inch by 1 inch or as indicated.

2. Colors and patterns as selected by Architect from price groups specified.

3. Slip Resistance: Resistant to slipping appropriate to the installed conditions of use, as required by the California Building Code, ADAAG, ANSI 137.1 and TCNA.

a. For tile in shower and locker areas, incorporate grit into tile to increase slip resistance.

B. Glazed Wall Tile:

1. Size: 4-1/4 inch by 4-1/4 inch face dimensions by 5/16 inch thick (ceramic mosaic tile may also be used on walls).

2. Colors and patterns as selected by Architect from price groups specified.

C. Unglazed Paver Tile:

1. Porcelain, flat tile.

2. Size: 12 inch by 12 inch, or as shown.

3. Colors and patterns as selected by Architect from price groups specified.

4. Slip Resistance: Resistant to slipping appropriate to the installed conditions of use, as required by the California Building Code, ADAAG, ANSI 137.1 and TCNA.

D. Trim:

1. Integral bullnose at external corners.

2. Provide bullnose where tile projects from jamb.

3. Tile base with wall tile above

4. Bullnose at wainscot.

E. Stone Thresholds:

1. Exterior installation: Marble thresholds with minimum abrasive hardness value of 10 tested in accordance with ASTM C241.

2. White honed marble complying with Marble Institute of America Group "A," unless other color indicated and ASTM C503.

3. Size and profile shaped to provide transition between tile surfaces and adjoining finished floor surfaces, or as indicated. Width not less than 4 inches. Edges beveled on a slope of no greater than 1:2. Cut to fit door frame profile.

PART 3 - EXECUTION

3.01 EXAMINATION AND PREPARATION

A. Examine substrates and conditions for compliance with installation requirements. Verify that all penetrations through substrate have been installed. Proceed with Work only after all conditions are in compliance.

B. Substrates shall be firm; dry; clean and within flatness tolerances required by relevant ANSI A108 tile installation standards. Prepare surfaces as follows:

1. Concrete Floors: Allow concrete floors to cure for 28 days minimum before beginning tile and grout installation. Remove laitance, sand, dust, and loose particles.

2. Plywood Subfloors: Before installing mortar setting bed over plywood sub-floors, install cleavage membrane over sub-floor. Anchor firmly in place and lap joints 6 inches minimum. Turn membrane up 6 inches at walls and beneath building felt on walls.

C. Substrates to receive wall tile and base shall be:

1. Scratch coat of cement plaster, as specified in Section 09 2423 - Cement Plaster and Metal Lath (required in student restrooms, showers and locker rooms).

2. Cementitious backing panels, as specified in Section 09 2900 - Gypsum Board.

D. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical items of Work, and similar items located in or behind tile has been completed before installing tile.

E. Verify that joints and cracks in tile substrates are coordinated with caulked-joint locations; if not coordinated, adjust as required by the ARCHITECT.

F. Do not install tile until construction in spaces is completed and ambient temperature and humidity conditions are maintained in compliance with referenced standards and manufacturer's written instructions.

G. Protect adjacent surfaces during progress of Work of this section.

3.02 TILE INSTALLATION, GENERAL

A. Install tile in grid pattern, unless otherwise indicated. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Center the tile fields in both directions for each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise indicated.

B. For tile mounted in sheets: Joints between tile sheets shall be the same width as joints within tile sheets.

C. Extend Work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions, unless otherwise indicated. Terminate Work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

D. Accurately form intersections and returns. Perform cutting and drilling of tile without damaging tile. Carefully grind the cut edges of tile abutting trim, finish, or built-in items. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

E. Locate joints, directly above joints in concrete substrates, at horizontal and vertical changes in plane, or where indicated during installation of mortar beds. Provide 3/8-inch wide foam at joints. Do not saw-cut joints after installing tiles.

F. Prepare and clean joints to be sealed. Apply sealants to comply ASTM C920 with requirements of Section 07 9200 - Joint Sealants.

G. Conform to manufacturers printed instructions, and applicable requirements of ANSI and TCNA Standards.

3.03 TILE INSTALLATION, FLOOR

A. Install reinforcing and latex Portland-cement mortar setting bed over cured concrete slab or cleavage membrane on plywood floor. Lap reinforcing at least one full mesh, and support or lift so that it is approximately in the middle of mortar bed. Do not abut against vertical surfaces. Install foam separation material at perimeters and expansion joint locations for caulked joints.

B. Mix setting mortar in accordance with ANSI recommendations and ASTM C185.

C. Once begun, mortar installation shall continue until room is completed. Discard any batch not floated and finished within ½ hour of mixing. Firmly compact before screeding. Screed to true plane and pitch as indicated. Slope mortar bed sufficiently that water flows to drain and no puddling will occur. Slope mortar down to floor drains for proper installation of waterproof membrane. After screeding, firmly rub down with steel or wood float.

D. Cure mortar bed with a light fog spray of water and cover with 6-mil Visqueen for 72 hours.

E. Waterproof Membrane:

1. Install waterproof membrane where indicated and in kitchen, toilet, shower, and locker areas according to TCNA Standards. Extend membrane up wall mortar or backing board as follows:

   a. 3 inches above top of curb wall.

   b. 6 inches minimum above floor.

   c. In shower rooms, install from floor to ceiling.

2. Ensure that layers of membrane are fully inserted into clamping ring of floor drain. After membrane installation and before tile setting, install pea gravel around sub drain to prevent blockage of weep holes and place mortar to proper level for setting tile.

3. For tile installations other than slab on grade, before setting tile and after seven days curing, water test membrane by damming drains and doors, filling floor with water to 4-inch minimum depth and leaving for 24 hours. Correct any leaks and re-test before proceeding. After testing, protect membrane from traffic until tile Work begins.

F. Install tile on floors with the following joint widths:

1. Ceramic Mosaic Tile: 1/16 to 1/8 inch.

2. Paver Tile: 3/16 to 3/8 inch.

3.04 TILE INSTALLATION, WALLS

A. Install wall mortar beds before floor mortar beds.

B. On plaster walls, clean scratch coat surface of loose or foreign materials, fog spray with water, and install brown coat mortar bed over scratch coat to a thickness not less than 3/8 inch and not greater than 3/4 inch. Once started, wall mortar installation shall continue until wall is completely floated. Discard any batch not floated and finished within a half an hour of mixing. As soon as wall mortar is dried to sufficient hardness, but still plastic, firmly rub with wood float.

C. Cover cure with 40-weight Kraft paper for 72 hours minimum.

D. Install waterproof membrane where indicated per article 3.03E WATERPROOF MEMBRANE requirements.

E. Install tile over properly cured setting bed, waterproof membrane, or cementitious backing panels utilizing "thin-set" method with latex portland cement bond mortar, in accordance with manufacturer's printed instructions and ANSI A108.5. Confirm substrate is completely clean and free of dust. Ensure that bond coats do not intrude into joints to be caulked.

F. Minimum coverage of bond mortar shall be 80 percent except 95 percent in shower areas or exterior installations. Set and test as specified for floors.

G. Lay out Work so tiles will be centered on each wall or section of wall in order to minimize tile cuts. Lay out tile wainscots to next full tile beyond dimensions indicated. Spot setting bed with mortared tile, set plumb and true, accurately indicate plane of finished tile surfaces.

H. Install tile on walls with following joint widths:

1. Glazed Wall Tile: 1/16 inch.

2. Ceramic Mosaic Tile: 1/16 to 1/8 inch.

3. Special Large Tile: 3/16 to 3/8 inch.

I. Horizontal joints shall be level, vertical joints plumb with surfaces true and plumb, edges of tiles flushed.

J. Rub exposed cuts smooth with a fine stone; no cut edge shall be set against a fixture or adjoining surface without a 1/16 inch joint to be caulked.

K. Install access doors where required, furnished under another section, in correct location, plumb or level, flush with adjacent construction, and securely fastened to framing.

3.05 THIN SET METHOD

A. Confirm substrate is completely clean and free of dust. Cut foam at floor perimeters flush with top of mortar bed. Ensure that bond coats do not intrude into joints to be sealed. Install tile over properly cured setting bed or waterproof membrane utilizing "thin-set" method with latex portland cement bond mortar, in accordance with manufacturer's printed instructions and ANSI A108.5.

B. Minimum coverage of bond mortar shall be 80 percent except 95 percent in shower areas and exterior installations. Place tile into fresh mortar press tile to ensure full contact. Before setting proceeds, set and remove three tiles or sheets of tiles to confirm specified coverage of bond mortar. If coverage is insufficient, utilize a larger toothed trowel or back butter tiles until proper coverage is provided.

3.06 GROUTING

A. Prior to starting, ensure that all tile surfaces are clean and excessive bond mortar is scraped and vacuumed from joints (approximately 2/3 depth of tile should be open for grouting). Follow manufacturer’s instructions for mixing grout. Once grout Work commences, proceed until complete wall or floor area is finished utilizing one batch of grout.

B. Latex portland cement grouting: Dampen tile surface and joints with water using sponge but leaving no puddles in joints. Force grout into joints using sufficient pressure on rubber float so as to fill joints completely and scrape excess grout off tile surface with rubber float. Smooth or tool grout to uniform joint finish. Do not over water.

C. Curing latex Portland cement grout: Remove final grout haze with clean soft cloth, and cover with 40-weight Kraft paper to cure. Leave paper in place for protection. Cover wall surfaces with 40-weight Kraft paper for 72 hours.

3.07 CLEANING AND SEALING

A. If grout scum is not visible on tile surface after curing, clean tile surface with clear water. Remove and replace cracked, broken or defective Work with proper material.

B. If, when curing membrane is removed, grout scum is visible on tile surface, use the following cleaning method:

1. Immediately recover floor with paper or felt and allow to continue curing for a minimum of 14 days; uncover floor and maintain entire tile surface saturated with clean cool water for not less than two hours.

2. Utilize a neutral cleaner acceptable to manufacturers of tile and grout and follow manufacturer’s instruction. Do not provide generic acid cleaners.

3. Wet tile floors and apply cleaning solution to floor surface, then scrub with a brush. Rinse area several times with clean water to flush solution off floor surface.

C. Apply penetrating sealer in accordance with manufacturer's instructions utilizing a dense sponge applicator, paint pad, sprayer or brush. Avoid overlapping, puddling, and rundown. Completely wipe surface dry within 3 to 5 minutes using cotton or paper towels; do not allow sealer to dry on tile. After two hours, test surface by applying water droplets to surface. If water is absorbed, apply a second coat. Avoid surface traffic for 24 hours.

3.08 SEALANTS

A. Ensure joints to be sealed are free of setting and grouting materials and construction debris. Do not permit any foot traffic on installed sealants for a minimum of 48 hours or protect with hardboard strips.

B. Install in accordance with Section 07 9200 - Joint Sealants.

3.09 PROTECTION

A. Admit no traffic where tile is installed until mortar and grout has set for a minimum of 72 hours.

B. Protect Work of this section until Substantial Completion.

3.10 CLEAN UP

A. Remove rubbish, debris, and waste material and legally dispose of off the Project site.

END OF SECTION

SECTION 09 5113

ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Lay-in acoustical ceiling systems and metal suspension systems.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 09 2216 - Non-Structural Metal Framing.
3. Section 09 2900 - Gypsum Board.
4. Section 09 5115 - Vinyl-Faced Acoustical Ceilings.
5. Section 11 5215 – Video/Multimedia Projector Mounting Plate.
6. Division 23 - HVAC.
7. Division 26 - Electrical.

1.02 QUALITY ASSURANCE

A. Ceiling systems shall consist of lay-in acoustical ceiling panels by a single manufacturer and suspension systems by a single manufacturer for the entire project.

B. Qualifications of Installer: Minimum five years experience in installing acoustical ceiling systems of the types specified.

C. Design Criteria:

1. Deflection of finished surface to 1/360 of span or less.
2. 1/8 inch maximum permissible variation from true plane measured from 10 foot straightedge placed on surface of finished acoustical fiber units.

D. Requirements of Regulatory Agencies:

1. Conform to CBC requirements and UL - Tunnel Test for Fire Hazard Classification of Building Materials.
2. CISCA: Acoustical Ceilings Use and Practice.
3. Division of the State Architect: Comply with requirements of IR 25-2.13.

E. American Society for Testing and Materials (ASTM):

1. ASTM A641 - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.

2. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

3. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.

4. ASTM C635 - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.

5. ASTM C636 - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.

6. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

7. ASTM E580 – Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions.

8. ASTM E1264 - Standard Classification for Acoustical Ceiling Products.

9. ASTM E1414 - Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum.

10. ASTM E1477 - Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.

F. American Society of Civil Engineers (ASCE):

1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures, as amended by CBC 1615A.1.16.

G. CHPS Low-Emitting Materials Table: Materials submitted must be listed as low emitting on the CHPS website, www.CHPS.net.

1.03 SUBMITTALS

A. Samples:

1. Lay-in panels of each specified type, 6-inch by 6-inch minimum size.

2. Suspension System: 12-inch long samples of suspension system members, connections, moldings and wall angles, for each color specified.

B. Shop Drawings:

1. Indicate complete plan layouts and installation details.

2. Indicate related Work of other sections which is installed in, attached to, or penetrates ceiling areas, such as air distribution and electrical devices.

C. Product Data:

1. Suspension System for Lay-in Ceiling: Printed data for suspension system components, including load tests, indicating conformance to specified tests and standards.

2. Acoustical units: Printed data indicating conformance to specified tests and standards.

D. Maintenance Materials: Provide extra panels equal to 1 percent of the area of each typical module size of acoustical panel, but not less than 8 of each specified size, style and color.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to the Project site in original sealed packages.

B. Storage: Store materials in building area where they will be installed, in original package. Keep clean and free from damage due to water or deteriorating elements.

C. Handle in a manner to prevent damage during storage and installation.

1.05 PROJECT CONDITIONS

A. Installation of acoustical ceiling system shall not begin until the building is enclosed, permanent heating and cooling is in operation, and residual moisture from plaster and concrete work has dissipated. Building areas to receive ceilings shall be free of construction dust and debris.

B. Environmental Requirements: Maintain temperature in space at 55 degrees F or above for 24 hours before, during, and after installation of materials.

C. Scheduling:

1. Before concealing Work of other sections, verify required tests and inspections have been completed.

2. Coordinate with related Work of other sections. Coordinate location and symmetrical placement of air distribution devices, electrical devices, and penetrations with related Work section.

1.06 WARRANTY

A. Manufacturer shall provide a 10 year material warranty.

B. Installer shall provide a two year fabrication and installation warranty.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. USG Corporation.

B. Armstrong World Industries.

C. CertainTeed Saint-Gobain.

D. Equal.

2.02 SUSPENSION SYSTEM

A. Metal suspension system for acoustical lay-in tile shall be hot-dipped galvanized steel conforming to ASTM A653. Main beams and cross tees shall be double-web steel construction with exposed flange design, with factory punched cross tee slots, hanger holes and integral couplings.

B. Metal suspension system for acoustical lay-in tile shall conform with ASTM C635, C636 and E580 and section 13.5.6 of ASCE 7, as amended by CBC Section 1615A.1.16, for installation in high seismic areas.

C. Structural classification of suspension systems shall be heavy-duty in conformance to ASTM C635.

D. Vertical Strut: USG Donn Compression Post, or equal, or as indicated; types and designs complying with requirements of authorities having jurisdiction and seismic Zones D, E and F requirements. Provide base attachment clip for connection of vertical strut to main beams.

E. Wall Molding: Fabricated from galvanized steel with 2-inch horizontal leg and hemmed edges, same finish as main and cross tees.

F. Spacer/Stabilizer Bars: Provide for tying together the ends of main runners and cross tees that are not attached to wall molding.

G. Hanger Wire: 0.106 inch diameter (0.144 inch diameter for pendant fixtures), galvanized soft annealed mild steel wire as defined in ASTM A641, Class 1 coating.

H. Provide attachment devices and any other required accessories for a complete suspended ceiling system installation.

2.03 ACOUSTICAL CEILING PANELS

A. Acoustical ceiling panels shall be class A in accordance with ASTM E1264.

B. Acoustical panels shall meet the following surface-burning characteristics when tested in accordance with ASTM E84 for Class A materials:

1. Maximum Flame Spread: 25.

2. Maximum Smoke Developed: 50.

C. Mold and Mildew Resistance: Panels and faces shall be treated with a biocide paint additive or an antimicrobial solution to inhibit mold and mildew.

2.04 CEILING TYPES

A. ACT 1 - Classrooms:

1. Acoustical Ceiling Panels:

a. Panel Name: Armstrong Fine Fissured High NRC 1811, USG Radar Climaplus HiNRC 22311, CertainTeed Fine Fissured HHF 497 HNRC, or equal.

b. Panel Size: 2-foot by 4-foot.

c. Panel Thickness: 3/4 inch.

d. Edge Detail: Lay-in.

e. Light Reflectance: 0.83 minimum, complying with ASTM E1477.

f. CAC: Minimum 35 - 39, UL Classified, complying with ASTM E1414.

g. NRC: Minimum 0.70, UL Classified, complying with ASTM C423.

h. Color: White.

i. Recycled Content: Minimum 37 percent.

2. Suspension System:

a. Suspension System Name: Prelude XL by Armstrong, Donn DX by USG, 1200 Seismic Series by Chicago Metallic Corporation, or equal.

b. Color: White.

B. ACT 2 - Administration:

1. Acoustical Ceiling Panels:

a. Panel Name: Armstrong Ultima 1912, USG Mars ClimaPlus 86985, CertainTeed Symphony M #1222BF-OVT-1, or equal.

b. Panel Size: 2-foot by 2-foot.

c. Panel Thickness: 3/4 inch.

d. Edge Detail: Beveled tegular.

e. Light Reflectance: 0.89 minimum, in accordance with ASTM E1477.

f. CAC: Minimum 35, UL Classified, complying with ASTM E1414.

g. NRC: Minimum 0.70, UL Classified, complying with ASTM C423.

h. Color: White.

i. Recycled Content: 74 percent minimum.

2. Suspension System:

a. Suspension System Name: Silhouette XL by Armstrong, Fineline by USG, 4500 Ultraline Series by Chicago Metallic Corporation, or equal.

b. Color: White.

C. ACT 3 - Cafeteria:

1. Acoustical Ceiling Panel:

a. Panel Name: Armstrong Optima Open Plan 3250, USG Halcyon #98223,CertainTeed Symphony F 1342B-OVT-1, or equal.

b. Panel Size: 2-foot by 2-foot.

c. Panel Thickness: 1 inch.

d. Edge Detail: Tegular.

e. Light Reflectance: 0.88 minimum, complying with ASTM E1477.

f. NRC: Minimum 0.95, UL Classified, complying with ASTM C423.

g. Color: White.

h. Recycled Content: Minimum 28 percent.

2. Suspension System:

a. Suspension System Name: Prelude XL by Armstrong, Donn DX by USG, 1200 Seismic Series by Chicago Metallic Corporation, or equal.

b. Color: White.

D. ACT 4 – Other areas:

1. Acoustical Ceiling Panel:

a. Panel Name: Armstrong Fine Fissured 1729, USG Radar Climaplus 2410, CertainTeed Hytone Fine Fissured HHF 197, or equal.

b. Panel Size: 2-foot by 4-foot.

c. Panel Thickness: 5/8 inch.

d. Edge Detail: Lay-in.

e. Light Reflectance: 0.82 minimum, complying with ASTM E1477.

f. CAC: Minimum 35, UL Classified, complying with ASTM E1414.

g. NRC: Minimum 0.55, UL Classified; complying with ASTM C423.

h. Color: White.

i. Recycled Content: Minimum 37 percent.

2. Suspension System:

a. Suspension System Name: Prelude XL by Armstrong, Donn DX by USG, 1200 Seismic Series by Chicago Metallic Corporation, or equal.

b. Color: White.

E. ACT 5 – Specialty Acoustic Spaces:

1. Acoustical Ceiling Panel:

EDIT NOTE: CALL OUT ACT-5 ON THE DRAWINGS WHERE APPLICABLE AND INDICATE THE NRC AND CAC PERFORMANCE REQUIREMENTS.

a. Spaces with specialty acoustical requirements such as Music Classrooms, Multi-Purpose Room, shall be provided with the NRC and CAC performance requirements indicated on drawings. b. Ceiling tiles in control rooms in Multi-Purpose Rooms and Auditoriums shall be black in color.

PART 3 - EXECUTION

3.01 PREPARATION

A. Furnish layouts for inserts, clips or other supports and struts required to be installed by the Work of other trades that depend on the suspended ceiling system for support.

B. Coordinate related Work to ensure completion prior to installation of clips or fasteners.

C. Compare layouts with construction conditions. Tile shall be spaced symmetrically about the centerlines of the room or space and shall start with a tile or joint line as required to avoid narrow tiles at the finish edges unless indicated otherwise. Joints shall be tight with joint lines straight and aligned with the walls. Ceiling moldings shall be provided where tile abuts wall with matching caulking to eliminate any space.

3.02 INSTALLATION OF SUSPENSION SYSTEMS

A. General:

1. Install suspension system in accordance with ASTM C636 and ASTM E580.

2. System shall be complete; with joints neatly and tightly joined and securely fastened; suspension members shall be installed in a true, flat, level plane.

3. Hanger Wires: 0.106 inch diameter minimum; larger sizes as indicated or required.

a. Fasten wires to panel points and structure above per most stringent requirements of fabricator and CBC and as indicated on Drawings.

b. Wires exceeding 1:6 out-of-plumb shall be braced with counter-sloping wires.

c. Maintain wires at least 6 inches from non-braced ducts, pipes, conduits, and other items.

d. Install wire along main runners at 4 feet on center. Terminal ends of each main runner and cross tee must be supported within 8 inches of each wall with a perimeter wire or within one-fourth (1/4) of the length of the end tee, whichever is least, for the perimeter of the ceiling area.

e. Where obstructions prevent direct suspension, provide trapezes or equivalent devices; 1 ½-inch minimum cold rolled channels back to back may be installed for spans to 6 feet maximum.

f. Wire shall be straight, without extraneous kinks or bend. Hanger wire connections must be capable of carrying a 200 - pound pull without stretching or shifting the suspension clip.

4. Bracing Wires to Resist Seismic Forces: 0.106 inch diameter minimum, larger sizes as indicated or required.

a. System for Bracing Ceilings: Lay-In Ceiling Systems: Install one four-wire set of sway-bracing wires and a vertical strut for each 144 square feet maximum of ceiling area. Locate wire-sets and struts at 12

feet maximum on center. At ceiling perimeters, wire-sets shall be installed within 6 feet of walls.

b. Install four-wire sets and struts within 2 inches of cross-runner intersection with main runner; space wires 90 degrees from each other.

c. Do not install sway bracing wires at an angle greater than 45 degrees with the ceiling plane.

d. Wires shall be tight, without causing ceiling to lift.

e. Fasten struts in accordance with CBC requirements.

f. Maintain wires at least 6 inches from non-braced ducts, pipes, conduit, and other items.

5. Provide additional wires, 0.106 inch diameter minimum, necessary to properly support suspension at electrical devices, air distribution devices, vertical soffits, and other concentrated loads.

6. Suspension:

a. Suspension members shall be fastened to two adjacent walls per ASTM 580; but shall be at least 3/4 inches minimum clear of other walls.

b. Any suspension members not fastened to walls shall be interconnected to prevent spreading, near their free end, with a horizontal metal strut or stabilizer bar or 0.064 inch diameter taut tie wire.

c. Provide additional tees or sub-tees to frame openings for lights, air distribution devices, electrical devices, and other items penetrating through ceiling, which do not have an integral flange to support and conceal cut edges of acoustic panels. Provide cross bracing necessary to securely support any surface mounted fixtures or other items.

7. Attachment of Wires:

a. To Metal Deck or Steel Framing Members: Install as required by current code.

b. To Suspension Members: Insert through holes in members or supporting clips.

c. Wires shall be fastened with three tight turns minimum for hanger wires and four tight turns minimum bracing wires. Turns shall be made in a 1 ½-inch maximum distance.

B. Suspension System for 2-foot by 4-foot Lay-in Acoustical Ceilings:

1. Main Runners: Install main runners 48 inches apart; 0.106 inch diameter hanger wires space 48 inches on center maximum along runners, and within 8 inches of ends.

2. Install wall moldings with fasteners to studs. Install corner caps at molding intersections.

3. Cross-Tees: Install between main runners in a repetitive pattern of 2-foot spacings.

4. Sub-Tees: Install at edges of penetrations.

3.03 INSTALLATION OF ACOUSTICAL PANELS

A. Install panels into suspension system. Partial panels shall be neatly cut and fitted to suspension and around penetrations and/or obstructions. Duplicate tegular edges at partial panels; cuts to be straight. Repaint cut tiles to match color or as directed by manufacturer for mylar facing at visually exposed conditions or as required by the ARCHITECT.

B. Penetrations through the ceilings for sprinkler heads and other similar devices that are not integgrally tied to the celing system in the lateral direction shall have a 2 inch oversized ring, sleeve or adapter through the celing tile to allow freee movement of one inch in horizontal directions. Alternateively per ASTM E580, a flexible sprinkler hose fitting that can accommodate one inch of celing movement shall be permitted to be used in lieu of the oversized ring, sleeve or adapter.

3.04 AIR DISTRIBUTION DEVICES

A. Refer to and coordinate with Division 23 - HVAC.

B. Install air distribution grilles and other devices into suspension system. Install 4 taut wires, each 0.106 inch diameter minimum, to each device within 3 inches of device corners, to support their weight independent of the suspension system.

3.05 LIGHT FIXTURES

A. Refer to and coordinate with Division 26 - Electrical.

B. Fixtures weighing less than 56 pounds: Install fixtures into suspension systems and fasten earthquake clips to suspension members. Install minimum 2 slack safety wires, each 0.106 inch diameter minimum, to each fixture at diagonally opposite corners, to support their weight independent of the system.

C. Fixtures weighing 56 Pounds or more: Install fixtures into suspension system and fasten earthquake clips to suspension system members as required by the Drawings and/or code. Install not less than 4 taut 0.106 inch diameter wires capable of supporting four times the fixture load.

D. Support pendant-mounted light fixtures directly from the structure above with hanger wires or cables passing through each pendant hanger and capable of supporting two times the weight of the fixture. Brace the pendant-mounted light fixtures by either a bracing assembly at the ceiling penetration or below the ceiling to the walls, as indicated in the drawings.

3.06 CLEANING

A. General: After installation of acoustical material has been completed, clean surfaces of the material, removing any dirt or discolorations. Replace panels as required.

B. Acoustical Panels: Minor abraded spots and cut edges shall be touched up with the same paint as was used for factory applied finish of the lay-in panels.

C. Remove and replace work that can not be succesfully cleaned and repaired to eliminate evidence of damage.

3.07 CLEAN UP

A. Remove rubbish, debris, and waste materials and legally dispose off of the Project site.

3.08 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 09 6513

RUBBER BASE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Topset coved rubber base for installation with surface flooring.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 09 6516 - Resilient Sheet Flooring.
3. Section 09 6518 - Rubber Flooring and Stair Covering.
4. Section 09 6519 - Vinyl Composition Tile.
5. Section 09 6543 - Linoleum Flooring.
6. Section 09 6813 – Tile Carpet.

1.02 SUBMITTALS

A. Product Data: Submit manufacturer’s published technical data describing materials, construction and recommended installation instructions. Submit technical data and installation instructions for each adhesive material.

B. Maintenance Instructions: Submit manufacturer’s recommendations for maintenance, care and cleaning of base.

C. Samples: Submit Samples of topset base in each available color. Following color selections, submit Samples, not less than 12 inches long of each selected color and type. Submit pint cans of each type adhesive.

D. Maintenance Materials: Before Substantial Completion, deliver at least 50 lineal feet and five outside corner units of each color of rubber base installed. Deliver the materials in unopened factory containers or in sealed cartons with labels identifying the contents, matching installed materials. Include unopened cans of adhesives adequate to install the maintenance materials.

1.03 QUALITY ASSURANCE

A. Qualifications of Installer: Minimum five years experience in successfully installing the same or similar flooring materials.

B. Comply with the following as a minimum requirement:

1. ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials.

2. ASTM F1861: Standard Specification for Resilient Wall Base.

3. Comply with current CHPS requirements, www.chps.net.

4. Chemically based products such as sealers, primers, fillers, adhesives, etc. must be approved by Owner's Office of Environmental Health and Safety (OEHS).

5. Each selected color and configuration shall be from same dye lot and color.

1.04 DELIVERY, STORAGE AND HANDLING

A. Materials shall be delivered to the Project site in original unopened manufacturer's packaging clearly labeled with manufacturer's name. Store materials at room temperature, but not less than 70 degrees F, for a minimum of 48 hours before installation, unless otherwise indicated in manufacturer's printed instructions.

1.05 PROJECT CONDITIONS

A. Ventilation and Temperature: Verify areas that are to receive rubber base are ventilated to remove fumes from installation materials, and areas are within temperature range recommended by the various material manufactures for site installation conditions.

1.06 WARRANTY

A. Manufacturer shall provide a five year material warranty.

B. Installer shall provide a two year fabrication and installation warranty.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Mannington/Burke Wall Base.

B. Roppe, Pinnacle Rubber Base.

C. Flexco Company, Wallflower Premium Rubber Wall Base.

D. Tarkett.

E. Equal.

2.02 MATERIALS

A. Rubber base: Conform to ASTM F1861; Group 1, solid (homogeneous); Type 1, TS, (thermoset) vulcanized rubber, Style B (coved), 4-inch high unless otherwise indicated, integral colors as selected, non-shrinking, 1/8 inch thick, with matching molded outside corners.

B. Base Adhesive: Water based, low odor type, as recommended by manufacturer of rubber base.

PART 3 - EXECUTION

3.01 COORDINATION

A. Coordinate the Work of this section with other sections to provide a level, smooth and clean finish surfaces to receive rubber base.

3.02 EXAMINATION

A. Field verify dimensions and other conditions affecting the Work of this section before commencing the Work of this section.

B. Before Work is started, examine surfaces that are to receive rubber base. Deficiencies shall be corrected before starting the Work of this section.

3.03 PREPARATION

A. Do not start preparation until adjacent concrete floor slabs are at least 90 days old and finish flooring is installed.

B. Install rubber base when ambient temperature is 70 degrees F. or higher.

3.04 INSTALLATION

A. Install topset base at:

1. Hard floors, including resilient flooring, concrete and wood, carpet tile and other soft floors.

2. Along cabinetry base and where flooring extends into open cabinets.

B. Install all wall base with pre-molded outside corners. Clean and prep existing wall and apply adhesive to the wall or back of base. Ensure that not less than 18-inch-long filler or end pieces are not installed. Roll base to ensure that the top of the bass installed is tight against the wall and toe is tight against the floor, all end joints to be tight with no gaps. Install matching factory pre-molded outside corners at all offsets. Should pre-

molded outside corners become unavailable and confirmed, corners are to be wrapped tight by slightly gouging the back of the Base and apply adhesive at gauge. Wrap base around the corner, Push base down at the corner to form a consistent toe, ensuring that it is snug to the floor on both sides of the corner, All Inside corners shall be scribed fit tight with no gaps at the top or bottom of the base. Wrapped inside corners are not acceptable.

C. Use of adhesive gun is prohibited. Apply adhesive directly to substrate using the appropriate notched trowel or spreader according to manufacturer's instructions. Maintain 1/8 inch gap from top of base to prevent adhesive oozing onto adjacent surfaces.

D. Base and outside corners shall be rolled with a seam roller before adhesive sets.

3.05 CLEANING

A. Maintain surfaces of base clean as installation progresses. Clean rubber base when sufficiently seated and remove foreign substances.

B. Clean adjacent surfaces of adhesive or other defacement. Replace damaged and/or defective Work to the specified condition.

3.06 CLEAN UP

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

3.07 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 09 6523

LUXURY VINYL TILE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Luxury vinyl tile flooring as indicated.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 03 3000 - Cast-in-Place Concrete.
3. Section 06 1626 - Engineered Plywood Flooring Underlayment.
4. Section 09 6518 - Rubber Flooring and Stair Covering.
5. Section 09 6516 - Resilient Sheet Flooring.
6. Section 09 0561 - Moisture Testing for Flooring Installation.
7. Section 09 6513 - Rubber Base.
8. Section 12 4813 – Entrance Floor Mats and Frames.
9. Section 14 2423 - Hydraulic Passenger Elevators.

1.02 DEFINITIONS

A. Pop-up: A pop-up is defined as any surface deviation or looseness of substrate that is equal to or greater than 1/64 (0.015625) inch above the concrete floor level, regardless of the size.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer’s published technical data describing materials, construction and recommended installation instructions. Submit technical data and installation instructions for each adhesive material. Submit list and Product Data of recommended finish materials.

B. Maintenance Instructions: Submit manufacturer’s recommendations for maintenance, care, and cleaning of luxury vinyl tile.

C. Samples: Submit Samples of luxury vinyl tile and any reducers or transitions in each available color and pattern. Following color selections, submit full size samples of each selected color and pattern. Submit pint cans of each type of adhesive.

D. Maintenance Materials: Before Substantial Completion, deliver a minimum of 5%, or one unopened container of each color and pattern of luxury vinyl tile in each color and pattern installed. Label each container indicating locations installed. Include unopened cans of adhesives adequate to install the maintenance materials.

E. Installer’s Experience Qualifications: Submit list of not less than five projects, extending over period of not less than five years, indicating installer’s experience record. Submit letter from manufacturer indicating manufacturer's approval for installer of the products.

1.04 QUALITY ASSURANCE

A. Qualifications of Installer: Minimum five years’ experience in successfully installing the same or similar flooring materials.

B. Qualifications of Supervising Installer: In addition to the qualifications of the installer listed above, the flooring installer’s supervisor shall have a minimum of 10 hours Cal-OSHA safety training.

C. Pre-Installation and Progress meetings: Prior to start of work of this section and after approval of submittals, schedule on-site meetings between Contractor, Supervising Installer, OAR and Project Inspector to review installation and procedures required for project.

D. Comply with the following as a minimum requirement:

1. Materials shall be compliant with requirements of CBC Chapter 11B and ADAAG.

2. ASTM E84: Class A Flame Spread Rating of 25 or less.

3. Comply with current CHPS requirements, www.chps.net.

4. Moisture Testing: ASTM F1869 and ASTM F2170.

1.05 DELIVERY, STORAGE AND HANDLING

A. Materials shall be delivered to the Project site in original unopened manufacturer’s packaging clearly labeled with manufacturer’s name.

B. Materials shall be stored at room temperature, but not less than 70 degrees F for not less than 48 hours before installation, unless manufacturer’s instructions specify otherwise.

1.06 PROJECT CONDITIONS

A. Ventilation and Temperature: Verify areas that are to receive new flooring are ventilated to remove fumes from installation materials. Verify that areas are within temperature range recommended by the various material manufactures for Project site installation conditions.

1.07 WARRANTY

A. Manufacturer shall provide a twenty year wear material warranty.

B. Installer shall provide a five year fabrication and installation warranty.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. ShawContract– Joy Squared 2.5mm, Terran II 2.5mm&5mm, Solitude 5mm and Cove 5mm.

B. Interface - Study Stride 3mm, level set 4.5mm and Star Gazing 4.5.

C. Karndean – Opus 2.5mm, Van-Gogh GD 3mm and Long Board 4.5mm.

D. Catalina Products International (CPI) Cabrillo 2.5mm, HVT 2.5mm, Avalon 5mm.

E. Milliken – Fortified Foundations 2.5mm & 5.0mm, Local Measure 2.5mm & 5.0mm, Lumenology 5mm and Quite life.

F. Or equal.

2.02 MATERIALS

A. Luxury Vinyl Tile: Conform to ASTM F1700, Class III (printed film vinyl), type B, 4-inch by 24-inch up to 18-inch by 48-inch by minimum 2.5 mm thick, colors and patterns as indicated on Drawings. Minimum of 20 mil wear layer.

B. Crack Filler and Leveling Compound: 100 percent cementitious binder type (as defined by ASTM C150), shall be approved by Owner’s Office of Environmental Health and Safety (OEHS). The following manufacturers are currently listed approved by OEHS:

1. Shonox SL.

2. Ardex SD-F.

3. Mapei Planiprep SC.

4. Equal, as recommended by flooring manufacturer and approved by OEHS.

5. Leveling Compound shall meet or exceed 200 pounds when tested in accordance with ASTM C1583.

C. Interlocking floating glue free installation.

D. Concrete Primer: Non-staining type recommended by manufacturer of luxury vinyl tile. Concrete primer shall be OEHS approved.

E. Adhesive: Water based, low odor type formulated specially for installation with luxury vinyl tile, recommended by manufacturer and approved by OEHS.

F. Reducer Strips: Tapered rubber not less than one inch wide, and thickness to match tile.

PART 3 - EXECUTION

3.01 TESTING

A. Refer to Section 09 0561 - Moisture Testing for Flooring Installation.

3.02 COORDINATION

A. Coordinate with related Work to assure level, dry, smooth, and clean finish surfaces to receive luxury vinyl floor tile.

3.03 EXAMINATION

A. Field verify and correct deficiencies of conditions affecting Work before commencing Work of this section.

3.04 PREPARATION OF CONCRETE SLABS

A. Do not start preparation until underlying concrete floor slabs are at least 90 days old. Any leveling compound under a vapor or moisture barrier shall be warranted to be installed in a wet or moist environment without moisture limitations.

B. Leveling: Check sub-floors for true to level and plane within the tolerance listed in Manufacturer's installation instructions. Test floor areas both ways with a 10-foot straightedge and repair high and low areas exceeding allowable tolerance. Pop ups shall be hammered out and floor filled with an approved cementitious leveling compound. Remove high areas by power sanding, stone rubbing or grinding, chipping off and filling with an approved leveling compound, or equivalent method. Fill low areas with an approved leveling compound. Repair and level surfaces having abrupt changes in plane, such as trowel marks or ridges, whether or not within allowable tolerance. Clean areas where repairs are performed.

C. Cracks or Depressions: Fill voids with an approved cementitious leveling compound of the type recommended by flooring manufacturer for the specific Work conditions.

D. Cleaning: After leveling, clean substrates of deleterious substances and foreign matter.

3.05 PREPARATION OF WOOD SUB-FLOORS

A. Install underlayment in accordance with Section 06 1626 - Engineered Plywood Flooring Underlayment.

B. Sweep floors and vacuum sanding dust.

3.06 INSTALLATION OF TILE

A. Color and pattern: Install tiles in the pattern indicated on Drawings. If no pattern is indicated, tiles shall be installed in a rectangular pattern, in one color.

B. Special designs and school logo:

1. Fabricate of sizes and colors indicated on drawings and from electronic file provided by Architect.

2. Precision cut LVT tiles using either computer aided water-jet or laser technologies to a tolerance of 0.005 inch.

C. Install luxury vinyl floor tile when ambient temperature is 70 degrees F or higher or manufacturer's range.

D. Install the tile adhesive in a thin film evenly with a notched trowel. Trowel notches shall be as recommended by adhesive manufacturer.

1. Mix adhesive in accordance with manufacturer's instructions.

2. Install adhesive only in area that can be covered by flooring material within the adhesive manufacture's recommended working time. Adhesive application rate shall be as required to avoid telegraphing trowel lines to the surface after maintenance coatings are applied. Adjust tile runoff during installation if necessary.

3. Immediately remove any excess adhesive from the tile surface using the adhesive manufacturer's recommended cleaner and a damp, not wet, cloth.

E. Provide reducer where floor covering edges are exposed, such as at center of the door or where floor coverings terminate.

F. Install tiles symmetrically about centerlines of areas progressing toward walls. Adjust border tiles to be even on all walls or nothing smaller than a 3" piece. Tiles shall be straight and joints close. Tile shall be cut to fit snug door jambs casing, pipes fixtures and walls. No slivers at edges.

G. Mechanically cut flooring material to produce square true edges.

H. As floor tile is installed and within adhesive's recommended working time, roll with a clean, smooth, 100-pound roller in both directions. As the rolling proceeds, replace any loosened, defective, or damaged tile with new and finish to the specified condition.

I. Remove dust, debris, and soil with any combination of sweeping, micro-fiber dust-mopping with a properly treated, non-oily mop and vacuuming.

3.07 CLEANING, NO WAXING, AND COMPLETION

A. Maintain flooring surfaces clean as installation progresses.

B. Use a sprayer to mist the area to be cleaned with a neutral cleaning solution prepared in accordance with manufacturer's instructions.

C. Gently scrub the floor using red or maroon cleaning, not stripping pads, mounted on a single disc, 175 RPM floor machine; or preferably, with a machine that uses horizontally mounted brushes with a counter-rotating spindle motion. Never allow the machine to remain running stationary.

D. Remove the resulting slurry with a wet vacuum.

E. Rinse the floor at least four times, each time using a clean mop and clean rinse water. On the first rinse, apply just enough water to keep the floor wet until the solution is picked-up with a vacuum. The next two rinses should be with a fairly well wrung-out, damp mop. The final rinse should produce virtually clean rinse water. Ensure the rinse water is clean throughout the rinsing process. Avoid tracking the floor after the final rinse. Check the floor after the final rinse for any missed areas and re-scrub/rinse as needed. Repeat the rinsing process until all signs of the cleaning solution are removed and the floor shows no sign of haziness or dusting when dry. If the Contractor has lightweight "automatic" floor machines capable of achieving the same result as described above, they may be used in-place of this method. Do not flood or excessively dampen floor at any time.

F. Allow the Work to dry thoroughly.

G. Clean adjacent baseboard and other surfaces of adhesive and other materials. Replace damaged or defective Work to the specified condition.

3.08 CLEAN UP

A. Remove rubbish, debris, and waste materials and legally dispose of off Project site.

3.09 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 09 9000

PAINTING AND COATING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. exterior painting.

B. Following items shall not be painted:

1. Brass valves, chromium or nickel-plated piping and fittings.

2. Boiler control panels and control systems.

3. Fabric connections to fans.

4. Flexible conduit connections to equipment, miscellaneous name plates, stamping, and instruction labels and manufacturer's data.

5. Mechanical and electrical utility lines, piping and heating and ventilation ductwork in tunnels, under-floor excavated areas or crawl spaces, attic spaces and enclosed utility spaces.

6. Flag, floodlight, parking light poles and loudspeaker poles, metal stairs, handrails and chain-link fence with a galvanized finish, unless otherwise noted.

7. Structural and miscellaneous steel, open web steel joists and metal floor decking, which will not be exposed in final construction, shall have no finish other than one coat of shop primer.

8. Hardboard covering on tops and backs of counters and benches.

9. Brass, bronze, aluminum, lead, stainless steel and chrome or nickel-plated surfaces.

10. Non-metallic walking surfaces unless specifically shown or specified to be painted.

1.02 REGULATORY REQUIREMENTS

A. Paint materials shall comply with the Food and Drug Administration’s (F.D.A.) Lead Law and the current rules and regulations of local, state and federal agencies governing the use of paint materials.

1.03 SUBMITTALS

A. List of Materials: Before submittal of samples, submit a complete list of proposed paint materials, identifying each material by distributor's name, manufacturer’s name,

product name and number, including primers, thinners, and coloring agents, together with manufacturers' catalog data fully describing each material as to contents, recommended installation, and preparation methods. Identify surfaces to receive various paint materials.

B. Material Samples: Submit manufacturer's standard colors samples for each type of paint specified. Once colors have been selected, submit Samples of each color selected for each type of paint accordingly:

1. Samples of Paint and Enamel must be submitted on standard 8 ½" x 11" Leneta Opacity-Display Charts. Each display chart shall have the color in full coverage. The sample shall be prepared from the material to be installed on the Work. Identify the school on which the paint is to be installed, the batch number, the color number, the type of material, and the name of the manufacturer.

2. Elastomeric shall be submitted in duplicate samples of the texture coating. Samples will be not less than 2 ½ by 3 ½ in size and installed upon backing. Finished Work will match the reviewed Sample in texture.

3. Materials and color samples shall be reviewed before starting any painting.

C. For transparent and stained finishes, prepare samples on same species and quality of wood to be installed in the Work, with written description of system used.

1.04 QUALITY ASSURANCE

A. Certification of Materials: With every delivery of paint materials, the manufacturer shall provide written certification the materials comply with the requirements of this section.

B. Coats: The number of coats specified is the minimum number. If full coverage is not obtained with the specified number of coats, install additional coats as required to provide the required finish.

C. Install coats and undercoats for finishes in strict accordance with the recommendations of the paint manufacturer as reviewed by the Architect.

D. Paint materials shall comply with the following as a minimum requirement:

1. Materials shall be delivered to Project site in original unbroken containers bearing manufacturer's name, brand number and batch number.

2. Open and mix ingredients on premises in presence of the Project Inspector.

1.05 DELIVERY, STORAGE AND HANDLING

A. Storage and Mixing of Materials: Store materials and mix only in spaces suitable for such purposes. Maintain spaces clean and provide necessary precautions to prevent fire. Store paint containers so the manufacturer's labels are clearly displayed.

1.06 SITE CONDITIONS

A. Temperature: Do not install exterior paint in damp, rainy weather or until surface has thoroughly dried from effects of such weather. Do not install paint, interior, or exterior, when temperature is below 50 degrees F, or above 90 degrees F, or dust conditions are unfavorable for installation.

1.07 WARRANTY

A. Manufacturer shall provide a three year material warranty.

B. Installer shall provide a three year application warranty.

1.08 MAINTENANCE

A. Provide at least one gallon of each type, color and sheen of paint coating installed. Label containers with color designation indicated on Drawings.

PART 2 - PRODUCTS

2.01 PAINT MATERIALS

A. Furnish the products of only one paint manufacturer unless otherwise specified or required. Primers, intermediate and finish coats of each painting system must all be the products of the same manufacturer, including thinners and coloring agents, except for materials furnished with shop prime coat by other trades.

B. Factory mix paint materials to correct color, gloss, and consistency for installation to the maximum extent feasible.

C. Paint materials to be minimum “Architectural Grade”.

D. Gloss degree standards shall be as follows:

HIGH GLOSS	70 and above	EGGSHELL	30 to 47
SEMI-GLOSS	48 to 69	SATIN	15 to 29

2.02 MANUFACTURERS

A. Acceptable manufacturers, unless otherwise noted:

1. Dunn-Edwards Corporation Paints
2. Frazee Paints and Wall coverings
3. Vista Paints
4. Sherwin Williams
5. ICI Paints
6. Equal.

1.

2.03 MURALS

A. Manufacturer: Behr, Premium Plus Ultra Flat, or equal.

B. Anti-Graffiti Coating: Per Section 09 9623 Graffiti-Resistant Coatings.

PART 3 - EXECUTION

3.01 PREPARATION

A. Examine surfaces to receive paint finish. Surfaces which are not properly prepared and cleaned or which are not in condition to receive the finish specified shall be corrected before prime coat is installed.

B. New woodwork shall be thoroughly cleaned, hand sandpapered, and dusted off. Nail holes, cracks or defects in Work shall be filled. On stained woodwork, fill shall be colored to match stain. Filling shall be performed after the first coat of paint, shellac or varnish has been installed.

C. Plaster surfaces except veneer plaster shall be allowed to dry at least 3 weeks before painting. Veneer plaster shall be allowed to dry sufficiently to receive paint as determined by moisture meter tests.

D. Metal surfaces to be painted shall be thoroughly cleaned of rust, corrosion, oil, foreign materials, blisters, and loose paint.

E. Do not install painting materials to wet, damp, dusty, dirty, finger marked, rough, unfinished or defective surfaces.

F. Concrete surfaces shall be dry, cleaned of dirt and foreign materials and in proper condition to receive paint. Neutralize spots demonstrating effects of alkali.

G. Mask off areas where necessary.

3.02 APPLICATION

A. Backpainting: Immediately upon delivery to the Project site, finish lumber and millwork shall be backpainted on surfaces that will be concealed after installation. Items to be painted shall be backpainted with priming coat specified under "Priming".

B. Priming: New wood and metal surfaces specified to receive paint finish shall be primed. Surfaces of miscellaneous metal and steel not embedded in concrete, and surfaces of unprimed plain sheet metal Work shall be primed immediately upon delivery to the Project site. Galvanized metal Work and interior and exterior woodwork shall be primed immediately after installation. Priming of surfaces and priming coat shall be as follows:

1. Knots, Pitch and Sap Pockets: Shellac before priming.

2. Exterior Woodwork and Wood Doors: Prime with one coat of exterior waterborne emulsion wood primer.

3. Interior Woodwork: Where indicated to be painted, prime with one coat of waterborne wood primer.

4. Stain: Woodwork indicated to receive a stain and varnish finish shall be stained to an even color with water borne stain. On open-grained hardwood, mix stain with paste filler and completely fill pores in wood.

5. Galvanized Metal Work: Clean oil, grease and other foreign materials from surfaces. Install vinyl wash pretreatment coating. Follow manufacturer's instructions for drying time, and then prime with one coat of metal primer.

6. Unprimed Iron, Steel, and Other Uncoated Metals: Where specified to be painted, prime with one coat of metal primer.

7. Shop Primed Metal Items: Touch up bare and abraded areas with metal primer before installation of second and third coats.

8. Coats shall be installed evenly and with full coverage. Finished surfaces shall be free of sags, runs and other imperfections.

C. Allow at least 24 hours between coats of paint.

D. Rollers shall not be used on wood surfaces.

E. Each coat of painted woodwork and metal, except last coat, shall be sandpapered smooth when dry. Texture-coated gypsum board shall be sanded lightly to remove surface imperfections after first coat of paint has been installed.

F. Each coat of paint or enamel shall be a slightly different tint as required. Each coat of paint, enamel, stain, shellac, and varnish will be inspected by the IOR before next coat is applied. Notify the Project Inspector that such Work is ready for inspection.

1. Tinting Guideline: The first coat, primer/undercoat(s) to be untinted or tinted up to 50 percent lighter or darker (at the discretion of the installer) than the finish coat. The second coat (or third coat if a seal coat and undercoat have been specified) is to be factory tinted in the range of 10 percent to 15 percent lighter or darker (at the discretion of the installer) than the finish coat. The final coat is to be factory tinted to the required color selected. These tinting guidelines shall be provided on all surfaces receiving paint.

G. Do not "paint-out" UL labels, fusible links and identification stamps.

H. Paint Roller, brush and spray.

1. Only Paint rollers shall be used on interior plaster, drywall, masonry/plaster and plywood surfaces, nap shall not exceed one half inch in length.

2. First coat on wood overhang and ceilings shall have material applied by roller and then brushed out in a professional manner to leave surface free of imperfections. Finish coat may be sprayed.

3. Other surfaces shall have all coatings applied with brushes of proper size.

4. Spray work is permitted only on radiators, acoustic plaster, masonry and plaster.

I. Where ceilings are specified to be painted, beams, cornices, coves, ornamental features, plaster grilles, etc. shall be included.

J. Ceilings shall be white, including classrooms, storage rooms, offices, arcades, etc. Boiler room and fan room ceiling color shall match adjacent walls.

3.03 CLEANING

A. Remove rubbish, waste, and surplus material and clean woodwork, hardware, floors, and other adjacent Work.

B. Remove paint, varnish and brush marks from glazing material and, upon completion of painting Work, wash and polish glazing material both sides. Glazing material, which is damaged, shall be removed and replaced with new material.

C. Clean hardware and other unpainted metal surfaces with recommended cleaner. Do not furnish abrasives or edged tools.

3.04 SCHEDULE

A.

B. Exterior:

1. Woodwork: 3 coats.

a. First Coat: As specified in this section under Priming.

b. Second and Third Coats: Exterior house and trim enamel.

2. Wood Doors: 3 coats.

a. First Coat: As specified in this section under Priming.

b. Second and Third Coats: Exterior gloss enamel.

3. Plaster and Stucco: 3 coats. Flat 100 percent acrylic.

a. Prime Coat: Alkali resistant primer/sealer.

b. Exterior 100 percent acrylic.

4. Concrete: 3 coats. Flat 100 percent acrylic.

a. First Coat: Concrete sealer.

b. Second and Third Coats: Exterior 100 percent acrylic.

5. Concrete Block: 3 coats. Flat 100 percent acrylic.

a. First Coat: Concrete block filler.

b. Second and Third Coats: Exterior 100 percent acrylic.

6. Metal: 3 coats. Shall be cleaned and pre-treated. Items to be painted include, but are not limited to: steel columns and miscellaneous steel items, gravel stops, metal doors and frames, hoods and flashings.

a. First Coat: As specified in this section under Priming.

b. Second and Third Coats: Exterior gloss enamel.

C. Mechanical and Electrical Work:

1. Except where interior mechanical and electrical Work to be painted is specified to receive another paint finish, Work occurring in finished rooms and spaces shall be cleaned, pre-treated, and painted with 3 coats. Items to be painted include, but are not limited to: steel and copper piping, pipes, vents, fittings, ducts, plenums, miscellaneous supports and hangers, electrical conduit, fittings, pull boxes, outlet boxes, unfinished surfaces of plumbing fixtures, miscellaneous metal cabinets, panels, and access doors and panels.

a. First Coat: As specified in this section under Priming.

b. Second and Third Coats: Interior enamel, semi-gloss or gloss to match adjacent wall or ceiling finish.

2. Insulation and Taping on Pipes and Ducts: 3 coats.

a. Finished Rooms:

1) First Coat: Interior waterborne primer.

2) Second and Third Coats: Interior semi-gloss or gloss enamel to match adjoining wall or ceiling finish.

b. Building Exterior:

1) First Coat: Exterior waterborne primer.

2) Second and Third Coats: Exterior gloss enamel.

3. Inside surfaces of ducts, vents, dampers and louvers as far back as visible from room in which they open shall be painted with 2 coats of flat black paint.

D. Miscellaneous:

1. Outside Storage Units (wood or metal): 3 coats.

a. First Coat: As specified in this section under Priming.

b. Second and Third Coats: Exterior gloss enamel.

2. Exterior and interior surfaces of storage bins, and potting tables shall have 3 coats of acrylic stain.

3. Wood compost bins shall be finished with 3 coats of acrylic stain.

3.05 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.06 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 09 9013

PAINTING OF EXISTING FACILITIES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Interior and exterior painting.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 02 8333 – Lead Abatement and Lead-Related Construction Work.
3. Section 02 8213 – Asbestos Abatement and Asbestos Related Disturbance.
4. Section 06 1000 - Rough Carpentry.
5. Section 06 2000 - Finish Carpentry.
6. Section 07 9200 - Joint Sealants.
7. Section 09 2423 - Cement Plaster and Metal Lath.
8. Section 09 2900 - Gypsum Board.
9. Section 09 9623 – Graffiti - Resistant Coatings.

1.02 REGULATORY REQUIREMENTS

A. Workers shall be trained in EPA’s (Environmental Protection Agency); Renovation, Repair and Painting (RRP), the lead-related construction course that satisfies the requirements specified in 40 CFR, Part 745, Section 745.90.

B. The Lead Related Construction Work, specified herein, shall be performed by a company, partnership, corporation, sole proprietorship or individual doing business, association, or other business entity; a Federal, State, Tribal, or local government agency; or a nonprofit organization, shall satisfy the requirements specified in 40 CFR, Part 745, Section 745.89, as a Lead-Safe Certified Firm.

C. Prior to commencement of Asbestos Related Construction Work, personnel required to construct and enter the Work Area or handle Asbestos Containing Materials shall have received adequate training, minimum of 16 hours of O&M training comprised of 2 hours of Awareness Training and 14 hours of Special O&M

Training, in accordance with the requirements by 40 CFR, Part 763, Subpart E (AHERA) and Title 8, Section 1529, of the California Code of Regulations.

D. Paint materials shall comply with Food and Drug Administration's (FDA) Lead Law and current rules and regulations of local, state and federal agencies governing use of paint materials.

E. Paint color requirements for CALOSHA: CALOSHA requires the following items be painted as prescribed:

1. Gas Mains and Valves shall be painted "gun metal gray" (medium gray).

2. Fire Valves and Raisers shall be painted OSHA's "safety red".

1.03 SUBMITTALS

A. Submit in accordance with Section 01 3300: Submittal Procedures.

1. Submit a complete list of materials to be furnished stating supplier and distributor's names with product recommendations.

2. Submit manufacturer's standard color samples for each type of paint specified. Once colors have been selected, submit six samples of each color selected for each type of paint, on standard 8 ½ by 11 spray-out panel.

3. Before any coating is applied, submit to Project Inspector samples of each color to be used on contract. If more than one batch of material and color is to be used, samples from each batch shall be submitted.

B. Paint and Enamel Spray-Outs:

1. Samples of Paint and Enamel shall be submitted on standard 8 ½ by 11 Leneta Opacity-Display Charts. Each display chart shall have color in full coverage. Sample shall be prepared using material from batch to be used on actual job. Identify school on which paint is to be used, batch number, color number, type of material, name of manufacturer and name of CONTRACTOR.

2. Furnish samples of colors to Project Inspector. Samples shall be kept on the job until painting is completed.

3. CONTRACTOR shall be responsible for finish color on surface to be painted; where different materials of same color are specified to be applied on same, or adjoining surfaces, final color match shall match color sample on those surfaces.

C. Elastomeric coating shall be submitted in duplicate samples of texture coating. Samples shall be not less than 2 ½-inch by 3 ½-inch in size and on adequate backing.

D. Provide the current SCAQMD permit for each HEPA Vacuum and Portable Mechanical Ventilation System before they are brought onto the Project site.

E. Materials and color samples shall be approved before a job start meeting will be scheduled.

1.04 QUALITY ASSURANCE

A. Certification of Materials: With every delivery of paint materials manufacturer shall certify, on form supplied by OWNER that materials comply with requirements of this Section.

B. Paint materials shall be approved by OWNER'S Office of Environmental Health and Safety (OEHS) Chemical Evaluation Program and comply with applicable requirements of Food and Drug Administration's (FDA) Lead Law and South Coast Air Quality Management District (SCAQMD).

C. Painters working on Lead related work shall be trained at a minimum, in EPA's Renovation, Repair and Painting (RRP) Rule.

D. Pre-Construction Meeting: Prior to start of Work of this section and after approval of submittals, schedule an onsite meeting between CONTRACTOR, OAR, Project Inspector, representatives of the paint manufacturer, and painting subcontractor to review construction conditions and to discuss conformance to the requirements of this Section prior to paint application.

1.05 DELIVERY, STORAGE AND HANDLING

A. Materials shall be delivered to project site in original unbroken containers bearing manufacturer's name, brand number, batch number, and Safety Data Sheets.

B. Open and mix ingredients on premises in presence of Project Inspector. Immediately remove rejected materials from premises.

1.06 METAL STORAGE CONTAINER

A. Storage and Mixing of Materials: Store materials and mix only in spaces designated for purpose by OAR. Keep such spaces clean and take necessary precautions to prevent fire. Hang out oily rags singly in open air. Stack paint containers so that manufacturer's labels are clearly displayed.

B. Paint, combustible materials, gasoline driven equipment, etcetera shall not be stored or left in any school building overnight.

C. In event that equipment and material storage sheds must be placed on asphalt pavement less than six months old, each wheel, leg or other supporting member shall be centered on a 4-foot by 8-foot by ¾ inch thick sheet of plywood. Shed shall be set down in such a manner as to prevent damage to pavement.

CONTRACTOR shall be responsible for any damage to pavement caused by improper placement of shed.

1.07 ENVIRONMENTAL CONDITIONS

A. Temperature: Do not apply exterior paint in damp, rainy weather or until surface has dried from effects of such weather. Do not apply paint, interior or exterior, when temperature is below 55 degrees F., humidity is above 80%, or above manufacturer's stated recommended temperature, or when dust conditions are unfavorable to proper workmanship.

1.08 WARRANTY

A. Manufacturer shall provide a three year material warranty from date of Substantial Completion.

B. CONTRACTOR warrants work executed and materials furnished under Contract shall be free from defects of materials and application for a period of three years from date of Substantial Completion.

C. Elastomeric coating shall be warranted for a period of five years from date of Substantial Completion.

1.09 PROTECTION

A. Fire alarm boxes, fire sprinkler heads, smoke detectors and intrusion alarm systems shall be uncovered and available to perform function that it was designed for each and every night.

B. Pressure relief grilles with barometric damper leading to a corridor or an exterior shall be masked off before spraying and then uncovered immediately after spraying.

C. Conspicuously post sufficient "Wet Paint" signs continuously to alert public and school personnel to existing conditions until paint is completely dried.

D. Provide and maintain barriers, guards, lights, warning signs, etcetera for complete protection and as directed by the Project Inspector.

E. Do not impede emergency egress.

1.10 REMOVAL AND REINSTALLATION OF SECURITY GRILLES

A. Replace and secure at end of each working day protective security grilles. Every bolt shall be replaced properly using a washer, cut smooth and filed down.

B. Remove window grilles and anchoring devices prior to painting area behind grille.

C. Repair or replace grills, anchoring devices, and hardware damaged during removal and replacement process with material of same composition.

D. Reinstall grilles; anchoring devices and hardware shall be replaced with new hardware of same material. Installation of previously used or damaged hardware and anchoring devices shall not be permitted.

E. Provide hardware, specialty tools, and labor needed to remove and reinstall window grilles.

F. Paint security grilles that have graffiti or have been vandalized.

G. Do not leave any building or classroom unsecured. Grilles shall be reinstalled and rooms properly secured at end of each day.

H. Patch holes that exist prior to removal of grilles or that are exposed or created during removal.

I. Removal and Replacement

1. Grille and window sill shall be numbered prior to removal. Grille must be reinstalled to original location. Remove numbers upon reinstallation.

2. Window grilles may have been anchored in different ways according to building composition and grille type. Following is a list of different types of anchors and methods of removal and installation. (Processes listed are not applicable to every situation. Use appropriate methods as needed, with prior consent of Project Inspector).

a. Nail in Anchor:

1) Removal: Use cold chisel to split aluminum head, pull out steel nail in center, and then pull out aluminum sleeve or grind off aluminum head to reveal nail, then remove nail. Touch up grille with approved spray cold galvanize where galvanize has been damaged from grinding.

2) Reinstallation: With grille flush to wall, insert anchor flush with mounting tab, and drive nail with hammer until secure. Bent nails will not be accepted.

b. Threaded Anchors:

1) Removal: Grind off tack weld only, threaded stud shall remain in wall. Remove nut, washer, and grille. Touch up galvanizing damaged during grinding.

2) Reinstallation: Install grille without damaging anchor threads. Install new washer and nut, tack weld nut to tab, clean weld, and paint. Do not weld threads.

c. Carriage Bolts: Note: Extra-long carriage bolts are a specialty item. Allow sufficient time to order.

1) Removal: Remove nut and washer and pull out bolt (do not reuse).

2) Reinstallation: Replace with new bolt of same size and minimum of 1 inch longer than bold removed. Install a new fender washer and nut. Tighten until grill is firmly against wall. Check to make sure window operates correctly. Cut off bolts flush with nut and de-burr bolt.

d. Lag Type Screws

1) Removal: Remove nut and washer and pull out bolt (do not reuse).

2) Reinstallation:

a) If existing hole is capable of receiving new screw: Replace with new lag, of same diameter, using 1 inch longer than those removed. Tack weld screws to grille.

b) If existing hole is damaged or otherwise compromised, a new placement of tab and screw is necessary. Remove existing tab, offset location of tab 2 inches, and drill correct size pilot hole into wood frame to avoid splitting wood. Replace with a new lag, of same length and diameter as removed. Tack weld screws to grill. Welds shall be cleaned and painted with cold galvanized paint.

e. Tamper Proof Screws

1) Removal: Remove nut and washer and pull out bolt (do not reuse).

2) Reinstallation:

a) If existing hole is capable of receiving new screw: Replace with new screw, of same diameter, using 1 inch longer than those removed.

b) If existing hole is damaged or otherwise compromised, a new placement of tab and screw is necessary. Remove existing tab, offset location of tab 2 inches, and drill correct size pilot hole into wood frame to avoid splitting wood. Replace with a

new screw, of same length and diameter as removed. Welds shall be cleaned and painted with cold galvanized paint.

f. Pop Rivet-Steel, Aluminum, or Stainless Steel. Note: Extra-long pop rivets are a specialty item. Allow sufficient time to order.

1) Removal: Drill out with proper size drill bit, do not increase hole size.

2) Reinstallation: Replace with new pop rivet, of same diameter and composition as rivet removed.

3. Grilles reinstalled in exact prior position. Do not use plastic anchors or toggle bolts. Grilles have been installed with expanded metal situated in a consistent directional manner and shall be reinstalled in same manner. Extra or oversized holes shall be repaired. If for any reason anchor will not securely hold, use next bigger size anchor and offset tab 2 inches and re-anchor as per OAR direction.

4. Repair damage that previously exists prior to removal or is done to existing concrete, brick, wood, or any other surface during removal. If welding is necessary, welder shall protect surfaces from damage and maintain a fire watch during welding and at least ½ hour after completion.

5. Do not change original type of anchor without prior approval from OAR and Project Inspector.

6. Comply with applicable lead and asbestos abatement requirements prior to removal of grilles. Only employees properly trained and certified shall be permitted to disturb building materials containing lead or asbestos.

1.11 MOVING EQUIPMENT

A. Perform handling and moving of furniture, equipment, casework, books, and supplies, or items impeding project and re-installing in their original location, except as otherwise directed by OAR. Library books shall be moved and re-shelved in same sequence and in same location from which they were removed, unless otherwise directed by OAR.

1.12 MISCELLANEOUS

A. Provide and maintain barriers, guards, lights, warning signs, etcetera for complete protection and as directed by the OAR. Provide access to doors and openings. Do not store equipment or material near openings or traffic lanes that could be hazardous during an emergency.

1.13 DEFINITION OF TERMS

A. Work shall include labor, material, equipment and scaffolding required for cleaning and preparation of surfaces to receive painters finish and for painting and varnishing, as herein specified. Perform work unless specifically noted otherwise.

B. Painting shall include complete preparation and finish or refinishing in accordance with requirements specified herein. Drywall shall be treated same as specified for plaster.

C. Wherever woodwork is specified to be refinished, it will include wood finish member (trim), movable cabinets with doors and center cut doors, windows and sash, screen doors, screens, sash poles, movable and fixed bulletin boards and chalkboards, etcetera.

D. Plastic, impregnated plywood, hardwood, metal, asbestos board (if painted), and mastic coated wood surfaces shall be treated in same manner as specified for “woodwork”.

E. Whenever “Paint or Enamel” is referred to in these specifications, it shall be taken to mean types of waterborne materials and water reducible materials.

F. Whenever “edges” are referred to in these specifications, it shall be taken to mean every edge (which include tops and bottoms).

G. Work shall be done by skilled and experienced painters in a professional manner. Painters must wear presentable white uniforms consistent with industry standard and personal ID Badges.

1. Provide ID badges identifying the following:

a. Employee’s name.

b. Employee’s photo.

c. Company Position (i.e. apprentice, journeyman, foreman).

d. Company name and logo.

e. Company phone number.

1.14 SCAFFOLDING

A. Scaffolding and aerial lifts shall be made available to OWNER, without cost, to allow inspection of work. OWNER will coordinate its inspections with that of CONTRACTOR’s to avoid delays to the work.

1.15 SCHEDULING OF WORK

A. Schedule work through the OAR.

PART 2 - PRODUCTS

2.01 PAINT MATERIALS

A. Factory mix paint materials to correct color, gloss, and consistency for installation to maximum extent feasible.

B. Paint materials shall be by one manufacturer.

C. Paint materials shall be “Premium Plus or Ultra Premium Grade”.

D. Acceptable manufacturers, unless otherwise noted:

1. Dunn-Edwards Corporation Paints.
2. Vista Paints.
3. Behr Paint Company
4. Sherwin Williams.
5. PPG Paints.
6. Benjamin Moore
7. Ever-Gard Paint: a subsidiary of Shilpark Paint
8. Equal.

E. Gloss degree standards shall be as follows:

High Gloss	70 and above	Eggshell	30 to 47
Semi-Gloss	48 to 69	Satin	15 to 29

2.02 MURAL PAINT MATERIALS

A. Manufacturer: Behr, Premium Plus Ultra Exterior Flat, Behr Premium Plus Exterior Semi-Gloss Enamel, or equal.

B. Anti-Graffiti Coating: Per Section 09 9623 Graffiti-Resistant Coatings.

PART 3 – EXECUTION

3.01 REMOVE AND REINSTALL

A. Remove coat hooks, name plates, label frames, sash lifts, sash locks, pencil sharpeners, flag brackets, drawer handles and locks, window coverings, switch and

receptacle plates, removable bulletin boards, mirrors, maps and thermometer. Reinstall all of the above after painting is completed.

B. Remove exposed nails, hooks, tacks, screws, staples and pins in surface to be painted and patch holes with a matching material. Remove interior and exterior obsolete screens, grille hangers, fasteners and patch holes.

C. Remove and reinstall Venetian blinds and channels ensuring security latches are secure. When removed, blinds and channels shall be marked with its location and reinstalled in the same location.

D. CONTRACTOR shall replace map and picture hooks as directed by the Project Inspector.

E. Paper labels shall be soaked off and glue residue from tape removed.

F. Remove metal or plastic room numbers, letters, signs, and, after painting is complete, clean and reinstall them neatly.

G. Sash locks shall be reset in accordance with instructions for locking doors and windows each night.

3.02 REPLACEMENT SCREWS AND HARDWARE

A. Hardware shall be replaced using new screws, of same diameter, but one size longer than those removed. Screws used must be of finish design and material to match hardware.

B. Remove paint from hardware, including paint from previous painting.

3.03 GENERAL PREPARATION OF EXISTING PAINTED SURFACES

A. Previously painted surfaces will be assumed to contain lead.

B. Trenching: Before any cleaning or sandblasting operation is started, soil at base of building shall be trenched to a depth of six inches and eight inches wide. After completing painting application and allowing sufficient drying time, trench shall be refilled.

C. For stucco/masonry repair, apply an exterior patching material specified in Section 09 2423, bringing the surface flush with the existing finish while matching the existing building textured finish.

D. Glass, fiberglass and polycarbonate on exterior shall be traced neat and clean with approximately, but no more than 1/16 inch overlay. Paint specks, smears or splatters shall be immediately removed and surface cleaned.

E. Miscellaneous Exterior Surfaces Freestanding exterior school signs, windbreaks, baffles, benches, scoreboards, fences and gates (excluding chain link), decorative panels, interior and exterior surfaces of display cases, storage and supply cabinets, including both sides and edges shall be prepared and primed as specified under

"Doors." They shall receive number of coats of paint as detailed under "Colors and Number of Paint Coats."

F. Examine surfaces to receive paint finish. Surfaces which are not properly prepared and cleaned or which are not in condition to receive finish specified, shall be corrected before paint is applied. Painting shall not be done on existing painted surfaces until surfaces are approved by the Project Inspector.

G. Remove items fastened to existing painted surfaces and patch holes with a material and re-fasten in original location upon completion of painting work.

H. Existing painted surfaces indicated to be painted, shall be prepared as follows:

1. Wood, plaster and metal surfaces shall be washed with TSP (tri-sodium phosphate) substitute to remove dirt, grease and other foreign materials and rinsed with clean water and then sand papered and dusted off. Surfaces shall have wax completely removed before washing, which includes base, shoe base, and concrete base.

2. Checked, cracked, blistered, scaled, peeling, and alligatored paint on wood and metal surfaces shall have paint removed down to original finished surface, then hand-sanded and dusted clean.

a. Surfaces shall then be considered as new work.

b. Woodwork shall be hand sanded smooth after each and every coat, except last coat. Coats shall be free from dust, dirt or other imperfections.

c. Steel sash and aluminum sash to be painted must be steel-wooled and dusted off. Sash putty shall be hand sanded smooth and dusted off.

d. Remove lint and grease from screens, vents, hoods, et cetera that are to be painted.

3.04 OTHER SURFACE PREPARATION REQUIREMENTS

A. Existing painted surfaces shall be prepared and made ready to receive new coat of paint or other finish coating materials by any of following methods:

1. Checked, cracked, blistered, scaled loose, and alligator paint on wood and metal surfaces on exterior or interior of facilities shall be wet scraped and wet sanded to a smooth solid surface, H.E.P.A. vacuumed, wet wiped as specified per EPA RRP and then painted as specified. Wet scraping and or wet sanding shall be performed only when school is not in session, and students and staff are not on site.

2. Trenching: Before any cleaning operation is started, soil at base of building shall be trenched to a depth of six inches and eight inches wide. After completing painting application and allowing sufficient drying time, trench shall be refilled.

3. Pressure washing shall not be allowed without prior approval from the OWNER's Facilities Environmental Technical Unit. Only low pressure hydro-washing, below 750 psi, shall be allowed on all exterior surfaces.

4. Hydro-washing: Exterior masonry and plaster on buildings, bungalows, pavilions, and appurtenances must be washed with a cleaner using hydro-washing equipment, or as directed by Project Inspector, to remove grease, dirt and foreign materials and then rinsed with clean water to remove residue. Surfaces must be allowed to dry for at least five days or as determined by Project Inspector. Care shall be taken to prevent water from entering buildings through vents, et cetera. Immediately following hydro-washing, areas surrounding buildings must be rinsed down. Ensure no rinse water enters storm drains.

    a. Exposed mastic, concrete, and/or plaster surfaces shall be cleaned with a cleaner, using hydro-cleaning equipment. This process is to remove dirt, foreign materials, grease, and oil and rinsed with clean water to remove residues.

    b. Before hydro-washing efflorescence must be brushed off and surface treated with a 10 percent solution of Muriatic Acid, neutralized with a 10 percent solution of ammonia water and then rinsed with clean water.

    c. Painted surfaces that will be directly or indirectly impacted by hydro-washing shall have paint stabilized to remove loose, flaky or peeling paint using the wet method. Wood, metal, and other exterior non-masonry/stucco surfaces shall be primed where stabilization has occurred prior to application of cleaner and hydro-washing.

    d. Hydro-washing is not intended to remove loose, flaky or peeling paint or paint chips. Water generated from cleaning and hydro-washing process shall be collected and stored in DOT approved container and examined for the presence of paint chips. The visible paint chips shall be separated from the waste water and be disposed of as assumed RCRA hazardous waste or be characterized to determine disposal requirements. The remaining wastewater must be characterized for proper disposal in accordance with Specification 02-8333, Lead Abatement and Lead Related Construction Work.

    e. At no time shall water from hydro-washing process be directed to soil, such as planted area, sewer system, storm drain, be allowed to flow off OWNER property to adjoining public or private property, or to flow across asphalt or cement concrete and allowed to dry.

    f. Hazardous waste generated by this process requires that the Office of Environmental Health and Safety (OEHS) be notified. Hazardous waste shall be being transported under a Uniform Hazardous Waste Manifest approved by OEHS prior to disposal. CONTRACTOR shall ensure the manifest is completed as required by code and then submit it to OEHS for approval. The OAR will sign the manifest

once it is accurately completed and approved by OEHS prior to transport.

5. Pressure Washing of materials containing asbestos or lead are abatement activities and will only be performed by companies and individuals with prior Facilities Environmental Technical Unit (FETU) approval.

3.05 CRACKS AND VOIDS

A. Voids between wall and ceiling surfaces and wood or metal trim or scribed edges where finish exists or is specified to be applied and including picture molding, must be filled with putty, filler or latex sealing compound.

B. Areas where finish plaster coat is loose must have that portion removed to a solid surface. Surfaces that are broken, cracked, or damaged and areas where finish plaster coat has been removed must be coated with compatible bonding agent. Surface will then be given a cement plaster finish coat consisting of one-part Plastic Portland Cement to three parts sand to match existing finish. Cracks shall be "V-eed" out, filled, finished flush with and textured to match adjoining surfaces, per OWNER Representative's approval.

C. Neutralize walls showing effects of alkali.

3.06 FILLER ON SIDING AND WOODWORK

A. Checked and cracked portions of siding and woodwork (after surrounding areas have been prepared as specified above) shall be primed, smoothed with an exterior filling compound and then sanded smooth when dry. Filled areas must be spot primed. Filler shall not be used on handball walls or basketball backstops.

3.07 SEALING SASH, DOOR FRAMES

A. Sealant that will interfere with proper application of coatings shall be removed. Seal around door and window frames, flashing, vents, separations between masonry or plaster and adjoining surfaces, etcetera, with a sealant compound recommended by manufacturer of coating to be used. Sealing and filling shall be done with sufficient pressure to force material to base of opening.

3.08 MASTIC REPAIR AND ELASTOMERIC REPAIR

A. Surface must be clean, firm and free of oil, wax and chalk. Mildew must be killed. Surface must be rinsed and allowed to dry.

B. Use primers as recommended by manufacturer for each substrate.

C. May be applied with airless spray equipment, using a 22 to 34 orifice tip and do not apply when surface or air temperature is below 50 degrees F.

D. Apply elastomeric with a ½ inch to 1 ½-inch roller cover or an air-atomized spray texture pump system. Do not over-roll.

E. Spreading rate:

Fine texture:	Approx. Mil thickness	Wet	18 Mils
	at 80 square feet per gallon	Dry	9 Mils
Medium texture:	Approx. Mil thickness	Wet	18 Mils
	at 60 square feet per gallon	Dry	9 Mils
Heavy texture:	Approx. Mil thickness	Wet	39 Mils
	At 40 square feet per gallon	Dry	26 Mils

NOTE: Coverage will vary depending upon texture desired and surface. Direction will be given by an OWNER representative.

F. Dry time: To touch: 1 to 1 ½ hours

To re-coat: 24 hours

G. Finish will be uniform in texture and free of imperfections.

H. Elastomeric coatings will receive at least two coats of paint.

I. Cracks 1/32 inch up to 1/16 inch: Apply two coats of elastomeric coating to bridge cracks.

J. Cracks and imperfections greater than 1/16 inch and up to 1/8 inch shall be treated with a brush-grade elastomeric sealant applied in a 2-inch wide band; crowned at center and feathered at edges to conceal repair.

K. Cracks and imperfections greater than 1/8 inch and up to ½ inch shall receive a urethane sealant (recommended by paint manufacturer), “rake out” crack to conform to manufacturer’s specifications and apply sealant per manufacturer’s directions.

L. Cracks, holes and damaged spots larger than ½ inches: Damaged areas shall be given a cement plaster finish coat consisting of one-part plastic Portland cement to three-parts plaster sand to match existing finish. When finished, it shall be flush with and match existing texture of adjoining surface.

M. Texture match: Crack repairs shall be finished to match texture of adjoining surfaces, per Project Inspector’s approval. Handheld plaster hopper guns may be used. Exercise care to ensure that areas finished by handheld plaster machines match in color, texture and thickness to adjoining surfaces. A compatible bonding agent shall be used.

3.09 REPAIR OF PLASTER

A. Exterior areas, where finish plaster coat is loose, shall have that portion removed to a solid surface. Surfaces that are broken, cracked, or damaged and areas where finish plaster coat has been removed shall be coated with compatible bonding agent. Surface will then be given a cement plaster finish coat consisting of one-part Plastic Portland Cement to three parts plaster sand to match existing finish. Cracks shall

be “veed-out”, filled, finished flush with and textured to match adjoining surfaces, per Project Inspector’s approval.

1. If existing plaster was a machine applied, dash coat, apply final application of finish coat over patched areas by machine to match existing adjacent machine texture. Use a finish plaster material with a bonding admixture mixed according to manufacturer's recommendation.

2. Cracks, holes, and damaged spots larger than ½ inch, see Article Mastic Repair and Elastomeric Repair.

B. Exterior plaster designated to be painted shall receive three coats. First coat shall be sealer. Second and third coats shall 100 percent acrylic gloss enamel unless otherwise indicated.

C. Interior plaster patching shall receive four coats. First coat shall be pigmented sealer. Second coat shall be enamel undercoat. Third and fourth coats shall gloss or semi-gloss enamel as indicated.

3.10 REPAIR OF SPALLING CONCRETE

A. Remove surface contamination, broken and spalled concrete to a sound concrete base. Concrete shall be removed to a depth of one-half inch minimum around rebar. Sides of areas to be repaired shall be straight, not tapered or sloped.

B. Spalled or loose concrete shall be removed using an electric or compressed air chipping hammer.

C. Clean exposed rebar by sand/media blasting, remove debris and dust and treat steel with a sealant compatible to patching materials same day. Project Inspector shall approve sealant application prior to any patching materials being applied.

D. Repair concrete to match existing concrete surfaces using Sika Top 123 Gel Mortar, DAP Concrete Patch, Quikrete Fast-Setting Concrete, or equal.

E. Sealant and patching materials shall be applied by qualified applicator.

3.11 SPRAYING MASONRY/CEMENT PLASTER

A. Masonry/plaster material must be a 100 percent acrylic flat paint, color as directed. Material must be applied in strict conformity to manufacturer’s directions. There must be at least 24 hours drying time between first coat which shall be factory tinted 10 percent to 15 percent lighter (or darker) in color than finish coat. Manufacturer shall be acquainted with conditions of surfaces to be refinished and provide written specifications for the job including special primers or additives needed for adhesion sealing of first coat of paint and general performance of materials. Finished surface must be uniform and free of imperfections. Each coat applied to surface must be sprayed using “Cross-Off” method of application by spraying horizontally with a 50 percent overlap on returns and doubling back with a vertical stroke with a 50 percent overlap on returns.

3.12 CAFM BUILDINIG NUMBERS

A. After painting of masonry/plaster, paint and repaint (stencil) CAFM numbers with 100 percent acrylic gloss in one location on each building. Numbers shall be 6 inches in height using Gothic Bold Army font. Color is to be Black on light color surfaces and White on dark color surfaces. Coordinate with OAR color selection for surfaces and locations.

3.13 STAINED AND VARNISHED SURFACES

A. Where existing varnish has been removed and woodwork is to be enameled, woodwork shall be primed as specified under "Priming" and then given three coats. First coat of enamel undercoat, second and third coats of gloss or semi-gloss enamel.

B. Interior woodwork having a stain and varnish finish shall have areas where painter's finish has been removed, build-up to match adjoining finish with stain, filler for open wood grained wood and varnish. Exposed surfaces of woodwork shall be given two coats of interior gloss varnish, and one coat of interior varnish, semi-gloss finish or as specified herein. Between coats of varnish, surfaces shall be sanded with #220 sandpaper or steel-wool and dusted clean.

C. Where exterior gloss varnish for finish coat is specified, method of build-up shall be as specified above, however exterior gloss varnish shall be used in lieu of interior varnish. When following items are to receive varnish, three coats of exterior gloss varnish shall be used on: window stools, sash, screens, exterior doors/frames, wood handrails, balustrade caps, chalk rails, toilet stall doors, fixed benches, sash poles, stair treads, risers, bleachers, base and base shoe.

D. Remove stains from varnished surfaces before refinishing.

E. Colored varnish is prohibited.

3.14 SASH PUTTY

A. Loose sash putty must be removed and replaced. Rough, uneven or otherwise deteriorated sash putty shall be sanded smooth or re-puttied.

B. Sash putty and sealing compound shall be painted with same number of coats as specified for woodwork.

3.15 PUTTY

A. Holes, open joints of siding, woodwork and sash glazing shall, after surrounding areas have been prepared as specified above, be knife puttied. On stained woodwork, putty must be colored to match stain. Puttying shall be done after first coat of paint or varnish has been applied. Latex sealant may be used on open joints and woodwork. Putty and/or sealant shall be spot primed before finish coat is applied. Putty or latex sealant shall not be used on handball walls or basketball backstops.

3.16 FILLER ON SIDING AND WOODWORK

A. Checked and cracked portions of siding and woodwork (after surrounding areas have been prepared as specified above) shall be primed, smoothed with an exterior filling compound and then sanded smooth when dry. Filled areas must be spot primed. Filler shall not be used on handball walls or basketball backstops.

3.17 MIXING AND APPLICATION

A. Colors of coatings shall be as directed by Project Inspector.

B. Three coats of paint shall be applied as follows:

1. First coat: primer or undercoat, shall be white or may be tinted up to 50% lighter or darker than the finish coat at the discretion of the installer.

2. Second coat shall be factory tinted in range of 10 percent to 15 percent lighter or darker than finish coat.

3. Third coat shall be factory tinted to color selected but allowing for tint variations in more than one color for application to different surfaces. Color combinations in rooms and for surfaces shall be varied in accordance with color samples.

C. Various colors may require additional coats of paint complete coverage. No additional allowances will be made. CONTRACTOR is responsible for consulting color samples and knowing color and coverage.

D. Surfaces to be finished and each coating shall be separately inspected by Project Inspector and checked for mill thickness. The requirements are two mils each coat wet and three mils dry after three coats. Notice that such work is ready for inspection shall be given to Project Inspector. Should such notice not be given before succeeding coat is put on, finish applied shall be removed or an additional coat shall be applied, as directed by Project Inspector. Allow at least one day drying time between coats for exterior work or as directed by Project Inspector for proper drying.

E. Roof work to be painted Q8-38T Birch Gray.

3.18 PAINT ROLLERS, BRUSH AND SPRAY

A. Paint rollers or spray may be used on interior plaster, drywall, masonry, stucco and plywood surfaces. Where rollers are used, nap shall not exceed 1/2 inch in length. To ensure proper coverage when rolling, a metal bucket screen/grid must be used.

B. First coat on wood overhangs and ceilings must have material applied by roller and then must be brushed out in a professional manner to leave surface free of imperfections. Finish coat may be sprayed.

3.19 PRIMING

A. Surfaces from which paint finish have been removed down to original wood or metal surfaces shall be primed as follows:

1. Wood shall be sealed or primed with a non-water borne material on both sides and edges. Wood completely sealed with a non-water borne material shall be top coated with a water borne material as specified herein. Finish material (water borne) shall be compatible with non-water borne primer per manufacturer's recommendations. Hardwood shall be filled and stained to an even color.

2. Galvanized Metal: Clean oil and foreign material from surfaces. Apply a metal clean and etch pretreatment coating. Follow manufacturer's instructions for drying time, and then prime with one coat of metal primer.

3. Ferrous and non-ferrous metal: Use a primer for ferrous and non-ferrous metal.

3.20 FIRE AND LIFE SAFETY EQUIPMENT

A. Cal-OSHA requires the following equipment be painted as follows:

1. Gas Mains and Valves shall be painted "gun metal gray" (medium gray).

2. Fire Valves and Raisers shall be painted OSHA's "safety red".

3.21 DOORS

A. Painted or refinished interior and exterior wood or metal doors must be finished on both sides and edges with three coats of paint consisting of first coat of primer, second coat and third coat of exterior high gloss enamel.

B. Where doors open into rooms or spaces having different finishes, communicating doors must have edges finished according to industry standard or as directed by Project Inspector.

1. Strike edge of door shall be same color as inside face of door.

2. Hinged edge of door shall be same finish as outside face of door.

C. Exterior hardwood doors and frames where varnish finish has been removed shall be built-up to match adjoining finish with stain, filler and one coat of exterior varnish. Then surfaces, including edges must be given specified number of coats of exterior varnish as detailed under "Stain and Varnish Finish."

3.22 RAMPS, STAIRS AND HANDRAILS

A. Unpainted, painted and mastic coated classroom ramps, treads, risers and thresholds of building shall be prepared as specified herein and painted with two coats of Monochem DEX-COAT textured paint or equal.

B. Handrails shall be finished same as specified for exterior wood doors using exterior gloss enamel.

3.23 THRESHOLDS

A. Painted thresholds to be prepared, primed, and receive two coats of a non-skid porch and deck paint.

B. Natural finished wood thresholds to be prepared and receive three coats of a high gloss varnish.

3.24 INTERIOR AND EXTERIOR WOODWORK

A. Wood surfaces shall be prepared to receive new finish as specified under Articles Preparation of Surfaces and Priming. Wood surfaces (with the exception of wood classrooms and offices walls which shall be painted in a semi-gloss finish) shall be painted with three coats of paint consisting of first coat of primer, second coat and third coat of exterior high gloss enamel.

3.25 ENAMEL FINISH

A. Interior woodwork having an existing enameled finish must have areas where painter's finish has been removed and where spackling has been done in repairing defects in surface, built-up with undercoat. Wood surfaces shall then be given one coat of undercoat, a second coat and third coat of finish paint to match room finish. Paint shall be applied as specified under "Colors and Number of Coats."

B. Unpainted plaster surfaces to receive an enamel finish, must receive four coats of paint. First coat of pigmented sealer, second coat of enamel undercoat, third and fourth coats of gloss or semi-gloss enamel as specified herein.

C. Previously painted interior surfaces must have patching and places where painted finish has been removed, built up with one coat of a pigmented sealer. Then entire surface including patching shall be given one coat of an enamel undercoat, a second and third coat of gloss or semi-gloss enamel as specified herein.

3.26 CABINETS

A. Cabinets without doors, cabinets with glass doors and pegboard doors shall have interiors finished to match surrounding or adjacent work, unless interior has a stained finish.

B. Cabinets having solid panel doors must have exposed parts of cabinet and surfaces of doors finished to match room finish. Shelf edges shall be finished same as room finish.

3.27 PLYWOOD WALLS

A. Interior plywood walls having an existing stain finish must have exposed plywood joints machine sanded to remove projecting edges and prepared as follows:

1. Voids between wall surfaces and wood or metal trim or battens, and nail holes must be filled with putty, sealant, or an exterior filler, sanded smooth when dry and dusted clean.

2. Interior walls must be sanded smooth, brushed off and finished with three coats of paint. First coat of enamel undercoat, second and third coats of semi-gloss enamel.

3. Exterior plywood shall be cleaned and finished with three coats. First coat shall be undercoat. Second and third coats shall be gloss enamel. Exterior plywood may be sprayed if it is then back-rolled.

3.28 INTERIOR PLASTER AND DRYWALL WORK – WALLS AND CEILINGS

A. Where ceilings are specified to be painted, beams, cornices, coves, ornamental features, staff work, plaster grilles, etcetera shall be included.

B. Ceilings shall be white, unless otherwise noted. Includes classrooms, storage rooms, offices, arcades, etcetera. Boiler room and fan room ceiling color shall match adjacent walls.

C. Where walls are specified to be painted, columns, staff work, piers, returns, reveals, soffits of stairs, both sides of stair railings, soffits and reveals of windows and other openings shall be included.

D. Grease, ink spots and marks of indelible pencils shall be completely removed by use of water and abrasive soap powder without injury to finished surface.

E. First coat may be thinned per paint manufacturer's recommendation with a thinner prepared specifically for material used. Coats shall be flowed on freely. First coat must be prepared so as to stop suction, and should any dead spots appear, they shall be touched up before next coat is applied. The last coat shall be a uniform surface, free of defects.

3.29 AREAS REQUIRING ENAMEL

A. Interior and Exterior Enamel – Gloss: Woodwork, walls and ceilings (except acoustic tile or acoustic plaster or as otherwise specified herein) in following areas:

1. Physical Education and Gym Buildings.

2. Cafeteria: Except student and teachers' dining rooms.

3. Shops.

4. Miscellaneous Rooms: Toilet rooms, custodian closets, storerooms, boiler and mechanical rooms.

5. Kitchen Complex: Color; Eastwind – Q7-16P.

B. Interior and Exterior Enamel – Semi-Gloss: Woodwork, walls and ceilings (except acoustic tile or acoustic plaster or as otherwise specified herein) in following areas:

1. Administrative offices.

2. Faculty lounges and auditoriums.

3. Walls and surfaces in rooms or areas specified to receive an enamel finish and not herein specified to receive a Gloss Enamel finish, shall have a finish coat of Semi-Gloss Enamel.

C. Interior masonry, brick and concrete surfaces having an existing painter's finish shall be finished same as specified for interior plaster and drywall. Concrete pan ceilings may be sprayed as directed by Project Inspector.

3.30 UNPAINTED METAL

A. Unpainted bronze, brass, copper work, window grilles, stairways, handrails, chain-link fences, stainless steel, open metal shelving, porcelain metal faced cabinets and aluminum will not be painted, unless otherwise specified.

3.31 PAINTED METAL

A. Exposed structural steel, miscellaneous/ornamental iron, sheet metal work, guards, steel sash, gates, painted aluminum, basketball rims, etcetera shall have surfaces cleaned and prepared as specified. The areas from which original painter's finish has been removed shall be spot primed with metal primer to match adjoining surfaces and then surfaces shall be given a prime coat of metal primer, second and third coats as specified. Copper pipe shall be painted with one coat of enamel undercoat per manufacturer's recommendation, a second and third coat of enamel as specified.

B. Painted ornamental iron rails and gates, metal ceilings (metal decking, etcetera) stairs, pipe columns, and pipe rails shall be prepared and finished as specified herein. Metal decking and metal roll-up doors may be sprayed.

C. Exterior surfaces (except bottom) of exterior metal storage containers, including both sides of door(s) and edges shall be prepared and painted with three coats of paint consisting of first coat of primer, second coat and third coat of exterior high gloss enamel. Exterior metal storage container(s) must be sprayed.

3.32 METAL COVERED DOORS, RADIATORS

A. Metal Covered Doors: Bare metal must be primed with a metal primer. Doors and edges shall then be painted with one coat of enamel undercoat, a second coat and third coat of exterior gloss enamel as specified.

B. Fly screens and hardware cloth of copper, bronze or galvanized wire must be painted with one coat of exterior enamel.

C. Radiator guards must be removed, painted with three coats of enamel to match adjoining surface and replaced after radiators have been painted.

3.33 LIGHT FIXTURES

A. Exterior/interior light fixtures (other than plated or bronzed) and bells to be primed and then painted with two coats of an enamel to match adjoining surface. Bell identification plates must have paint removed and be kept clean.

B. Metal stacks and kilns must, after preparation, receive two coats of aluminum paint or a heat resistant material. Minimum required heat resistant coating shall be rated to not less than 700 degrees F.

C. Cafeteria equipment: Metal work in cafeteria, kitchen and serving counters in student and faculty dining rooms having an existing aluminum paint finish must be cleaned as specified and given two coats of an aluminum paint.

3.34 FLAG AND LIGHT POLES

A. Clean by wire-brushing and sanding to remove foreign debris, loose paint, rust, etcetera from pole, platform, steps, cage area and mechanical fixtures related to those areas. After removing loose paint, feather-edge sand surrounding areas of existing finish. Remove dust. Exclude electrical fixtures.

B. Spot-prime with a quick-dry metal primer.

C. Apply by brushing first and second coat of aluminum paint per manufacturer's time recommendation for re-coating.

D. Rolling or airless spraying is not permitted on flag and light poles.

3.35 METAL SHOWERS AND DRESSING ROOMS

A. The exterior and interior surfaces of metal shower stalls and dressing rooms in locker and shower rooms to be cleaned of rust, dirt, grease and loose materials. Where painters finish has been removed, area to be built-up with a coat of rust preventive primer and then surfaces shall be given first, second and third coats as specified under "Areas requiring enamel."

3.36 PAPER TOWEL BOXES

A. Metal boxes for paper towels, toilet paper and metal sanitary boxes, must be enameled with two coats of gloss white enamel.

3.37 METAL SURFACES

A. Clean by wire-brushing and sanding to remove foreign debris, loose paint, rust, etcetera. After removing loose paint, feather-edge sand surrounding areas of existing finish. Remove dust.

B. Exterior bare metal surfaces shall be primed with a metal primer then painted with a first coat of enamel undercoat, then a second coat and third coat of exterior gloss enamel.

C. Hardware having a painted finish shall have paint removed. Doors closers shall be finished with a leather brown or aluminum paint. Aluminum paint shall be applied in sanitary areas such as cafeterias, dining rooms and toilet rooms. Leather brown (N-2501) paint shall be used in other areas.

3.38 METAL LOCKER FINISH

A. Following items in physical education and gymnasium buildings, (including related physical education buildings, such as locker rooms, field houses, etcetera and buildings having lockers or like equipment) must be washed with a silicone wax and grease remover, rinsed and have scratches, marks and defacements "feathered out." Then surfaces must be given one coat of a primer and two finish coats of a gloss metal enamel finish. Surfaces must be free from sags, runs, over-spray, etcetera.

1. Interior and exterior surfaces of faculty and students' metal lockers, metal shelving for drawers of wire baskets and drawer type lockers or as specified.

2. Plated hardware, locks, name plates and number tags shall be masked off and adjoining surfaces shall be protected while spraying. If locks are to be removed, they shall be removed and reinstalled by OWNER.

3.39 PAINTING OF MECHANICAL WORK

A. Exposed heating, ventilating, air conditioning, plumbing, electrical equipment, apparatus, piping, ducts, coverings, etcetera shall be cleaned, prepared and painted as specified herein for that item.

1. In finished areas, these items must be finished with one coat of primer and two coats of enamel to match adjoining wall or ceiling finish as specified herein.

B. Radiator branches, risers, returns, radiators, supports and other types of heating equipment in finished spaces shall be finished with three coats of paint to match adjoining finish as specified herein. Gas steam radiators shall be disconnected and reconnected by OWNER.

C. Register faces and grilles, unless plated, must be given three coats of paint to match adjoining finish as specified.

D. Ventilators and interior sheet metal ducts must be treated and finished as specified for interior metal work.

E. Coverings on pipes in finished rooms must be finished same as adjoining wall or ceiling surfaces. Do not break surface of any wrapped pipes.

F. Labels on fire alarm systems, bells, pulls must be covered and kept intact. Fire alarm bells and pulls to be painted red gloss paint.

G. Covering on boilers, tanks, pipes, etcetera in boiler room and heater room must be primed and then finished with gloss enamel.

H. Valves, pipe hangers, flanges, unions, drain pipes, soil lines, exposed blow-off pipes, boiler fronts, smoke boxes, breeching, iron boiler bases, metal stacks, water column/pipe connections, damper regulators, manholes, safety valve connections, boiler appurtenances, etcetera, located in boiler room must be painted with two coats of a boiler paint as recommended by paint manufacturer.

I. Pumps, fans, fan housing, belt guards, including supports, motors, or other equipment, cover plated to sump pump, tank, manhole covers/rings mounted in

floors including conduits and piping in boiler or fan rooms must be primed and then finished with two coats of gloss enamel as specified herein.

J. Mechanical work not specifically mentioned must be painted as specified for other work of same character.

K. Finished bronze, brass fittings, plated work, name plate and fusible links and chains must be cleaned of paint.

L. Pressure relief grilles with barometric dampers leading to a corridor or to exterior must be masked off before spraying any material.

M. Automatic sprinkler valves, gas meters and water meters must be painted as specified herein.

3.40 ELECTRICAL CABINETS

A. Front side of doors and exposed lip around doors to electrical cabinets in finished areas must be finished same as walls.

3.41 ACOUSTICAL PLASTER, TILE, FIBERBOARD

A. Acoustical plaster shall be cleaned to remove dust before painting.

B. Acoustical plaster shall be sprayed with One full Coat of Pigmented Sealer and then with two coats of Vinyl Wall paint, using “cross-off” method of spraying horizontally with a 50 percent overlap on each stroke and then doubling back with a vertical application with a 50 percent overlap on each stroke.

C. Acoustic tile, wood fiber units, and fiberboard shall receive not less than two coats of a fire retardant paint with a flame spread rating of not more than seventy-five feet on acoustical tile as evaluated by a tunnel test and shall be currently recognized by State Fire Marshal’s Office. Fire retardant shall be applied in strict conformity to manufacturer’s directions. The above surfaces shall be sprayed using “cross-off” method. Before fire retardant coating is applied, ceiling shall receive one full coat of pigmented sealer. Kitchens shall receive two coats of gloss finish after receiving one full coat of a pigmented sealer.

3.42 CORK AND FIBERBOARD TACK BOARDS

A. Unpainted cork board panels used in connection with chalkboards or bulletin boards shall be finished with two coats of vinyl wall paint, factory tinted to match wall color and brushed on. Where cork strips are inset in head trim on chalkboards, cork shall be either varnished or enameled to match wood trim.

B. Painted cork board and unpainted or painted fiberboard panels shall be finished with two coats of vinyl wall paint.

C. Where cork or fiberboard has been painted with water-soluble paint, this water-soluble paint shall be washed off and allowed to dry. Surface shall then be painted as described above.

3.43 CHALKBOARDS

A. Chalkboards (including portable chalkboards) shall be washed with a strong solution of a cleaner as per manufacturer's recommendation, rinsed with clear clean water to remove chalk dust and allowed to dry. Fill joints and repair defects such as cracks and holes with paste wood filler colored with paint to match chalkboard. After filler has hardened sufficiently, repaired spots shall be sanded smooth to level of adjacent surfaces.

B. Apply two coats of chalkboard paint. Paint shall be liquid slate green as manufactured by Cal-Western, Rust-Oleum, Valspar, or equal. Sand between coats with #180 wet-or-dry sandpaper. Paint shall be rolled with a ¼ inch nap and brushed out.

C. After final coat, entire surface must be finished smooth with #400 wet or dry sandpaper.

D. Finished board must present a surface free of defects and brush marks and shall meet approval of Project Inspector.

E. Do not paint natural slate chalkboards.

3.44 LETTERING

A. Lettering and numerals on glass, fiberglass, plaster, and surfaces to be refinished shall be reproduced in original locations and will be of size, color and design as directed by Project Inspector and OAR. An experienced sign painter shall do lettering.

3.45 HARDWARE AND AUTOMATIC DOOR CLOSERS

A. Hardware having a painted finish must have paint removed. Doors closers must be finished with a leather brown or aluminum paint. Aluminum paint shall be applied in sanitary areas such as cafeterias, dining rooms, toilet rooms. Leather brown (N-2501) paint shall be used in other areas. Where both sides of doors are specified to be painted, door closers shall be included.

3.46 GAS FIRED UNITS

A. Gas fired units, which need to be disconnected and reconnected, and/or any unit that must be shut down, re-ignited and tested will be done by OWNER personnel.

3.47 CLEANING

A. Glass, polycarbonate and fiberglass on interior and exterior where painting has been done shall be cleaned of paint and varnish. Glass, fiberglass and polycarbonate that are scratched or damaged by painting work, shall be replaced with material to match original.

B. Finished bronze, copper, brass fittings, plated work, name plate and fusible links and chains shall be cleaned of paint.

C. Before applying finish coat of material to exterior sash with security grilles, CONTRACTOR shall clean window panes with a cleaner.

D. Dispose of debris, waste or unused materials, off site. Use of school dumpsters is strictly prohibited.

E. Remove paint from hardware, including paint from previous painting.

F. CONTRACTOR shall free sash and leave it in an easy operating condition.

G. Glass, fiberglass and polycarbonate on exterior shall be traced neat and clean with no more than 1/16 inch overlay. Paint specks, smears or splatters shall be immediately removed and surface cleaned.

H. Rooms, Buildings, and Campuses must be cleaned of paint debris, including dust caused by painting project to approval of Project Inspector and OAR.

3.48 POST OCCUPANCY WORK

A. Two months after substantial completion, OAR will arrange a date and time when the CONTRACTOR must return to the site to check and free sashes that were painted so they are in proper operating condition.

END OF SECTION

SECTION 10 1400
SIGNAGE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Interior and exterior accessibility, identification, directional and informational signs.

2. Parking signs.

3. School Name and Address Sign.

B. Related Requirements:

1. Division 01: General Requirements.

2. Section 08 1113: Hollow Metal Doors, Windows and Frames.

3. Section 08 1416: Wood Doors.

4. Division 09: Finishes.

5. Section 13 4216: Wheelchair Lifts.

6. Section 14 2423: Hydraulic Elevators.

7. Section 32 1313 - Site Concrete Work.

1.02 REFERENCES

A. ASTM International:

1. ASTM A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

2. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

3. ASTM D4802 - Standard Specification for Poly (Methyl Methacrylate) Acrylic Plastic Sheet.

1.03 SUBMITTALS

A. Product Data: Submit material descriptions, finishes and color charts for each type of sign.

B. Shop Drawings: Submit Shop Drawings indicating sign style, lettering, overall dimensions and quantities. Submit floor plans showing locations for each sign.

C. Material Samples: Submit three samples illustrating full size sample sign, of type, style and color specified.

D. Manufacturer's installation instructions.

1.04 QUALITY ASSURANCE

A. Pre-Installation Conference: Notify OAR when signs are ready for installation. Arrange for conference at site. Do not proceed with installation until ARCHITECT'S approval of specific locations and methods of attachment has been obtained.

B. Provide signs from one manufacturer.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver products to site and protect from damage. Store until immediately prior to installation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products of following manufacturers are acceptable and are the basis for intended design and quality.

1. H. Toji and Company.
2. Karman Ltd., Architectural Signs.
3. Vomar Products Inc.
4. ASI-Modulex, Inc.
5. Mohawk Sign Systems, Inc.
6. Accent Signage Systems.
7. The Gruenke Company.
8. Ada Sign Products.
9. Equal.

2.02 MATERIALS AND FABRICATION

A. Interior Sign Materials:

1. Substrate Panel: 1/8 inch minimum thick, integrally colored or clear acrylic plastic, or laminated acrylic. Conforming to ASTM D4802; non-glare (matte), UV stable, suitable for interior and exterior use.

a. Corners shall be [square], [radius].

b. Edges shall be square and eased.

c. Colors as selected by ARCHITECT from manufacturer's custom color range.

2. Fasteners:

a. Stainless steel tamper-proof screws and plastic anchors.

b. Signs mounted on fire-rated doors shall be secured with adhesive.

c. Adhesives and sealants shall comply with the limits for VOC content and shall be approved by OWNER's Office of Environmental Health Services (OEHS).

B. Exterior Sign Materials:

1. Sign: ASTM B209 aluminum sheet, 0.080 inch thick with rounded corners of at least 1/8 inch radius and eased edges. White figure on a blue background; non-glare, high contrast signs. The blue shall be equal to color number 15090 in Federal Standard 595B.

2. Post: 2 by 2 inch galvanized steel tubing, weighing minimum of 4.31 pounds per foot and conforming to ASTM A500, Grade B, 3/16 inch thick wall thickness.

3. Concrete Post Footings: Refer to Section 32 1313, Site Concrete Work.

4. Fasteners: Stainless steel carriage bolts with tamper resistant nuts.

C. Characters and Symbols: Shall be fabricated by one of the processes described below:

1. Computer cut raised characters and graphics shall be cut from 1/16 inch integrally colored acrylic. Raised characters and graphics shall be inlaid 1/32 inch minimum into first surface of sign background, secured with adhesive so it cannot be removed without the use of tools. Raised characters and graphics shall have beveled, eased or rounded edges. Non-tactile text and graphics shall be applied to the second surface, and background color shall be applied to the second surface and protected with film or an additional backplate. Pictograms and other symbols including the International Symbol of Accessibility, which are included on signs with raised characters and Braille, are not required to be raised.

2. Raised characters and graphics including braille shall be integral to sign face and shall be formed into sign face by high pressure thermoforming using a negative

mold. No applied, glued, welded tactile elements are acceptable. Raised characters and graphics shall have beveled, eased or rounded edges. No sharp, square edges are acceptable. Non-tactile text and graphics shall be applied to the second surface, and background color shall be applied to the second surface and protected with vinyl film. Pictograms and other symbols including the International Symbol of Accessibility, which are included on signs with raised characters and Braille, or other signs are not required to be raised.

2.03 COMMUNICATION ELEMENTS AND FEATURES

A. Raised Characters Raised characters shall comply with CBC 11B-703.2.

1. Character Type: Characters on signs shall be raised 1/32 inch minimum above their background and shall be sans serif uppercase characters duplicated in Braille. Characters and Braille shall be in a horizontal format.

2. Character Height: Character height measured vertically from the baseline of the character shall be 5/8 inch minimum and 2 inch maximum based on the height of the uppercase letter “I”.

3. Character Proportions: Characters shall be selected from fonts where the width of the uppercase letter “O” is 60 percent minimum and 110 percent maximum of the height of the letter “I”.

4. Stroke Thickness: Stroke thickness of the uppercase letter “I” shall be 15 percent maximum of the height of the character.

5. Character and Line Spacing shall be in conformance to CBC 11B-703.2.7 and 11B-703.2.8.

6. Character Placement: Shall be placed in accordance with Paragraph 2.03, C below.

B. Visual Characters: Visual characters shall comply with CBC Section 11B-703.5. Characters shall be conventional in form and shall be uppercase or lowercase or a combination of both, as indicated on the drawings. Characters shall not be italic, oblique, highly decorative, or of other unusual forms.

1. Finish and Contrast: Characters and their backgrounds shall have a non-glare finish. Characters shall contrast with their background with either light characters on a dark background or dark characters on a light background.

2. Character Proportions: Characters shall be selected from fonts where the width of the uppercase letter “O” is 60 percent minimum and 110 percent maximum of the height of the uppercase of the letter “I”.

3. Character Height: Minimum character height shall comply with CBC Table 11B-703.5.5.

4. Height from Finish Floor or Ground: Visual characters shall be 40 inches minimum above the finish floor or ground

5. Stroke Thickness: Uppercase letter “I” shall be 10 percent minimum and 20 percent maximum of the height of the character.

6. Character and Line Spacing: Shall be in accordance with CBC 11B-703.5.8 and 11B-703.5.9.

C. Braille: Contracted Grade 2 Braille, conforming to CBC 11B-703.3. Braille characters shall be inlaid optically correct acrylic Raster beads into computer drilled holes in the panel surface.

1. Dimensions and Capitalization: Braille dots shall have a domed or rounded shape and shall comply with CBC Table 11B-703.3.1. The indication of an uppercase letter or letters shall only be used before the first word of sentences, proper nouns and names, individual letters of the alphabet, initials, and acronyms.

2. Position: Braille shall be positioned below the corresponding text in a horizontal format, flush left or centered. If text is multi-lined, Braille shall be placed below the entire line of text. Braille shall be separated 3/8 inch minimum and 1/2 maximum from any other tactile characters and 3/8 inch minimum from raised borders and decorative elements.

D. Pictograms: In conformance to CBC 11B-703.6. Pictograms shall have a field height of 6 inches minimum. Characters and Braille shall not be located in the pictogram field.

1. Finish and Contrast: Pictograms and their field shall have a non-glare finish. Pictograms shall contrast with their field with either a light pictogram on a dark field or a dark pictogram on a light field.

2. Text Descriptors: Pictograms shall have text descriptors located directly below the pictogram field, and shall comply with CBC 11B-703.2, 11B-703.3 and 11B-703.4.

E. International Symbol of Accessibility (ISA): Shall comply with CBC 11B-703.7 and CBC Figure 11B-703.7.2.1. The ISA shall consist of a white figure on a blue background. The blue color shall be approximate to FS. 15090 in Federal Standard 595C.

F. Mounting Locations and Height: Signs with tactile characters shall be as indicated on the drawings and in conformance to CBC 11B-703.4.

1. Mounting Locations:

a. Identification signs for rooms and spaces shall be located on the wall adjacent to the latch side of the door, as one enters the room or space.

b. Signs that identify exits shall be located at the exit door when approached in the direction of egress travel.

c. Signs containing tactile characters shall be located so that a clear floor space 18 inches minimum by 18 inches minimum, centered on the tactile

characters, is provided beyond the arc of any door swing between the closed position and 45 degrees open position.

d. Where a tactile sign is provided at a door, the sign shall be located alongside the door at the latch side.

e. Where a tactile sign is provided at double doors with one active leaf, the sign shall be located at the inactive leaf.

f. Where a tactile sign is provided at double doors with two active leafs, the sign shall be located to the right of the righthand door.

g. Where there is no wall space at the latch side of a single door or at the right side of double doors, signs shall be located on the nearest adjacent wall.

2. Mounting height above finish floor or ground: Tactile characters on signs shall be located 48 inches minimum above the finish floor or ground surface, measured from the baseline of the lowest Braille cells and 60 inches maximum above the finish floor or ground surface, measured from the baseline of the highest line of raised characters.

2.04 ROOM IDENTIFICATION SIGNS

A. Room Identification Sign Types:

1. Room Identification Sign with Changeable Insert: 7 inches high by 9 inches wide, minimum, with 4 inches high by 9 inches wide window for name and title removable insert. Locate room name immediately below window and centered above room number. Room name shall be raised characters 3/4 inches high minimum, and room number 1 inch minimum; and shall be accompanied with Braille indicators.

2. Room Identification Sign with Room Name and Room Number: 7 inches high by 9 inches wide, minimum. Room name shall be raised characters 3/4 inches high minimum, and room number 1 inch minimum; and shall be accompanied with Braille indicators.

3. Room Number Sign: 7 inches wide by 4 inches high; room number, one inch high minimum, raised character, accompanied by Braille indicator immediately bellow.

B. Room Identification Sign Requirements:

1. Finish and Contrast: Refer to paragraph 2.03.B.

2. Raised Characters and Proportions: Refer to paragraph 2.03.A.

3. Braille: Refer to paragraph 2.03.C.

4. Mounting Location and Height: Refer to paragraph 2.03.F.

C. Special Education Classroom Signs: Room identification signs shall read as follows:

Classroom Name:	Classroom Sign:
Special Education Classroom Type I	Classroom Type I
Special Education Classroom Type II	Classroom Type II
Special Education Classroom Type III	Classroom Type III

2.05 RESTROOM SIGNAGE

A. Multiple-Occupancy restrooms shall be provided with geometric symbols and wall mounted pictograms with text descriptors.

B. Geometric Symbols:

1. Doorways leading to toilet rooms shall be identified by a geometric symbol complying with CBC Section 11B-703.7.2.6.

2. Male Restroom Door Symbol: 1/4 inch thick equilateral triangle with edges 12 inches long, with vertex pointing upward, the triangle symbol shall contrast with the door, either light on a dark background or dark on a light background. A male silhouette shall appear within the equilateral triangle in contrasting color to it.

3. Female Restroom Door Sign: 1/4 inch thick circle 12-inch diameter, the circle symbol shall contrast with the door, either light on a dark background or dark on a light background. A female silhouette shall appear within the circle in contrasting color to it.

4. “All Gender” Restroom Door Sign (Single occupancy restrooms): 1/4 inch thick circle, 12-inch diameter with a 1/4 inch thick equilateral triangle with the vertex pointing upward superimposed on the circle and within the 12-inch diameter. Triangle and circle shall be of contrasting colors; the circle symbol shall contrast with the door. A female and a male silhouette shall appear within the equilateral triangle in contrasting color to it, and the word “restroom” shall appear on the bottom part of the circle in contrasting color to it.

5. Edges and Vertices on Geometric Symbols: Shall be eased or rounded at 1/16 inch minimum or chamfered at 1/8 inch maximum. Vertices shall be radiused between 1/8 minimum and ¼ inch maximum.

6. Location and Mounting Height: Symbols shall be mounted at 58 inches minimum and 60 inches maximum above the finish floor or ground surface measured from the centerline of the symbol. Where a door is provided the symbol shall be mounted within one inch of the vertical centerline of the door.

a. At locations with no restroom doors, locate sign adjacent to the opening. Tactile room name accompanied by Braille shall be located on symbol sign.

C. Room Identification for Multiple-Occupancy Restrooms: Provide a 16 inch long by 6 inch tall room identification sign, including a pictogram of the International Symbol of Accessibility on a side. Restroom names shall be “Girls” or “Boys”, for students, and “Women” and “Men” for staff. Characters, Braille, pictograms and mounting locations and height shall be in conformance to Article 2.03.

D. Room Identification for Single-Occupancy Restrooms: Provide a 16 inch long by 6 inch tall room identification sign, including a pictogram of the International Symbol of Accessibility on a side. Text descriptor shall be “All Gender Restroom”. Characters, Braille, pictograms and mounting locations and height shall be in conformance to Article 2.03.

E. Room Identification for Non-Accessible Single-Occupancy Restrooms: Provide an 8 inch long by 3 inch tall room identification sign. Text descriptor shall be “All Gender Restroom”. Characters, Braille, and mounting locations and height shall be in conformance to Article 2.03.

2.06 RAISED CHARACTER AND BRAILLE EXIT SIGNS

A. Tactile Exit Sign Types:

1. “EXIT”.
2. “EXIT STAIR DOWN”.
3. “EXIT RAMP DOWN”.
4. “EXIT STAIR UP”.
5. “EXIT RAMP UP”.
6. “EXIT ROUTE”.
7. “TO EXIT”.
8. “EXIT WITH ALARM”, on exit doors with an alarm.

9. "EXIT ONLY" or "EXIT STAIR ONLY", on exit doors and stair exit doors which lock from outside and does not allow a return.

B. Sign Requirements:

1. Finish and Contrast: Refer to paragraph 2.03.B.

2. Raised Characters and Proportions: Refer to paragraph 2.03.A.

3. Braille: Refer to paragraph 2.03.C.

4. Mounting Location and Height: Refer to paragraph 2.03.F.

2.07 STAIRWAY IDENTIFICATION SIGNS

A. Provide floor identification signs at the landing of each floor level in interior exit stairway connecting more than three stories, designating the floor level, the terminus of the top and bottom of the interior exit stairway and the identification of the stair.

1. Mount signs 5 feet above each floor landing in a position that is readily visible when doors are in the open and closed positions.

2. Sign size shall be a minimum of 18 by 12-inch.

3. The letters designating the identification of the stair, such as "STAIR No. 1", shall be placed at the top of the sign in 1 ½-inches minimum in height block lettering with 1/4 inch strokes.

4. Upper terminus, such as "ROOF ACCESS" or "NO ROOF ACCESS", shall be placed under the stairway identification in one inch high block lettering with 1/4 inch strokes.

5. The number designating the floor level shall be a minimum of 5 inches in height with 3/4 inch strokes and located in the center of the sign.

   a. Mezzanine levels shall be identified by letter "M" preceding the floor number.

   b. Basement levels shall be identified by letter "B" preceding the floor number.

6. All other lettering and numbers shall be a minimum of one inch in height.

7. Lower and upper terminus of the stairway shall be placed at the bottom of the sign in one inch high block lettering with 1/4 inch strokes.

8. Characters and their background shall have a non-glare finish. Characters shall contrast with their background, with either light characters on a dark background or dark characters on a light background.

B. Tactile Floor Designation Sign in Stairways: Shall be located at the landing of each floor level, placed adjacent to the door on the latch side, to identify the floor level. At the exit discharge level, the sign shall include a raised five-pointed star located to the left of the identifying floor level. The outside diameter of the star shall be the same as the height of the raised characters.

1. Finish and Contrast: Refer to paragraph 2.03.B.

2. Raised Characters and Proportions: Refer to paragraph 2.03.A.

3. Braille: Refer to paragraph 2.03.C.

2.08 SIGNS FOR AREAS OF REFUGE AND EXTERIOR AREA FOR ASSISTED RESCUE

A. Doors providing access to an area of refuge shall be identified by a sign stating: “AREA OF REFUGE”. Sign shall have visual characters per paragraph 2.03.B, Braille per 2.03.C and the International Symbol of Accessibility per 2.03.E.

B. Doors providing access to an exterior area for assisted rescue shall be identified by a sign stating: “EXTERIOR AREA FOR ASSISTED RESCUE”. Sign shall have visual characters per paragraph 2.03.B, Braille per 2.03.C and the International Symbol of Accessibility per 2.03.E.

C. Sign Instructions: In Areas of Refuge and Exterior Areas for Assisted Rescue provide instructions on the use of the area under emergency conditions. The sign shall include the following, and shall comply with 2.03.B:

1. Persons able to use the exit stairway do so as soon as possible, unless they are assisting others.

2. Information on planned availability of assistance in the use of stairs or supervised operation of elevators and how to summon such assistance.

3. Directions for use of the two-way communications system where provided.

2.09 DIRECTIONAL EXIT SIGNAGE

A. At exits serving a required accessible space but not providing an approved accessible means of egress, at elevator landings and within areas of refuge, provide signage indicating the location of accessible means of egress.

1. Finish and Contrast: Refer to paragraph 2.03.B.

2. Character Height and Proportions: Refer to paragraph 2.03.B.

3. Symbol of Accessibility: Refer to paragraph 2.03.E.

2.10 ASSISTIVE LISTENING DEVICE SIGN

A. Include International Symbol of Access for Hearing Loss, CBC Figure 11B-703.7.2.4, with text “Assistive-Listening System Available”. Use upper and lower case characters. Sign shall comply with the following requirements:

1. Finish and Contrast: Refer to paragraph 2.03.B.

2. Character Height and Proportions: Refer to paragraph 2.03.B.

3. Symbol of Accessibility: Refer to paragraph 2.03.E.

2.11 DESIGNATED AISLE SEAT

A. Designated Aisle Seat: Each designated aisle seat shall be identified by a sign with the International Symbol of Accessibility per paragraph 2.03.E. Additionally, post visual signage at the ticket office or where indicated on drawings, indicating availability of seats for disabled persons. Visual sign shall be per paragraph 2.03.B.

2.12 PUBLIC TELEPHONE WITH VOLUME CONTROL SIGN

A. Sign shall contain a depiction of a telephone handset with radiating sound waves. Symbol shall be white on a blue background. The blue shall be equal to Color No. 15090 in Federal Standard 595B. Symbol shall comply with CBC Figure 11B-703.7.2.3.

2.13 ACCESSIBILITY ENTRANCE SIGNS AND PATH OF TRAVEL DIRECTIONAL SIGNS

1.

A. Entrance Sign: Provide at each building entrance an International Symbol of Accessibility sign. Signs shall be visible to persons along approaching pedestrian ways.

B. Directional Signs: Provide where indicated on the drawings with arrow indicators and International Symbol of Accessibility.

C. Signs shall be mounted on wall with lower edge between 48 inches and 60 inches above ground surface or finish floor. Pole mounted, overhead and projecting signs shall have the lower edge at least 80 inches from the ground surface or finish floor.

D. Sign shall comply with the following requirements.

1. Directional Signs: Refer to paragraph 2.03.B.

2. Symbol of Accessibility: Refer to paragraph 2.03.E.

E. No Smoking Sign: Provide at each building entrance. Reverse cut white vinyl sign with 4 1/2-inch high no smoking symbol, mounted on glass entry doors. Under No Smoking symbol, place words “No Smoking”, ½ inch high minimum, San Serif upper and lower case characters.

2.14 PARKING SIGNS

A. Tow-Away Sign: 18 inches by 24 inches with rounded corners. Black graphics on white background, with lettering not less than 1 inch high. Sign to read: “UNAUTHORIZED VEHICLES PARKED IN DESIGNATED ACCESSIBLE SPACES NOT DISPLAYING DISTINGUISHING PLACARDS OR SPECIAL LICENSE PLATES ISSUED FOR PERSONS WITH DISABILITIES WILL BE TOWED AWAY AT THE OWNER’S EXPENSE. TOWED VEHICLES MAY BE RECLAIMED AT [Insert location] OR BY TELEPHONING (213) 625-6631“.

B. Parking Space Identification Sign: 12-inch by 18-inch with rounded corners. White reflectorized graphic on dark blue background and shall display an 8-inch high International Symbol of Accessibility per paragraph 2.03.E.

1. Additional language or an additional sign below the International Symbol of Accessibility shall state I “Minimum Fine $250”.

2. Signs identifying van accessible parking spaces shall contain additional language or an additional sign with the designation “Van Accessible”.

C. Signs shall be mounted on posts at head of each accessible parking with lower edge 80 inches minimum above ground surface or mounted on walls at a minimum height of 60 inches from ground surface.

D. Headroom Signs: On parking structures provide signs indicating headroom clearance height at entries and at any point of a vehicular path where entry clearance height is reduced. Minimum character height shall be 3 inches.

2.15 OCCUPANT LOAD SIGNS

A. Provide maximum occupancy load signs. Post in a conspicuous place near the main exit or exit access doorway from the room or space of rooms and areas indicated in the drawings.

B. Minimum size: 4 inches high by 8 inches wide, 7/8 inch high letters, 1 inch high numerals.

C. Sign to read: “MAXIMUM OCCUPANCY LOAD XXX”. Indicate occupant load shown on drawings.

2.16 EMERGENCY GAS SHUT OFF SIGN

A. Exterior Signs: Painted aluminum, suitable for outdoor use, with pre-drilled mounting holes.

1. Sign Size: Minimum 4 inches high by 8 inches wide.

2. Color: Subsurface white text, red background.

3. Character Height: One inch high.

4. Text:

a. Site main gas shut off valve(s): “MAIN SITE EMERGENCY GAS SHUT-OFF VALVE”.

b. Building gas shut-off valve(s): “BUILDING EMERGENCY GAS SHUT-OFF VALVE.”

B. Science Lab Gas-Shut-Off Signs: 1/8 inch thick acrylic.

1. Sign Size: Minimum 4 inches high by 8 inches wide.

2. Color: Subsurface white text, red background.

3. Character Height: One inch high.

4. Text: “EMERGENCY GAS SHUT-OFF VALVE”.

2.17 LADDER TO ROOF SIGN

A. 1/8 inch thick acrylic.

1. Sign Size: Minimum 4 inches high by 8 inches wide.

2. Color: Subsurface white text, red background.

3. Character Height: One inch high.

4. Text: “LADDER TO ROOF”.

2.18 WHEELCHAIR LIFT SIGNS

A. Provide a sign complying with paragraph 2.03.B, posted in a conspicuous place at each landing and within the platform enclosure stating ‘NO FREIGHT” and include the International Symbol of Accessibility per paragraph 2.03.E.

2.19 EMERGENCY WINDOW SIGN

A. Provide upper and lower emergency window signs as follows:

1. Lower Sign: Signs shall be mounted on the wall centered with the egress window and with the bottom edge located between 6 and 8 inches from the floor.

2. Upper Signs: Signs shall be mounted on the wall within 4 inches of the window frame with the lower edge between 60 inches and 72 inches above ground surface or finish floor.

B. Text: Text shall state “EMERGENCY WINDOW”.

C. Sign shall comply with the following requirements:

1. Sign Size: Four inches by six inches.

2. Color: Subsurface white text, red background.

3. Character Height: one inch.

2.20 FIRE SPRINKLER RISER ROOM SIGN

A. Locate one sign at each fire sprinkler riser room door as indicated in drawings.

B. Text: Sign to read “Fire Sprinkler Riser Inside”, white characters, 1 inch high on red background.

C. Sign Requirements:

1. Raised Characters and Proportions: Refer to paragraph 2.03.B.

2. Braille: Refer to paragraph 2.03.C.

3. Mounting Location and Height: Mounted on the door, refer to paragraph 2.03.F.

2.21 OWNER FURNISHED / CONTRACTOR INSTALLED SIGNS

A. Locate at the main entry and at pedestrian and vehicular entrances to the school site.

1. Welcome to Our School Sign: Sign size is 24 inches by 36 inches.

2. Safe School Zone Sign: Sign size is 18 inches by 24 inches.

2.22 ELEVATOR SIGNS

A. Elevator hoistways shall be identified on both jambs by a 2-inch high raised character identifying level of floor, accompanied by Grade 2 Braille in compliance with CBC. 11B-407.2.3.1. A raised, 5-pointed star placed to the left of the floor designation shall be provided on both jambs at the main entry level. The outside diameter of the star shall be two inches and all points shall be of equal length. Raised characters including the

star, shall be white on a black background. The Braille translation for the star shall be "MAIN". Applied plates shall be permanently fixed to the jambs.

1. Raised Characters: Refer to Paragraph 2.03.A.

2. Mounting Height: Refer to Paragraph 2.03.F.

3. Braille Characters: Refer to Paragraph 2.03.C.

B. Emergency Signs: Pictorial sign shall be posted adjacent to each elevator call station on all floors instructing occupants to use the exit stairways and not to use the elevator in case of fire. Sign shall read: "IN CASE OF FIRE, ELEVATORS ARE OUT OF SERVICE. USE EXIT STAIRS." Letters shall be not less than 1/2 inch, on a contrasting background.

C. Floor numbers: Elevator hoistway shall have a floor number not less than 4 inches in height, placed on the walls and/or doors of the hoistway at intervals such that a person in a stalled elevator, upon opening the car door, can determine the floor position.

D. Machine Room: A sign shall be permanently displayed in the elevator machine room, elevator machinery space, elevator control space, or elevator control room in a conspicuous location with a minimum 1-1/2 inch letters on a contrasting background, stating:

NO COMBUSTIBLE STORAGE
PERMITTED IN THIS ROOM
By Order of the Fire Marshal [or name of fire authority]

2.23 EVACUATION PLANS

A. 1/8 inch thick acrylic sign consisting of a floor plan depicting the building layout. The words "EVACUATION PLAN" shall be included at the top of the plan in minimum 3/4 inch high characters. Interior spaces shall be indicated by shading and corridor shall be prominent and displayed in white. Sign shall provide emergency procedures information and instructions to be followed in the event of an emergency and shall be printed with a minimum of 3/16-inch high non-decorative lettering providing a sharp contrast to the background. Emergency procedures information shall include, but not be limited to the following:

1. Viewer location symbol, "YOU ARE HERE" in the plan. Plan shall be oriented in each sign as required to correspond with the users view.

2. Location of exits with arrows leading to them.

3. Location of fire extinguishers.

4. Fire department emergency telephone number 911.

B. Mount signs so that bottom edge is no more than 48 inches from the finish floor, and within close proximity to the building, stair or elevator entrance. The reader must be able to approach the sign without encountering any obstacle.

C. Evacuation Plans Requirements:

1. Finish and Contrast: Refer to paragraph 2.03.B.

2. Character Height and Proportions: Refer to paragraph 2.03.B.

2.24 SCHOOL NAME AND ADDRESS SIGN

A. Sign, indicating school name and address, shall be furnished with cast aluminum letters as manufactured by Andco Industries Corp., or equal.

B. Style: Helvetica Medium, Futura 444, Ribbon 555, 556 or 557 as selected.

C. Material: 0.064 inch aluminum construction, unless indicated otherwise.

D. Letter Size: School name shall be 10 inches high and address shall be 4 inches high, unless indicated otherwise.

E. Letter Copy and Design: As indicated on Drawings.

F. Finish: Finish shall be type H anodic clear or black, as selected by ARCHITECT.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work.

B. Beginning of installation means installer accepts condition of existing surfaces.

C. Signs and identification devices shall be field inspected after installation and approved by the enforcing agency per CBC 11B-703.1.1.2

3.02 METHODS OF INSTALLATION

A. Interior Identification Signs and Interior Directional Signs:

1. Fasten to wall with four tamper-proof round-head screws, one at each corner of sign. Furnish plastic anchors.

2. When concealed installation is specified, install backplate to wall as above. Fasten sign to backplate with very high-bond double-faced tape.

3. For installation on glass, fasten sign to glass with very high bond double faced tape. On opposite side of glass, anchor matching backplate to glass with very high-bond double-faced tape.

B. Geometric Signs: Geometric toilet room signs shall be fastened to doors with three tamper-proof oval-head counter-sunk screws.

C. Exterior Post Mounted Directional Signs: Size of required footing shall be as indicated on the drawings. Fasten sign with tamperproof stainless steel bolts.

D. Exterior Wall Mounted Identification Signs and Directional Signs:

1. Aluminum signs: Fasten to wall with 4 tamper-proof round-head screws, one at each corner of sign. Furnish plastic anchors.

a. Cement Plaster, Brick, or Masonry: Provide plastic anchors. For signs greater than 640 square inches use Leadwood Screw Anchors, concrete fasteners 1WSA 10112, or equal.

b. Chain Link Fence: Fasten with 9 gage hog rings, King Hughes Fasteners 5150DG50, or equal, with 11/16 inch opening at each corner of sign.

c. Wrought Iron Fence: Install at each corner with 3/16 inch stainless steel rivets.

2. Acrylic signs: Install backplate to wall as indicated above. Fasten sign to backplate with high-bond double-faced tape and silicone.

E. Exterior Building Sign:

1. Each letter shall be furnished with a minimum of three cast mounting lugs on backside, drilled and tapped to receive installation bolts.

2. Letters shall be installed according to manufacturer's method PMC-1. Letters shall be installed ¾ inch away from wall surface, by an aluminum sleeve spacer.

3.03 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off Project site.

3.04 PROTECTION

A. Protect Work of this section until Substantial Completion.

END OF SECTION

SECTION 10 2113

PHENOLIC TOILET COMPARTMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Solid phenolic toilet compartments, urinal screens, and vision screens.

B. Related Requirements:

1 Division 01 - General Requirements.

2 Section 05 4000 - Cold Formed Metal Framing.

3 Section 06 1000 - Rough Carpentry.

4 Section 10 2813 - Toilet Accessories.

5 Section 10 2815 – Hand and Hair Dryers.

1.02 DESIGN REQUIREMENTS

A. Design and fabrication shall conform to requirements of ADAAG and CBC Chapter 11B.

B. Toilet Compartments: Floor supported overhead braced type units consisting of solid phenolic pilasters, panels and doors; plated steel leveling devices with stainless steel covers; and stainless steel fittings, hardware and fastenings.

C. Urinal Screens: Floor supported and wall hung type consisting of solid phenolic screen panels and plated steel leveling devices with stainless steel covers, stainless steel fittings and fastening.

D. Vision Panels: Floor- and wall-mounted solid phenolic type.

1.03 SUBMITTALS

A. Shop Drawings: Submit Shop Drawings indicating complete layout, elevations of partitions, thickness of solid phenolic panels, fastenings, proposed method of anchoring, size and spacing of anchors, details of construction, hardware, fittings, mountings, method of assembly, other related items, and installation details.

B. Product Data: Submit manufacturer's technical data for materials, fabrication, finishing, fastenings, hardware, and installation details.

C. Material Samples:

1. Submit full range of Samples of phenolic chips for initial color selection. Chips shall be at least 2-inch by 3-inch.

2. Submit Samples of hardware and fasteners.

D. Certificates: Furnish manufacturer's certification that materials meet or exceed Specification requirements.

1.04 QUALITY ASSURANCE

A. Comply with the following as a minimum requirement:

1. ASTM A167: Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.

2. ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials.

3. Underwriters Laboratories Inc. (UL):

a. UL Fire Resistance Directory; applicable UL Design Numbers for application of fireproofing and conditions as indicated.

4. Chemical Resistance: Panels to meet or exceed Scientific Equipment Furniture Association’s (S.E.F.A.) list of 49 standard chemicals.

5. Consistency:

a. Panels to have uniform thickness (+0.03 inch).

b. Panels to have uniform flatness (maximum difference of 0.03 inch) for a 10-foot span.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to Project site with manufacturer's labels intact and legible, in sealed containers. Materials shall be kept dry.

B. Protect compartments and screens.

1.06 COORDINATION

A. Field Measurements: Secure field measurements prior to fabrication, for proper and adequate fabrication and installation of the Work of this section.

B. Furnish inserts and anchorage built into other construction for installation of toilet compartments, urinal screens and vision panels.

1.07 WARRANTY

A. Toilet Compartment Manufacturer shall provide a 25 year material warranty for solid phenolic panels and hardware.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturer:

1. Qualifications of Toilet Compartment Manufacturer: Partition Manufacturer shall have been regularly engaged in the construction of Phenolic Toilet Compartments of the type specified for a minimum of five years.

B. Solid Phenolic Panels:

1. Formica Solid Phenolic panels with -692 Folkstone Celesta, 689 Stellar, Formica Corporation.

2. Wilsonart.

3. Nevamar Surface Systems.

4. Equal.

C. Hardware:

1. Galaxy Hardware, Series 8033.

2. Jacknob Corporation.

3. Equal.

2.02 MATERIALS

A. Toilet compartments panels, doors and pilasters; urinal screens and visual screens.

1. Core: Phenolic impregnated Kraft papers. Panel shall be at least 93 pounds per cubic foot to ensure full saturation of Kraft core.

2. Face Sheet: Over decorative papers impregnated with melamine resin and integrally compression molded with the core.

3. Fire Resistance: The panels shall have the following surface burning characteristics and smoke generation values in accordance with UL 723 classification and labeling in accordance with ASTM E84 Class A tests and shall be self-extinguishing.

a. Flame spread: Maximum 30 for ¾ inch thick panels; 30 for ½ inch thick panels.

b. Smoke developed: Maximum 70 for ¾ inch thick panels; 85 for ½ inch thick panels.

4. Panels shall be UL registered and labeled.

5. Panel shall be resistant to cleaning solvents and uric acid.

6. Product/Material Specification:

a. Modulus of Elasticity: 1.5 million psi minimum.

b. Shear Strength: 2,000 psi minimum.

c. Compressive strength: 24,000 psi minimum.

d. Water Absorption: 3 percent maximum.

e. Use Temperature: 350 degrees F maximum.

f. Surface and Edges: Non-porous.

g. Material Resistance: Will not support fungus or bacteria.

h. Uniform Load Deflection: ¼ inch maximum per Table A:

Table A: Uniform Load (lbs) which causes ¼ inch deflection at Center

(Shelves not fixed at either end, static load on E modulus of 2.0 by 106)* Uniform Load in pounds:

Thickness	12 by 24-inch	12 by 36-inch	12 by 48-inch	24 by 36-inch
½ inch	370	110	45	220
¼ inch	1,400	400	170	800

*Loads can be affected by temperature, humidity, time, and other environmental factors. Users should test shelves in appropriate environment. It is assumed that deflection greater than ¼ inch is undesirable aesthetically, even though rupture has not occurred.

B. Stainless Steel: ASTM A167, Type 304.

C. Concealed Fasteners and Leveling Devices:

1. Concealed Fasteners: Stainless steel.

2. Leveling Devices: Zinc or cadmium coated steel, Stainless steel.

2.03 FABRICATION

A. Doors shall be ¾ inch thick, panels ½ inch thick, pilasters 3/4 inch thick and screens ½ inch thick. Edges shall be machined to a radius of 3/16 inch; exposed surfaces shall be free of fabrication marks.

B. Pilasters: Flush, formed of ¾ inch thick solid phenolic panels. Edges shall be machined to a radius of 3/16 inch.

1. Door Dimensions: Unless otherwise indicated, furnish 24-inch wide in-swinging doors for standard toilet compartments, 36-inch wide clear opening out-swinging doors when located at the end, and 36-inch wide clear opening out-swinging doors when located at the side for stalls equipped for use by the physically disabled

2. Anchorage: Provide stainless steel anchorage, complete and threaded rods, washers, and leveling adjustment nuts at pilasters, to permit connection to floor slab. Furnish devices, which are designed to support pilasters from structure without transmitting load to floor fill.

3. Overhead Bracing: Provide anti-grip, decorative, heavy duty, extruded aluminum head rail with clear anodized finish.

C. Panels and Urinal Screens: Flush, formed of ½ inch thick solid phenolic panels with a one inch corner radius. Height and width as indicated in drawings.

2.04 HARDWARE

A. Door hardware shall be cast Type 304 stainless steel, as follows:

1. Hinges: 11 gage Cast Stainless Steel Hinge. Hinge shall be cast of type 304 stainless steel and shall have a Satin finish. Hinge shall be gravity type for self-closing action and shall be fully adjustable up to 360 degrees. Pivot pin shall be made of type 304 stainless steel. Only stainless steel components shall be used in the construction of the Hinge. Plastic inserts are unacceptable. Hinges shall provide emergency access by lifting the door. Hinges shall be pre-drilled for mounting to door and pilaster with Stainless Steel through-bolts. Stamped stainless steel is not acceptable.

a. Galaxy Hardware: CS-560 (LeftHand IN/RightHand OUT) or CS-561 (RightHand IN/LeftHand OUT).

b. Jacknob Corporation: 7273 (RightHand IN/LeftHand OUT) or 7283 (LeftHand IN/RightHand OUT).

c. Equal.

2. Continuous Hinge: Continuous 14 gauge stainless steel hinge (48.5”) shall be made of Type 302/304 Stainless Steel and shall have a Satin Finish. Hinge shall be 3” wide and shall have four (4) Stainless Steel wire springs for self-closing action. Pivot pin shall be .250” in diameter, and shall be made of Type 304 Stainless Steel. Hinges shall provide emergency access by lifting the door. Hinges shall be pre-drilled for mounting to door and pilaster with Theft Proof Stainless Steel Torx Head with Pin Through-Bolts. Brass inserts are unacceptable. Each Hinge Set is to be packaged in a separate carton, and is to be labeled by stock number, manufacturer, and left or right hand. Furnish one per door.

a. Galaxy Hardware: SS-953 (LeftHand IN/RightHand OUT) or SS-954 (RightHand IN/LeftHand OUT).

b. Jacknob Corporation: 7339 (RightHand IN/LeftHand OUT) or 7349 (LeftHand IN/RightHand OUT).

c. Equal.

2. Strike and Keeper with Emergency Access: Refer to Detail #1 of this section. Strike and keeper shall be heavy duty ASTM A167, Type 304 cast stainless steel with a polished satin finish. All outside corners and edges shall be rounded to

ensure there are no sharp edges. The strike and keeper shall provide emergency egress by lifting of the door. The strike and keeper shall be 2.50" high, with the mounting holes at 1.50" O.C. The wall thickness shall be a minimum of .125". The keeper shall have a minimum 7/8 inch tab to prevent impaling injuries. The strike and keeper shall be mounted to the pilaster with theft proof stainless steel Torx Head with pin through-bolts. Strike and keeper shall have an integral rubber bumper door stop rated and able to withstand a sudden impact of 350 lbs. Stamped stainless steel strike and keepers are unacceptable. Extra door stops that encumber the door opening and create a hazard are unacceptable. The stock number shall be molded into the back of strike and keeper for ease in identification. Furnish one per door.

a. Galaxy Hardware: CS-458 (inswing strike & keeper), or CS-456 (outswing strike & keeper).

b. Jacknob Corporation 6283 (inswing strike & keeper), or 4913 (outswing strike & keeper).

c. Equal.

3. Slide Latch: Heavy duty cast stainless steel with satin finish. Slide latch shall be surface mounted. The slide bar shall be .150 inch thick, 1.020 inch wide and 3.720 inch long. Latch shall have an internal stainless steel buffering spring to prevent damage when door is inadvertently slammed against the latch. Mounting holes are to be spaced at 3.50 inch on center. Latch knob shall be riveted to the slide bar and welded to insure that the knob will not come off. Stock number shall be molded into the back of the slide latch for ease identification. Furnish one per door. Stamped stainless steel is not acceptable.

   a. Galaxy Hardware: CS-233.

   b. Jacknob Corporation: 5053

   c. Equal.

4. Coat Hook: Heavy duty cast stainless steel with satin finish. Coat hook and bumper shall be 2.340 inch high, 1.230 inch wide and shall protrude out from the door 3.05 inch. The hook portion shall have a finished diameter of .250 inch thick. The stock number shall be molded into the back of the Coat Hook and Bumper for ease in identification. Furnish one per door. Stamped stainless steel is not acceptable. Mount at 48 inches maximum above finished floor in accessible toilet compartments.

   a. Galaxy Hardware: CS-274.

   b. Jacknob Corporation.

   c. Bobrick: B-212.

   d. Equal.

5. Door Stop: Heavy duty cast stainless steel with satin finish. Plated Zarnac Door stops are unacceptable. Door Stop shall have a 2.125 inch base diameter and shall

protrude 1.80 inch from the Wall. The bumper at the end of the Door Stop shall be .250 inch thick. The diameter of the shaft shall be .6875 inch. The stock number shall be molded into the back of the Door Stop for ease in identification. Stamped stainless steel is not acceptable.

a. Galaxy Hardware: CS-276.

b. Jacknob Corporation: 4123.

c. Equal.

6. Pull Handle:

a. Heavy duty cast stainless steel with satin finish. Plated Zamac Door pulls are unacceptable. Pull Handle shall protrude from the face of the door .940 inch and shall be 4.735 inch long. The Pull Handle shall have mounting holes drilled and tapped for 10/24 threads at 3.50 inch on center. The Pull Handle shall be .655 inch wide and shall be mounted back to back with the slide latch. The stock number shall be molded into the back of the pull handle for ease in identification. Stamped stainless steel is not acceptable. Provide u-pull shape handle on each side of accessible toilet compartment doors.

1) Galaxy Hardware: CS-277.

2) Jacknob Corporation: 6253.

3) Equal.

b. Accessible Door Pull: 5-1/8 inch by 3 inch high stainless steel pull:

1) Galaxy Hardware: PH-200.

2) Jacknob Corporation: 6253.

3) All Partitions A0625.

4) Equal.

B. Pilaster Shoes: ASTM A167, Type 302/304 Stainless Steel, minimum 3-inch high, 18 gauge, finish with #3 Directional polish, attached with stainless steel through bolts.

C. Brackets: One piece double ear bracket or single ear bracket (at end partition) extending within 3 inches of top and bottom panel edges. Extruded 6063-T5 Aluminum with a satin anodized finish or 304 stainless steel. The minimum weight shall be 1.685 pounds per lineal foot. Inside opening of Bracket shall be .50 inch for panels, .75 inch for pilasters. Holes for mounting to wall and panel/pilaster shall be pre-drilled. Holes are to be spaced at 9 inches on center along the full length of the bracket for a total of twelve holes (double ear) for mounting to the wall and six holes (single ear) for mounting to the panel/pilaster. Each bracket is to have a minimum wall thickness of .125 inch.

D. Overhead Bracing (Headrail): Continuous heavy duty extruded 6063-T5 Aluminum Headrail with anti-grip profile. Head rail shall have integral reinforcing channel and curtain track. Head rail shall have Satin Anodized finish. Provide headrail corner

brackets, wall brackets, and headrail end caps as required. The headrail and headrail brackets shall have a minimum wall height of 2 inch. The minimum wall thickness of the headrail and head ail brackets shall be .125 inch.

1. Galaxy: AL-115 (16’ antigrip headrail), EC-120 (3/4” END CAP), HP-132 (Headrail to wall bracket pack), HP-970 (Corner headrail bracket pack).

2. Jacknob Corporation: 80188 – Extruded Aluminum Headrail, 2109 Headrail Wall Brackets, 6672 Headrail End Caps.

3. Equal.

E. Chrome-plated, non-ferrous cast alloy material shall not be furnished for hinges, brackets, locks, latches and other fittings and accessories.

PART 3 - EXECUTION

3.01 EXAMINATION AND PREPARATION

A. Before covering wall framing with finish materials, examine framing to ensure that backing plates and structural framing have been installed in such position as to receive all attachment screws.

B. Verify spacing of plumbing fixtures to ensure compatibility with installation of compartments.

C. Do not start the Work of this section until all deficiencies have been corrected.

3.02 INSTALLATION

A. Install partitions and screens as shown in the Shop Drawings and in accordance with manufacturer’s instructions and as specified. Install straight, level and plumb.

B. No evidence of drilling, cutting or patching shall be visible in finished Work.

C. Fasten panel brackets securely to walls and ceilings with recommended anchoring devices.

D. Fasten panels and pilasters to brackets with through bolts and nuts.

E. Fasten urinal screen panels to walls with a continuous bracket.

F. Provide ½ inch spaces between wall surface and panels or pilasters.

G. Provide for adjustment of floor variations with non-breakable plastic shoes on pilasters. Conceal floor fastenings in pilaster shoes.

H. Furnish each toilet compartment door with top and bottom hinges, and door latch.

I. Install door strike keeper on each pilaster in alignment with door latch.

J. Furnish each toilet compartment door with one coat hook and bumper.

3.03 TOLERANCES OF INSTALLED WORK

A. Maximum Variation from Plumb or Level: 1/8 inch.

B. Maximum Misplacement from Intended Position: 1/8 inch.

3.03 ADJUSTING AND CLEANING

A. Hardware Adjustment: After installation, adjust hardware for proper operation. Install hinges on in-swinging doors to hold open approximately 30 degrees from the closed position when unlatched. Install hinges on out-swinging doors to return to the fully closed position. Door shall be plumb with pilasters when door is closed.

B. Adjust and align door hardware to uniform clearance at vertical edges of doors. Clearance space shall not exceed ¼ inch.

C. Cleaning: Clean compartments, hardware, and doors before Substantial Completion and leave free from imperfections. Remove protective coverings.

3.04 CLEANUP

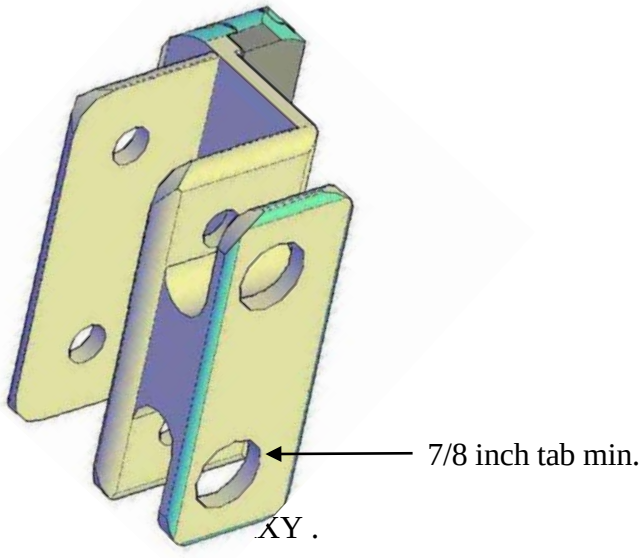
A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

3.05 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

DETAIL #1 – STRIKE AND KEEPER



SECTION 10 2813

TOILET ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Toilet accessories.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 06 1000- Rough Carpentry.

1.02 REGULATORY REQUIREMENTS

A. Comply with CBC Chapter 11B requirements and ADAAG recommendations for accessibility.

1.03 SUBMITTALS

A. Shop Drawings: Submit a schedule of accessories and Shop Drawings indicating installation methods and fasteners.

1.04 QUALITY ASSURANCE

A. Coordinate related Work as required to ensure proper and adequate provision in framing of backing and wall finish for installation of accessories.

1.05 DELIVERY, STORAGE AND HANDLING

A. Protect accessories from damage.

PART 2 - PRODUCTS

2.01 GENERAL

A. Accessories shall be provided with necessary anchoring devices and fasteners appropriate for surfaces on which items are to be fastened.

2.02 MATERIALS

A. Liquid Soap Dispenser: 20 gage stainless steel, 40-ounce. capacity, tamper-proof cap and concealed vandal-proof mounting. Continental V 444SS, ASI 0347, Bobrick B-2111, or equal.

B. Toilet Paper Boxes:

1. For Student and Public Restrooms:

a. Non-accessible toilet compartments: Surface mounted, JR Billington JRB-016, or equal.

b. Accessible adult toilet rooms or compartments: semi-recessed Bobrick B-3888, ASI-0031, Bradley 5412 (double roll tissue holder without paper roll spindle stops), or equal.

c. Accessible elementary or kindergarten toilet rooms or compartments: semi-recessed Bradley 5124 (double roll tissue holder without paper roll spindle stops), or equal

2. For Faculty and Staff Restrooms:

a. Non-accessible toilet compartments: ASI 0264-1A2, Bobrick B-27460 (double roll tissue holder), Bradley, or equal.

b. Accessible toilet rooms or compartments:

1) Semi-recessed Bobrick B4388 or 3888, ASI 0031, Bradley 5412 (double roll tissue holder without paper roll spindle stops), or equal.

2) Surface mounted ASI 0264-1A2, Bobrick B-27460 (double roll tissue holder), Bradley, or equal.

3) For Accessible Kindergarten Restrooms:

i. Dual roll toilet tissue dispenser, Bradley 5124, Bobrick B-697, ASI74022, or equal.

C. Paper Towel Boxes: Type 304 stainless steel, satin finish. Door with tumbler lock and piano hinge.

1. Surface mounted: ASI 0245-SS, Bobrick B-263, Bradley 252, or equal.

2. Semi-recessed: ASI 0457-2, Bradley 247-10, or equal.

3. Recessed: ASI 0457, Bobrick B-35903, Bradley 247, or equal.

D. Grab Bars: 1-1/4 inches diameter by 18 gage stainless steel tubing, of size and configuration indicated. Ends shall be screwed to 11 gage stainless steel wall plate, with snaplock cover flanges. Grab bars over 36 inches in length shall be furnished with stainless steel support at mid point. Exposed stainless steel to be 180 grit satin finish. ASI 3700 series, Tubular Specialties Manufacturing, Inc. series Q-CS-1, Bobrick, or equal.

E. Shower Seat: Folding shower seat with frames and supports constructed entirely of stainless steel tubing. Slats shall be phenolic. Mounting hardware shall consist of stainless steel screws with plastic plugs. Tubular Specialties Manufacturing Inc., Model No. 731-PH, ASI, Bobrick, or equal.

F. Mirrors: Framed mirror, with one piece roll-formed 3/4 inch by 3/4 inch Type 304 stainless steel angle frame, with satin finish. Corners shall be heliarc welded, ground and polished smooth. Glass shall be No. 1 quality 1/4 inch float glass, electrolytically copper-plated. Frame shall be furnished with a continuous integral stiffener on sides. Back of mirror shall be protected by 1/8 inch thick, waterproof, shock-absorbing polyethylene padding and 20 gage galvanized steel back attached to frame with concealed screws. Mirror shall be provided with a 20 gage wall hanger. ASI 0600, Bobrick B-290 series, Bradley, or equal. Size as indicated on Drawings.

G. Mirror with Shelf: Frame and mirror as described above, with Type 304 stainless steel shelf, 5 inches deep with 3/4 inch return edges on 4 sides, front and side return edges shall be hemmed. ASI 0605, Bobrick B-292, Bradley, or equal. Size as indicated on Drawings.

H. Medicine Cabinet (Nurse's Office Restroom): Recessed-mounted, one-piece seamless construction of Type 304 stainless steel, satin finish. Cabinet door with No.1 quality 1/8 inch float glass. Provide 4 adjustable stainless steel shelves. ASI 0952, Bobrick B-398, Bradley, or equal.

I. Toilet Seat Cover Dispensers (Faculty and Staff Toilet Rooms only): Surface-mounted, Type 304 stainless steel, satin finish. ASI 0477SM, Bobrick B-221, Bradley, or equal.

J. Sanitary Napkin Vendors and Disposals

1. Vendors (In Nurse’s Office Restrooms only): Surface mounted, Type 304 stainless steel, satin finish, tumbler lock, single 25 cent coin operation. ASI 0864, Bobrick B-2800, Bradley, napkin/tampon dispenser, or equal.

2. Disposals in non-accessible toilet compartments Surface-mounted, Type 304 stainless steel, satin finish, ASI 0473-A, Bobrick B-270, Bradley, or equal.

3. Disposals in accessible toilet rooms or compartments: recessed, semi-recessed or 3-inch maximum projection from wall surface; Bobrick B 353 (recessed), ASI 0473 (recessed), Bradley, or equal.

K. Mop and Broom Holder Rack: Provide two 24-inch long minimum, stainless steel mop and broom holder racks at each janitor room. ASI 8215-3, Bobrick B223 by 24, Bradley, or equal.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Check openings in substrates to receive accessories. Verify openings are correctly located and sized to receive accessories, and that locations will comply with disability access requirements. Confirm that blocking, backing or support is properly located and adequate for the accessory installation.

B. Verify spacing of plumbing fixtures and toilet partitions. Confirm spacing and locations are compatible with proposed accessory locations and will allow compliance with disability access requirements.

3.02 INSTALLATION

A. Install toilet accessories in accordance with manufacturer's written recommendations and accessibility requirements. Fasten components firmly in place.

B. Drill holes to correct size and application that is concealed by item with ¼ inch tolerance.

C. Install recessed accessories into wall openings with sheet metal screws into metal frames.

D. Install surface-mounted accessories to backing plates with machine screws, plumb, and aligned.

E. Grab Bars:

1. Fasten to toilet partition with 3-inch diameter stainless steel back plates with studs, couplings, and stainless steel machine screws.

2. At wood stud walls, fasten wood blocking with threaded stainless steel wood screws of sufficient length to penetrate blocking 1 ¼-inch minimum.

3. At metal stud walls, provide 1/8 inch cold-rolled steel plate, drilled and tapped for machine screws, or 16 gage cold-rolled steel plate complete with threaded sleeves for stainless steel machine screws. Weld plates to studs.

4. At concrete or masonry walls, install bars with sheet metal screws and expansion anchors.

5. At plaster or gypsum board walls, provide spacers of same thickness as wall material to prevent crushing of wall material.

F. Mirrors: Install mirror on manufacturer supplied concealed wall hanger and fasten with two theft-resistant locking screws.

G. Stainless Steel Medicine Cabinet: Fasten cabinet to wall.

H. Before Substantial Completion, deliver keys and maintenance instructions and product data to OAR.

3.03 ADJUSTING AND CLEANUP

A. Adjust accessories for proper operation.

B. Remove rubbish, debris, and waste material and legally dispose of off the Project site.

3.04 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 10 2815

HAND AND HAIR DRYERS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Warm air, high speed, energy efficient, self-contained electric hand dryers.

2. Warm air, high speed self-contained electric hair dryers.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 06 1000 - Rough Carpentry.

3. Section 09 3013 - Ceramic Tiling.

4. Division 26 - Electrical.

1.02 REGULATORY REQUIREMENTS

A. Comply with CBC Chapter 11B requirements and ADAAG recommendations for accessibility.

B. UL 499 - UL Standard for Electric Heating Appliances.

1.03 SUBMITTALS

A. Shop Drawings: Drawings indicating locations, dimensions, clearances, mounting heights, fasteners and wiring.

B. Product Data: Submit for product data and installation instructions.

C. Certificates: Provide documentation indicating compliance to UL 499.

D. Samples: Submit finish samples for each specified product.

E. Maintenance Data.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing electric hand and hair dryers with ten years minimum experience.

B. Quality Standards: Dryers shall comply with UL 499, Standard for Electric Heating Appliances.

C. Coordination:

1. Coordinate related Work as required to ensure proper and adequate provision in framing of backing and wall finish for installation of dryers.

2. Coordinate junction box location with electrical work of Section 26 0513, Basic Electrical Materials and Methods.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver dryers and components in manufacturer's original, unopened, undamaged containers with identification labels intact.

B. Store dryers as recommended by manufacturer.

1.06 WARRANTY

A. Manufacturer shall provide a 7 year material warranty against defects in factory workmanship and materials. Motors shall be warranted for three years and sensors for five years.

PART 2 – PRODUCTS

2.01 EARLY EDUCATION CENTER HAND DRYERS

A. General:

1. Electrically operated dryer designed for heavy duty operation, internally grounded. Unit shall be UL listed.

2. Operation: Automatic sensing. Dryer shall start automatically when hands are placed underneath nozzle and stop automatically when hands are removed.

3. Sound Level: Adjustable up to a maximum of 83 dB.

4. Air Velocity: Adjustable 35,000 to 35,000 LFM.

5. Maximum Operation Time: 35 seconds, failsafe feature will shut off dryer if it runs longer.

6. Vandal Resistant:

a. Use tamperproof fasteners to secure cover.

b. Motor and heater shall be inaccessible.

c. Air intake shall be shielded.

B. Surface mounted.

C. Cover: One piece, stainless steel with brushed satin finish. Operating instruction information shall be graphically noted on front. Mount dryer cover with recessed tamper proof fasteners to a heavy steel or cast aluminum wall plate which in turn is to be fastened to wall with concealed mounting bolts. Bolts shall be inserted through rubber grommets to reduce noise and wall vibration.

D. Nozzle: Units with an external nozzle shall be furnished with a nozzle. Nozzle shall be fixed to blow air in a down position only.

E. Mechanism: Motor shall be of a universal or of an induction design with permanently lubricated bronze bushing or bearings.

1. Unit shall be of universal voltage or suitable for installation on standard 115, 208, or 220 volt, single phase AC supply, as indicated on Drawings.

2. Dryer shall operate below 1,000 watts.

3. Fan shall be furnished with a large single inlet and be centrifugal type, constructed of welded and plated steel or of molded R/C (QMFZ2) polypropylene rated at a minimum 94 hb. Fan shall be mounted directly on motor shaft. All parts shall be easy to service and replace.

4. Heating element shall be spiral wound Nichrome wire mounted directly on fan housing. Element shall produce an air temperature of 135 degrees F. at a 72 degrees F. ambient room. Motor and heating element shall be protected by an automatic resetting device.

2.03 MANUFACTURERS

A. Early Education Center Dryers:

1. Excel Dryer, Inc.: Thinair.

2. World Dryer: VERDIdri.

3. Equal.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify spacing of plumbing fixtures and toilet partitions. Confirm spacing and locations are compatible with proposed dryer locations and will allow compliance with disability access requirements.

B. Check surfaces and openings in substrates to receive dryers. Verify openings are correctly located and sized to receive dryers, and that locations and dimensions will

comply with disability access requirements. Confirm that blocking, backing or support is properly located and adequate for the accessory installation.

C. Coordinate location and requirements for power supply, conduit, disconnect switches and wiring.

3.02 INSTALLATION

A. Install dryers in accordance with manufacturer's written recommendations and in conformance to CBC, Chapter 11B requirements.

B. Install dryers level, plumb and firmly anchored in place to backing at locations and heights indicated.

C. At locations indicated by ARCHITECT adjust dryer velocity to reduce noise level.

D. Apply bead of caulk around edges of cover to wall.

3.03 ADJUSTING AND CLEANUP

A. Remove rubbish, debris, and waste material and legally dispose of off the Project site.

3.04 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 11 6813

PLAY FIELD EQUIPMENT AND STRUCTURES

(PRIMARY CENTERS AND ELEMENTARY SCHOOLS)

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes the following types of play equipment and structures:

1. Other playground equipment as indicated on the Drawings.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 03 3000 - Cast-In-Place Concrete.
3. Section 31 2200 - Grading.
4. Section 31 2313 - Excavation and Fill.
5. Section 32 1216 - Asphalt Paving.
6. Section 32 1723 - Pavement Markings.
7. Section 32 1816 - Playground Protective Surfacing.
8. Section 32 3113 - Chain Link Fencing and Gates.
9. Section 33 4000 - Storm Drainage Systems.

1.02 SUBMITTALS

A. Coordination Drawings: Layout plans and elevations indicating extent of playground equipment with playground surface systems. Indicate playground equipment locations, use zones, fall heights, extent of protective surfacing, and critical heights.

B. Product Data: For each type of product specified. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

C. Certificates: Signed by manufacturers of playground equipment certifying that products furnished comply with DSA and Contract Documents.

1.03 QUALITY ASSURANCE

A. Comply with NAAMM'S "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating metal finishes.

B. Comply with the Architectural and Transportation Barriers Compliance Board Final Rule, ADAAG for Play Areas, effective November 2000.

C. Comply with California Code of Regulations Title 22 and CBC 11B-1008.

PART 2 - PRODUCTS

2.01 GENERAL

A. Products: In the locations indicated on the Drawings, provide the products specified for each designation. If location is not shown, provide unit located per the OAR's directions.

2.02 PLAYGROUND EQUIPMENT, GENERAL

A. Athletic Equipment:

1. Basketball Backboards:

a. Manufacturer/Product:

1) Porter Athletic Equipment Co. / "Outdoor Backstop", as a standard of quality.

2) L.A. Steelcraft.

3) Gametime.

4) PW Athletic.

5) Equal.

b. Type:

1) Porter model #00184-234 Outdoor 4 feet Extended Vertical Post Back-to-Back Backstop with Backboards and Goals, with #234 Fan Aluminum Bank, Regular Duty Goal #00235-000 or Heavy Duty #00202-H 00 double rim.

c. Backstop support shall be designed for mounting goal at any height between 6 and 10-foot.

d. Upright support shall be 4 ½-inch outside diameter heavy wall, galvanized steel pipe, capped at top end. Anchor pin for lower end of upright shall be provided to anchor pipe in concrete footing.

e. Backboard shall be supported 4 feet in front of upright support by dual horizontal support assemblies. Lower support assembly shall be fabricated from 3-½ inch outside diameter heavy wall, galvanized pipe furnished with a heavy, slotted mounting plate which is located directly behind the four goal mounting holes. Upper support assembly shall be fabricated from 1-7/8 inch outside diameter heavy wall, galvanized pipe fabricated with a plated, structural angle for attachment to the top corners of the backboard. Support assemblies shall be clamped to the upright support by means of heavy, galvanized, ductile iron castings with plated hardware.

f. Cast Aluminum backboard Porter model #01207-300 Official size 3 feet six inches by six feet Rectangular Perforated Steel. Heavy-wall rectangular frame shall include two vertical struts located on 2 feet 11-inch centers with mounting holes for attachments to supports structures. Goal mounting area shall be reinforced by horizontal and vertical support tubing to minimize undue load. Powder coated before final assembly. 11- Gage steel face with 1 ½-inch deep to formed perimeter flange. Perforations shall be ¼ inch diameter, spaced ½ inch diagonal centers for a 23 percent open area. Perforated areas will not be included/located on 3-inch wide perimeter outline or on 24-inch wide target area. Backboard shall be compatible with direct mount type support structures, drilled holes shall be 7/16” diameter.

g. Goals:

1. Goal - Heavy duty Porter model # 00202-H 00 double rim shall be fabricated from 5/8 inch diameter cold drawn alloy steel round formed to an 18 inch inside diameter ring. Inside of ring shall be positioned 6 inch from face of backboard by heavy, L-shaped, formed steel mounting plate with a 5 inch by 5 inch mounting hole centers. Goal shall be rigidly braced by means of a ½ inch diameter cold drawn alloy steel round formed and welded in position for maximum support. Rim shall be provided with twelve “no-tie” net attachment clips for net attachment. Goal shall be finished in a durable enamel finish. Color of goal to be official orange. Goal shall be furnished complete with a high quality white nylon net and plated mounting hardware.

2. Volleyball Standards:

a. Manufacturer / Product:

1) L.A. Steelcraft / Volleyball Posts, as a standard of quality.

2) Porter.

3) Gametime. / Great Western, Number – 273SS.

4) PW Athletics.

5) Equal.

b. Type: L.A. Steelcraft model #VBP-25-BG with #278E sleeve and net.

c. Size: 2 7/8-inch outside diameter. by height as required for 7 feet above finish surface.

d. Construction: Galvanized steel pipe with eyelets for attachment of rope for volleyball nets. One column of the two-column set shall be equipped with hand ratchet and stop for net adjustment. Top of pipe to be capped. Provide nets, complete.

3. Tetherball Standards:

a. Manufacturer / Product:

1) Porter Athletic Equipment Company.

2) Gametime.

3) L.A. Steelcraft.

4) PW Athletics.

5) Equal.

b. Type: Porter model #00763-200 Tetherball Post, rope and Ball.

c. Size: 2 3/8-inch outside diameter by height as required for 8-foot 6-inch height above finish surface.

d. Construction: Galvanized steel pipe with 3/8 inch solid stack eyebolts 7/8 inch inside diameter hook (galvanized), galvanized steel cap.

4. Baseball and Softball Backstops:

a. Manufacturer / Product:

1) L.A. Steelcraft, as a standard of quality.

2) Gametime.

3) Jaypro Sports, LLC.

4) PW Athletics.

5) Equal.

b. Size: 13-foot high by 20-foot 6-inch wide by 81-inch deep.

c. Pipe Supports: 2 3/8-inch outside diameter, vertical posts and front top, 1-5/8 inch outside diameter horizontal braces, and 1-7/8 inch outside

diameter back top. Galvanized steel per ASTM 53, Grade B and ASTM A53M-02.

d. Fabric: 9 gage galvanized wire fabric, 2-inch mesh.

e. Type: L.A. Steelcraft model #810JH4C permanent heavy-duty baseball backstop.

2.03 FABRICATION

A. General: Provide standard sizes, playground equipment and weights of components as indicated.

2.04 CAST-IN-PLACE CONCRETE

A. Concrete Materials and Properties: Comply with requirements of Section 03 3000 - Cast-in-Place Concrete to provide normal-weight, air-entrained concrete with a minimum 28-day compressive strength of 3,000 psi, 4-inch slump, and one inch maximum size aggregate.

2.05 GENERAL METAL FINISHES

A. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are permitted if they are within one-half of the range of reviewed Samples. Noticeable variations in the same piece are not permitted. Variations in appearance of other components are permitted if they are within the range of reviewed Samples and are assembled or installed to minimize contrast.

B. Baked-Enamel Powder-Coat Finish: Manufacturer's standard, baked, polyester-TGIC, powder-coat finish complying with finish manufacturer's written recommendations for surface preparation, including pretreatment, application, baking, and minimum dry film thickness of 3 to 5 mils.

C. PVC Finish: Manufacturer's standard, UV-stabilized, mold-resistant, slip-resistant, matte-textured, dipped or sprayed-on, PVC-plastisol finish, with flame retardant added, complying with coating manufacturer's written recommendations for pretreatment, application, and minimum dry film thickness of 80 mils.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions for compliance with requirements for Project site clearing, earthwork, surface and sub-grade drainage, and other conditions affecting installation.

B. Do not begin installation before final grading for placing protective surfacing is completed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Verify locations of playground perimeter and pathways. Verify that playground layout and equipment locations comply with requirements for each type and component of equipment.

3.03 INSTALLATION, GENERAL

A. General: Comply with manufacturer's written recommendations unless more stringent requirements are indicated.

B. Basketball Standards: Excavation shall be a minimum of 4-foot deep by 3-foot diameter. The backstop column support shall be installed, plumbed, and shored with the column positioned in a manner so that a minimum column embedment of 3'-6 inch occurs. Fill excavation with concrete. A measured height of 10 feet from top of finish surface to top of ring shall be provided. Maintain shoring in place until concrete is sufficiently hydrated to support backstop column.

C. Volleyball Standard: Provide 2-foot 6-inch deep by 1 foot 6-inch diameter excavation and install top of posts at seven feet above adjacent playing surface. Embed posts 2 feet into concrete.

D. Tetherball Posts: Provide 1 foot 6-inch diameter by three feet deep excavation and install top of posts 8-foot 6-inch above adjacent playing surface, embed post 2-foot 3-inch, provide 6 inches minimum of concrete under post. Provide concrete backfill sloped to drain.

E. Baseball Backstops: Provide 1 foot diameter by 3-foot 6-inch deep concrete footing. Pipe supports shall be embedded in concrete footing to a minimum depth of 36-inch, provide a minimum of 6 inches of concrete under pipe.

F. Install other playground equipment as indicated on the Drawings.

G. Post and Footings:

1. Excavation: Hand-excavate holes for posts and footings to dimensions, profile, spacing, and in locations indicated on Drawings, in firm, undisturbed or compacted subgrade soil. Level bearing surfaces with drainage fill, to required elevation.

2. Post Setting: Install mainframe equipment posts in concrete footing. Protect portion of posts above footing from concrete splatter. Install concrete around posts and vibrate or tamp for consolidation. Verify that posts are set plumb or at the correct angle and are aligned and at the correct height and spacing. Brace posts in position during placement and finishing operations until concrete is sufficiently hydrated. Smooth tops of concrete footings, and slope top surface for positive shedding of water.

3.04 ADJUSTING AND PROTECTION

A. Adjust movable playground equipment components to operate smoothly, easily and quietly, free from binding, warp, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range.

B. Protect the Work of this section until Substantial Completion.

3.05 CLEANING AND CLEANUP

A. After completing playground equipment installation, inspect components. Remove spots and dirt. Repair damaged finishes to match original finish or replace component.

B. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 21 1313

FIRE-SUPPRESSION SPRINKLER SYSTEM

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Fire sprinkler system for protection of buildings.

2. Standpipe system.

C. Related Requirements: The requirements of this Section, NFPA 13, and NFPA 14 shall be included with the requirements found in the following specification sections:

1. Division 01 - General Requirements.

2. Section 09 9000: Paints and Coatings.

3. Section 22 0500: Common Work Results for Plumbing.

4. Section 22 0513: Basic Plumbing Materials and Methods.

5. Section 22 0553: Plumbing Identification.

6. Section 22 1000: Plumbing.

7. Section 26 0500: Common Work Results for Electrical.

8. Section 28 3100: Fire Detection and Alarm.

9. Section 31 2323: Excavation and Fill for Utilities.

10. Section 33 1100: Site Water Distribution Utilities.

1.02 SUBMITTALS

A. Manufacturer’s Data:

1. Submit complete and detailed equipment and material list of items to be furnished and installed under this section.

2. Submit manufacturer's specifications and other data required to demonstrate compliance the plans and specified requirements.

B. Drawings:

1. Submit shop drawings of wet pipe fire protection sprinkler system in compliance to NFPA 13, Standard for the Installation of Sprinkler Systems, Sprinkler systems shall comply with the provisions of NFPA 13, 14, 20, 24, 25, and 72.

2. Shop drawings shall fully comply with the most stringent provisions of this specification and plans, and with the applicable codes and standards.

3. Shop drawings shall be same size as the Contract Drawings and shall be produced using AutoCAD.

C. Regulatory Requirements:

1. Installation of fire sprinkler system shall not vary from the plans unless alterations have been approved by the State Fire Marshal at DSA.

2. Complete DSA standard testing forms and get sign-off by the Project Inspector.

D. Closeout Submittals: Submit in accordance to Section 01 7700, Contract Closeout, and as specified herein:

1. Record Drawings:

a. Record drawings of installed Work shall be maintained current on the Project site, available for Fire Marshal and the Project Inspector to review.

b. At completion of installation submit Record Drawings signed by installing Contractor in AutoCAD format, including:

1). Record Specifications.

2). Record Product Data: Include specific model, type and size for equipment and material installed.

3. Record Test Results.

4. Maintenance Manuals.

1.03 QUALITY ASSURANCE

A. Comply with applicable national or local codes and standards.

B. Except where exceeded by the requirements of these specifications, the following are made part of this section: prints and details, and provisions of the NFPA 13 Standard for Installation of Sprinkler Systems and NFPA 14 Standard for the Installation of Standpipes and Hose Systems.

C. Qualifications of Manufacturer: Products used in work of this section shall be produced by manufacturers regularly engaged in manufacture of similar items and with a 5 year history of successful production that is acceptable to the Architect.

D. Qualifications of Installer: Installer shall have a current C-16 license in the State of California in the installation of fire sprinkler systems.

1.04 FIRE SERVICE WATER CONNECTION

A. The Owner shall pay fees and provide for the fire main POC (point of connection), consisting of the installation of a single detector check valve (if one is required) and meter shut off valve inside a meter vault.

B. Fire Service Mains shall be provided with approved Meter Service Backflow protection. An approved Reduced Pressure Principle Detector Backflow Prevention Assembly (RPDA) to meet minimum backflow protection requirements for meter service protection (MSP) shall be provided on the fire main, according to the California Plumbing Code (CPC) and according to the current Los Angeles Department of Water and Power WATER SERVICE RULE 16-D where applicable. Double Check Detector Backflow Prevention Assemblies shall only be used with the written approval of the Water Purveyor. (for backflow prevention assemblies refer to specification section 22 1000 plumbing.)

1.05 PRODUCT HANDLING

A. Comply with the provisions specified in Sections 22 0500 and 22 0513.

1.06 COORDINATION

A. Coordinate activities in accordance with provisions of Section 22 0500.

1.07 JOB CONDITIONS

A. Unscheduled utility flow interruptions are not permitted. Schedule service interruptions in advance, with the OAR.

1.08 EXTRA MATERIALS FOR MAINTENANCE

A. Provide spare sprinkler heads in quantity equal to 2 percent of total number of each type of sprinkler head installed. There shall be no less than two heads of each type and temperature rating provided, and in no case less than six spare sprinkler heads per building. There shall be no fewer than 6 spare sprinkler heads for up to 300 sprinkler heads installed; no less than 12 spare sprinkler heads for up to 1,000 sprinkler heads installed; and no less than 24 spare sprinkler heads for the sites with more than 1,000 sprinkler heads installed. Spare sprinkler heads shall be kept inside of spare sprinkler head box(s). A spare sprinkler wrench for each type of sprinkler head shall also be provided inside of each spare sprinkler head box, at each building. Locations of spare sprinkler boxes shall be located at:

1. Fire Sprinkler Riser, when enclosed and secured.

2. Plant Manager's Office, or an OWNER approved location when Fire Sprinkler Riser is exposed.

PART 2 - PRODUCTS

2.01 FIRE PROTECTION SYSTEM DESCRIPTION

A. General: Provide systems complete including, but not limited to:

1. Provide underground and above ground sprinkler and standpipe piping including trenching and backfilling. Materials and equipment shall be UL/FM listed and approved as required by NFPA for their application. Required signage shall be provided and installed as required by NFPA 13, NFPA 14, and NFPA 25.

2. Provide overhead sprinkler system with sprinklers installed as required according to type, location and temperature rating.

B. Sprinkler Heads:

1. Provide chrome pendant spray type sprinkler heads with matching escutcheons in areas with finished ceilings. Exterior escutcheons shall be poly-coated or concealed type to prevent rusting and oxidation.

2. Provide upright sprinklers in areas with exposed piping.

3. Provide poly-coated glass bulb corrosion resistance type sprinklers heads in areas exposed to a corrosive environment such as parking garages and sites located within two miles from ocean.

4. Sprinklers shall be glass bulb type, with hex-shaped wrench boss integrally cast into the sprinkler body to reduce the risk of damage during installation,

5. Sprinklers in concealed spaces, exterior locations, and other areas that will experience over 100 degrees F ambient temperature shall be furnished with 200 to 225-degree rated sprinklers. Sprinkler heads in boiler rooms, furnace rooms, or heater rooms shall be furnished with sprinklers rated at 250 to 290 degrees F. If a sprinkler is directly affected by a spotlight, steam, or other heat source, a 350-degree F or higher sprinkler head shall be furnished. Sprinkler heads in other locations, unless otherwise noted, shall be 155 to 165 degrees F rated.

6. Automatic fire sprinkler head type shall be as follows:

a. In areas with ceiling heights of eight to nine-feet, sprinkler heads installed shall be recessed or fully concealed.

b. Areas with ceiling height of eight to nine-feet, that are not constantly supervised such as corridors, arcades, students' restrooms, and other restrooms shall be provided with fully concealed sprinkler heads.

c. Ceilings eight-feet or lower shall be provided with fully concealed sprinkler heads.

7. Sprinkler heads in light hazard occupancies are required to be Quick Response sprinklers as required in NFPA 13. Sprinkler heads shall be of the same manufacturer throughout the building/site as indicated. Sprinklers shall typically be ½ inches NPT, standard orifice, minimum 5.6 nominal K factor, UL listed for 175 psi, and listed for light and ordinary hazard occupancies.

8. Other specialized sprinkler heads such as walk-in refrigerator or freezer heads, side wall, ¾ inches sprinklers above 5.6 K factor, and those sprinklers with a K factor below 5.6, shall only be used where required by project condition. Large drop sprinkler heads and extended coverage sprinkler heads shall not be installed.

9. Sprinkler head location shall be designed and installed in an aesthetically pleasing manner and should generally be located in center of 24-inch by 24-inch ceiling tiles and in center of 24-inch by 48-inch ceiling tiles in the 24-inch direction and no closer than 12-inch from the edge in the 48-inch direction.

10. UL/FM listed Sprinkler head guards shall be provided on Sprinkler heads installed at seven feet six inches above floor or lower in exposed locations, or that are deemed subject to damage. Sprinkler head guards shall securely fasten with bolt-on feature to the base of the sprinkler or be a factory installed guard. Guards shall also be provided on upright and sidewall heads where sprinklers are installed at seven feet six-inch heights or lower.

C. Fire Sprinkler and Standpipe Systems:

1. Underground piping: Comply with the requirements of Section 33 1100, Site Water Distribution Utilities.

2. Provide an underground UL/FM listed C-900 or Ductile iron with protective wrapping supply line connected to detector check meter or water main as indicated. Install site water mains no closer than 10'- 0" parallel to the building foundations. Underground fire water lines shall be installed 36 inches below grade. Red tracer wire of #12 shall be installed in accordance with Section 33 1100: Site Water Distribution Utilities.

3. Fire Department Connection (FDC) with check valve (wafer type) shall be provided after the backflow preventor, and before the building fire sprinkler riser(s), located where the FDC will be accessible to the fire department from the street or sidewalk without obstructions. No shut off valve shall be allowed

on the FDC line as per NFPA 13. FDCs shall have a height between two and four-foot above the ground.

4. PIVs shall be electrically supervised regardless the number of fire sprinkler served (CBC 903.4) and set at a height of three feet to the top and have the handle locked in place with a break-a-way lock.

5. Provide a UL listed, FM approved FDC, approved RP type backflow assembly, check valves, shut-off valves, drain valves, ITV, and flow indicator at the locations required. (Test-and-drain combination valves are prohibited.)

6. Flow indicator shall activate the fire alarm system between 45 and 90 seconds and activate a local alarm on the outside of the building continuously with water flow. Connection of this switch is a part of the Work of Division 26. Shut-off including valves on the fire main backflow preventor shall be electrically supervised according to CBC 903.4, NFPA 13 and Section 28 3100 – "Fire Detection and Alarm".

7. Pipe through ceilings at head locations shall be furnished with a two piece, or fully concealed escutcheon. Unless otherwise designated, escutcheons shall be identical and match the other escutcheons of the same type throughout the building or site. Piping through walls and ceilings shall have a split ring chrome escutcheon.

    a. Flexible stainless-steel sprinkler head drop system may be used. Flexible drops shall be UL listed, FM approved, and shall be compatible with ceiling systems. Flexible drop length shall be included in the Hydraulic Calculations. The drop system shall include the required support bracing.

8. Furnish and install required signs, spare heads, special wrenches, and spare sprinkler head boxes as required to satisfy NFPA 13, NFPA 14 and this specification.

9. Sprinkler system piping shall be provided with complete drainage as required by NFPA. Discharge line of fire sprinkler main drain valve and inspector's test valve shall be directed to appropriate and effective BMPs in compliance with local governing agency requirements; or drained indirectly into sanitary sewer system using an appropriately sized Hub Drain. Main drain lines shall never discharge into a sanitary plumbing fixture, not even into a floor sink or floor drain. Inspector's test valve could be directed to landscaped, greenway, or green belt areas. Furnish protection of piping against accidental or malicious damage.

    a. Provide auxiliary drainage as required. The discharge valve shall be accessible and serviceable installed within a recessed wall mounted access panel. The access panel shall be installed minimum 3 feet above floor but less than 7 feet above floor.

10. Upon completion of the Work of this section, and before Substantial Completion, subject system, including underground supply connection, to tests required. A minimum hydrostatic test shall be two hundred pounds (200 psi) or fifty pounds (50 psi) in excess of the maximum system working pressure, whichever is greater, for four hours with no leaks or loss of pressure per NFPA 13 and NFPA 24. The Project Inspector shall be furnished with a NFPA 13 and NFPA 24 test certification.

11. Local fire sprinkler alarm requirements shall be accomplished with a vane or paddle type water flow detector switch and an electrically powered fire sprinkler horn located on the street side of the building and connected to the fire alarm control panel with secondary power provided from the fire alarm batteries. The drilled-out disk shall be attached to the mounting U-bolt. Time delay shall be set at 45 to 60 seconds. Mechanically activated water bells with alarm valve and pressure switch are prohibited.

12. Seismic separation assemblies shall be located between the buildings if space allows accessibility. Otherwise they shall be located inside the building providing the most space. Swing joints may be fabricated on site using flexible groove couplings and six grooved (Victaulic) 90-degree elbows in a teepee formation (see NFPA 13, figure A.9.3.3). Seismic separation assemblies can also be made utilizing a manufactured, UL/FM listed swing joint assembly rated at a minimum 175 psi.

13. Hanging, bracing and support shall utilize only UL/FM listed approved products, and comply with NFPA 13, Chapter 9 requirements for rod and bolt sizes.

14. Hanger rods in exterior locations and in parking structures shall have Electrodeposited Zinc Coating per ASTM B633 to prevent rusting.

15. Building Fire Sprinkler riser assemblies shall be provided as follows. Every building shall be provided with an accessible and electrically supervised riser shut off valve at a height not to exceed five-feet above the floor. Every building riser assembly shall be equipped with a main drain valve, the flow indicating switch, and pressure gauge immediately after the shut-off valve. In cases where a riser assembly is provided for each floor in the building, a main drain and flow switch shall be provided for each floor; the main building shut-off shall not be required. An electrically supervised Post Indicator Valve located outside the building may serve as the building riser shut-off valve.

2.02 MATERIALS

A. Automatic Fire Sprinkler Head, UL/FM listed:

AFSH-1 Brass pendant type for areas with suspended ceilings:

Victaulic	Tyco	Viking	Reliable	Or equal
V27	TY 3231	VK302	F1FR56	

B. Sprinkler Guards:

SPG-1 Sprinklers installed at seven feet six inches above floor or lower in exposed locations, or that are deemed subject to damage shall be equipped with a UL/FM listed, head guard. Guards shall be listed, supplied and approved for use with the sprinkler by the sprinkler manufacturer. Sprinkler head guards shall securely fasten with bolt-on feature to the base of the sprinkler or be a factory installed guard. Guards shall also be provided on upright and sidewall heads where sprinklers are installed at seven feet six-inch heights or lower.

Reliable	Viking	Tyco	FPPI	Victaulic	Or equal

C. Hangers, Supports, Bracing:

HSB-1 Tolco products or UL listed and FM or equal.

D. Threaded fittings:

TF-1 Ductile iron, 300 psi rated, UL listed, FM or NFPA approved.

TF-2 Cast iron fittings, 175 psi rated, UL listed, FM or NFPA approved:

Anvil	Ward	Taylor	Or equal

TF-3 Malleable Iron, 300 psi rated, UL, Listed, FM or NFPA approved

TF-4 Galvanized, 175 psi rated, UL Listed, FM or NFPA approved

E. Fire Sprinkler Pipes and Standpipes:

FSP-1 Fire sprinkler pipe: 1-inch through 8-inch, Schedule 40, black or galvanized steel meeting ASTM Standards A53, A135, or A795. Pipe Corrosion Resistance Ratio (CRR) shall be 1.00 or greater. Pipe may be threaded or grooved.

a. Piping 2 inches and smaller shall have threaded joints and fittings in concealed, non-accessible locations. Groove coupler connections (Victaulic, Viking VGS, or equal) on pipe sizes 1 inch through 2 inches are acceptable in accessible areas with required seismic bracing provided. Plain end connections such as “Plainlock” and “FIT” are prohibited.

b. For pipe sizes 2 ½-inch and larger, grooved type (Victaulic, Viking VGS, or equal), welded, threaded and flanged connections may be used. Any connection that does not utilize

a threaded, welded or grooved connection is prohibited, except for mechanical tee bolt-on branch outlet fittings sizes 2-inch and smaller (Victaulic 920 and the 920N).

c. Submit Verification from manufacturer stating that piping material furnished meets above criteria; (i.e.: threadable pipe has a UL assigned CRR of 1.00 minimum, that it meets ASTM A53, A135 or A795, and it is UL listed, FM or NFPA approved.)

FSP-2 Ductile iron pipe, AWWA C151 (for pipes below grade). Gasketed self-retaining joints per ASME/ANSI B16.4.

FSP-3 Plastic, PVC, thick wall (cast iron OD sized), DR 14 (200 PSI). UL listed for fire main service (underground). Gasketed self-retaining joints - Johns Manville Blue Brute AWWA C900, JM Eagle C900 water pipe or equal.

FSP-4 Fire Sprinkler Pipe: 1 inch through 3-inch, Copper meeting NFPA 13 Standards. Pipe may be grooved.

FSP-5 Flexible Fire Sprinkler Head Connectors: 1-inch pipe size flexible stainless-steel fire sprinkler head connectors “Flex Head Industries” Models 2024, 2036, 2048, 2060 and 2072, or equal.

2.03 ACCESSORIES AND APPURTENANCES

A. Escutcheons: Polished chrome plated split-ring type for exposed piping at every penetration inside finished rooms.

B. Guards: Provide sprinklers with guards at ceiling at or under seven feet six-inch high and where subject to damage or vandalism.

C. Miscellaneous: Provide accessories and appurtenances for a complete system.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions under which Work of this section shall be performed. Correct conditions detrimental to proper and timely completion of Work. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel or groove plain end ferrous pipe ends.

B. Remove scale and foreign matter, from inside and outside of pipes, before assembly.

C. Provide piping connections to equipment with flanged or grooved connections.

3.03 INSTALLATION

A. Install underground supply line connected to above ground detector check or water main indicated. Braced or clamped bends shall be in accordance with requirements of NFPA 24. Provide vertical clamp rods at flange and spigot piece of risers, long enough to pass through riser's base flange where required. Furnish approved mechanical restraint fittings or concrete thrust blocks where required. Provide red tracer wire with detectable metallic tape installed as per Section 22 0553: Plumbing Identification on C-900 underground piping.

B. Install FDCs, check valves, shut-off valves, gauges, Inspector’s test and drain assemblies and flow indicator as required. FDC must be installed so that it is unobstructed and accessible for the Fire Department’s first response unit.

C. Pipe through floors, wall, and ceilings, at head locations, shall be furnished with required sleeves, and escutcheons and fire caulking where indicated and/or required by code. Escutcheons shall be polished chrome plated unless other finish is selected by the Architect.

D. Upon completion of the Work of this section, and before Substantial Completion, subject the entire system, including underground supply connections, to tests as required by NFPA 13, and CBC standards and furnish the Owner with a certificate of compliance as required.

E. Close nipples are prohibited. Threaded unions are prohibited. Where a threaded union or coupling is needed, a groove type fitting (Victaulic or equal) shall be used instead. If a groove style coupling is used in a concealed area, an access panel allowing full access to that connection shall be provided.

F. Fire sprinkler systems piping hangers, seismic bracing, anchors and supports shall conform to NFPA 13, CBC and other applicable codes and the requirements of this specification.

G. Grooved joints shall be installed in accordance with the manufacturer’s latest published installation instructions. Grooved ends shall be clean and free from indentations, projections, and roll marks in the area from pipe end to groove. Gaskets shall be of an elastomer grade suitable for the intended service and shall be molded and produced by the coupling manufacturer.

H. Tee branch outlets on fire sprinkler mains shall be by the use of a threaded ductile iron tee fitting, a groove type tee fitting, (Victaulic or equal), or by the use of a thread-a-

let welded on by a certified welder as required by NFPA. Mechanical tee bolted branch outlet fittings are prohibited except for branch outlet sizes 2-inch and smaller.

I. Sprinkler lines within the building shall be concealed within the structure. Risers shall be installed in utility, supply rooms or similar service areas whenever possible, and shall not obstruct access, or maintenance of other equipment within the space. Mains and risers shall be located within the area protected by the sprinkler system unless otherwise approved by fire authorities having jurisdiction.

J. Sprinklers that have been dropped, damaged, have cracked bulbs, or show a visible loss of fluid shall not be installed.

K. Sprinkler bulb protectors shall be removed by hand after sprinkler installation. Tools or other devices to remove the protector that could damage the bulb in any way shall not be used.

L. Routing of piping in non-concealed exposed areas shall be subject to the Architect's review in the final shop drawings.

M. Underground piping shall have a minimum of 36 inches of cover to grade. Underground pipe shall be installed on a flat not less than 6-inch thick undisturbed sand bed. After required pressure-leak test, pipe shall be covered with sand not less than 6 inches thick, before backfilling. Comply with NFPA Standards. Piping is not allowed to be underground below the building floor slab.

N. Provide approved backflow prevention assemblies. Installations of backflow prevention assemblies shall be tested and certified by a certified Los Angeles County backflow prevention device tester prior to Substantial Completion. Tests shall be performed in the presence of the Project Inspector. Test reports shall be turned over to the Project Inspector for mailing to proper agency.

O. Provide shunt trip when sprinklers are installed in the elevator machine rooms and elevator hoist way unless the sprinklers are located 2 feet or less from the hoist way pit floor.

P. Auxiliary drains with valves 3' to 7' above floor shall be provided in labeled access panels where change of piping direction prevents drainage of system through main drain. Discharge piping shall be piped to an OWNER approved location.

Q. It is prohibited to install valves and maintenance fittings in the ceiling.

R. Each building with a sprinkler riser shall be furnished with an accessible shut off riser valve installed no higher than five feet from the finish floor. Each floor shall have a separate shut off valve with flow switch and shall be securely enclosed or secured with a chain and break-a-way lock. Also see section 2.01- C-9 of this specification.

S. Inspector’s Test Valve (ITV) shall be located at the furthest opposite end of the sprinkler system from the supply. Test-and-drain type combination valves are prohibited.

T. Fire Valves and Risers shall be painted OSHA’s “safety red”.

3.04 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.05 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose at off-project site.

END OF SECTION

SECTION 22 0500

COMMON WORK RESULTS FOR PLUMBING

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. This Section provides the basic plumbing requirements that apply to the Work of Division 22.

B. Related Requirements:

1. Division 01: General Requirements.
2. Division 22: Plumbing
3. Division 23: HVAC
4. Division 26: Electrical.

1.02 REGULATORY REQUIREMENTS

A. Current federal Safe Drinking Water Act (SDWA) regulations require the furnishing of lead-free pipe, solder, and flux in the installation or repair of plumbing in non-residential facilities connected to public drinking water systems. Under this regulation, solders and flux are considered lead-free when they contain 0.2 percent lead or less. Under California regulations pipes and pipe fittings are considered lead-free when they contain 0.25 percent lead or less as defined in California Assembly Bill 1953 (AB 1953). No pipe, pipe fittings, or any other fitting or fixture intended to convey or dispense water for human consumption by drinking or cooking is allowed in the domestic plumbing system, if they do not meet the low lead definition of AB 1953. Weighted average lead content of the wetted surface area of pipes, fittings and fixtures may not exceed 0.25 percent.

1. Provide lead-free water pipe, solder, and flux materials that meet the standards as outlined by the federal SDWA regulations and California AB 1953 if installed in drinking water system.
2. Collect pipe, solder, and flux material samples as required by the Project Inspector. Test samples shall be delivered to an Owner designated testing laboratory for testing of lead content.
    a. Test samples for lead content by the atomic absorption spectrophotometry method.
3. Materials found not conforming to SDWA and California AB 1953 regulations shall be deemed defective Work and shall be replaced with lead-free materials.
4. Comprehensive testing of the remaining materials for their lead content shall be performed as required by the Project INSPECTOR.

A. Materials, fabrication, equipment, and installation shall comply with industry standards and code requirements. Where manufacturer’s recommendations exceed

industry standards, the manufacturer's recommendation shall establish the minimum standard. As a minimum, standards from the following organizations shall apply:

1. ANSI - American National Standards Institute.
2. ASME - American Society of Mechanical Engineers.
    a. ASME Boiler and Pressure Vessel Code.
    b. ASME B31 - Standards for Pressure Piping.
3. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers.
4. ASTM - American Society for Testing and Materials.
    a. ASTM A53 Specification for Welded and Seamless Pipe.
5. AWWA - American Water Works Association.
6. CSA - Canadian Standards Association.
7. FM Global - Factory Mutual Global
8. IAPMO - International Association of Plumbing and Mechanical Officials.
9. NFPA - National Fire Protection Association.
10. OSHA - Occupational Safety and Health Administration.
11. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association.
12. UL - Underwriters Laboratories Inc.
13. Intertek (ETL Certification).

B. Materials, fabrication, equipment, and installation shall comply with federal, state, and local codes including, but not limited to, the following:

1. CBC, California Building Code, and CMC, California Plumbing Code.
    a. Latest edition as adopted by the City of Los Angeles, the County of Los Angeles, and the State of California including amendments effective on the Effective Date of the Contract.
2. California Code of Regulations, Title 8, Industrial Relations, Division 1, Chapter 4, Division of Industrial Safety.

3OSHA - Occupational Safety and Health Administration.

4. CDPH - California Department of Public Health.
5. SCAQMD - South Coast Air Quality Management District.

C. Specifications or Drawings shall not be construed to permit deviation from the requirements of governing codes unless approval has been obtained from legally constituted authorities having jurisdiction, and the Architect. The Contract Documents may contain more stringent requirements than those legally required.

D. Permits and Fees: Refer to the General and Supplementary Conditions.

1.03 SUBMITTALS

A. Provide submittals in accordance with Section 01 3300: Submittal Procedures and with specific requirements of Division 22 sections, as applicable.

B. The above information shall become the basis for inspecting and testing materials and actual installation procedures performed in the Work.

C. Shop Drawings: Submit one additional copy when control diagrams having line voltage connections are indicated. Shop Drawings shall be specifically prepared for the Work of this Project. Drawings prepared in accordance with requirements of Section 01 3113: Project Coordination and Section 01 3300 may be provided by the Architect to serve as a background for the Shop Drawings. Shop Drawings shall comply with the requirements of Section 01 3113 and Section 01 3300 and shall indicate at a minimum:

1. Complete system layout of equipment, components, plumbing fixtures, piping, indicating service clearances, and pipe sizes, fitting types and sizes and pipe elevations, distances of pipes and equipment from building reference points and hanger support locations. The above items shall be coordinated on the shop drawings according to the requirements of Section 01 3113.

2. Schedule and description of equipment, piping and fittings.

1.04 PROJECT RECORD DOCUMENTS

A. Comply with provisions of Section 01 7700: Contract Closeout.

B. Project Record Drawings:

1. Provide a complete set of plumbing and fire protection drawings in AutoCAD and, if available, BIM, complete with external reference drawings, fonts, blocks and plotter pen color/line thickness settings on CD-ROM. Also submit one set of full size reproducible plots on vellum and 3 sets of prints.

2. Before Contract Completion, deliver corrected and completed prints to the OAR. Delivery of project record documents to the OAR does not relinquish responsibility of furnishing required information omitted from project record documents.

C. Operation and Maintenance Manuals:

1. Submit two copies of operation and maintenance manuals in required form and content. If no revisions are required, furnish one additional copy. If revisions are required, one copy shall be returned with instructions for changes; perform such changes and return three copies of manuals. Manuals shall be bound in accordance to Section 01 7700. Deliver manuals to the OAR. Submit an electronic copy of the entire manual in PDF file format.

2. Contents of Manual:

a. Title sheet with Project name, including names, addresses and telephone number of Contractor, installer, and related equipment suppliers.

b. Manufacturer's operating instructions including, but not limited to, the following:

1) Identification of components and controls.

2) Trouble shooting checklist and guidelines.

3) Recommendations for optimum performance.

4) Warnings and safety precautions on improper or hazardous operational procedures or conditions

c. Manufacturer's product data and parts and maintenance booklet for each item of equipment furnished under Division 22 that includes the following as a minimum:

1) Manufacturer’s model, identification and serial numbers.

2) Exploded view of assembly drawings identifying each component or part with the relevant part number.

3) Directory of manufacturer’s representatives, service contractors and part distributors.

4) Maintenance and trouble-shooting instructions, including schedule for preventive maintenance, periodic inspection and cleaning criteria.

d. Project Record Drawings: Complete set of plumbing, fire protection and control system drawings in 50 percent reduced print format shall be furnished with the manual. Submit the above record drawings on CD-ROM in AutoCAD and, if available, BIM, complete with external reference drawings, fonts, blocks, and plotter pen color/line thickness settings.

e. Testing, Adjusting, and Balancing reports: Submit as specified in Section 23 0593.

f. South Coast Air Quality Management District (SCAQMD) permits to install and operate boilers, water heaters and other fuel burning equipment and third-party source test reports as required by SCAQMD to allow start-up and operation of equipment.

g. Los Angeles County industrial waste permits.

h. Valve directory complete with location, function, size, and model of each valve with reference to the project record drawings.

i. Equipment and component identification chart complete with location, function, size, and model of each equipment or component with reference to the project record drawings.

1.05 COORDINATION

A. Contract Documents indicate extent and general arrangement of Work under Division 22. Contractor shall coordinate work in accordance with Section 01 3113 requirements and make adjustments as required to provide maximum headroom, a neat arrangement to keep passageways and openings clear to provide accessibility and provisions for maintenance, and to meet code requirements.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Delivery and Storage: Deliver materials to Project site in their original unopened containers with labels intact and legible at time of delivery. Store in strict accordance with manufacturer's recommendations.

B. Do not store plastic pipe or materials in direct sunlight.

1.07 PRELIMINARY OPERATION

A. OAR may require any portion of plumbing Work to be operated before Substantial Completion. Such operation shall be in addition to regular tests, demonstrations and instructions required under the Contract Documents, and shall be performed as required.

B. Notify the INSPECTOR at least 24 hours in advance of lighting or re-lighting pilots.

1.08 TRAINING OF OWNER PERSONNEL

A. Training of Owner’s personnel shall include:

1. A minimum of 4 hours of on-site overview of the overall Plumbing System.

2. Refer to Division 22 sections for specific training on each of the components of the Plumbing System.

B. Contract shall include the cost of training Owner operation and maintenance personnel in operating, adjusting, maintenance, trouble-shooting, and Project site repair of each component, equipment, or system provided under this Contract.

C. Operational and maintenance training shall be conducted on the Project site, unless indicated otherwise.

D. Upon completion of Owner training, a completion certificate indicating the nature of the training and a description of the systems, complete with equipment and component lists shall be issued to each trainee. The certificate should be issued in duplicate with one copy retained by OAR.

E. An attendance sheet with the names and signatures of all participants attending the training shall be submitted to the OAR and kept as part of the project documents.

1.09 GUARANTEES AND DAMAGE RESPONSIBILITY

A. Sound of water flowing in piping shall not be transmitted to building structure. Operation of mechanical system shall not produce operational sounds that can be heard outside of rooms enclosing apparatus or equipment.

PART 2 – PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Unless otherwise specified, materials and equipment shall be new, in good and clean condition. Equipment, materials, and components shall be of the make; type and model number noted on Drawings or specified. Pieces of equipment of the same type shall be by the same manufacturer.

B. Whenever an item is listed by a single proprietary name, with or without model number and type, it shall be for purpose of design only, to indicate characteristics and quality

desired. Proprietary designation listed on Drawings, or listed first in Specifications, is used as a basis for design to establish a standard for quality and performance and space requirements.

C. Equipment and materials indicated or required to be installed outdoors shall be of the type that is designed, manufactured, listed or approved by authorities having jurisdiction for outdoor installation by being resistant to the adverse effects of weather. The additional protective measures against outdoor weather required by the manufacturers' installation instructions and prevalent practice shall be provided.

D. For substitution of materials or products, refer to the General Conditions.

PART 3 – EXECUTION

3.01 SERVICE INTERRUPTIONS, OFF-SITE, GAS AND WATER

A. Schedule Work so there shall be no service interruptions of existing systems or systems during normal hours of operation of affected systems and facilities.

B. When service interruptions are mandatory, arrange in advance with the OAR as to time and date of such interruptions.

C. Systems, which are interrupted, shall be returned back into operation in such manner that they will function as originally intended.

3.02 CUTTING, NOTCHING, AND BACKING

A. Conform to California Building Code, Title 24, Part 2, for notches and bored holes in wood and for pipes and sleeves embedded in concrete and for cuts in steel, as detailed on structural Drawings.

B. Where pipes pass through, or are located within one inch of any construction element, install a resilient pad, ½ inch thick minimum, to prevent contact.

C. Furnish provisions for recesses, chases, and accesses and provide blocking and backing for proper reception and installation of plumbing Work.

3.03 LOCATION OF PIPING AND EQUIPMENT

A. Location of piping, apparatus and equipment indicated on the Drawings is approximate and shall be altered to avoid obstructions, preserve headroom, and provide free and clear openings and passageways.

B. Trenches parallel to footings shall not be closer than 18 inches to the face of footings and shall not be below a plane having a downward slope of 2 horizontal to one vertical, from a line 9 inches above bottom of footing.

C. Pipe in tunnels shall be installed close to one side of tunnel to provide maximum space for passage. Pipe shall not be installed through crawl hole unless otherwise specified or detailed on Drawings.

D. Place equipment in locations and spaces indicated, disassemble and/or reassemble equipment as required by Project conditions.

3.04 TESTS AND TESTING

A. Tests shall be as required under the applicable sections of Division 22, including this Section.

B. Additional tests may be required in the case of products, materials, and equipment if:

1. Submitted items are altered, changed, or cannot be determined as exactly conforming to the Contract Documents.

2. Performance testing and results may also be required on certain items which are as specified, including fan, and pump performance.

C. Piping Tests:

1. Perform tests required to demonstrate that operation of plumbing systems and their parts are in accordance with Specifications covering each item or system, and furnish materials, instruments and equipment necessary to conduct such tests. Tests shall be performed in presence of the Inspector, and representatives of any governmental agency having jurisdiction. Work shall not be concealed or covered until required results are provided.

2. If required tests are not performed, Owner may provide in accordance with the Contract Documents.

3. Pressure gauges furnished in testing shall comply with CPC. Air shall be bled from lines requiring hydrostatic or water tests.

4. Systems shall be pressure-tested in accordance with pipe testing schedule below. Pipe test shall indicate no loss in pressure after a minimum duration of 4 hours at test pressures indicated. Where local codes require higher test pressures than specified herein for fire sprinkler systems, local codes shall govern.

5. Fuel gas lines shall be first tested with piping exposed, before backfilling trenches or lathing; second with piping in finished arrangement, backfilled and paved where required, and walls finished.

6. Piping systems may be tested as a unit or in sections, but entire system shall successfully meet requirements specified herein, before final testing by the Inspector.

7. Repair of damage to pipes and their appurtenances or to any other structures resulting from or caused by these tests, shall be provided.

D. Pipe Testing Schedule:

System Tested	**Test Pressure (psig)**	**Test With:**
Durham system, glass or plastic acid waste, vent and roof drain (except pipes running under a slab or underground)	Fill with water to top of highest vent; allow to stand two hours, or longer, as required by Inspector. Minimum head required for any joint shall be 10 feet in building.	Water
Cast-iron soil, waste and interior downspout, condensate drain from air conditioning equipment	10 feet of water, vertically	

Domestic water piping	200	Water
Standpipes, wet or dry	300	Water
Gas piping(steel threaded or plastic)	60 (both tests)	Air
Gas piping (steel welded)	100 (both tests)	Air

E. Equipment Performance Assurance Tests:

1. Before operating any equipment or systems, a thorough check shall be performed to determine that systems have been flushed and cleaned as required and that equipment has been properly installed, aligned, lubricated, and serviced. Factory instructions shall be checked to verify installations have been completed and recommended lubricants have been installed in bearings, gearboxes, crankcases, and similar equipment. Particular care shall be furnished in lubricating bearings to avoid damage by over-lubrication and blowing out seals. Equipment shall also be checked for damage that may have occurred during shipment, after delivery, or during installation. Damaged equipment, products, and materials shall be replaced or repaired as required.

2. Upon completion of the above, adjust the system settings to within normal operating conditions to prevent the system from being damaged upon start-up.

3. Run-test the equipment after start-up for five consecutive days. Tests shall include operation of all equipment and systems for a period of not less than two 8 hour periods at 90 percent of the full specified capacities.

4. Equipment Start-up Reports: For each equipment or system on which start-up is performed, submit 8 copies of start-up report for review by the Architect.

   a. The start-up report shall include the manufacturer's standard start-up form completed and signed by the start-up technician.

5. Provide, maintain, and pay costs for equipment, instruments, and operating personnel as required for specified tests.

6. Provide electric energy and fuel required for tests.

7. Final adjustment to equipment or systems shall meet specified performance requirements.

8. Equipment, systems, or Work deemed defective during testing shall be replaced or corrected as required. Test until satisfactory results are provided.

F. Specific Coordinated Plan for Test and Balance:

1. Provide a narrative of the operational intent that clearly describes the function and sequence of operation of each component, equipment, or system installed. Instruct designated Owner personnel in the operation of the installed systems.

2. Prior to final test and balance, plumbing equipment and systems shall be operated and tested as indicated in Article 3.04.F above to demonstrate satisfactory overall operation of the installed systems.

3. Welding performed as part of this Division may be subject to radiographic inspections at random in accordance with requirements specified in Section 22 0513: Basic Plumbing Materials and Methods.

3.05 NOISE AND VIBRATION REDUCTION

A. Correct noise or vibration caused by plumbing systems. Provide all necessary adjustments to specified and installed equipment and accessories to reduce noise to the lowest possible level

B. Correct noise or vibration problems caused by failure to install work in accordance with Contract Documents. Include all labor and materials required as a result of such failure. Pay for re-testing of corrected noise or vibration problems by the project acoustical consultant including travel, lodging, test equipment expenses, etc.

3.06 PROTECTION, CARE AND CLEANING

A. In addition to storage criteria of the General Conditions, and provisions under Section 01 5000: Construction Facilities and Temporary Controls, the following shall be provided:

1. Provide for the safety and good condition of materials and equipment until Substantial Completion. Protect materials and equipment from damage.

2. Protect installed Work.

3. Replacements: In case of damage, immediately provide repairs and/or replacements as required.

4. Protect covering for bearings, open connections to tanks, pumps, compressors and similar equipment.

5. Interior of piping shall be maintained free of dirt, grit, dust, and other foreign materials.

6. Fixtures, piping, finished brass or bronze, and equipment shall have grease, adhesive, labels, and foreign materials removed. Chromium, nickel plate, polished bronze or brass Work shall be polished. Glass shall be cleaned inside and out.

7. Before initial start-up and again before Substantial Completion, piping shall be drained and flushed to completely remove grease and foreign matter. Pressure regulating assemblies, traps, strainers, boilers, flush valves, and similar items shall be thoroughly cleaned. Tag system with an information tag listing responsible party and date of element, before initial start-up and again before Substantial Completion. Compressed air, oil, and gas piping shall be blown out with oil-free compressed air or inert gas.

END OF SECTION

SECTION 22 0513

BASIC PLUMBING MATERIALS AND METHODS

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. This Section prescribes basic materials and methods generally common to the Work of Division 22.

B. Related Requirements:

1. Division 01: General Requirements.
2. Division 22: Plumbing.
3. Division 23: HVAC.
4. Division 26: Electrical.
5. Section 32 8413: Potable Water Irrigation.
6. Section 32 8426: Reclaimed Water Irrigation.
7. Division 33: Site Improvements.

1.02 SUBMITTALS

A. Provide in accordance with Division 01, Section 22 0500 and specific requirements of each section of Division 22.

B. Types of welding rods to be used.

1.03 QUALITY ASSURANCE

A. Standards: Comply with applicable national, state, and local codes and standards: ASTM, ASME, and ANSI. Federal Specifications, AWWA, CISPI, NFPA, FM, UL, CPC (California Plumbing Code), CMC (California Plumbing Code), CSA.

B. Conform to provisions of Section 22 0500: Common Work Results for Plumbing.

C. Manufacturer of plumbing products must be third-party certified to ANSI/NSF Standard 61, Section 9 certification, and ANSI/NSF 372 to demonstrate compliance

with the federal requirements for lead contribution to drinking water, the Safe Drinking Water Act SDWA, and the California Health and Safety Code Section 116875.

D. Qualifications of Manufacturer: Products used in the Work of this Section shall be produced by manufacturers regularly engaged in manufacture of similar items and with a history of successful production as reviewed by the ARCHITECT.

E. Bronze or Brass Alloy Valves shall contain less than 15% zinc content.

1.04 COORDINATION

A. Coordinate related Work in accordance with provisions of Section 01 3113: Project Coordination.

PART 2 – PRODUCTS

2.01 GENERAL

A. Provide the following products if they are indicated in the Contract Documents or if they are required for the proper installation, function or operation of equipment, systems or components indicated in the Contract Document.

B. Provide the following products as a complete assembly with required accessories for a complete and functioning entity in compliance with governing codes and applicable standards as specified in Section 22 0500, manufacturer's instructions or as required.

1. Omission of minor details in the Contract Documents does not waive and/or otherwise relinquish compliance with the above requirements.

2.02 MANUFACTURERS AND MATERIALS

A. Ball Valves: 2-inch and smaller:

BV-1: 600 psi, CWP, Lead Free Bronze, two piece construction with reinforced TFE seats, full port, stainless steel ball and stem, adjustable packing gland, (no threaded stem designs allowed), threaded.

Manufacturer: Apollo Valves 77CLF-140A, NIBCO T-585-66-LF or T-585HP-66-LF, Hammond UP8303A, Milwaukee UPBA400S, or equal.

BV-2: 1000 psi CWP, Stainless Steel, two piece construction with reinforced TFE seats, full port, stainless steel ball and stem adjustable packing gland, (no threaded stem designs allowed), threaded ends.

Manufacturer: Apollo Valves 76F-100, NIBCO T-585-S6-R-66-LL, Milwaukee BA260, or equal.

Ball Valves in Insulated Piping: Use extended operating handle of non-thermal conducive material, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation and memory stops that are fully adjustable after insulation is applied. Apollo Valves Therma-Seal, NIBCO NIB-Seal Handle.

B. Butterfly Valves:

EDIT NOTE: BUTTERFLY VALVES IN A DOMESTIC PLUMBING SYSTEM INTENDED TO CONVEY WATER FOR HUMAN CONSUMPTION SHALL COMPLY WITH QUALITY ASSURANCE, ARTICLE 1.03 OF THIS SECTION.

BFV-1 200 psi CWP tight shut-off.

1. Body: Lug type ductile iron. Suitable for bi-directional dead-end service at rated pressure without use of downstream flange.

2. Disc: Aluminum bronze or stainless steel.

3. Stem: One or two-piece, 400 series stainless steel.

4. Seat and O-Rings: EPDM.

5. Upper and Lower Stem Bearings: Copper alloy or non-metallic material.

6. Operators: Valves 6 inches and smaller, with lever handle. Valves 8 inches and larger, with manual gear operator and disc position indicator.

7. Manufacturers:

   a) Valves 2.5 to 6-inch: Apollo Valves LD145, Milwaukee ML 233E, NIBCO LD-2000-3, or equal.

   b) Valves 8-inch and larger: Apollo Valves LD145, Milwaukee ML 333E, NIBCO LD 2000-5, or equal.

C. Check Valves:

EDIT NOTE: CHECK VALVES IN A DOMESTIC PLUMBING SYSTEM INTENDED TO CONVEY WATER FOR HUMAN CONSUMPTION SHALL COMPLY WITH QUALITY ASSURANCE, ARTICLE 1.03 OF THIS SECTION.

1. Bronze, 2-inch and smaller:

   CHV-1: 200 psi, CWP lead free bronze body, horizontal swing, Y pattern, renewable seat and disc, threaded ends.

Manufacturer: Apollo Valves 163T-LF, NIBCO T-413-Y-LF, Milwaukee UP-509, Hammond UP-904, or equal.

EDIT NOTE: APPLICATION: USE ON DOMESTIC HOT AND COLD WATER SYSTEMS.

CHV-2: 200 psi, CWP, lead free bronze body, horizontal swing, Y pattern, renewable seat and disc, solder ends.

Manufacturer: Apollo Valves 163S-LF, NIBCO S-413-Y-LF, Milwaukee UP-1509, or equal.

D. Earthquake Valve:

EQV-1: Mechanically triggered by seismic movement, complying with state of California seismic response specifications, UL listed and certified by D.S.A. Size and pressure as required or indicated on Drawings. (Minimum 1/4 psi, maximum 10 psi. Earthquake valve shall shut off gas automatically during an earthquake to prevent an explosion or fire. Acceptable Manufacturers: California Valve (former Koso), or equal.

1. Not sensitive to vibrations caused by passing trucks or accidental bumping.
2. Sensitive to wide amplitude G's only. Preset at factory for the correct G-rating.
3. Positive sealing from minus 10 degrees F. to 150 degrees F.
4. Visual open-close indicator.
5. Manual reset.
6. Plumb line for mounting.
7. Tripping mechanism has non-creeping rolling latch.
8. Install valve per manufacturer’s recommendations only.

EDIT NOTE: APPLICATION: AUTOMATIC SHUT-OFF FOR GAS SYSTEMS DURING EARTHQUAKE AT GAS.

1.

K. Piping and fittings:

EDIT NOTE: PIPES AND FITTINGS IN A DOMESTIC PLUMBING SYSTEM INTENDED TO CONVEY WATER FOR HUMAN CONSUMPTION SHALL COMPY WITH QUALITY ASSURANCE ARTICLE 1.03.

1. Piping shall be continuously and permanently marked with manufacturer's name, type of material, size, pressure rating, and the applicable ASTM, ANSI, UL, or NSF listing. On plastic pipe, date of extrusion must also be marked.

2. Underground non-ferrous pressure pipes shall be installed with proper color tracer wires. Refer to color code provisions in Section 22 0553: Plumbing Identification.

P-1: Cast iron: Hubless, service weight, ASTM A888, CISPI 301, conforming to CISPI 310 and installed in accordance to IAPMO IS 6.

Manufacturer: American Foundry, Tyler, AB & I, or equal.

PF-1a: Cast iron, soil or waste no-hub coupling with neoprene gaskets, stainless steel corrugated shields and stainless steel clamps. 2 bands for size 1 ½-inch thru 4-inch, IAPMO, ASTM C 564 and CISPI 310.

Manufacturer: American Foundry, Tyler, AB & I, or equal.

PF-1b: Cast iron, soil or waste, Heavy-duty no-hub coupling with neoprene gaskets, stainless steel corrugated shields and stainless steel clamps. 4 bands for size 5-inch thru 10-inch. IAPMO, ASTM C564 and CISPI 310.

Manufacturer: American Foundry, Tyler, AB & I, or equal.

EDIT NOTE: PROVIDE WITH P-1 AS REQUIRED BY THE ENGINEER DUE TO SITE SPECIFIC CONDITIONS.

PF-1c: Same as PF-1a with Heavy Duty Husky SD 4000 Coupling and stainless steel clamps. IAPMO, ASTM C564 and CISPI 310.

EDIT NOTE: PROVIDE WITH P-1 AT SEWAGE EJECTOR OR SUMP PUMP DISCHARGE.

P-2: Galvanized steel, Schedule 40, ASTM A53.

Manufacturer: US Steel or equal.

PF-2: Malleable iron, Class 150, threaded, galvanized, beaded, ANSI B 16.3.

Manufacturer: Stockham, Stanley Flagg, Grinnell, or equal.

P-3: Copper drainage tube, inside structure and above grade. Type DWV hard temper, ASTM B 306.

Manufacturer: Mueller, Anaconda, Cerro Brass, Cambridge-Lee, Halstead, or equal.

NOTE: USE OF COPPER TUBING TYPE DWV IS PROHIBITED FOR CONDENSATE DRAINAGE.

PF-3: Cast brass drainage fittings ASA B 16.23, ASTM B 42.

Manufacturer: Mueller Brass, NIBCO, Stanley Flagg, Lee Brass, or equal.

P-4: Copper water tube, Type L hard, ASTM B88. (For above ground use only.)

Manufacturer: Mueller, Cambridge-Lee, Halstead, or equal.

NOTE: USE OF COPPER TUBING TYPE M IS PROHIBITED.

PF-4a: Copper Press-Connect pressure fittings, comply with ASME B16.51 "Copper Alloy Press-Connect Pressure Fittings", with Ethylene Propylene Diene Monomer, EPDM O-Ring Seal in each end. Fittings with the sizes of 2-1/2" and larger shall have cross-section Grab Rings and separation rings.

Manufacturer: Viega, NIBCO, Mueller Industries, Apollo, or equal.

EDIT NOTE: PROVIDE WITH P-4 OR P-5 PIPE.

PF-4b: Wrought copper - solder type ANSI B 16.22.

Manufacturer: Mueller Brass, NIBCO, Lee Brass, or equal.

EDIT NOTE: PROVIDE WITH P-4 OR P-5 PIPE, SOLDER, AND FLUX SHALL BE LEAD-FREE. FLUX SHALL BE AN APPROVED WATER-SOLUBLE MATERIAL.

PF-4c: Grooved end type– ASTM B75 or B152 and ANSI B16.22 wrought copper, bronze sand casting per ASTM B584-87 copper alloy CDA 836 per ANSIbB16.18. Couplings shall be CTS style 606 supplied with angle pattern bolt pads for rigidity, coated with copper coated alkyd enamel. Gaskets shall be pre-lubricated Flush seal type.

Manufacturer: Apollo Shurjoint, Victaulic, or equal.

EDIT NOTE: FOR DOMESTIC HOT AND COLD WATER 2 ½-INCH AND LARGER COPPER APPLICATIONS. PROVIDE WITH PIPING SCHEDULE NUMBER P-4.

P-5: Copper water tube, Type K hard, ASTM B88.

Manufacturer: Mueller, Cerro Brass, Cambridge-Lee, Halstead, or equal.

P-6: Type 316L Stainless Steel pipe, marked with manufacturer's identification and fittings. Manufacturer's representative shall instruct installers and certify them for joint installation. Piping system shall be provided with a five-year manufacturer's material warranty.

Manufacturer: Viega or equal.

EDIT NOTE: USE FOR CONDENSATE DRAINAGE AND CHEMICAL VENT PIPING. FOR COMPRESSED AIR DISTRIBUTION USE SPECIFY WITH COMPRESSED AIR RATED O-RING.

PF-6a: Type 316L Stainless Steel Mechanical joints. Stainless steel joint for chemical waste piping systems.

Manufacturer: Blucher, Josam, or equal.

EDIT NOTE: FURNISH WHEN USED WITH MATCHING PIPE ONLY. PROVIDE WITH PIPING SCHEDULE P-6.

PF-6b: Type 316L Stainless Steel Press Fittings. For condensate Drainage and Water Distribution systems provide with EPDM seals. For compressed air piping systems provide with HNBR seals. Manufacturer's representative shall instruct installers and certify them for joint installation.

Manufacturer: Viega, or equal.

EDIT NOTE: FURNISH WHEN USED WITH MATCHING PIPE ONLY. PROVIDE WITH PIPING SCHEDULE P-6.

P-7: Black steel pipe, Schedule 40, ASTM A53, Type E, ERW.

Manufacturer: Wheatland, Bull Moose, or equal.

PF-7a: Malleable iron, Class 125, ANSI B 16.3, threaded or welded Schedule 40 black steel for 2-inches and below and welded for 2 ½-inch and above.

Manufacturer: Stockham, or equal.

PF-7b: Grooved end type, ASTM A395 and A536 ductile iron; ASTM A234 WPB forged steel; fabricated from ASTM A53 carbon steel. Couplings shall be supplied with angle-pattern bolt pads for rigidity, except in locations where flexibility is desired. Gaskets shall be pre- lubricated.

Manufacturer: Apollo Shurjoint, Victaulic, Galvanized or painted, or equal.

PF-7c: Press fittings, ASME B31, Carbon Steel, – For aboveground piping 2-inches and below. Provide fittings with Hydrogenated Nitrile Butadiene Rubber, HNBR Sealing Element.

Manufacturer: Apollo Valves: Power Press, Viega: MegaPressG, or equal.

PF-7d: Malleable Iron, class 125, ANSI B 16.3, threaded schedule 80 black steel.

Manufacturer: Stockham, or equal.

P-8: Red seamless brass 85-5-5-5, iron pipe size (IPS), threaded pipe, ASTM B43.

Manufacturer: Mueller, Cerro Brass, Cambridge-Lee, Halstead, or equal.

PF-8: Bronze and brass, 250 psi, threaded, ASA B16.17 and F S WW-P-460.

Manufacturer: Mueller Brass, Lee Brass, or equal.

P-9: Underground site water service pipe sizes 4-inch and larger shall be C900 water service pipe material. Refer to guide specification section 33 1100 "site water distribution utilities".

PF-9: Ductile Iron. Refer to guide specification section 33 1100 "site water distribution utilities".

EDIT NOTE: APPLICATION: SITE DOMESTIC WATER, IRRIGATION AND MAIN FIRE LINE UNDERGROUND ONLY (4 INCHES AND OVER). REFER TO GUIDE SPECIFICATION SECTION 33 1100 "SITE WATER DISTRIBUTION UTILITIES".

P-10: FRPP (Flame Retardant Polypropylene) schedule 80 chemical waste pipe, conforming to ASTM F1412 and ASTM D4101. The joints shall be Socket Fusion type. The installer shall be certified by the manufacturer for joint installation.

Manufacturer: Orion, or equal.

EDIT NOTE: USE FOR UNDERGROUND INSTALLATIONS OF CHEMICAL WASTE PIPING.

PF-10a: FRPP (Flame Retardant Polypropylene), schedule 40 DWV directional fittings including couplings. Joined using the socket fusion system conforming to ASTM 2657. The installer shall be certified by the manufacturer for this kind of joint installation.

Manufacturer: Orion, or equal.

P-11: PVDF (Polyvinylidene Fluoride) schedule 40 chemical waste pipe, conforming to ASTM F1673, ASTM D3222 and complying with UL723 (ASTM E84). The joints shall be no-hub mechanical Joints or Socket Fusion. The installer shall be certified by manufacturer for joint installation.
Manufacturer: Orion, or equal.

EDIT NOTE: USE FOR ABOVE GROUND INSTALLATIONS WHERE THE CORROSIVE WASTE PIPING PASSES THROUGH AIR PLENUMS AS DEFINED BY CALIFORNIA MECHANICAL CODE (CMC).

PF-11a: PVDF (Polyvinylidene Fluoride), schedule 40, No-hub coupling. Each coupling shall have 300 series stainless steel outer band and 5/16 inch bolts, nuts and washers plated to meet a 100-hour salt spray test per ASTM B117. Drains, bottle traps and similar devices shall be the same

material and gauge as the pipe with mechanical joints. Installer shall be certified by the manufacturer for this type of joint installation.

Manufacturer: Orion, or equal.

PF-11b: PVDF (Polyvinylidene Fluoride), schedule 40 coupling. Joined using the socket fusion system conforming to ASTM 2657. Drains, bottle traps and similar devices shall be the same material and gauge as the pipe with mechanical joints. Installer shall be certified by the manufacturer for this kind of joint installation.

Manufacturer: Orion, or equal.

P-12: FRPP (Flame Retardant Polypropylene) schedule 40 chemical waste pipe, conforming to ASTM F1412 and ASTM D4101. The joints shall be no-hub mechanical joints or Socket Fusion type. Installer shall be certified by the manufacturer for joint installation.

Manufacturer: Orion, or equal.

EDIT NOTE: USE FOR ABOVE-GROUND INSTALLATIONS OF CHEMICAL WASTE AND VENT PIPING.

PF-12a: FRPP (Flame Retardant Polypropylene), schedule 40, No-hub coupling. Each coupling shall have 300 series stainless steel outer band and 5/16-inch bolts, nuts and washers plated to meet a 100-hour salt spray test per ASTM B117. Drains, bottle traps and similar devices shall be the same material and gauge as the pipe with mechanical joints. Installer shall be certified by the manufacturer for this type of joint installation.

Manufacturer: Orion, or equal.

PF-12b: FRPP (Flame Retardant Polypropylene), schedule 40 coupling. Joined using the socket fusion system conforming to ASTM 2657. Drains, bottle traps and similar devices shall be the same material and gauge as the pipe with mechanical joints. Installer shall be certified by the manufacturer for this kind of joint installation.

Manufacturer: Orion, or equal.

P-13: Polyethylene plastic pipe, ASTM D 2513, Standard Dimension Ratio 11 rated at 80 psi working pressure and 73° Fahrenheit for 3 inches and smaller, SDR 11.5 rated at 76 psi and 73° Fahrenheit for 4 inches and above, butt or socket type fittings, joined by heat fusion, orange or yellow color. Installer shall be certified by the manufacturer for this kind of joint installation.

Manufacturer: CPCHEM (Chevron Phillips Chemical Company LP) PE 2406, or equal.

EDIT NOTE: APPLICATION: FOR NATURAL GAS BELOW GRADE ONLY. TRANSITION TO ANODE-LESS STEEL RISER AT METER,

REGULATOR, OR BUILDING WALL.

PF-13a: Polyethylene plastic fittings, ASTM D 3261 and D 2683, Standard Dimension Ratio 11 rated at 80 psi working pressure and 73° Fahrenheit for 3 inches and smaller, SDR 11.5 rated at 76 psi at 73° Fahrenheit for 4 inches and above, butt or socket type fittings, joined by heat fusion, Installer shall be certified by manufacturer for joint installation. Color orange or yellow.

Manufacturer: CPCHEM, (Chevron Phillips Chemical Company LP), or equal.

PF-13b: Polyethylene transition risers, for PF-13a above, Transition fitting must have a minimum vertical height of 36 inches from the horizontal connection which will allow for a 6-inch steel riser above ground. Polyethylene transition risers shall be anodeless.

Manufacturer: GF Piping Systems, or equal.

EDIT NOTE: APPLICATION: INSTALLED IN A GAS PIPING SYSTEM FOR THE PURPOSE OF PROVIDING A TRANSITION FROM HORIZONTAL BELOW GROUND (POLYETHYLENE) TO A VERTICAL ABOVE GROUND (STEEL). TRANSITION MUST BE MADE ON THE HORIZONTAL SIDE OF THE GAS PIPING SYSTEM AND MEET ASTM STANDARDS FOR POLYETHYLENE PLASTIC PIPE AND FITTINGS.

P-14: PVC, schedule 40, extruded from 100 percent virgin Polyvinyl Chloride (PVC) compound, meeting requirements of class 1254-13 of ASTM D1784. (Use for irrigation systems after the control valves only.)

Manufacturer: Spears, Charlotte, or equal.

PF-14 Plastic fittings, schedule 40 molded from PVC type I compound, conforming to the requirements of specification ASTM D2466.

Manufacturer: Spears, Charlotte, Harvel Plastics Inc., or equal.

a. PVC primer and solvent for chemical weld of pipe and fittings shall be as recommended by pipe manufacturer. Containers for solvent and primer shall be clearly marked with manufacturer's data. Solvent and primer shall not be more than one year old. The safety placards must be visible. Blue or red hot glue shall not be used.

1) Primer: Weld-On P-70 by IPS, Conforming to ASTM F656.

2) Cement: Weld-On 711 (gray) by IPS, Conforming to ASTM D2564.

P-15: Purple pipe, PVC, schedule 40 for reclaimed or recycled water (below ground only for non-potable irrigation systems), type 1, grade 1, PVC-1120, Cell Class 12454 B.

Manufacturer: Charlotte, or equal.

PF-15: Purple Plastic fittings, schedule 40 molded from PVC type I compound, conforming to the requirements of specification ASTM D2466. Refer to section 32 8426 “Reclaimed Water Irrigation”.

Manufacturer: Charlotte, or equal.

P-16: High Density Polyethylene pipe (HDPE) with tracer wire. Refer to guide specification section 33 1100 “site water distribution utilities”.

PF-16a: Butt Fusion HDPE Fittings. Refer to guide specification section 33 1100 “site water distribution utilities”.

PF-16b: Bolted Connections to HDPE pipes. Refer to guide specification section 33 1100 “site water distribution utilities”.

EDIT NOTE: APPLICATION: SITE DOMESTIC WATER, IRRIGATION AND MAIN FIRE LINE UNDERGROUND ONLY (UP TO 3 INCHES). REFER TO GUIDE SPECIFICATION SECTION 33 1100 “SITE WATER DISTRIBUTION UTILITIES”.

L. Pipe and Fitting Requirements Schedule: Unless otherwise specified or indicated on Drawings, pipe and fittings shall be installed in accordance with the following table:

TABLE I

PIPE AND FITTING SCHEDULE

Use	Limits	Pipe	Fittings
Condensate drains and drains From HVAC Equipment	All sizes	P-4, or P-6 *Roof penetration & above, and exterior exposed piping shall be P-6 only	PF-4b, or PF-6b *Roof penetration & above, and exterior exposed piping shall be P-6 only
Domestic Cold Water, underground	Within 5’ from building, All sizes	P-5	PF-4a, or PF-4b
Domestic Cold Water, underground	Site distribution only, sizes up to 3”	P-5 or P-16 Refer to 33 1100	PF-4a, PF-4b, PF-4c, or P-16a, P-16b Refer to 33 1100
Domestic Hot and Cold water, aboveground	Interior only	P-4	PF-4a, or PF-4b, Note: No FIP for stub outs

Use	Limits	Pipe	Fittings
			is allowed, use Hi ear or drop ear cast brass 90 elbow.
Water Service-aboveground	Exterior only	P-6 Refer to 33 1100	PF-6b Refer to 33 1100
Natural Gas, Interior, aboveground	All sizes	P-7	PF-7a, PF-7b, or PF-7c
Waste and Vent - Indirect	All sizes	P-3	PF-3
Waste and Vent – Sanitary/ Grease	All sizes	P-1	PF-1a, or 1b
Waste and Vent – Sanitary/ Grease	Underground, site only	P-1 Refer to 33 3000	PF-1a, or 1b Refer to 33 3000

M. Pipe Isolators:

PLA-1 Absorption pad shall be not less than ½ inch thick, unloaded. Pad shall completely encompass pipe.

EDIT NOTE: APPLICATION: FOR COPPER PIPING.

Manufacturer: Holdrite, LSP, Stoneman, Potter-Roemer, Trisolator, PR-Isolator, or equal.

EDIT NOTE: PLA-2 PLASTIC CUSHION TO FORM AN INSULATING

LINER AND ELIMINATE METAL TO METAL CONTACT WHEN SECURING COPPER TUBES AND PIPES IN AIR CONDITIONING AND REFRIGERATION INSULATION PREVENTING GALVANIC EROSION. (ACOUSTICAL TYPE FOR SOUND ABSORPTION).

Manufacturer: Hydra-Zorb Cushion Clamps, Acousto-Clamp, or equal.

O. Plug Valves:

PV-1 2 inches and smaller: Rockwell No.114, lubricated plug type, 200-pound., water operating gauge pressure iron body and plug, regular pattern, threaded, with indicating arc.

Manufacturer: Walworth, Homestead, WKM, or equal.

EDIT NOTE: APPLICATION: ISOLATION AND ON-OFF APPLICATION FOR GAS SYSTEM.

PV-2. 2 ½-inch and larger: Rockwell No.115 and No.165 lubricated plug type, 200 pound water operating gauge. Iron body and plug, regular pattern, flanged, with indicating arc.

Manufacturer: Walworth, Homestead, WKM, or equal.

EDIT NOTE: APPLICATION: SAME AS PV-1.

P. Safety Relief Valves:

SRV-1: Combination temperature and pressure relief type. CSA approved. Set to open at 125 psi pressure.

Manufacturer: Apollo Valves: 18C, Watts: 40L, Cash-Acme: NCLX-1, or equal.

R. Vent Caps:

VC-1 Vandal-proof hood type, for plumbing vent lines.

Manufacturers: ZURN Z193, MIFAB R1930, or equal.

EDIT NOTE: APPLICATION: SANITARY DRAINAGE SYSTEM.

V. Unions:

1. Unions shall be furnished and installed in accordance with the following requirements (unless flanges are furnished):

    a. At each threaded or soldered connection to equipment and tanks, except in Freon or fuel gas, piping systems, whether indicated or not.

b. Immediately downstream of any threaded connection to each manually operated threaded valve or cock, and each threaded check valve, yard box or access box except those in Freon piping systems, whether indicated or not.

c. At each threaded connection to threaded automatic valves (except those in Freon piping systems) such as reducing valves and temperature control valves, whether indicated or not.

d. If grooved piping is used, couplings shall serve as unions. Additional unions are not required

2. Unions shall be located so that piping can be easily disconnected for removal of equipment, tank, or valve.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions under which Work of this Section shall be performed. Correct conditions detrimental to proper and timely completion of Work. Do not proceed until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Provide all materials and equipment for the Work. Furnish and install necessary apparatus, parts, materials, and accessories.

B. Pipe Installation:

1. Install piping parallel to wall and provide an orderly grouping of proper materials and execution.

2. Piping shall clear obstructions, preserve headroom, provide openings and passageways clear, whether indicated or not. Verify the Work of other Divisions to avoid interference.

3. If obstructions or the Work of other Divisions prevent installation of piping or equipment as indicated by the Drawings, perform minor deviations as required by the ARCHITECT.

4. Install piping after excavation or cutting has been performed. Piping shall not be permanently enclosed, furred in, or covered before required inspection and testing is performed.

5. Exposed polished or enameled connections from fixtures or equipment shall be installed with no resulting tool marks or threads at fittings. Residue or exposed pipe compound shall be removed from exterior of pipe.

6. Piping shall be concealed in chases, partitions, walls, and between floors, unless otherwise directed or specifically noted on Drawings. When penetrating wood studs, joists, and other wood members, provide such members with reinforcement steel straps of Continental Steel & Tube Co., ULINE, Independent Metal Strap, or equal.

7. Reduce fitting where any change in pipe size occurs. Bushings shall not be furnished unless specifically reviewed by the ARCHITECT or indicated on Drawings.

8. Piping subject to expansion or contraction shall be anchored in a manner, which permits strains to be evenly distributed. Swing joints or expansion loops shall be installed. Seismic restraints shall be installed so as not to interfere with expansion and contraction of piping. Seismic loops required at all building separations.

9. Immediately after lines have been installed, openings shall be capped or plugged to prevent entrance of foreign materials. Caps shall be left in place until removal is necessary for completion of installation.

10. Couplings shall not be installed except where required pipe runs between other fittings are longer than standard length of type of pipe being installed and except where their installation is specifically reviewed by the ARCHITECT.

11. Water piping shall be installed generally level, free of traps, unnecessary offset, arranged to conform to building requirements, clear of ducts, flues, conduits, and other Work. Piping shall be arranged with valves installed to provide for complete drainage and control of system. Piping shall not be installed which causes an objectionable noise from flow of water therein under normal conditions. Refer to Section 23 0500: Common Work Results for Plumbing.

12. Water lines may be installed in same trench with sewer lines, provided bottom of water line is 12 inches minimum above top and to the side of sewer line.

13. Changes in pipe sizes shall be furnished with eccentric reducers, flat on top. Offsets to clear obstruction shall not be installed so as to produce air pockets.

C. Pipe Sleeves and Plates:

1. Provide pipe sleeves of Schedule 40 black steel pipe or Schedule 40 PVC plastic pipe in concrete or masonry walls, footings, and concrete floors below grade. Provide adjustable submerged deck type sleeves at locations where pipes pass through concrete floors, except concrete slab floors on grade, and at

locations where soil pipe for floor type water closets passes through concrete floors.

2. Sleeves shall provide ½ inch clearance around pipes, except plastic pipe shall have 1 inch clearance. Caps of deck type sleeves shall be removed just prior to installation of pipe. Area around sleeves shall be smooth and without high or low spots. Sleeves in walls shall not extend beyond exposed surface of wall. Sleeves in concrete floors and walls shall be securely fastened to forms to prevent movement while concrete is being placed.

3. Piping installed on a roof shall clear the roof surface by 10 inches minimum, with or without insulation. Bottom of individual fittings may infringe on 10 inches clear space but not groups of fittings or fittings located within 27 inches of each other.

4. Stiles shall be provided to facilitate crossing of piping when parallel piping runs are laterally greater than 12 inches out-to-out, or any pipe is higher than 18 inches, and more than 40 feet long or runs between two or more major pieces of equipment or housings greater than 20 feet apart. Stiles shall be not less than 20 inches wide with a minimum tread depth of 10 inches. Where stiles are required, they shall be located so greatest obstructed distance is 30 feet.

5. Where pipes pass through waterproofed walls, floors, or floors on grade, sealant with Link-Seal Modular Seals, or equal, between pipe and sleeve to provide a waterproof joint. Where earth is in contact with pipe on both sides of a wall or foundation, the waterproof joint is not required. Commercial rubber compression units may be furnished instead of sealed sleeves if reviewed by the ARCHITECT.

6. A swing joint, or other required device, shall be furnished and installed in hot water lines with 10 feet of sealant or compression joint to allow for expansion.

7. Provide polished, chrome-plated flanges when plumbing pipes pass through walls at plumbing fixtures, etcetera as specified in Section 22 1000 Plumbing. Provide polished steel, chromium-plated split floor and ceiling plates at locations where pipes pass through walls, floors, ceilings, and partitions in finished portion that neatly conceals pipe insert.

8. Pipe sleeves shall be provided where pipes intersect footings or foundation walls and sleeve clearances shall provide for footing settlement, but not less than one inch all around pipe.

D. Welding of Pipe and Qualifications of Welder:

1. Joints above grade or accessible conduit or tunnels in steel piping may be either welded or screwed unless specifically indicated otherwise on Drawings

or specified. Joints in below grade steel piping, whether in insulation or not, shall not be welded, unless otherwise indicated.

2. Welded joints in pipe shall be continuous around pipe and shall comply with ASME B31: Code for Pressure Piping, unless otherwise specified.

3. Each pipe weld shall be stamped with welder's identification mark. Welding shall be performed by welders possessing a valid certificate of qualification for welding carbon steel welding pipe in horizontal position (2G) and horizontal fixed position (5G) in accordance with the requirements of Section IX of the ASME Boiler and Pressure Vessel Code, by an OWNER-recognized, DSA approved testing laboratory.

4. Before any welder performs welding on the Work, furnish the INSPECTOR with a copy of welder's valid qualification papers and obtain verification. Welder qualification is not valid unless it has been issued while welder was performing work for current employer and has performed type of work described by qualification in the preceding 3 months.

EDIT NOTE: REFERENCE: ASME BOILER AND PRESSURE VESSEL CODE, SECTION VIII, UW-29 TESTS OF WELDERS AND WELDING OPERATORS.

5. Welding performed under these Specifications is subject to special tests and inspections including Ultra Sonic Testing (UT) or radiographic inspection.

   a. These tests shall be performed at random locations up to 20% of the entire number of the welded joints per inspector’s selection, and in accordance with related examination techniques by an OWNER recognized, DSA approved testing laboratory.

EDIT NOTE: ASME BOILER AND PRESSURE VESSEL CODE, SECTION VIII, UW-51 RADIOGRAPHIC EXAMINATION OF WELDED JOINTS.

E. Unacceptable Welds and Repairs to Welding:

1. Welds containing any of the following types of imperfections shall be deemed defective Work:

   a. Cracks of any type.

   b. Zones of incomplete (in excess of 1/32 inch) fusion or penetration.

   c. Elongated slab inclusions longer than 1/4 inch.

   d. Groups of slag inclusions in welds having an aggregate length greater than thickness of parent metal in a length 12 times the thickness of the parent metal.

   e. Undercuts greater than 1/32 inch.

f. Overlaps, abrupt ridges or valleys.

2. When a defective weld is detected by examination as outlined above, two additional welds shall be tested at locations selected by the Project Inspector. If the two selected welds demonstrate compliant welding, then the two tested welds shall be deemed to be in compliance. Welding revealed by the tests to be defective work shall be removed, repaired, and re-tested.

3. If either of the two selected welds demonstrates welding deemed to be defective Work, all welding in that portion of the Work shall be deemed defective Work and either: all welds shall be cutout, prepare new ends for welding and weld to comply with this Specification, or test all welds, removing and repairing only such welding deemed to be defective Work.

4. Repair welding shall be performed in a manner in full compliance with ASME B31. The welded joints or repairs shall be spot examined with UT or radiographic tests in accordance with foregoing requirements.

EDIT NOTE: REFERENCE, ASME BOILER AND PRESSURE VESSEL CODE, SECTION VIII, UW-52.

5. OWNER shall cause to be performed additional random UT or radiographic examinations of welds. OWNER shall be responsible for the costs of any UT or radiographic examinations found to be in compliance with specified requirements.

6. Installer shall be responsible for the costs of UT or radiographic re-examinations of welds deemed defective Work and not in compliance with this Specification and shall repair or replace said welds in accordance with specified requirements.

F. Welding Rods: Submit a written list of materials and proposed type of welding rods.

G. Backing Rings: Backing rings may be submitted for installation provided the Product Data is submitted with the material list.

H. Qualification Tests for Low-pressure Welding:

1. Tests shall be performed on 3-inch standard weight pipe ASTM A53, Grade A, and shall be welded by acetylene and electric arc. Each sample shall consist of 2 pieces, each 10 inches long, with 30-degree bevel at point weld.

2. Two 20-inch samples shall be performed in the 2G and two 20-inch samples in the 5G positions, with positions defined in Section IX, ASME Boiler and Pressure Vessel Code. Welds shall have the reinforcement ground or machined flush to the surface of the pipe before testing. Samples shall be tested as full section tensile.

3. Weld shall develop a load of 90 percent of 50,000 psi, i.e., 45,000 psi or shall develop a fracture in parent metal.

4. Each qualified welder shall carry an identification card listing welder's name, date of test, and type of welding tests passed; signed by the welder and the laboratory.

5. A valid certificate of qualification issued in compliance with requirements of the ASME Boiler Pressure Vessel Code Section IX shall qualify a welder for issuance of a certificate for low-pressure pipe welding.

I. Certificates of Qualification for Welding of Unfired Pressure Vessels:

1. Certificates of qualification shall be issued by a laboratory recognized by the OWNER in compliance with the requirements of the ASME Boiler Pressure Vessel Code Section IX. Qualifications shall be for both acetylene and arc welding of Schedule 40 ASTM A53, Type B, steel welded or seamless pipe in the Horizontal Position (2G) and the Horizontal Fixed Position (5G) as defined by said code.

2. Certificate described above is not valid unless it has been issued while welder was working for his current employer, and unless welder has performed type of work described by certificate in the preceding three months. Requirements for possession of a valid certificate shall not be waived for welders fabricating unfired pressure vessels when the Specifications require compliance with ASME code or when welding pipe carries working pressures greater than 75 psi and temperatures greater than 250 degrees F.

J. Pipe Joints and Connections:

1. Pipe and tubing shall be cut per IAPMO Installation Standards. Pipe shall have rough edges or burrs removed so that a smooth and unobstructed flow shall be provided.

2. Hot tapping of gas lines is strictly prohibited.

3. Threaded Pipe: Joints in piping shall be installed according to the following service schedule:

a. Soap Piping: Litharge and glycerin, or Expando, Gasoila, or equal.

b. Plastic Piping: Teflon pipe joint compound tape.

c. Oxygen Piping: Wash treads with S.P., rinse, blow-dry and apply litharge and glycerin.

d. Cleanout Plugs: No compound shall be used. After inspection and test, plugs shall be removed, cleaned, greased, and replaced.

e. Other services furnish sealant, suitable and as reviewed by the ARCHITECT.

4. Threads on pipe shall be cut with sharp, clean, unblemished dies and shall conform to ANSI/ASME B2.1 for tapered pipe threads.

5. Joint compounds shall be smoothly placed on male thread and not in fittings. Threaded joints shall be installed tight with tongs or wrenches and sealant of any kind is not permitted. Failed joints shall be replaced with new materials. Installation of thread cement or sealant to repair a leaking joint is not permitted.

6. Sharp-toothed Stillson, or similar wrenches, is not permitted for the installation of brass pipe or other piping with similar finished surfaces.

K. Copper Tubing and Brass Pipe with Threadless Fittings:

1. Silver brazed joints shall be used for attaching fittings to non-ferrous metallic refrigerant piping.

2. Non-pressure gravity fed condensate lines may be soldered with 95/5 solder.

3. Silver brazing alloy, Class BCUP-5. Surfaces to be joined shall be free of oil, grease, and oxides. Socket of fitting and end of pipe shall be thoroughly cleaned with emery cloth and wiped to remove oxides. After cleaning and before assembly or heating, flux shall be installed to each joint surface and spread evenly. Heat shall be applied in accordance with instructions in the Copper Tube Handbook issued by Copper Development Associates. Joints constructed of rough bronze fittings shall be provided as recommended by manufacturer.

4. Do not overheat piping and fittings when installing silver brazing.

5. Joints in non-ferrous piping for services not covered above shall be installed with solder composed of 95/5 tin/antimony, ASTM B32, Grade 5A. Surfaces to be jointed shall be free of oil, grease, and oxides. Sockets of fitting and end of pipe shall be cleaned with emery cloth to remove oxides. Solder flux shall be sparingly installed and solder added until joint is completely filled. Do not overheat. Excess solder, while plastic, shall be removed with a small brush in order to provide an uninterrupted fillet completely around joint. Random inspection of joints shall be conducted by Project Inspector to ensure joints are lead-free.

6. Grooved end joints for copper piping shall be assembled in accordance with the latest manufacturer recommendations. Pipe ends shall be clean and free from indentations, projections, and roll marks in the area from pipe end to groove for proper gasket sealing. Grooving tools shall be as manufactured by Victaulic, RIDGID, MAG Tool, or equal.

7. Pressed fittings for copper or copper alloy pipe or tubing shall have an elastomeric O-ring that forms the joint. The pipe or tubing shall be fully inserted into the fitting, and the pipe or tubing marked at the shoulder of the fitting. Pipe or tubing shall be cut square, mechanically cleaned and reamed prior to joining to remove all burrs (interior and exterior) and restore full inside diameter and a smooth, chamfered exterior surface. The fitting alignment shall be checked against the mark on the pipe or tubing to ensure the pipe or tubing is inserted into the fitting. The joint shall be pressed using the tool recommended by the manufacturer.

    a. Press Installation Training Requirement: Installation training shall be provided on site by manufacturer personnel and documented with Engineer. Installation procedures, depth guides, and tool inspection shall be provided by manufacturer for all product types (steel or copper) for reference and safety assurance.

L. Ring-Type Pipe: Joints shall be installed in accordance with manufacturer's instructions with grooved couplings, fittings and rubber rings. Couplings and pipe shall be compatible and of the same manufacturer. Rings shall be accurately located and installed by grooves in coupling. Pipe shall be installed with zero deflection unless otherwise specified. Pressure pipe shall be furnished with thrust blocks at each offset point.

M. Welded Pipe Joints:

1. Joints in welded steel pipelines shall be installed by oxyacetylene or electric arc process. Welding shall be continuous around pipe and provided as specified.

2. Butt welds shall be of the single V-type, with ends of pipe and fittings beveled approximately 37 ½ degrees. Piping shall be aligned before welding is started with the alignment maintained during welding.

3. Welds for flanges and socket fittings shall be of the fillet type with a throat dimension not less than pipe wall thickness.

N. Grooved End Pipe Joints: Grooved end joints for carbon steel piping shall be assembled in accordance with the latest manufacturer recommendations. Pipe ends shall be clean and free from indentations, projections, and roll marks in the area from pipe end to grove for proper gasket sealing. Grooving tools shall be as manufactured by Victaulic, RIDGID, MAG Tool, or equal.

O. Stainless steel press joints: Joints shall be Vic-Press 304TM, or equal, made with Victaulic Series ‘PFT’ tools and the appropriate sized jaw. Pipe shall be certified for use with Vic-Press 304TM system, and shall be square cut, properly deburred and cleaned, and marked at the required location to insure full insertion into the fittings and/or couplings.

Q. Valves: Valves shall conform to the following:

1. Piping systems shall be furnished with valves at points indicated on Drawings and specified, arranged to provide complete regulating control of piping system throughout building and the Project site.

2. Valves shall be installed in a neat grouping, so that parts are easily accessible and maintained.

3. Valves shall be full size of line in which they are installed, unless otherwise indicated on Drawings or otherwise specified, and shall be one of types specified.

4. Provide chain operators on valves 2-inch and larger located 7 feet or more above the servicing floor level.

5. Valves for similar service shall be of one manufacturer.

6. Except where otherwise specified, valves shall be Apollo, Belimo, Victaulic, Stockham, Crane, Jenkins, Milwaukee, Hammond, American, NIBCO, Hoffman, or equal.

7. Ball valves below grade are not allowed.

8. Hose bibs in dense garden areas and lunch pavilions shall be ¾ inch in size with 1 inch line size serving lunch pavilion hose bibb. Other hose bibs shall be ¾ inch lock shield type. Bibs shall be furnished with vacuum breaker protection.

13. Maximum 2 valves are allowed to be installed within access panel, install the valve easily accessible/operational.

S. Hangers and Supports:

1. Piping shall be securely fastened to building structure by approved iron hangers, supports, guides, anchors, and sway braces to maintain pipe alignment to prevent sagging and to prevent noise or excessive strain on piping due to uncontrolled or seismic movement under operating conditions. Hangers and supports shall conform to Manufacturer’s Standardization Society Specification SP-69. Hangers shall be relocated as required to correct unsatisfactory conditions that may become evident when system is placed into operation. Appliances, heat exchangers, storage tanks, and similar equipment shall be securely fastened to structure in accordance with seismic requirements. Outdoor metal hangers and supports shall be hot-dipped galvanized steel, unless otherwise specified.

2. Hose faucets, compressed air outlets, and similar items at ends of pipe branches shall be rigidly fastened to building construction near point of connection.

3. Piping shall not be supported by wire, rope, wood, plumbers' tape, or other non-recognized devices.

4. Hangers and supports shall be designed to support weight of pipe, fittings, weight of fluid and weight of pipe insulation, and shall have a minimum factor of safety of five, based on ultimate tensile strength of material installed.

5. Burning or welding of any structural member under load is not permitted. Field welding not specified on Drawings or reviewed Shop Drawings is not permitted without review by ARCHITECT and DSA.

6. Burning holes in beam flanges or other structural members is not permitted without review by the ARCHITECT and DSA.

7. Pipe hangers on piping covered with low temperature insulation shall be installed on outside of insulation and not in contact with pipe unless otherwise detailed on Drawings. Insulation shall be protected by 18 gage galvanized steel shield, with a minimum length of 10 inches, installed completely around pipe covering between covering and hanger. Installing hangers directly on pipe and butting adjoining sections of insulation against hanger is permitted provided void and hanger rod are properly insulated and sealed so that no sweating occurs at hangers.

8. Hanger rods shall be fastened to structural steel members with suitable beam clamps. Clamps shall be Tolco, Carpenter & Patterson, Fee and Mason, or equal, as follows:

    a. Tolco I beam, Fig.62 for maximum 1000 pounds.

    b. Tolco I or WF beam, Fig. 329, for maximum of 1290 pounds.

9. Hanger rods shall be fastened to concrete inserts in concrete slabs or beams. Inserts shall be Tolco, Carpenter & Patterson, Fee and Mason, or equal, as follows:

    a. Tolco Fig.310 for maximum of 600 pounds.

    b. Tolco Fig. 309 for maximum of 1140 pounds.

10. For fastening to wood ceilings, beams, or joists, furnish Grinnell Fig. 128R, Grinnell Fig. 153, Tolco 78, or equal pipe hanger flange fastened with drive screws. Under wood floors, 3/8 inch hanger rods shall be hung from 2-inch by 2-inch by 1/4 inch angle clips 3 inches long, with 2, staggered 10d nails, clinched over joist.

11. Pipe hanger rod sizes: 3/8-inch for pipe sizes ½-inch through 4-inch, ½-inch for pipe sizes 5-inch through 8-inch, and 5/8-inch for pipe size 10-inch through 12-inch.

12. Where rod hangers are used with a diameter greater than 3/8-inch, they shall be equipped with swivels or eye nuts to prevent bending in the rod.

13. Turnbuckles, if furnished, shall provide a load carrying capacity equal to that of the pipe hanger with which they are being installed.

14. Pipe hangers shall be of same size, or nearest larger manufactured size available, as pipe or tubing on which they are being installed.

15. Hangers, clamps, and guides furnished for support of non-metallic pipe shall be padded with 1/8 inch thick rubber, neoprene, or soft resilient cloth.

16. Where special pipe-supporting requirements in the Specifications conflict with any standard requirements specified herein, the Specification requirements shall govern.

17. Vertical Piping:

    a. Vertical pipe risers shall be securely supported with riser clamps of recognized type. Risers in reinforced concrete buildings shall be furnished with extension clamps fastened to pipe above each concrete floor slab with extended arms of clamp to rest on slab. Clamps shall be provided with lead or Teflon liners when installed on copper tubing. Clamps shall be plastic-coated when installed on non-ferrous pipe or tubing.

    b. Copper tubing in sizes 1 ½-inches and larger and steel pipelines passing up through building shall be supported at each floor of building or every 15 feet whichever is less.

    c. Copper tubing sizes 1 ¼-inches and smaller shall be supported at not intervals not more than 6 feet on center. Special provisions shall be installed for vertical lines subject to expansion and contraction caused by operating temperature differences.

    d. Vertical cast iron pipelines shall be supported from each floor and at its base. Malleable iron or steel pipe clamps with minimum thickness of 1/4 inch shall be furnished and fastened around pipe for support.

18. Horizontal Piping:

    a. Roof Mounted Piping: Pressure and non-pressure piping shall be supported from channels, stands, clamps, trapezes, rollers, or structures mounted on 100% rubber, UV resistant rooftop supports with reflective

strips, Dura-Block, or equal. Roller type supports shall be provided below and above pipe to prevent its dislodgement. Bottom of pipes shall clear the roof surface by 10 inches.

b. Insulated steam and space heating hot water insulated condensate lines, insulated domestic hot water supply and return piping shall be supported with Tolco Figure 4, B-Line Figure B3140, Grinnell Figure 212, or equal, steel hangers with welded eye rods to permit hinge movement at point of attachment of hangers. Hinge movement at point of support shall be provided by welded eye linked rods Tolco Figure 101L, B-Line Figure B3211X, Grinnell Figure 278, or equal.

c. Domestic cold water piping, water supply and return piping, condenser water piping, insulated refrigerant piping gas piping, compressed air piping, cast iron soil piping, galvanized steel vents, waste and downspout piping and glass to be supported with Tolco Figure 1, B-Line Figure B3100, Grinnell Figure 260, or equal, hangers with rods, turnbuckles and inserts suitable for above hangers.

d. Maximum hanger and support spacing shall conform to CPC schedule for horizontal piping installed above grade.

19. A hanger or support shall be installed close to the point of change in direction of a pipe run, in either a horizontal or vertical plane.

20. When practicable, supports and hangers for cast iron soil pipe shall be installed as close as possible to joints and when hangers or supports are not located within one foot of a branch line fitting, an additional hanger or support shall be installed at fitting.

21. In systems where grooved piping is used, couplings shall be provided with angle pattern bolt pads to comply with support and hanging requirements of ANSI/ASME B31.1, ANSI/ASME B31.9, and NFPA Pamphlet 13.

T. Flashings:

1. Each pipe, duct, or equipment and related accessories passing through building envelope shall be installed with waterproof flashing.

2. Flashing or flanges on pipes, vents, and ducts passing through a tile or slate roof shall be constructed of sheet lead. Flashing for pipes and heater vents passing through a roof shall be 4 pound soft sheet lead. Flashing and flanges for ducts and heater vents passing through exterior walls shall be 22 gage sheet metal. Install caps on top of heater pipes. Flanges and flashing shall be installed waterproof at point of connection with pipe or duct by welding. No soldered joints on roof flashings will be allowed. No Stoneman lead roof flashings will be allowed.

3. Lead flashing and flanges shall be constructed of 4 pound sheet lead with burned joints. Flange of lead flashing or lead flange on a duct shall extend out onto roof a minimum of 12 inches from pipe or duct. Lead flashing shall extend up the pipe or duct not less than 8 inches.

4. Sheet metal flashing shall be constructed of 24 gage galvanized sheet steel. Flanges on these flashings shall extend out onto roof a minimum of 10 inches from pipe or duct. Flanges on ducts through exterior walls shall extend out from duct a minimum of 2 ½ inches. Flanges on gas-fired equipment single-wall vents shall be of ventilated type. Type B gas vents through a roof shall be furnished with non-ventilated flashing as per NFPA Pamphlet 211.

5. Cast iron, steel, brass, and copper pipe, which terminates less than 18 inches above roof, shall be furnished with a combination counter-flashing and vandal-proof hood for protection against water, birds and foreign matter. Cast iron, steel, brass and copper pipe, which does not terminate within 18 inches of roof, shall be furnished with a counter-flashing sleeve. Pipe, which terminates more than 18 inches above roof, shall be furnished with protection against entrance of water, birds, and foreign matter.

6. Counter-flashing and combination counter-flashing sleeves and vandal-proof hoods shall be cast iron, vandal-proof, threaded, sealed or approved gas-heated sleeve type. Counter-flashing sleeves on each of these items shall extend down over flashing a minimum of ¾ inch.

7. Storm collars shall be securely screwed and installed waterproof around appliance vent pipe immediately above flashing.

8. Vent piping above roof shall be furnished with a combination counter-flashing sleeve and vandal-proof hood.

U. Equipment Installation: Install roof or floor mounted equipment on level platforms, housekeeping pads or curbs and provide sound, vibration and seismic control measures per Section 23 0548 even if not indicated on Drawings.

END OF SECTION

SECTION 22 0553

PLUMBING IDENTIFICATION

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes: Marking and identification on mechanical piping systems, ducts, controls, valves, and apparatus.

B. Related Requirements:

1. Division 01: General Requirements
2. Section 21 1313: Fire-Suppression Sprinkler Systems.
3. Section 22 0513: Basic Plumbing Materials and Methods.
4. Section 22 1000: Plumbing.
5. Section 22 2013: Plumbing Piping.

1.02 SUBMITTALS

A. Submit in accordance with Division 01 and Section 22 0500: Common Work Results for Plumbing.

B. Submit product data and installation instructions for each item specified.

C. Submit Samples of materials.

1.03 QUALITY ASSURANCE

A. Comply with provisions of:

1. Section 22 0500: Common Work Results for Plumbing.
2. ANSI/ASME A13.1: Scheme for the Identification of Piping Systems.
3. APWA: Uniform Color Code.
4. IAPMO: Uniform Plumbing Code (UPC)

PART 2 – PRODUCTS

2.01 MATERIALS

A. General: Piping systems, controls, valves, apparatus, etc., except those that are installed in inaccessible locations in partitions, walls, and floors, shall be permanently identified.

2.02 VALVES

A. Furnish prepared chart or diagram for each piping system, indicating by identifying letter or model number of each valve in the system, its location, and function.

B. Install charts in aluminum frame with clear glass front and secure on wall where designated by the Project Inspector.

C. Bind copies of each chart in operating instructions manual.

D. Provide each valve with a brass, aluminum, or plastic disc, not less than 1-1/4 inches diameter bearing engraved numbers corresponding to those indicated on chart. Fasten discs to valve with No. 14 brass wire.

E. Provide an additional tag for safety valves and other valves that could be hazardous to safety and health of occupants. Distinguish these tags from regular valve tags by color (such as yellow with black letters, and marked "Danger"); submit Sample tag to the Architect for review.

2.03 INSTRUMENTS AND CONTROLS

A. Identify panel-mounted instruments and controls with engraved bakelite nameplates permanently affixed to panel boards.

B. Identify alarm indicating devices and alarm reset devices by nameplates.

C. Identify automatic valves, flow switches, and pressure switches, with embossed aluminum or plastic tape affixed to controller, indicating service and setting.

2.04 EQUIPMENT

A. Identify each major piece of equipment with engraved bakelite nameplates permanently affixed to the equipment, indicating the room numbers it services, Equipment identification designation shall be the same to its designation indicated on the “As-Built Drawings”. Room numbers in the nameplates shall correspond to the final room numbers.

2.05 ABOVE GRADE PIPE IDENTIFICATION

A. Identify pipes by means of colored labels with directional flow arrows and identification of the pipe content, in conformance to ANSI/ASME A13.1 or the UPC.

B. Materials: Precoiled acrylic plastic with clear polyester coating, all-temperature, self-adhering, as manufactured by Brady, Brimar Industries, Seton, Stranco, Inc., or equal.

C. Size:

Outside Diameter of Pipe or Insulation (in inches)	Length of Color Field (in inches)	Size of Letter (in inches)
¾ to 1 ¼	8	½
1 ½ to 2	8	¾
2 ½ to 6	12	1 ¼
8 to 10	24	2 ½
over 10	32	3 ½

D. Locations:

1. On accessible piping, whether insulated or not (including mechanical rooms, attic and ceiling spaces); except that labels shall be omitted from piping where contained material is obvious due to its connection to fixtures (such as faucets, water closets, etcetera.).

2. Near each valve and branch connection in such accessible piping.

3. At each pipe passage through wall or floor.

4. At not more than 20 feet spacing on straight pipe run between bands required in 2 and 3 above.

5. At each change in direction.

E. Application: Install on clean surfaces free of dust, grease, oil, or any material that will prevent proper adhesion. Replace non-adhering or curling labels with new labels.

F. Color Schedule:

Content of Pipe	Legend	Background Color	Lettering Color
Domestic cold water	Domestic. C.W.	Green	White
Non-potable cold water	Caution: Non-potable Water Do Not Drink (1)(2)	Purple	Black
Domestic hot-water 140ºF	Domestic H.W. 140ºF	Blue	Black
Sanitary waste	San waste	Green	White
Sanitary vent	San vent	Green	White

Indirect drain	Ind drain	Green	White
Gas	Gas	Yellow	White

H. Notes on Schedule:

1. Note (1) indicates 2 ¼ inch by 1 inch yellow label with ½ inch letters reading UNSAFE WATER at one end of primary label.

   Note (2) words should read "CAUTION: NONPOTABLE WATER DO NOT DRINK." with international *do not drink* symbol.

   Note (3) words should read "CAUTION: RECLAIMED WATER DO NOT DRINK." with international *do not drink* symbol.

2.06 UNDERGROUND PIPE

A. Detectable Marking Tape:

1. Provide and install detectable marking tape along buried piping. Tape shall be specifically manufactured for marking and locating underground utilities with electronic equipment. Tape shall be acid and alkali resistant, and manufactured with integral wires or foil backing, encased with protective cladding. Tape shall be a minimum of two inches in width.

2. Manufacturer: Reef Industries, Inc., Advantage Brands, Inc., Northtown Company, Mutual Industries, Inc., or equal.

3. Detectable marking tape shall be color-coded per APWA Color Code:

   a. Yellow: Oil and gas.

   b. Blue: Water, irrigation and slurry lines.

   c. Green: Sewer and drain lines.

B. Tracer Wire:

1. Solid copper wire type THWN, 12 AWG gauge, with heat and moisture resistant insulation.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Correct detrimental conditions prior to commencing the Work of this Section. Install markers and identification tags as specified with materials and installation procedures recommended by manufacturer.

B. Place tracer wire on top of non-metal utility lines allowing some slack. Do not wrap tracer wire around pipe. Fasten tracer wire in place at approximately 10 feet on centers with non-metal ties.

C. Install underground detectable pipe marking tape continuously buried 8 to 10 inches above the buried utility pipe. Wrap tape on pipe risers up to a height of 12 inches above grade.

3.02 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 22 0700

PLUMBING INSULATION

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. Insulation for plumbing piping.

B. Related Requirements:

1. Division 01: General Requirements.
2. Section 22 0500: Common Work Results for Plumbing.
3. Section 22 0513: Basic Plumbing Materials and Methods.
4. Section 22 0553: Plumbing Identification.
5. Section 22 1000: Plumbing.

1.02 REFERENCES

A. American Society for Testing and Materials International (ASTM):

1. ASTM C302 - Standard Test Method for Density and Dimensions of Preformed Pipe-Covering-Type Thermal Insulation.
2. ASTM C411 - Standard Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation.
3. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
4. ASTM C533 - Standard Specification for Calcium Silicate Block and Pipe Thermal Insulation.
5. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation.
6. ASTM C1104 - Standard Test Method for Determining the Water Vapor Sorption of Unfaced Mineral Fiber Insulation.

7. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

8. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

B. Underwriters Laboratories, Inc.

1. UL 723 - Test for Surface Burning Characteristics of Building Materials.

C. National Fire Protection Association:

1. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials.

D. California Code of Regulation Title 24.

1. California Green Building Standards Code.

1.03 SUBMITTALS

A. Submit in accordance with Division 01 and Section 22 0500: Common Work Results for Plumbing.

1. Complete material list of items to be furnished and installed under this Section.

2. Manufacturer's specifications and other data required demonstrating compliance with the specified requirements.

3. Shop Drawings, catalog cuts and manufacturer's data indicating insulation, jacketing, adhesives, and coating. Insulating materials shall be certified by manufacturer to comply with the California quality standards for insulating materials.

4. Display sample cutaway sections.

5. Manufacturer's recommended method of installation procedures, which will become part of this Section.

1.04 QUALITY ASSURANCE

A. Qualifications of Manufacturer and Installer, Materials, Fabrication, Execution, and Standard of Quality: Comply with provisions stated under Section 22 0500: Common Work Results for Plumbing and Section 22 0513: Basic Plumbing Materials and Methods.

B. Insulation Work shall be in accordance with the California Building Energy Efficiency Standards, CBC, and Uniform Mechanical Code and the California Green Building Standards Code.

C. Test Ratings:

1. Comply with provisions stated under Section 22 0500 and 22 0513 with emphasis on ASTM E84, NFPA 255, or UL 723. ASTM C167, ASTM C302, UL label or listing of satisfactory test results from the National Institute of Standards and Technology, or a satisfactory certified test report from an acceptable testing laboratory. Approval by the State Fire Marshal is required.

2. Furnish labels, legibly printed with the name of the manufacturer or listings indicate that fire hazard ratings do not exceed those specified for materials proposed for installation. Flame spread index of not more than 25 and smoke developed rating not exceeding 50.

3. Tests shall be performed on each item individually when insulation, vapor barrier covering, wrapping materials, or adhesives are installed separately at the Project site.

4. Test insulation, vapor barrier covering, wrapping materials and adhesives as an assembly when they are factory composite systems.

D. Regulatory Requirements: Insulation furnished and installed under this Section shall meet minimum legal requirements of the Building Energy Efficiency Standards adopted and incorporated in the California Energy Commission, Title 24, Part 2, Chapters 2 through 53 and the California Green Building Standards Code unless otherwise noted, for the piping,

E. Chemically based products such as sealers, primers, fillers, adhesives, etcetera must meet the California air quality regulations.

1.05 PRODUCT HANDLING

A. Protection, Replacement, Delivery and Storage: Comply with provisions stated under Sections 22 0500: Common Work Results for Plumbing and 22 0513: Basic Plumbing Materials and Methods.

PART 2 – PRODUCTS

2.01 MATERIALS

A. General:

1. Insulating material shall be fire resistant, non-corrosive, shall not break, settle, sag, pack or disintegrate under vibration, nor absorb more than 1 percent moisture by weight.

2. Insulating material shall be furnished with thickness indicated in Table 1, and shall furnish thermal resistance in the range of R-4.0 to 4.6 in accordance with inch at 75 degrees F. For any other value of R, insulation thickness shall be calculated accordingly and submitted for review.

3. Asbestos in any quantity in insulating material is not permitted.

4. Provide insulation materials, adhesives, coatings, sealants, fitting covers, and other accessories with a fire hazard rating not to exceed 25 for flame spread, 25 for fuel contributed and 50 for smoke developed, except for materials listed as follows:

   a. Nylon anchors for installing insulation to equipment.

   b. Treated wood blocks.

5. Flame-proofing treatments subject to moisture damage are not permitted.

TABLE 1 - MINIMUM PIPING INSULATION THICKNESS (1)

Insulation Thickness Required (in inches)

Piping System Type	Temp. Range (degrees F)	Runouts up to 2 (2)	1 and less	1.25 to 2	2.5 to 4	5 to 6	8 and larger
Service Water Heating Systems (recirculating, piping supply and return)							
Hot Water	Up to 180	0.5	1.0	1.0	1.5	1.5	1.5
Condensate Drain	½ inch minimum insulation thickness.	0.5	0.5	0.5	0.5	0.5	0.5
From A/C Equipment:	Insulate condensate drain lines within building, in room, inside walls and above ceilings.	0.5	0.5	0.5	0.5	0.5	0.5

NOTES: (1) For piping exposed to ambient temperatures, increase thickness by 0.5 inch.

(2) Runouts to individual terminal units, not exceeding 12 feet in length.

B. Lagging Adhesives: Shall be nonflammable and fire-resistant and shall have a maximum flame spread index of 25 and a maximum smoke developed index of 50

when tested in accordance with ASTM E84. Insulation finished with canvas shall be provided with laps adhered in accordance to manufacturer's recommendation. A finish coat of same material shall be applied to entire outer surface of lagging cloth at coverage specified by manufacturer.

C. Canvas Jackets: Provide 6 ounce, in accordance with square foot minimum, 48 by 48 thread count canvas jacketing.

D. Insulation Jackets:

1. Exterior insulation exposed to weather shall be weatherproofed with Childers aluminum jacketing as basis of design, or Pabco, RPR, or equal. Jacketing shall be manufactured from 1100, 3105 or 5010 aluminum alloy with 3/16 inch corrugations. Smooth or embossed jackets may be permitted in special situations to match an existing installation. Jacketing shall be furnished with an integrally bonded moisture barrier over entire surface in contact with insulation. A minimum thickness of 0.016 aluminum jacketing is to be provided on ducts and piping. A minimum thickness of 0.020 shall be provided on tanks, equipment, and heat exchangers.

2. Insulated elbows, of 90 degrees and 45 degrees, with a nominal iron pipe size of ½ inch to 8-inch shall be provided with Childers aluminum Ell-Jacs insulation covers as basis of design, or Pabco, RPR, or equal, manufactured from 1100 aluminum alloy of 0.024 inch thickness. Insulated elbows with a nominal pipe size of 10-inch to 18-inch shall be provided with Childers 4-piece aluminum Ell-Jacs as basis of design, or Pabco, RPR, or equal.

3. Tees, Flanges, and Valve Insulation in Conjunction with Aluminum Jacketing: Furnish Childers Aluminum Special Fabrications Insulation Covers as manufactured by Childers Products Company, Pabco, RPR, or equal.

E. Adhesives: Adhesives shall be water based, UL Classified, meet the requirements of NFPA 90A and NFPA 90B, have been tested according to relevant ASTM requirements, and be acceptable to the State Fire Marshal. Name, type and method of installation shall be submitted for review.

F. Valve and Fitting Cover: When installed in conjunction with PVC jacketing, furnish Zeston 25/50 rated polyvinyl chloride fitting covers as manufactured by Johns Manville, Knauf Insulation, Speedline, or equal.

2.02 DOMESTIC HOT WATER PIPING SYSTEM INSULATION

A. General: Insulate domestic hot water supply and return piping, including valves, strainers and fittings with insulation thickness as indicated on Table 1.

B. Materials:

1. Classes of Insulation:

a. Class A: Glass fiber molded pipe insulation suitable for service temperatures up to 850 degrees F. Pipe insulation shall be one piece, preformed, and provide a minimum R factor of 4.0 at 75 degrees F mean temperature. Insulation shall be faced with all-purpose fire retardant vapor barrier jacket. Pipe insulation shall be Johns Manville Micro-Lok, Knauf Redi-Klad 1000, Owens Corning FIBERGLAS Pipe Insulation SSL II-ASJ, or equal.

b. Class B: Flexible open-cell melamine (foam insulation) suitable for service temperature -150 degrees F to 400 degrees F. Thermal conductivity at 75 degrees F, K= 0.26. Pipe insulation, one-piece pre-formed, laminated to heavy non-reinforced PVC jacket, with locking track, factory installed to jacket, to snap insulation and jacket onto pipe. Similar to TechLite 079 Series as manufactured by Accessible Products Co., or equal. Installation shall comply with manufacturers recommendations.

c. Class C: Mineral fiber pipe insulation suitable for service temperatures up to 1200 degrees F. Pipe insulation shall be one-piece, preformed up to 3 inches thick, and provide a minimum R factor of 4.0 at 75 degrees F mean temperature. Insulation shall be faced with all-purpose fire-retardant vapor barrier jacket. Pipe insulation shall be 8 pounds in accordance with cubic foot density by Roxul Techton 1200, Fibrex COREPLUS 1200, Industrial Insulation Group, LLC (IIG) MinWool-1200, or equal.

2. Locations and Class of Insulation Required:

TABLE 2 – LOCATIONS AND CLASS OF INSULATION REQUIRED

LOCATION	CLASS OF INSULATION
Equipment Room	A, B or C
Other Locations	A, B or C

3. Fittings on indoor piping shall be covered with flush, hand-wrapped Class A, B, or C insulation, to match the adjoining pipe insulation and covered with polyvinyl chloride fitting covers: Zeston 2000 25/50 by Johns Manville, Knauf Insulation Proto PVC Fitting Cover, Speedline Polyco Smoke Safe, or equal.

4. Adhesive: Fibrous Adhesive to bond calcium silicate to itself and non-porous surfaces.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Except as specified herein, install material in accordance with recommendations of manufacturer. Do not install insulation materials until tests specified in other sections are completed. Remove foreign material such as rust, scale, or dirt. Surfaces shall be clean and dry. Maintain insulation clean and dry at all times.

B. On cold surfaces where a vapor barrier must be provided and maintained, insulation shall be installed with a continuous, unbroken moisture and vapor seal. Hangers, supports, anchors, or other projections that are fastened to cold surfaces shall be insulated and vapor sealed to prevent condensation.

C. Surface finishes shall be extended in such a manner as to protect raw edges, ends, and surfaces of insulation.

D. Pipe or duct insulation shall be continuous through walls, ceiling or floor openings, or sleeves; except where firestop or firesafing materials are required.

E. Metal shields shall be installed between hangers or supports and the piping insulation. Rigid insulation inserts shall be installed between the pipe and the insulation shields. Inserts shall be of equal thickness to adjacent insulation and shall be vapor sealed accordingly.

F. Insulation shall not be installed in the following locations unless otherwise noted:

1. On unions, flanged connections or valve handles.

2 Over edges of any manhole, clean-out hole, clean-out plug, and to restrict opening or identification of access.

3. Over any label or stamp indicating make, approval, rating, inspection, or similar data, unless provision is made for identification and access to label or stamp.

3.02 INSTALLATION OF DOMESTIC HOT WATER PIPING SYSTEM INSULATION

A. General: Domestic hot water, tempered water supply and return piping and condensate return piping, after having been tested, shall be cleaned and insulated.

B. Application: Insulate condensate return piping, domestic hot water supply and return, including tempered supply and return piping in accordance with manufacturer's instructions and as specified herein.

1. Install insulation on valve bodies up to valve bonnet. Fill void in saddles, in accordance with Section 22 0513: Basic Plumbing Materials and Methods, with insulation and seal joints.

2. Install insulating material to fittings, valves, and strainers and smooth to thickness of adjacent covering. Leave strainer clean-out plugs accessible. Covers fabricated from polyvinyl chloride shall be furnished.

C. Insulation Jackets in Exposed Indoor Locations:

1. Cover completed insulation with canvas jacket tightly pasted to covering with lagging adhesive. Lap jacket seams 1 1/2-inch minimum. Finish entire jacket with coating of undiluted adhesive.

2. Equivalent factory applied pre-sized, glass fiber reinforced, or glass fiber jackets may be furnished. Seal jacket seams with adhesive in accordance with manufacturer's instructions.

3. Johns Manville Zeston 2000, Knauf Insulation Proto PVC Fitting Cover, Speedline Polyco Smoke Safe, or equal, fitting covers may be furnished, with molded or segmented insulation equal to specified insulation applied to fittings. Secure covers in accordance with manufacturer's instructions.

4. In addition to above requirements, cover exposed insulated piping within a distance of 8 feet above floors with 26 gage galvanized steel jacket. Omit jacket in areas accessible only to maintenance personnel, such as mechanical equipment rooms, utility corridors, accessible pipe tunnels and manholes.

D. Concealed Indoor Locations: Cover insulation over fittings, valves, and strainers with canvas. Provide pipe insulation with factory or field applied standard jacket of 4 ounce minimum canvas, fiberglass cloth, or glass fiber reinforced jacket. Seal jacket laps with adhesive in accordance with manufacturer's instructions.

E. Exposed Outdoors: In addition to canvas or fiberglass cloth cover, pipe insulation exposed to weather shall be provided with an additional 0.016 inches thick aluminum jacket with 2-inch lap connected with one inch hem overlap joint located on side of pipe and turned down to shed water. Jacket shall be strapped 12 inches on center with ½-inch wide stainless steel strapping and wing seals. Aluminum jacket shall be mitered to fit fittings.

3.03 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

3.04 PROTECTION

A. Protect the Work of this Section until Substantial Completion.

END OF SECTION

SECTION 22 1000

PLUMBING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Labor, materials, tools, and equipment to install plumbing systems as indicated.

B. Related Sections:

1. Division 01 - General Requirements.
2. Section 07 9200: Joint Sealants.
3. Section 10 4413: Fire Extinguishers and Cabinets.
4. Section 11 4013: Food Service Equipment.
5. Section 12 3553: Laboratory Casework.
6. Section 22 0500: Common Work Results for Plumbing.
7. Section 22 0513: Basic Plumbing Materials and Methods.
8. Section 22 0548: Vibration and Seismic Control for Plumbing Piping and Equipment.
9. Section 22 0553: Identification for Plumbing piping and Equipment.
10. Section 22 0700: Plumbing Insulation.
11. Section 23 8000: Heating, Ventilating and Air Conditioning Equipment.
12. Section 31 2323: Excavation, Backfill for Utilities.
13. Section 33 3000: Site Sanitary Sewer Utilities.

1.02 SUBMITTALS

A. Provide in accordance with Division 01 and Section 22 0500: Common Work Results for Plumbing.

B. Provide necessary documentation to Owner for processing rebates for water efficient fixtures.

1.03 QUALITY ASSURANCE

A. Unless otherwise noted, the California Plumbing Code is hereby made part of this section.

B. Conform to provisions of Section 22 0500: Common Work Results for Plumbing.

C. Manufacturers of plumbing products must be third-party certified to ANSI/NSF Standard 61-2020, Section 9, and ANSI/NSF 372, to demonstrate compliance with the California Health and Safety Code Section 116875 and 116876, and the federal requirements for lead contribution to drinking water, the Safe Drinking Water Act SDWA.

1.04 PRODUCT HANDLING

A. Conform to provisions of Section 22 0513: Basic Plumbing Materials and Methods.

PART 2 - PRODUCTS

2.01 PIPING SYSTEMS

A. Materials: Refer to Section 22 0513: Basic Plumbing Materials and Methods.

B. Insulation for Piping: Refer to Section 23 0700: Plumbing Insulation.

2.02 FIXTURES AND DRAINS

A. General: Fixtures specified shall be furnished complete with trim and fittings. Cast iron plumbing fixtures shall be acid resistant enamel and identified by casting letters "AR" or words "acid-resistant" into metal. Fixtures shall be white unless otherwise specified. Cast iron fixtures shall be white enamel inside and on back, rim and apron, with exposed unfinished surfaces painted white. Fixtures of same general classifications shall be of same make.

B. Finished Brass:

1. Unless otherwise specified, finished brass of a similar type shall be of same manufacturer and model throughout buildings.

2. Finished and exposed brass plumbing, except floor, shower and urinal drains shall be chromium-plated and polished. Floor, shower and urinal drains, unless otherwise specified, shall be nickel-bronze metal.

C. Traps, Trap Arms and Tailpieces:

EDIT NOTE: Tubular Traps are prohibited.

1. Fixture Traps shall be all L.A. Code Cast Brass Chromium-plated and polished. Exceptions as follows:

    a. Traps that are an integral part of a fixture.

    b. Traps concealed in floors, walls and furring.

    c. Traps standard for service sinks and Industrial Shop equipment.

    d. Laboratory traps and tailpieces shall be as specified in section 22-0513 “Basic Plumbing Materials and Methods”.

2. Trap Arms shall be all IPS Threaded Brass Nipples into Female IPS Threaded Drainage Tee.

3. Tailpieces, Extension Tailpieces, 2-part wastes and any other tubular products shall be minimum 17 gage polished chromium-plated brass, except as otherwise specified.

4. Furnish polished chromium-plated brass wall flanges with setscrews and polished chromium-plated brass cover casing on discharge side of each trap.

D. Faucet and Shower Valve Handles: Faucet and shower valve handles shall be solid brass, chromium-plated and polished, and fastened to their stems by Allen type hollow head stainless steel set screws through the side of the handle extending into the stem. Handles with sharp edges or projections shall not be furnished. At accessible fixtures: handles shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate handles shall be 5 pounds maximum.

E. Fixture Supplies:

1. Supplies for water heaters shall be unplated rigid copper water tube with threaded adaptors for connections to valves and other threaded connections. All other supplies shall be chromium-plated brass with hospital threads or shall be furnished with fittings and valves, which completely cover threads.

2. Exposed supplies for showers shall be chromium-plated brass pipe up to header with hospital threads or shall be furnished with fittings and valves, which completely cover threads.

3. Supplies to water closet tanks, lavatories, and drinking fountains shall be furnished with a NSF 372/61 threaded brass nipple. Exposed unfinished piping shall be sleeved with chrome plated brass or copper cover casing and have an appropriate escutcheon for a clean finished appearance. Angle/straight valve stops shall be female 1/2 IPS (inlet) by 3/8 compression (outlet). Fixture supplies shall be polished chrome-plated, solid supply bulbed end risers with size compatible supply nut connection to fixture and 3/8 O.D. compression nut and ferrule connection to angle stop outlet. Stainless steel flexible braided connectors with re-enforced PVC inner hose are not allowed.

4. Hot and cold water fitting supply outlet piping serving water closets, urinals, lavatories, drinking fountains, sinks, faucets, hose bibs, and sillcocks shall be iron pipe size (IPS) brass nipple, and piped in such a manner that through wall water supply outlet piping be removable, size appropriate, and lead free. The use of copper, copper MIP sweat adapters or similar fittings, in lieu of brass nipples is not allowed. The IPS brass nipple shall be directly connected to the fixture as follows:

   a. Control stops for water closet and urinal flush valves.

   b. Angle stop for lavatories, sinks and drinking fountains.

   c. Shank/arm adapters for wall mounted sink faucets.

   d. Iron pipe size (IPS) brass nipple connection for hose bibs, sillcocks, and other plumbing related fixture and/or plumbing fitting water supply outlets.

5. Water supply pipe that penetrates a finished surface, wall, countertop or part of a cabinet shall be appropriately sized polished chromium-plated cover casing and wall flange/escutcheon fitting tight to the brass through wall nipple and securely affixed to the finished wall surface.

6. Water supplies of plumbing fixtures shall be protected against back-siphonage in event of a vacuum in piping system. Toilet and urinal flush valves shall be furnished with recognized atmospheric vacuum breakers, installed a minimum of 6 inches above fixture.

7. Discharge outlets of supply faucets for lavatories and sinks shall clear top of overflow rim by at least one inch.

2.03 ACCESS PLATES (To cleanouts, valves, water hammer arrestors and hose faucets)

A. Provide minimum 12” by 12” Access Plates for installation of recessed valves.

B. Cleanouts shall be installed by using cleanout plug, set flush to finished wall plane.

1. Installation of any cleanout plug within an access panel is not allowed. Exception: Custodial Sink, refer to the related standard technical drawing.

C. Schedule Numbers:

AP-1: Square, unless otherwise noted, steel, prime coated; frame, 18 gage minimum. Door shall be 16 gage minimum with concealed hinge or be removable, with vandal-proof lock operated by Allen wrench. **(Specify for painted and stucco walls.)**

SMITH	ELMDOR	MILKOR	WATTS	MIFAB	JOSAM
Fig-4760AK	DW-AKL	MOR DW AK1	CO-300-S-6	UA-A	58650-VP

AP-2: Round type, stainless steel, vandal-proof, 5/16 inch No. 18 or 1/4 inch No. 20 flat-head machine screw into cleanout plug. Plate shall be prime coated minimum 18 gage steel or polished chrome-plated brass, 18-8 No. 302 stainless steel, or polished nickel bronze.
(To be specified for painted walls, screwed into cleanout plug.)

SMITH	ZURN	JOSAM	WADE	WATTS	MIFAB
4710U	Z-1469-VP	58600	8480R	CO-480-RD-6	C1400-RD-6

AP-3: Square, polished face chrome-plated bronze, aluminum alloy or brass chrome-plated brass frame with 14 gage polished 18-8 No. 302 stainless steel or brass chrome-plated secured cover with vandal-proof screws.
(To be specified for tile walls.)

SMITH	ZURN	WADE	WATTS	MIFAB	JOSAM
4735-U	Z-1460-VP	58630	CO-300-S-6	C1400-S-3-6	58640-VP

AP-4: Square, floor type, cast nickel-bronze aluminum alloy or brass, with Carborundum or Scoriated, secured top.

(To be specified for floor access to solid interceptor in Science Room, Ceramic Room, and Agriculture Room.)

SMITH	ZURN	JOSAM	WATTS	MIFAB	OR EQUAL
4910U	Z-1461-VP	58630	CO-300-S-6	C1300-S-6	

2.06 CLEANOUT ASSEMBLIES

A. Cleanout plug shall be line size.

B. Schedule Numbers:

CO-1: Iron body cleanout tee full line size up to 4 inches and round access plate, plugs shall be brass, countersunk with tapped boss for 5/16 inch No. 18 or ¼ inch No. 20 screws. **(Specify for finished walls at base of waste stack, above urinal and service sink.)** AB&I and TYLER may be used as iron body cleanouts. Trim and accessories shall be Smith or Zurn or equal.

SMITH	ZURN	WATTS	MIFAB	JOSAM	OR EQUAL
4532-U	Z-1446-BP	CO-460-RD-34B	C1460-RD-6	58600-CO	

CO-2: Iron body with approved UPC plug, top and adjustable sleeve, cut-off ferrule, polished scoriated brass nickel bronze secured cover. AB&I and TYLER may be used as iron body cleanouts. Trim and accessories shall be Smith or Zurn or equal

(To be specified for finished floors inside buildings, in covered areas, and in concrete paving.)

Square:

SMITH	ZURN	WATTS	MIFAB	JOSAM	OR EQUAL
4053L-U-NB	ZN-1400-T	CO-200-S	C1220-S-1-6	55000-1-SQ	

Round:

SMITH	ZURN	WATTS	MIFAB	JOSAM	OR EQUAL
4033-L-U-NB	ZN-1400	CO-200-R	C1220-1-6	55000-1	

2.08 DRINKING FOUNTAINS

A. Also see Electric Water Coolers, below.

B. Drinking Fountains shall be provided with brass free waterways and provisions for future installation of water filter as required.

C. Schedule Numbers:

DF-9A: Hi-Low-Low pedestal, access compliant drinking fountains, one standing person with one wheelchair accessible and one child-height drinking fountain bowls, free-standing heavy duty all stainless steel pedestal with silver solar reflective powder-

coated finish, chrome plated brass push-button operated stainless steel valves with front access to service the water control cartridge and integral water supply strainer, and front accessible flow adjustment, with polished chrome-plated solid brass drinking fountain bubbler heads with laminar .45 gpm flow to prevent splashing and integral 5/8" dia. basin shank for vandal resistance strength, 100% lead-free waterways, with polished chrome-plated vandal-resistant waste strainers, vandal-resistant access plates, with integral mounting base, and internal space for CONTRACTOR supplied DFWF-1 drinking water filter Head Assembly with Bypass Plug. The CONTRACTOR shall request a "filter ready" installation detail from the manufacturer. ADA & CBC accessible, CSA Certified NSF/ANSI 61 Section 9, and NSF/ANSI 372. Basis of Design: Haws model 3603-1200 **(To be specified for Elementary schools' outdoor use in remote locations ONLY.)**

HAWS	OR EQUAL
3603-1200	

2.10 DIELECTRIC UNIONS

A. For pipes made of dissimilar metals use one of the following options to prevent accelerated corrosion and deterioration in the piping systems due to galvanic and stray current.

1. DU-1: Lead Free Brass threaded union with 6-inch Lead Free Brass nipple. NIBCO 733-3LF.

2. DU-2: Lead Free Brass flanged fittings with 6-inch Lead Free Brass nipple. WATTS – LF3100M3.

3. DU-3: Dielectric Waterway: Copper-silicon casting conforming to UNS C87850 with grooved and/or threaded ends. UL classified in accordance with ANSI / NSF-61 for potable water service. Basis of Design: Victaulic Style 647.

B. Dielectric Style Unions using ferrous and non-ferrous metals are prohibited.

2.13 FAUCETS

A. Access compliant faucets: Force to activate controls shall be no greater than 5 pounds. Self-closing metering, where specified, to remain open 10 seconds minimum when activated. Handles shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist.

B. Schedule Numbers:

F-1: Deck mounted, single lever handle, cold water inlet fitting, with rigid swinging goose neck spout and aerator.

CHICAGO	ZURN	T&S	OR EQUAL
350-E35ABCP	Z825B1-XL-15F	B-0305	

F-4: Single water inlet 4-inch center set lavatory faucet self-closing metering, to remain open 10 seconds minimum when activated. Adjustable time cycle with vandal resistant base plate and chrome plated finish. Provide copper tubing connector. To be used with 4-inch center set Lavatory Sink.**(To be specified for student restrooms).**

CHICAGO	ZURN	OR EQUAL
3400-ABCP	Z86100-XL-CP4	

F-5: 4-inch center set lavatory faucet self-closing metering, to remain open 10 seconds minimum when activated., Hot and cold-water inlets, adjustable time cycle and chrome plated finish. Provide copper tubing connectors. To be used with 4-inch center set Lavatory Sink.**(To be specified for Faculty restrooms and Cafeteria hand wash sinks - Access compliant.)**

CHICAGO	ZURN	OR EQUAL
3600CR44597AB	Z86500-XL	

FD-1: Cast iron body, no hub with seepage pan and flat, round nickel bronze strainers not less than 5-inch diameter for 2-inch outlet bodies, 7-inch for 3-inch outlet bodies and 8-inch for 4-inch outlet bodies, with maximum of ½ inch square holes or slots not larger than ¼ inch by 1 ¼-inch.

(To be specified for use in locations other than tile floors.)

SMITH	ZURN	WATTS	MIFAB	JOSAM	OR EQUAL
2005Y-A	ZN-415-B	FD-100-A	F1100-C-1	30000-A	

2.16 FLUSH VALVE ASSEMBLY

A. Valves shall be furnished so that flush remains constant and will not require any adjustment.

1. Each flush valve shall be provided with a loose key, square shank, lock shield angle service stop connected to flush valve with a union connection.

2. Provide l7 gage pressed brass escutcheons for wall and fixture. Escutcheons shall be fastened to not turn or rattle.

3. Each flush valve shall be furnished with a vacuum breaker providing one inch opening to atmosphere, which will not leak under any degree of back pressure and will not restrict rate of flow more than 10% at 10 PSI, and will operate noiselessly.

4. Tailpiece shall not be lighter than 17 gage and shall be part of flush valve assembly.

5. Exposed metal parts of flush valve assembly shall be nickel or chromium-plated on a brass or copper base.

6. Refer to 2.02.E for fixture supplies.

7. Controls for water closet flush valves shall be mounted on the wide side of toilet areas.

B. Schedule Numbers:

FLV-1: Automatic Flush Valve for Water Closets: Battery-powered, sensor-operated, 17 gage chrome-plated brass or heavier with cover and with metal cover manual override button. Shall deliver 1.28 gallon of water at each operation.

SLOAN	ZURN	OR EQUAL
Royal 111 SMO-1.28	ZER6000AV-HET-CPM	

FLV-1a: Manual Flush Valve for Water Closet: Shall deliver 1.28 gallon of water at each operation.

SLOAN	ZURN	OR EQUAL
Royal 111-1.28	Z6000AV-HET	

2.19 HOSE BIBBS

A. Hose Bibbs or Hydrants serving outside eating shall be ¾" supplied with minimum 1" water line.

B. Schedule Numbers:

HB-6: Same as HB-4 except furnish with bent nose and loose key handle.

(To be specified for use in exterior Agricultural Plot.)

ACORN	ZURN	CHAMPION	PRIER	OR EQUAL
8126-LK-RBVB	Z-1343-VB-LK	B-401LK	C-255NP	

HB-8: Recessed hose box furnished with wall flange and built-in drip lip. Box shall be one piece construction; door shall have a recessed cam lock. Door shall remain up and out of the way when in fully opened position. Valve shall be replaceable loose key wheel handle and screwdriver stop. Install within 2 feet above finished floor. Provide vacuum breaker.

(To be specified for use in Toilet Rooms.)

ACORN	WOODFORD	PRIER	OR EQUAL
Hose box 8104 or 8151	B75	C-634BX1	

2.20 LAVATORIES

A. Access compliant faucets for Lavatories: Force to activate controls shall be no greater than 5 pounds. Self-closing metering, when specified, to remain open 10 seconds minimum when activated.

B. Cast Iron Lavatories shall be acid resistant enamel and shall conform to Commercial Standards CS 77.63. Unites furnished in conjunction with strainer installation or faucet installation shall be brass. Exposed brass nuts shall be chrome plated.

C. Exposed trim shall be free from sharp edges or points. Fixture shall be furnished with other listed manufacturer specified trim. Instead of solid supply pipe, polished chrome-plated risers, 3/8 inch outside diameter with ferrule stop end and metal nosepiece may be furnished.

D. Insulate cold water, hot water and drain lines under all access compliant lavatories with approved type insulation.

PLUMBEREX	LAV-GUARD	OR EQUAL

E. Schedule Numbers:

L-1: 20-inch by 18-inch cast iron, acid-resistant enamel punched with three holes, 4-inch on center and supplied with tempered or cold water only. Unit shall be furnished with cast iron hangers. Stops shall be loose key, square shank, lock shield type.

(To be specified for use in Student Restrooms).

	BRASS CRAFT	CECO	CHICAGO	KOHLER	ZURN
Bowl		551		K-2867	Z5844-CB
Faucet		F-4		F-4	F-4
Drain			327-XCP	K-8820	Z8743_PC
Supply	HSTR 1720 A-CB-C		1017		ZH-8822-CE-LK

Note: Provide cast iron hangers for sinks.

L-2: Same as L-1, 20-inch by 18-inch cast iron, acid resistant enamel punched with three holes, 4 inches on center and supplied with tempered cold water only. Unit shall be furnished with cast iron hangers. Stops shall be loose key, square shank and lock shield

type. **(To be specified for access compliant, student restrooms).**

	BRASS CRAFT	CECO	CHICAGO	KOHLER	ZURN
Bowl		553		K-2867	Z5844
Faucet		F-4		F-4	F-4
Drain			327-XCP	K-8820	Z8743_PC
Supply	HSTR 1720 A-CB-C		1017		ZH-8822-CE-LK

L-4: 20-inch by 18-inch cast iron, acid resistant enamel lavatory with 4-inch center set combination push button metered faucet, supplied with hot and cold water complete with cast iron hangers. **(To be specified for access compliant installations at faculty restrooms)**.

	CECO	CHICAGO	KOHLER	ZURN
Bowl	553		K-2867	Z5844
Faucet	F-5		F-5	F-5
Drain		327-XCP	K-8820	Z8743_PC
Supply		1017		ZH-8822-CE-LK

2.22 PIPE HANGERS

A. Refer to Section 22 0513: Basic Plumbing Materials and Methods.

B. Schedule Numbers:

1. PH-1: Complete with clamps, inserts, etc.

SUPERSTRUT	UNISTRUT	TOLCO	B-LINE	OR EQUAL

2.23 P-TRAPS

A. Schedule Numbers:

PT-1: Cast brass complete, chrome-plated.

AB&A	OR EQUAL
107 or 108 chrome 1-1/2”x1-1/4”.	

2.29 SINKS and TRIM

A. Access compliant faucets for sinks: Force to activate controls shall be no greater than 5 pounds. where specified self-closing metering to remain open 10 seconds minimum when activated.

B. Cast iron sinks shall be acid resistant enamel and shall conform to Commercial Standards CS 77.63. Units furnished in conjunction with strainer installation or

faucet installation shall be brass. Exposed brass nuts shall be chrome-plated. Refer to the Fixture Supplies paragraph of this section.

C. Exposed trim shall be free from sharp edges or points. Fixture shall be furnished with other listed manufacturer specified trim. Instead of solid supply pipe, polished chrome-plated risers, 3/8-inches outside diameter with ferrule stop end and metal nosepiece may be furnished.

D. For access compliant sinks: Insulate cold water, hot water and drain pipes under sinks with district approved type insulation.

PLUMBEREX	LAV GUARD	OR EQUAL

S-2 ADA Compliance; Seamless die-down construction of 16-gauge type 304 Stainless Steel; Outside Dimensions: 19-inch by 25-inch; Inside Dimensions: 16-inch by 22-inch by depth of 5-1/2-inch; flat rim; use "J" clip option for solid surface tops installations.

Approved product manufacturer and model: JUST Sinks: S-ADA-1925-16-GR.

F. SINKS and TRIM Schedules:

ST-4:

ADA Size. Provide Tempered or Cold-Water single connection deck mounted stainless steel pantry faucet.

(To be specified for use in 6th grade science labs student's workstations; CAD and Drafting Labs; Child Development; Early Education Centers (EEC); General Classrooms; Instrumental Music; Kindergarten Classrooms.

Sink	Faucet	Strainer
S-2	F-1	K-8807

2.30 SERVICE STOP GAS VALVES

A. Schedule Numbers:

SGV-2: Bronze/Brass, ¾-inches to 2-inch IPS (WOG) water, oil, or gas – full port ball valve. CSA approved.

(To be specified for small boilers, pool heaters, and A/C units on roofs.)

WATTS	NIBCO	WILKINS	OR EQUAL
LFFBV-4	F-510-CS-R-66-FS	Model 850	

2.32 STOP VALVES

A. Stops shall be loose key type, ½-inches IPS inlet and outlet chrome-plated brass casting, except as noted.

B. Schedule Numbers:

STV-1: Angle:

CHICAGO,	BRASSCRAFT	NIBCO	OR EQUAL
442-LKABCP		77	

STV-2: Partition:

CHICAGO	T& S BRASS	OR EQUAL
1771-ABCP	B-1028	

STV-3: Straight Type, with Loose Key:

CHICAGO	BRASSCRAFT	T&S BRASS	OR EQUAL
45-LKABCP (1/2 inch)		B-O418	

2.35 TRAP PRIMERS

A. Trap Primer Requirements:

1. Installed within a recessed lockable access panel with proper clearances for repair and replacement.

2. Shall be installed with line size unions at each end for ease of replacement.

3. Provide an isolation shutoff valve for repair and replacement.

B. Schedule Numbers:

ATP-1: Automatic, multi-trap primer, cast bronze. Minimum pressure drop of 3 PSI shall activate trap seal primers. Limit serving traps to two using Sioux Chief 695-Y52 splitter.

MIFAB	JAY R SMITH	OR EQUAL

MR-500-NPB	2694	

2.38 WATER CLOSETS

A. General: Water closets shall be vitreous china with Polyvinyl chloride bolt caps. Fixtures with auto-flush valves shall be provided with manual override button.

B. Schedule Numbers:

WC-4: Floor mounted, access compliant, 17 to 19 inches height to top of seat with flush valve at 1.28 gallons per flush and open front, fire retardant seat.

(To be specified for access compliant use in Secondary schools for students and adults use.)

1. Bowl:

AMERICAN STANDARD	KOHLER	SLOAN	ZURN	OR EQUAL
3461.001	K-96057	ST-2029	Z5665-BWL-1	

2. Auto-flush valve (battery): FLV-1.

3. Manual-flush valve: FLV-1a.

4. Seat: White, ring thickness including bumpers shall be one inch.

OLSONITE	BEMIS	CENTOCO	OR EQUAL
10SSCTFR	1955 SSFR	AMFR500STSCCSS	

WC-5: Floor mounted, 11 to 12 inches height to top of seat with flush valve at 1.28 gallons per flush and open front fire-retardant white seats.

(To be specified for Kindergarten age and younger users.)

1. Bowl:

AMERICAN STANDARD	ZURN	Kohler	OR EQUAL
2282.001	Z-5675-BWL	K-96064	

2. Auto-flush valve (battery): FLV-1.

3. Manual-flush valve: FLV-1a.

4. Seat: White, ring thickness including bumpers shall be 1-1/4 inch.

BEMIS	OR EQUAL

BB 955 CT	

1.

2.42 WATER HAMMER ARRESTORS

A. Schedule Numbers:

WHA-1: Lead Free Water Hammer Arrestor provided for Headers for Lavatories, Wash Sinks, Wash Fountains, Kitchen Sinks, Service Sinks, Urinals and Water Closets. Also provide for drinking fountains and other fixtures or devices with quick-closing valves, such as clothes washers.

For sizing purposes size according to manufacturer's recommendations.

SIOUX CHIEF	PPP	JR SMITH	WATTS	JOSAM	OR EQUAL
655 and 656 SERIES	SC SERIES	5005 TO 5050 SERIES	Series LF05 and LF15M2	75000	

2.46 FIXTURE CONNECTIONS

A. Branches to individual fixtures shall be of the following sizes (Inches) unless larger sizes are indicated on Drawings:

Fixture	Copper, Cold (Inches)	Copper, Hot (Inches)	Trap and Connections (Inches)	Soil/ Waste (Inches)	Vent (Inches)
WC Flush Valve	1	N/A	4	4	2
Lavatories	1/2	1/2	1-1/2 by 1-1/4	2	1-1/2
Classroom Sink	1/2	1/2	1-1/2 by 1-1/2	2	1-1/2

Single Drinking Fountains	1/2	N/A	1-1/2	2	1-1/2
Sillcocks	3/4 minimum	N/A	N/A	N/A	N/A

B. Water headers serving water closets shall be copper water tube, with following size throughout length:

1. 1-1/2 inches for 2 flush valves.

2. 2 inches for 3 to 9 flush valves.

C. Water headers serving urinals shall be of following size throughout length:

1. 1” for 1 or 2 flush valves.

2. 1-1/4” for 3 flush valves.

3. 1-1/2” for 4 to 8 flush valves.

2.47 HEIGHT OF FIXTURES

A. Heights for standard fixtures.

Fixture	Adults and Students Ages 12 and Over (Inches)	Elementary Ages 6 to 11 (Inches)	Kindergarten and Younger Ages 3 to 5 (Inches)
Toilets, height to top of seat	15 to 17	15	11 to 12
Lavatories, sink top height	32	30	25

B. Heights for access compliant fixtures.

Fixture	Adults and Students Ages 12 and Over (Inches)	Elementary Ages 6 to 11 (Inches)	Kindergarten and Younger Ages 3 to 5 (Inches)
Toilets, center line from wall/partition	17-1/2	15	12
Toilets Seat Height	18	15	12
Lavatories, sink top height	34 maximum	30	24 maximum
Lavatories, sink knee clearance	27 minimum	24 minimum	Parallel (Side) Approach
Drinking fountains, bubbler height.	36 maximum	30 maximum	30 maximum
Drinking fountains, knee clearance	27 minimum	24 minimum – not required	24 minimum – not required

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions under which Work of this section will be performed. Correct conditions detrimental to proper and timely completion of Work. Do not proceed until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. General:

1. Unless otherwise specified, plumbing fixtures, equipment and appliances that require connections to plumbing line shall be connected. This shall include fixtures specified or indicated as furnished by others, furnished by Owner, or specified in other related sections. Install supplies, stops, valves, traps, wall flanges, or pipe casing for connection of this equipment.

2. Install equipment as indicated on reviewed and accepted Shop Drawings.

3. Avoid interference with Work of other trades. Do not deviate from Drawings without review of the Architect.

B. Examination: Check each piece of equipment in system for defects verifying that parts are properly furnished and installed.

C. For piping Work, refer to Section 22 0513: Basic Plumbing Materials and Methods.

D. Plumbing Fixture and Equipment Installation:

1. Unless otherwise indicated, fixtures shall be installed with 5/16 inch brass bolts or screws of sufficient length to securely fasten fixture to backing, wall, or closet ring.

2. Fixtures installed against concrete or masonry walls shall have their hangers fastened with 5/16 inch brass bolts, Philip Shield type anchors, or 2 unit cinch anchors. Wood or plastic plugs are not permitted.

3. Fixtures installed against wood or metal stud walls shall have their hangers fastened to metal backing plates with 5/16 inch brass bolts screwed into plate. Fixture hangers for urinals shall be fastened centered vertically on metal backing plate with three 5/16 brass bolts each for small individual hangers and six, for larger one piece hangers. Lavatories shall be hung with not less than four 5/16 inch brass bolts or not less than five 1/4 inch brass bolts. Each sink hanger shall be hung with not less than four 5/16 inch brass bolt or not less than five 1/4 inch brass bolts.

4. Pan type drinking fountains shall be hung with 5/16 inch cadmium plated bolts with a bolt in each bolt opening in hanger. Hangers for pan type drinking fountains shall provide 2 inches (plus or minus 1/4 inch) between pan and wall. Spaces due to irregularities between fixtures and tile walls shall be neatly filled with white cement or silicone filler.

5. Backing for hanging of plumbing fixtures and equipment shall be installed in supporting wall at time rough piping is installed. Backing for stud walls

shall be steel plate 1/4 inch thick, not less than 4 inches wide. Backing for urinals shall be ¼-inches thick by 6-inch wide steel plate. Steel plate shall be attached to stud at each end of plate and to each stud it crosses. Plate shall be attached to metal studs by bolting with two ¼ inch U-bolts per stud with bolts through plate and around stud flange or by welding with a 1/8 inch fillet weld full width of stud flange, top and bottom of plate. At wood studs, plate shall be carefully recessed flush with face of stud and attached to each stud with 2 No. 14 flat-head wood screws, 2 inches in length into pre-drilled 1/8 inch holes. Backing for stud walls supporting wall-hung closets shall be as detailed.

6. Rough-in for fixtures, equipment and appliances shall be as indicated on Drawings and as specified, including those items indicated as furnished by others, furnished by Owner, or future capacity. When connections to equipment from capped or plugged lines are required, caps or plugs shall be removed at time equipment is set and stops or valves installed and connections provided as specified.

7. Piping shall be stubbed out to exact location of fixtures and stubs shall be installed symmetrical with fixtures. Hot and cold water supplies for center set faucets on lavatories shall be installed on 8-inch centers, unless otherwise specified or required.

8. Kitchen equipment requiring backflow protection with hot and cold water connections shall be installed with approved backflow prevention assemblies; BPV-3 and drain into floor sink with air gap.

E. Cleanouts in Drain, Waste, Vent and Sewer Lines:

1. Cleanouts shall be installed at locations stated in the California Plumbing Code and accessible at following locations:

   a. At locations above first floor as stated on construction documents and 5 feet outside of the building.

   b. Install an accessible main line upper terminal cleanout in all restrooms above water closet overflow. (Install above upper terminal water closet where there are more than one water closets in a restroom).

   c. Above faucets of each sink with brass plug.

   d. Above service sink with brass plug.

   e. At each Drinking Fountain with brass plug.

   f. At each urinal and locate above urinal with brass plug.

g. Above overflow level of pot sinks with brass plug.

h. In vertical line at base of each downspout connected to an underground storm drain system extend cleanout to exterior of building.

i. At upper end of a horizontal vent line when any part of horizontal line is below overflow level of fixture it serves.

j. Not to exceed 100-foot intervals in sewer and waste lines exterior of building.

k. At property line connection.

l. Where indicated on Drawings.

2. Cleanouts shall be extended to grade as follows:

a. Not to exceed 100-foot intervals in straight runs of pipe outside buildings.

b. At horizontal changes of direction in aggregate greater than 135 degrees (underground).

c. At property lines.

d. Where cleanouts occur under concrete.

e. Where marked for future connections.

3. Cleanouts in building shall be extended to floor level or above floor level or above floor level in walls or furring when cleanouts are not accessible or where clearance is less than 18 inches.

4. Cleanouts in finished areas in building shall be concealed except that cleanouts above service sinks in janitor's rooms or closet, and cleanouts above service sinks or in exposed piping in boiler or heater equipment rooms, may be exposed. Cleanouts for urinals shall be installed above urinal and shall terminate behind an access plate.

5. Cleanouts in floors of covered areas and those extended to grade in concrete areas shall be floor level type with extensions body brass plugs and detachable nickel-bronze or aluminum alloy scoriated.

6. Concealed cleanouts in vertical lines shall be service weight soil cleanout tees with brass plugs and round cover plates unless otherwise specified or indicated. Cleanout shall be extended to finished wall by using all brass running thread couplings to extend plug to finish wall.

7. Cleanouts extended from below floor to a wall or furring or on horizontal lines above floor that terminate at a wall or furring shall be iron body type with brass plugs and round cover plates.

8. Cover plates over cleanouts in painted walls shall be steel, bonderized and prime coated. Cover plates cover cleanouts in tile walls shall be chromium-plated brass or nickel bronze. Plates shall be attached to cleanout plugs with 5/16 inch No. 18 or 1/4 inch No. 20 stainless steel vandal-proof type screws. Plates shall be one inch larger in diameter than fitting opening.

9. Cleanouts at bases of downspouts shall be tapped soil tees with brass plugs as hereinafter specified, full size of line.

EDIT NOTE: DO NOT INSTALL ROOF DRAIN CLEANOUTS WITHIN BUILDING INTERIORS.

10. Cleanouts extended to grade in exterior sewer lines other than floors or concrete areas shall be a cleanout assembly with secured top, extra heavy-duty, adjustable sleeve, cut-off ferrule, countersunk threaded brass plug and scoriated tractor type cover.

11. Other cleanouts shall be iron body type.

12. Cleanout extensions shall be no-hub cast iron soil pipe. Exterior cleanouts, those in concrete excepted, shall terminate in a 14-inch by 6-inch thick concrete block with cleanout assembly and top of block flush with finish grade.

13. Fittings in lines utilized as cleanouts shall be approved soil fittings including no-hub pipe. Tees and crosses in vent headers excepted.

14. Pipe joint compound shall not be installed on cleanout plug. After lines are tested and approved, each cleanout plug shall be removed, greased, and replaced.

3.03 EXCAVATION, TRENCHING AND BACKFILLING

A. Perform trenching, excavation, and backfilling required for Work of this section as specified herein and in Section 31 2323: Excavating, Backfilling, and Compacting for Utilities.

3.04 SERVICE CONNECTIONS

A. Determine exact location of required water, drain, and sewer connections and provide proper connections.

B. Potable water lines shall be purged completely before connecting to sources of water for the Project. Determine quality of water supply before connection.

3.05 WATER HAMMER ARRESTORS

A. Install water hammer arrestors indicated on Drawings and in following locations (only non-ferrous arrestors may be installed in copper water system):

1. Water lines to lavatory headers, water closet and urinal headers, service sinks, kitchen sinks, wash fountains, drinking fountains: between drinking fountain and water filter head assembly, laboratories with medical type faucets and on wash sinks having three or more stations and all other quick closing fixture such as clothes washers, as close to fixture as possible.

2. Between last two fixtures when three or more fixtures, other than those listed in Number 1 above, are served by a common header.

B. When possible, arrestor shall be installed in wall or furring. When arrestor is installed in wall or furring, furnish an access plate large enough to permit removal of arrestor. Access plate shall be a minimum of 2 inches larger in each direction than the arrestor.

C. Fixture water lines shall be provided with mechanical water arrestor hammer dampening devices. Air chambers are not approved.

3.06 CONDENSATE DRAINS - FROM AIR CONDITIONING UNITS

A. Connect drain piping from drain pan of air conditioning unit to condensate disposal location indicated. When coil or unit housing is shock or vibration isolated, connection shall be furnished through a flexible connector not less than 10 inches long. Drain line shall pitch to flow out at not less than one inch in 8 feet. Drain line shall not be reduced smaller than unit outlet connection.

B. Condensate drain piping installed within building whether in air conditioned space or not shall be insulated. Refer to Section 22 0700: Plumbing Insulation, for type of material required.

C. Condensate Trap:

1. A condensate trap shall be installed for each air conditioning coil. Trap shall be assembled from 2 brass ground joint unions: one between A/C unit and inlet of trap, and one at outlet of trap that connects to main drain.

2. Trap configuration shall be per manufacturer's recommendations based on total unit casting static pressure (simulated plugged filter condition), but not less than 3 inch water seal.

3. Running trap design is not permitted.

4. Secondary drain shall not be trapped.

D. Condensate trap shall be checked at equipment operational tests for proper water drainage flow from air conditioning unit. Cooling condensate pan shall be filled with water, filters covered with plastic (plugged filter simulated), unit panels replaced, and unit motor running at design condition. Pan shall drain without hesitation to bottom of inlet connection. Tests are made prior to installation of ceiling.

E. Secondary Overflow Drain:

1. Drain pan installed underneath air conditioning units in concealed ceiling space or units that incorporate dam fitting shall be furnished with secondary drain piped to outside planter area with outflow location clearly visible.

2. If outside building location is not available or feasible, secondary drains shall be piped to a classroom sink, if sink is not available pipe to a room corner away from cabinets, computers, desks, door ways/entrances or stairs.

3. Secondary vertical pipe that penetrates through suspended ceiling shall be furnished with a coupling or threaded adapter so ceiling tile can be removed without damage.

3.07 CONDENSATE DRAINS - FROM WINDOW TYPE HEAT PUMP AND EXTERIOR WALL MOUNT HEAT PUMP UNITS

A. Whether indicated on Drawings or not, window units and wall mount units without built in bottom drain pan for evaporator and condenser coils shall be provided with galvanized steel condensate pan at bottom of unit with drain line that drains into approved drywell. Install copper or Stainless Steel Type 316L 1/2 inch diameter pipe for window type air conditioners and 3/4 inch diameter pipe for exterior wall-mounted heat pump units.

3.10 GAS SERVICE

A. Above Grade Service: Pipe shall be steel, hammered, free of dirt and scale, and blown out with oil-free air or nitrogen to a clean, dry condition. Piping shall not be installed in or through a ventilation duct or plenum.

B. Underground Service, Gas approved (yellow) Polyethylene Plastic Pipe: Refer to Section 22 0513: “Basic Plumbing Materials and Methods”.

1. Pipes shall be joined with polyethylene fitting and joined together by thermal fusion in accordance with procedures recommended by Polyethylene plastic pipe and fitting manufacturer.

2. Plastic pipe shall be installed not less than 30 inches below grade.

3. Underground Warning Tape shall be installed 12 inches above buried gas piping. Warning tape shall be yellow with caution statement as follows: “CAUTION – BURIED GAS LINE BELOW”.

4. Plastic pipe shall not be installed in or under a building or structure. Pipe shall be installed under bituminous surfacing or compacted soil area, free from large stones. Pipe may be installed under sidewalks or driveways, as long as no joint occurs. Pipe installed under paved covered areas wider than 40 feet shall be installed in ventilated conduits extending 2 feet past paving.

5. Pipe shall be installed on a 6 inches deep sand bed. After required pressure-leak test, pipe shall be covered with sand not less than 6 inches thick.

6. Piping shall not support weight of valves, metal fittings or other items. Pipe shall be installed strain free.

7. Plastic pipe fittings shall not be stored or left exposed to sunlight. Pipe in open trenches shall be shielded. A sand envelope of 6 inches minimum shall be placed around pipe, with exception of joints, until inspection by IOR is completed. Protection for pipe shall be provided when necessary to leave pipe exposed overnight.

8. Installer of piping is required to have training and to have attained a certification. Non-trained/Non-certified installer must contact the manufacturer or manufacturer’s representative to provide on-site fusion training and certification, prior to work commencement

9. Polyethylene plastic pipe shall connect to a steel epoxy coated anodeless type riser to minimum of 6 inches above grade, when exiting the underground installation and transitioning to steel pipe connection.

10. Where a steel pipe riser passes into a structure or building, a double swing or double-offset joint shall be furnished. Pipe shall pass into structure 6-inches above grade and through a sleeve with a minimum one inch clearance. An isolation valve is required before pipe entering the building.

3.11 CLEANING - PLUMBING PIPING SYSTEMS AND FIXTURES

A. Plumbing lines and fixtures shall be flushed to remove dirt and foreign material until water runs clear and no foreign substance or odor is present. Strainers and screens on faucets shall be removed during this cleaning operation.

B. After satisfactory cleaning of strainer and screen replacements has been witnessed by the Project Inspector, post and maintain signs stating: "CAUTION - Water at this construction project has not yet been certified for human consumption." Signs

shall be furnished with letters at least 1/2 inch in height and shall be conspicuously posted at entrances to the Project site. Signs shall be paneled, black and yellow, in conformance with OSHA Section 1910.1455.

3.12 DISINFECTING DOMESTIC WATER PIPING SYSTEMS

A. Newly installed or replaced piping and/or fixtures dispensing potable water, and any additional piping and/or equipment impacting the integrity of this system shall be disinfected and undergo an approved bacteriological analysis before water system is allowed for public use.

B. Disinfection shall commence upon complete installation of all related domestic water systems including fixtures, valves, faucets, water heating systems, etc.

C. Work shall be performed by Technicians Certified by the American Water Works Association (AWWA) and/or the State of California Department Health Services, Grade II Water Treatment Operator Certification or higher issued by the Department of Health Services (DHS) for the State of California. Comply with Title 22, Code of Regulations Division 4, Chapter 13, and Article 2 Operator Certification Grades.

D. Method:

1. A Physical Separation of minimum 6” or Reduced Pressure Backflow assembly shall be installed to protect from cross contamination of the local water purveyor’s meter service supply when at any time there is any type of water connection with the piping to be disinfected (Chlorinated) and the water meter service supply.

2. Install a Chlorination Port including a T fitting and a shut off valve to the proximity of the point of connection at the new piping system.

3. System is to be flushed to remove any materials that may have entered the system.

4. Using a chemical feed metering pump and a chlorine tank, the chlorine solution is injected into the water system.

E. Disinfection and De-chlorination procedure (24 or 3 Hour Contact Time):

1. 24-hour Test Method:

a. Prior to disinfection, post signs on all water outlets of the system to be disinfected. Sign or tags shall read, “Water System Being Chlorinated- “Danger Do Not Drink Water” or similar warning.

b. Piping system shall then be adequately flushed with water to remove any particles and eliminate air pockets.

c. Using the continuous feed method, sodium hypochlorite conforming to ANSI/ AWWA B300 will be injected into the water system at a minimum of 50 PPM. A water flow meter provided by the water treatment technician will be used to determine the rate of injection and a chlorine test kit, Hach or equivalent, will be used to monitor the residual.

d. Chlorine residual test will be taken at all appropriate points and outlets to verify 50 PPM residual levels.

e. The chlorinated system shall be shut down for any use and the chlorinated water shall remain in the water system for retention of 24 hours.

f. After 24 hours, chlorine residual levels will again be tested at various points throughout the system to insure a minimum of 25 PPM residual. If the system has not met the minimum of a 25 PPM residual, the above disinfection process shall be repeated.

g. After satisfactory completion of the residual testing, flush out system until Hach or equivalent test reveal the water outlets have a free chlorine residual concentration less than 0.5 PPM. The procedure shall be in accordance with the AWWA standard C651-05.

h. The OAR may allow temporary use of the water system for construction purposes pending results of the bacteriological test analysis. Sign or Tags shall be left on all outlets stating water system is not safe for consumption until laboratory results are complete and meet these specifications.

2. 3 Hour Test Method:

a. If the water systems must be turned on for use as soon as possible, a 3 hours chlorine contact time to allow for disinfection is permitted with the OAR’s approval.

b. Prior to disinfection, post signs on all water outlets of the system to be disinfected. Sign or tags shall read, “Water System Being Chlorinated- “Danger Do Not Drink Water” or similar warning.

c. Piping system shall be then adequately flushed with water to remove any particles and eliminate air pockets. Using the continuous feed method, sodium hypochlorite conforming to ANSI/ AWWA B300 will be injected into the water system at a minimum of 200 PPM. A

water flow meter provided by the water treatment technician will be used to determine the rate of injection and a chlorine test kit, Hach or equivalent, will be used to monitor the residual.

d. Chlorine residual test will be taken at all appropriate points and outlets to verify 200 PPM levels. The chlorinated system shall be shut down for any use and the chlorinated water shall remain in the water system for retention of 3 hours.

e. After satisfactory completion of a 3 hour disinfection period, flush out system until Hach or equivalent test reveal the water outlets have a free chlorine residual concentration less than 0.5 PPM. The procedure shall be in accordance with the AWWA standard C651-05.

f. The OAR may allow temporary use of the water system for construction purposes pending results of the bacteriological test analysis. Sign or Tags shall be left on all outlets stating water system is not safe for consumption until laboratory results are complete and meet these specifications.

F. Bacteriological Test:

1. After final flushing and satisfactory results from the residual free chlorine concentration test, Bacteriological test samples shall be collected. The intent of the following is to provide insurance for an accurate representation to a complete Bacteriological test of the water system. At least two samples shall be taken from each floor of each building.

2. Bacteriological test samples shall be delivered to a State of California Department of Health Services Certified Laboratory to perform qualitative and quantitative bacterial analyses on the water samples for the presence of any Total Coliform bacteria and Plate Count. This count must be less than 500 cfu/mL.

3. The procedure shall be repeated if it shown by bacteriological examination made by an approved agency that the level of Disinfection does not meet these specifications.

4. After satisfactory results for the bacteriological test are provided to the OAR, the physical barrier or temporary reduce pressure back flow devise shall be removed, and the new piping shall be connected to the point of connection. All the connecting piping and fittings shall be disinfected prior to installation. Chlorination Port shall be capped water tight. Warning sign or tags shall be removed.

G. Drinking Fountain and Bottle Filler Lead Test: After installation of Drinking Fountain or Bottle Filler, and successful Bacteriological Test, shut off domestic water supply line feeding the fixture, and inform OAR. OAR will coordinate with the Drinking Water Quality Program (DWQP) Supervisor in local Project Unit and M&O's Plumbing Technical Unit Supervisor to conduct lead detection test and mitigate as necessary. Do not remove related construction warning sign and tags.

3.13 VALVES ON PLUMBING SYSTEM

A. Furnish and install gates, ball, globes, angles, and check valves on plumbing Work at following locations whether indicated on drawings or not.

B. Gate valves shall be installed in yard boxes only.

C. Installation of any ball valve within yard box/in ground is not allowed.

D. Hot and cold valves shall be:

1. Lead free complying with AB1953.

2. Above the ground copper water system, 2-inch and larger, may utilize Victaulic butterfly valves and fittings for their connections. A 2-inch or larger Victaulic valve may be in a wall if an adequately sized access panel is provided for maintenance or removal.

E. Valves shall be accessible and installed within an access panel approximately 3 feet above floor and no more than 7 feet above floor (Maximum two valves within each access panel,) or in a marked yard box to prevent tampering.

1. Immediately after each water meter, in addition to any valve furnished by utility company, there shall be an accessible valve on the inlet side for a strainer assembly, dual backflow device assembly and/or possibly a dual pressure reducing valve assembly.

2. A gate valve on each water supply before it enters building. Valves shall be accessible from outside building and shall be installed in a marked yard box, unless otherwise indicated on drawings. Shall omit gate valve handle and furnish 2-inch square operating nut.

3. At multi story buildings, provide an isolation-valve or multiple valves for both hot and cold water in access panel to isolate and control each floor level.

4. For classrooms, shops, offices and boiler or mechanical room, install a gate or ball valve to control hot and cold water lines to each group of fixtures, a group of fixtures shall be considered to be 2 or more fixtures in the same room. When practical, valves shall be installed on the same wall as group of

fixtures. Valves shall control only fixtures in rooms in which they are installed.

5. For restrooms, a gate or ball valve shall be installed in each restroom to isolate the hot and cold water supply into a restroom regardless of the number of fixtures. These valves shall control and be accessible only from within the restroom in which fixtures are installed. Valves shall be installed on the same wall as the group of fixtures it serves. Valves shall control only fixtures in restroom in which they are installed. Back to back restrooms shall be isolated separately and individually.

6. Install a gate or ball valve on each building branch line, which serves two or more fixtures, when these fixtures are not provided with a group isolation valve as specified above. These valves shall be located approximately 3 feet but not more than 7 feet above finish floor.

7. Install a gate, ball valve or partition stop for a drinking fountain or a group of drinking fountains.

8. Install a gate, ball valve or partition stop for hot and cold water supply to plumbing fixtures with no accessible supply stops, such as wall mounted faucets.

9. Install a gate, ball valve or partition stop for stops adjacent to, and controlling water flow to each sill cock and hose bib except as follows:

    a. A sill cock immediately below an exterior drinking fountain may be controlled by the same gate, ball valve or partition stop as drinking fountain.

10. Install a lose key angle stop, on each exposed fixture supply, and for each flush valve unless otherwise specified,

11. Install gate or ball valve at each location where a water line is connected to a piece of equipment other than items mentioned above.

12. Install a check valve on each hot water return line where it connects to a hot water storage tank or a water heater.

13. Handles, hand wheels (including dishwasher fill valve handles) and operating nuts shall be furnished of steel, brass, or cast iron and shall be removable. Unless specified to be loose key type, handles shall be securely fastened to their stems. On exposed outdoor valves, omit operating handles and provide operating nuts.

14. Provide a handle or a key for each five, or fraction thereof, loose key valves, bibs, or stops and deliver them to the project OAR.

3.14 VALVES - GAS SERVICE

A. A gas readily accessible shut-off stop shall be installed on each gas line entering a building immediately prior to the point it enters the building. Unless otherwise specified or indicated, shut-off valves for lines entering a permanent structure, buildings or portable buildings, shall be installed in a vertical riser above grade.

1. Gas shut off valve for portable buildings – In addition to the gas readily accessible shut-off stop specified above, a dedicated Gas shut off valve shall be provided in a marked Yard Box, for each portable building to facilitate relocation/removal of building without the need to shut off gas to entire school.

B. Gas Shut off valve within a building – A gas shut off valve with handles shall be accessible and serviceable within an access panel. Install valve minimum 3 feet above floor but less than 7 feet above floor.

C. In addition to locations specified, gas shut off valve shall be installed at following locations:

1. Install a lubricated plug gas shut off valve on any line connected to gas main or header at master assembly.

2. Install a lubricated plug gas shut off valve before entering any building or structure.

3. Install a gas valve on each outlet, in addition to any gas stop furnished with equipment.

4. Service to laboratory gas cocks shall be furnished with a special precision check valve, located downstream from gas stop servicing room outlet at each laboratory cock. Unless otherwise specified, 1/8-inches bore shall be provided for each outlet cock.

5. Install a gas shut-off valve on each gas line serving 2 or more gas outlets in same room. Service stop shall be installed not more than 7 feet above floor, and shall be in the room it serves.

6. Install a gas shut-off valve on inlet side of each gas pressure regulating valve.

7. Gas shut-off valves to be furnished with equipment.

8. Install gas shut-off valve at not more than 1,000 foot intervals on each gas main.

9. At multi-story buildings, provide gas-shut off valve(s) to isolate and control each floor or level. Install valves in a concealed manner in walls with access panels.

10. Gas shut-off valves in classrooms and locations subject to tampering shall be protected while remaining accessible.

D. When a gas-shut off valve adjacent to gas-fired equipment is indicated in Contract Documents it shall be furnished and installed as part of Work of this section.

E. When electrical wall switches with emergency push button are specified for controlling gas outlets at Laboratory Classrooms, provide main shut-off gas valve with normally closed electric solenoid valve within an accessible access panel.

3.15 ELECTROLYSIS PREVENTION

A. Brass nipples, 6 inches, with recognized brass unions; flanges shall be furnished and installed at locations described herein. Flanges shall be installed with complete insulating component consisting of gasket bolt sleeves and bolt washers. Dielectric insulators shall be installed at following locations:

1. Where special applications indicated on Drawings require an insulation flange or brass union, with 6-inch brass nipple to be installed in a condensate line, or steam line, flange insulation shall be of a high temperature type, suitable for continuous operation at temperatures up to 220 degrees F. for condensate and 400 degrees F. for steam.

2. Where steel or cast iron in ground connects to copper or brass piping above ground, transition from steel or cast iron pipe to copper or brass pipe shall be provided in an accessible location.

3. Underground dielectric connections shall be furnished in accessible yard boxes.

4. Above ground dielectric connections shall be exposed; or if in finished rooms shall be located in accessible access boxes.

3.16 UNDERGROUND PIPE MARKERS

A. Pipe markers shall be furnished according to Section 22 0553: “Plumbing Identification”

B. Underground Caution Tape shall be placed 12 to 18 inches above the utility line. The Caution Tape shall be a designated color and marked with the appropriate name for the specific type of utility pipe as follows:

1. Yellow – with the words: CAUTION GAS LINE BELOW

2. Blue – with the words: CAUTION WATER LINE BELOW

3.21 DEPTH OF SEWER LINES

A. Minimum depth of below grade sewer lines shall be 24 inches to centerline of pipe. Sewer lines shall slope ¼ inch per foot minimum, unless otherwise indicated. Minimum depth at Owner property line shall be 6 feet, unless otherwise required.

3.24 PEDESTAL DRINKING FOUNTAINS

A. Tailpiece material: copper DWV pipe and fittings.

B. Install clean-out fitting on the vertical part of the tailpiece for future maintenance.

3.25 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose from the project site.

3.26 PROTECTION

A. Protect Work of this section until Substantial Completion.

END OF SECTION

SECTION 23 0130

HVAC AIR DUCT CLEANING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section includes cleaning of the following existing air duct systems:

1. Supply system.
2. Return system.
3. Exhaust and Transfer system.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 23 3000 - Air Distribution.
3. Section 23 0700 - HVAC Insulation.
4. NADCA Standard ACR.
5. NADCA General Specification for the Cleaning & Restoration of Commercial HVAC Systems.
6. UL181 Standard for Factory-Made Air Ducts and Air Connectors.

1.02 DEFINITIONS

A. ACR: Assessment, Cleaning, and Restoration of HVAC Systems.

B. ASCS: Air systems cleaning specialist.

C. HEPA: High Efficiency Particulate Arrestance.

D. HVAC: Heating, Ventilation and Air Conditioning.

E. NADCA: National Air Duct Cleaners Association.

F. OEHS: Office of Environmental Health & Safety.

G. SDS: Safety Data Sheet.

H. SMACNA: Sheet Metal and Air Conditioning Contractors' National Association.

I. UL: Underwriters Laboratories.

1.03 SUBMITTALS

A. Qualification Data for ASCS as indicated on NADCA General Specification.

B. Strategies and Procedures Plan before starting the work.

C. Cleanliness Verification Report at the project completion.

1.04 QUALITY ASSURANCE

A. ASCS Qualifications:

1. Certification: Employ an ASCS certified by NADCA on a full-time basis.

2. Supervisor Qualifications: Certified as an ASCS by NADCA.

B. UL Compliance: Comply with UL 181 “Standard for Factory-Made Air Ducts and Air Connectors” requirement.

C. Cleaning Conference: Conduct conference at Project site. Review methods and procedures related to HVAC air-distribution system cleaning including, but not limited to, review of the cleaning strategies and procedures plan.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine HVAC air-distribution equipment systems to determine appropriate methods, tools, and equipment required for performance of the Work.

B. Perform "Project Assessment and Recommendation" according to current NADCA ACR Standard.

C. Prepare written report listing conditions detrimental to performance of the Work.

D. Proceed with work only after unsatisfactory conditions have been corrected, and OAR’s approval has been obtained.

3.02 PREPARATION

A. Prepare a written plan that includes strategies and step-by-step procedures. At a minimum, include the following:

1. Supervisor contact information.

2. Work schedule including location, times, and impact on occupied areas.

3. Methods and materials planned for each HVAC component type.

4. Required support from other trades.

5. Equipment and material storage requirements.

6. Exhaust equipment setup locations.

B. Use the existing service openings, as required for proper cleaning, at various points of the HVAC system for physical and mechanical entry and for inspection. Refer to Construction Documents for quantities.

C. Comply with current NADCA ACR Standard, "Guidelines for Constructing Service Openings in HVAC Systems" Section.

3.03 CLEANING

A. Comply with current NADCA ACR Standard Requirement.

B. Do not use any chemicals in the process of cleaning unless there is a significant reason. Using any kind of chemicals is subject to the OAR’s approval. Prior to the application of any chemical, ASCS is required to submit SDS document of proposed cleaning materials to OAR in order to obtain product approval from OEHS. Do not apply any material unsafe for hard metal surfaces.

C. Systems and Components to be Cleaned by a qualified ASCS:

1. Air devices for supply and return air.

2. Ductwork:

a. Supply-air ducts, including turning vanes and reheat coils, to the air-handling unit.

b. Return-air ducts to the air-handling unit.

c. Exhaust-air and Transfer-air ducts.

D. Perform cleaning before air balancing or mark the position of manual volume dampers and air-directional mechanical devices inside the system prior to cleaning. Restore them to their marked position on completion of cleaning.

E. Use duct-mounted access doors, as required, for physical and mechanical entry and for inspection.

1. Install additional duct-mounting access doors to comply with duct cleaning standards. Comply with requirements in Section 23 3000 "Air Distribution" for additional duct-mounting access doors.

2. Disconnect and reconnect flexible ducts as needed for cleaning and inspection. Replace damaged and deteriorated flexible ducts. Comply with requirements in Section 23 3000 "Air Distribution" for flexible ducts.

3. Disconnect and reconnect flexible connectors as needed for cleaning and inspection. Replace damaged and deteriorated flexible connectors Comply with requirements in Section 23 3000 "Air Distribution" for flexible connectors.

4. Replace damaged fusible links on fire and smoke dampers. Replacement fusible links shall be same rating as those being replaced. Comply with requirements in Section 23 3000 "Air Distribution" for fusible links.

5. Remove and reinstall ceiling components to gain access for duct cleaning. Clean ceiling components after they have been removed and replaced.

F. Particulate Collection and Odor Control:

1. Where venting vacuuming system inside building, use HEPA filtration with 99.97 percent collection efficiency for 0.3-micron size or greater particles.

2. When venting vacuuming system outside building, use filtration to contain debris removed from the HVAC system and locate exhaust down wind and away from air intakes and other points of entry into building.

G. Clean the following metal-duct system components by removing visible surface contaminants and deposits:

1. Air outlets and inlets: registers, grilles, and diffusers.

2. Supply, return, and exhaust fans including fan housings, plenums (except ceiling supply and return plenums), scrolls, blades or vanes, shafts, baffles, dampers, and drive assemblies.

3. Air-handling-unit internal surfaces and components including mixing box, coil section, air wash systems, spray eliminators, condensate drain pans, humidifiers and dehumidifiers, filters and filter sections, and condensate collectors and drains.

4. Coils and related components.

5. Return-air ducts, dampers, and actuators, except in ceiling plenums and mechanical room.

6. Supply-air ducts, dampers, actuators, and turning vanes.

7. Dedicated exhaust and ventilation components.

H. Mechanical Cleaning Methodology:

1. Source-Removal Cleaning Methods: The HVAC system shall be cleaned using source-removal mechanical cleaning methods designed to extract contaminants from within the HVAC system and to safely remove these contaminants from the facility. No cleaning method, or combination of methods, shall be used that could potentially damage components of the HVAC system or negatively alter the integrity of the system.

   a. Use continuously operating vacuum-collection devices to keep each section being cleaned under negative pressure.

   b. Cleaning methods that require mechanical agitation devices to dislodge debris that is adhered to interior surfaces of HVAC system components shall be equipped to safely remove these devices. Cleaning methods shall not damage the integrity of HVAC system components or damage porous surface materials such as duct and plenum liners.

2. Cleaning Mineral-Fiber Insulation Components:

   a. Fibrous-glass thermal or acoustical insulation elements present in equipment or ductwork shall be thoroughly cleaned with HEPA vacuuming equipment while the HVAC system is under constant negative pressure and shall not be permitted to get wet according to current NADCA ACR Standard. Replace fibrous-glass duct liner that is damaged, deteriorated, or delaminated or that has friable material, mold, or fungus growth.

   b. Cleaning methods used shall not cause damage to fibrous-glass components and will render the system capable of passing the HVAC System Cleanliness Tests, refer to current NADCA ACR Standard.

   c. Fibrous materials that become wet shall be discarded and replaced in-kind.

3. Clean coils and coil drain pans according to current NADCA ACR Standard. Keep drain pan operational. Rinse coils with clean water to remove latent residues and cleaning materials; comb and straighten fins.

4. Provide operative drainage system for wash-down procedures.

5. Biocidal Agents and Coatings: Apply Biocidal agents and coatings if active fungal growth is reasonably suspected or where unacceptable levels of fungal contamination have been verified. Apply Biocidal agents and coatings according to manufacturer's written recommendations and OEHS registration listing after the removal of surface deposits and debris.

    a. When used, Biocidal treatments and coatings shall be applied after the system is rendered clean.

    b. Apply Biocidal agents and coatings directly onto surfaces of interior ductwork.

    c. Sanitizing agent products shall be registered by the OEHS as specifically intended for use in HVAC systems and ductwork.

6. Debris removed from the HVAC system shall be disposed of according to applicable Federal, state, and local requirements.

I. Cleanliness Verification:

1. Verify cleanliness according to current NADCA ACR Standard, "Verification of HVAC System Cleanliness" Section.

2. Verify cleanliness after mechanical cleaning and before application of treatment, including biocidal agents and protective coatings.

3. Perform visual inspection for cleanliness. If no contaminants are evident through visual inspection, the HVAC system shall be considered clean. If visible contaminants are evident through visual inspection, those portions of the system where contaminants are visible shall be re-cleaned and re-inspected.

4. Additional Verification:

    a. Perform surface comparison testing or NADCA vacuum test.

    b. Conduct NADCA vacuum gravimetric test analysis for nonporous surfaces.

5. Prepare a written cleanliness verification report. At a minimum, include the following:

    a. Written documentation of the success of the cleaning.

    b. Site inspection reports, initialed by supervisor, including notation on areas of inspection, as verified through visual inspection.

    c. Surface comparison test results if required.

d. Gravimetric analysis (nonporous surfaces only).

e. System areas found to be damaged.

3.04 CONNECTIONS

A. Reconnect ducts to fans and air-handling units with existing flexible connectors after cleaning ducts and flexible connectors. Replace existing damaged and deteriorated flexible connectors.

B. For fans developing static pressures of 5-inch w.g. and higher, cover replacement flexible connectors with loaded vinyl sheet held in place with metal straps.

C. Reconnect terminal units to supply ducts with existing flexible ducts or replace damaged and deteriorated existing flexible ducts with maximum 12-inch lengths of new flexible duct.

D. Reconnect diffusers to low-pressure ducts with existing flexible ducts or replace damaged and deteriorated existing flexible ducts with maximum 60-inch lengths of flexible duct clamped or strapped in place.

E. Reconnect existing and new flexible ducts to metal ducts. Comply with requirements in Section 23 3000 "Air Distribution" for flexible ducts.

3.05 RESTORATION

A. Restore and repair HVAC air-distribution equipment, ducts, plenums, and components according to current NADCA ACR Standard, "Restoration and Repair of Mechanical Systems" Section.

B. Restore service openings capable of future reopening. Comply with requirements in Section 23 3000 "Air Distribution" Include location of service openings in Project closeout report.

C. Replace fibrous-glass materials that cannot be restored by cleaning or resurfacing. Comply with requirements in Section 23 3000 "Air Distribution".

D. Replace damaged insulation according to Section 23 0700 "HVAC Insulation".

E. Ensure that closures do not hinder or alter airflow.

F. New closure materials, including insulation, shall match opened materials and shall have removable closure panels fitted with gaskets and fasteners.

G. Reseal fibrous-glass ducts. Comply with requirements in Section 23 3000 "Air Distribution".

3.06 FIELD QUALITY CONTROL

A. Gravimetric Analysis: Sections of metal-duct system, chosen randomly by OAR may be tested for cleanliness according to NADCA vacuum test gravimetric analysis.

1. If analysis determines that levels of debris are equal to or lower than suitable levels, system shall have passed cleanliness verification.

2. If analysis determines that levels of debris exceed suitable levels, system cleanliness verification will have failed and metal-duct system shall be re-cleaned and re-verified with no additional cost to OWNER.

B. Verification of Coil Cleaning: Cleaning shall restore coil pressure drop to within 10 percent of pressure drop measured when coil was first installed. If original pressure drop is not known, coil will be considered clean only if it is free of foreign matter and chemical residue, based on thorough visual inspection.

C. Report results of tests in writing.

END OF SECTION

SECTION 23 0500

COMMON WORK RESULTS FOR HVAC

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. This Section provides the basic mechanical requirements that apply to the Work of Division 23.

B. Related Requirements:

1. Division 01: General Requirements.
2. Division 26: Electrical.

1.02 REGULATORY REQUIREMENTS

A. Materials, fabrication, equipment, and installation shall comply with industry standards and code requirements. Where manufacturer's recommendations exceed industry standards, the manufacturer's recommendation shall establish the minimum standard. As a minimum, standards from the following organizations shall apply:

1. AMCA - Air Movement and Control Association.
2. ANSI - American National Standards Institute.
3. ASME - American Society of Mechanical Engineers.
    a. ASME Boiler and Pressure Vessel Code.
    b. ASME B31 - Code for Pressure Piping.
4. AHRI - Air-Conditioning, Heating, and Refrigeration Institute.
5. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers.
6. ASTM - American Society for Testing and Materials.
    a. ASTM A53 - Specification for Welded and Seamless Pipe.
7. CSA - Canadian Standards Association.
8. FM Global - Factory Mutual Global
9. IAPMO - International Association of Plumbing and Mechanical Officials.
10. NFPA - National Fire Protection Association.
11. OSHA - Occupational Safety and Health Administration.
12. SMACNA - Sheet Metal and Air Conditioning CONTRACTORs' National Association.
13. UL - Underwriters Laboratories Inc.

14. Intertek (ETL Certification).

B. Materials, fabrication, equipment, and installation shall comply with federal, state, and local codes including, but not limited to, the following:

1. CBC, California Building Code, and CMC, California Mechanical Code.

a. Latest edition as adopted by the City of Los Angeles, the County of Los Angeles, and the State of California including amendments effective on the Effective Date of the Contract.

2. California Code of Regulations, Title 8, Industrial Relations, Division 1, Chapter 4, Division of Industrial Safety.

3. OSHA - Occupational Safety and Health Administration.

4. CDPH – California Department of Public Health.

5. SCAQMD - South Coast Air Quality Management District.

C. Specifications or Drawings shall not be construed to permit deviation from the requirements of governing codes unless approval has been obtained from legally constituted authorities having jurisdiction, and the Architect. The Contract Documents may contain more stringent requirements than those legally required.

D. Permits and Fees: Refer to the General and Supplementary Conditions.

1.03 SUBMITTALS

A. Provide submittals in accordance with Section 01 3300: Submittal Procedures and with specific requirements of Division 23 sections, as applicable.

B. After Architect's approval, the above information shall become the basis for inspecting and testing materials and actual installation procedures performed in the Work.

C. Shop Drawings: Submit one additional copy when control diagrams having line voltage connections are indicated. Shop Drawings shall be specifically prepared for the Work of this Project. Drawings prepared in accordance with requirements of Section 01 3113: Project Coordination and Section 01 3300 may be provided by the Architect to serve as a background for the Shop Drawings. Shop Drawings shall comply with the requirements of Section 01 3113 and Section 01 3300 and shall indicate at a minimum:

1. Complete system layout of equipment, components, ductwork, and piping, indicating service clearances, duct and pipe sizes, fitting types and sizes, top or bottom of duct and pipe elevations, distances of ducts, pipes and equipment from building reference points and hanger / support locations. All the above items shall be coordinated on the shop drawings according to the requirements of Section 01 3113.

2. Schedule and description of equipment, ductwork, piping, fittings, valves, dampers, and controllers.

1.04 PROJECT RECORD DOCUMENTS

A. Comply with provisions of Section 01 7700: Contract Closeout.

B. Project Record Drawings:

1. Provide a complete set of mechanical and control system drawings in AutoCAD and, if available, BIM, complete with external reference drawings, fonts, blocks and plotter pen color/line thickness settings on CD-ROM. Also submit one set of full-size reproducible plots on vellum and three sets of prints.

2. Before Contract Completion, deliver corrected and completed prints to the OAR. Delivery of project record documents to the OAR does not relinquish responsibility of furnishing required information omitted from project record documents.

C. Operation and Maintenance Manuals:

1. Submit operation and maintenance manuals in required form and content. If no revisions are required, furnish one additional copy. If revisions are required, one copy shall be returned with instructions for changes; perform such changes and return manuals. Manuals shall be bound in accordance to Section 01 7700. Deliver manuals to the OAR. Submit an electronic copy of the entire manual in PDF file format.

2. Contents of Manual:

a. Title sheet with Project name, including names, addresses and telephone number of CONTRACTOR, installer, and related equipment suppliers.

b. Manufacturer's operating instructions including, but not limited to, the following:

1) Identification of components and controls.

2) Pre-start checklist and start-up procedures.

3) Normal operation settings and checklists.

4) Pre-shut down checklist and shut down procedures.

5) Trouble shooting checklist and guidelines.

6) Recommendations for optimum performance.

7) Warnings and safety precautions on improper or hazardous operational procedures or conditions

c. Manufacturer's product data and parts and maintenance booklet for each item of equipment furnished under Division 23 that includes the following as a minimum:

1) Manufacturer’s model, identification and serial numbers.

2) Exploded view of assembly drawings identifying each component or part with the relevant part number.

3) Directory of manufacturer’s representatives, service CONTRACTORs and part distributors.

4) Maintenance and trouble-shooting instructions, including schedule for preventive maintenance, periodic inspection and cleaning criteria.

d. Project Record Drawings: Complete set of mechanical and control system drawings in 50 percent reduced print format shall be furnished with the manual. Submit the above record drawings on CD-ROM in AutoCAD and, if available, BIM, complete with external reference drawings, fonts, blocks, and plotter pen color/line thickness settings.

e. Testing, Adjusting, and Balancing reports: Submit as specified in Section 01 4525.

f. South Coast Air Quality Management District (SCAQMD) permits to install and operate boilers, water heaters and other fuel burning equipment and third-party source test reports as required by SCAQMD to allow start-up and operation of equipment.

g. Los Angeles County industrial waste permits.

h. Valve directory complete with location, function, size, and model of each valve with reference to the project record drawings.

i. Equipment and component identification chart complete with location, function, size, and model of each equipment or component with reference to the project record drawings.

1.05 COORDINATION

A. Contract Documents indicate extent and general arrangement of Work under Division 23. CONTRACTOR shall coordinate work in accordance with Section 01 3113 requirements and make adjustments as required to provide maximum headroom, a neat arrangement to keep passageways and openings clear to provide accessibility and provisions for maintenance, and to meet code requirements.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Delivery and Storage: Deliver materials to Project site in their original unopened containers with labels intact and legible at time of delivery. Store in strict accordance with manufacturer's recommendations.

B. Do not store plastic pipe or materials in direct sunlight.

1.07 PRELIMINARY OPERATION

A. OAR may require any portion of mechanical Work to be operated before Substantial Completion. Such operation shall be in addition to regular tests, demonstrations and instructions required under the Contract Documents, and shall be performed as required.

B. Notify the Project Inspector at least 24 hours in advance of lighting or re-lighting pilots.

1.08 TRAINING OF OWNER PERSONNEL

A. Training of Owner’s personnel shall include:

1. A minimum of 8 hours of on-site overview of the overall Mechanical System at the substantial completion of the entire job.

2. Refer to Division 23 sections for specific training on each of the components of the Mechanical System.

B. Contract shall include the cost of training Owner operation and maintenance personnel in operating, adjusting, maintenance, trouble-shooting, and Project site repair of each component, equipment, or system provided under this Contract.

C. Operational and maintenance training shall be conducted on the Project site, unless indicated otherwise.

D. Upon completion of Owner training, a completion certificate indicating the nature of the training and a description of the systems, complete with equipment and component lists shall be issued to each trainee. The certificate should be issued in duplicate with one copy retained by OAR.

E. An attendance sheet with the names and signatures of all participants attending the training shall be submitted to the OAR and kept as part of the project documents.

1.09 GUARANTEES AND DAMAGE RESPONSIBILITY

A. Sound of water flowing in piping shall not be transmitted to building structure. Operation of mechanical system shall not produce operational sounds that can be heard outside of rooms enclosing apparatus or equipment.

PART 2 – PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Unless otherwise specified, materials and equipment shall be new, in good and clean condition. Equipment, materials, and components shall be of the make; type and model number noted on Drawings or specified. Pieces of equipment of the same type shall be by the same manufacturer.

B. Whenever an item is listed by a single proprietary name, with or without model number and type, it shall be for purpose of design only, to indicate characteristics and quality desired. Proprietary designation listed on Drawings, or listed first in Specifications, is used as a basis for design to establish a standard for quality and performance and space requirements.

C. HVAC equipment products from different manufacturers are never identical. Equipment approved as being equal is interpreted as being equivalent in capacity, performance and quality. The dimensions, weight, configuration and utility requirements could be quite different from the equipment used as the basis of design. Due to these differences, additional coordination and adjustments by the CONTRACTOR are required. For the equipment to be deemed truly equal, the additional coordination and adjustments by the CONTRACTOR should not incur any additional cost to the Owner and any additional labor to the design team.

D. Equipment and materials indicated or required to be installed outdoors shall be of the type that is designed, manufactured, listed or approved by authorities having jurisdiction for outdoor installation by being resistant to the adverse effects of weather. All the additional protective measures against outdoor weather required by the manufacturers' installation instructions and prevalent practice shall be provided.

E. For substitution of materials or products, refer to the General Conditions.

PART 3 – EXECUTION

3.01 GENERAL INSTALLATION REQUIREMENTS

A. CONTRACTOR shall arrange for a preconstruction meeting with IOR prior to the installation of refrigerant piping to discuss installation and testing requirement.

3.02 SERVICE INTERRUPTIONS, OFF-SITE, GAS AND WATER

A. Schedule Work so there shall be no service interruptions of existing systems or systems during normal hours of operation of affected systems and facilities.

B. When service interruptions are mandatory, arrange in advance with the OAR as to time and date of such interruptions.

C. Systems, which are interrupted, shall be returned back into operation in such manner that they will function as originally intended.

3.03 CUTTING, NOTCHING, AND BACKING

A. Conform to California Building Code, Title 24, Part 2, for notches and bored holes in wood and for pipes and sleeves embedded in concrete and for cuts in steel, as detailed on structural Drawings.

B. Where pipes or ducts pass through or are located within one inch of any construction element, install a resilient pad, 1/2-inch-thick minimum, to prevent contact.

C. Furnish all necessary provisions for recesses, chases, and accesses and provide blocking and backing as necessary for proper reception and installation of mechanical Work.

3.04 LOCATION OF PIPING AND EQUIPMENT

A. Location of piping, apparatus and equipment as indicated on Drawings is approximate and shall be altered to avoid obstructions, preserve headroom, and provide free and clear openings and passageways.

B. Trenches parallel to footings shall not be closer than 18 inches to the face of footings and shall not be below a plane having a downward slope of 2 horizontal to one vertical, from a line 9 inches above bottom of footing.

C. Pipe in tunnels shall be installed close to one side of tunnel to provide maximum space for passage. Pipe shall not be installed through crawl hole unless otherwise specified or detailed on Drawings.

D. Place equipment in locations and spaces indicated, disassemble and/or reassemble equipment as required by Project conditions.

3.05 VALVE AND SPECIALTY APPLICATIONS

A. Install thermostatic/ electronic expansion valves as close as possible to distributors on evaporators.

1. Secure bulb to clean, straight, horizontal section of suction line using two bulb straps. Do not mount bulb in a trap or at bottom of the line.

2. If external equalizer lines are required, make connection where it will reflect suction-line pressure at bulb location.

B. Install safety relief valves where required by ASME Boiler and Pressure Vessel Code. Pipe safety-relief-valve discharge line to outside according to ASHRAE 15.

C. Install moisture/liquid indicators in liquid line near condensing unit.

D. Install filter dryers in liquid line between compressor and thermostatic expansion valve.

E. Consult refrigeration equipment manufacturer to determine the need for a receiver.

F. Install receivers sized to accommodate pump-down charge.

G. See Evaluations for discussion of flexible connectors.

H. Install flexible connectors at condensing unit.

3.06 PIPING AND JOINTS INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems; indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Shop Drawings.

B. For piping and joints installation requirements refer to section 23 0513: Basic HVAC Materials and Methods.

3.07 TESTS AND TESTING

A. Tests shall be as required under the applicable sections of Division 23, including this Section.

B. Tests required by other sections of the Contract Documents include the following:

3. Test and balance of mechanical equipment and systems: Refer to Section 01 4525: Testing, Adjusting, and Balancing for HVAC.

4. Hydrostatic test of boilers: Refer to Section 01 4525: Testing, Adjusting, and Balancing.

5. Test of smoke and fire detectors: Refer to Division 26: Electrical.

C. Additional tests may be required in the case of products, materials, and equipment if:

1. Submitted items are altered, changed, or cannot be determined as exactly conforming to the Contract Documents.

2. Performance testing and results may also be required on certain items which are as specified, including fan, and pump performance.

D. Piping Tests:

1. Perform tests required to demonstrate that operation of mechanical systems and their parts are in accordance with Specifications covering each item or system,

and furnish materials, instruments and equipment necessary to conduct such tests. Tests shall be performed in presence of the Project Inspector of Record and Owner Authorized Representative. Work shall not be concealed or covered until required results are provided.

2. Pressure gages furnished in testing shall comply with CPC. Air shall be bled from lines requiring hydrostatic or water tests.

3. Systems shall be pressure-tested in accordance with pipe testing schedule below. Pipe test shall indicate no loss in pressure after a minimum duration of 48 hours at test pressures indicated. Where local codes require higher test pressures than specified herein for fire sprinkler systems, local codes shall govern.

4. Fuel gas lines shall be first tested with piping exposed, before backfilling trenches or lathing; second with piping in finished arrangement, backfilled and paved where required, and walls finished.

5. Piping systems could be tested as a unit or in sections, but entire system shall successfully meet requirements specified herein, before final testing by the Project Inspector.

6. Repair of damage to pipes and their appurtenances or to any other structures resulting from or caused by these tests, shall be provided.

7. Refrigerant piping shall be pressure tested by using a certified calibrated electronic testing equipment.

8. Refrigerant Piping Brazing and Deburring Testing procedures for each building:

    a. OWNER will randomly select maximum Two installed split systems serving each building for the inspection of proper brazing and deburring of associated refrigerant piping systems. Maximum Two copper fittings within the piping systems shall be randomly selected by OWNER and cut and removed by CONTRACTOR for inspection.

    b. If a sign of oxidation is found on any selected fittings or adjacent piping, then the tested split system piping, and all connected equipment including evaporator and condensing unit with sign of oxidation shall be removed and replaced in entirety by CONTRACTOR at no additional cost to OWNER.

    c. If a burr is found on any selected joint, then the entire tested refrigerant piping system shall be removed and replaced by CONTRACTOR at no additional cost to OWNER.

    d. CONTRACTOR shall repair all tested systems after OWNER’s inspection and approval at no additional cost to OWNER.

    e. Inspector of Record shall be present during the replacement of the defective systems and the repair of the tested systems by CONTRACTOR.

    f. If one or more selected split systems fail, then Two additional split systems (not including the ones previously tested) shall be selected for

further testing. Selection of additional split systems and retesting will be performed until neither oxidation nor bur is found within the tested systems.

9. Pipe Testing Schedule:

System Tested	Test Pressure (psig)	Test With:
Hot water heating system piping and chilled water piping	150	Water
Vacuum pump or condensate pump discharge and condensate return piping	150	Water
Refrigeration piping	600	Dry nitrogen

E. Equipment Performance Assurance Tests:

1. Before operating any equipment or systems, a thorough check shall be performed to determine that systems have been flushed and cleaned as required and that equipment has been properly installed, aligned, lubricated, and serviced. Factory instructions shall be checked to verify installations have been completed and recommended lubricants have been installed in bearings, gearboxes, crankcases, and similar equipment. Care shall be furnished in lubricating bearings to avoid damage by over-lubrication and blowing out seals. Equipment shall also be checked for damage that may have occurred during shipment, after delivery, or during installation. Damaged equipment, products, and materials shall be replaced or repaired as required.

2. Upon completion of the above, adjust the system settings to within normal operating conditions to prevent the system from being damaged upon start-up.

3. Run-test the equipment after start-up for five consecutive days. Tests shall include operation of heating, ventilating, and air conditioning equipment and systems for a period of not less than two 8-hour periods at 90 percent of the full specified heating and cooling capacities. If equipment passes, install new filters. If equipment fails, it shall be adjusted and retested until system meets all applicable codes.

4. Equipment Start-up Reports: For each equipment or system on which start-up is performed, submit 8 copies of start-up report for review by the Architect.

   a. The start-up report shall include the manufacturer's standard start-up form completed and signed by the start-up technician.

5. Provide, maintain, and pay costs for equipment, instruments, and operating personnel as required for specified tests.

6. Provide electric energy and fuel required for tests.

7. Final adjustment to equipment or systems shall meet specified performance requirements.

8. Equipment, systems, or Work deemed defective during testing shall be replaced or corrected as required. Test until satisfactory results are provided.

F. Specific Coordinated Plan for Test and Balance:

1. Provide a narrative of the operational intent that clearly describes the function and sequence of operation of each component, equipment, or system installed. Instruct designated Owner personnel in the operation of the installed systems.

2. Prior to final test and balance, mechanical equipment and systems shall be operated and tested as indicated in Paragraph 3.04.E above to demonstrate satisfactory overall operation of the installed systems.

3. Immediately before starting tests, air filter media shall be replaced with new media.

4. An accurate means of measuring air flow and temperatures shall be furnished to balance air supply, return, and exhaust systems so uniform temperatures occur in every room and design airflow is obtained through registers, diffusers, and grilles.

5. Systems shall be adjusted to provide airflows indicated including maximum fresh air and maximum return air. Dampers shall be checked for proper settings and operation. Air and water inlet and leaving temperatures at coils shall be checked. Complete operational data including airflows, room temperatures, fan speeds, motor currents, plenum, and duct static pressures shall be tabulated.

6. Welding performed as part of this Division may be subject to radiographic inspections at random in accordance with requirements specified in Section 23 0513: Basic HVAC Materials and Methods.

3.08 NOISE AND VIBRATION REDUCTION

A. Correct noise or vibration caused by mechanical systems. Provide all necessary adjustments to specified and installed equipment and accessories to reduce noise to the lowest possible level

B. Correct noise or vibration problems caused by failure to install work in accordance with Contract Documents. Include all labor and materials required as a result of such failure. Pay for re-testing of corrected noise or vibration problems by the project acoustical consultant including travel, lodging, test equipment expenses, etc.

3.09 PROTECTION, CARE AND CLEANING

A. In addition to storage criteria of the General Conditions, and provisions under Section 01 5000: Construction Facilities and Temporary Controls, the following shall be provided:

1. Provide for the safety and good condition of materials and equipment until Substantial Completion. Protect materials and equipment from damage.

2. Protect installed Work.

3. Replacements: In case of damage, immediately provide repairs and/or replacements as required.

4. Protect covering for bearings, open connections to tanks, pipe coils, pumps, compressors and similar equipment.

5. Interior of ductwork shall be maintained free of dirt, grit, dust, loose insulation, and other foreign materials.

6. Air handling equipment shall not be operated until building is cleaned and air filters are installed.

7. Fixtures, piping, finished brass or bronze, and equipment shall have grease, adhesive, labels, and foreign materials removed. Chromium, nickel plate, polished bronze or brass Work shall be polished. Glass shall be cleaned inside and out.

8. Before initial start-up and again before Substantial Completion, piping shall be drained and flushed to completely remove grease and foreign matter. Pressure regulating assemblies, traps, strainers, boilers, flush valves, and similar items shall be thoroughly cleaned. Tag system with an information tag listing responsible party and date of element, before initial start-up and again before Substantial Completion. Compressed air, oil, and gas piping shall be blown out with oil-free compressed air or inert gas. Refrigerant piping shall be cleaned as specified.

END OF SECTION

SECTION 23 0513

BASIC HVAC MATERIALS AND METHODS

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. This Section prescribes basic materials and methods generally common to the Work of Division 23.

B. Related Requirements:

~~1.~~ Division 01: General Requirements.

2. Division 22: Plumbing.

3. Division 23: Heating, Ventilating, and Air-Conditioning.

4. Division 26: Electrical.

1.02 SUBMITTALS

A. Provide in accordance with Division 01, Section 23 0500 and specific requirements of each section of Division 23.

1.03 QUALITY ASSURANCE

A. Standards: Comply with applicable national, state, and local codes and standards: ASTM, ASME, and ANSI. Federal Specifications, AWWA, CISPI, NFPA, FM Global, UL, CPC (California Plumbing Code), CMC (California Mechanical Code), CSA.

B. Qualifications of Manufacturer: Products used in the Work of this Section shall be produced by manufacturers regularly engaged in manufacture of similar items and with a history of successful production as reviewed by the Architect.

C. Bronze or Brass alloy valves shall contain less than 15% zinc content.

1.04 COORDINATION

A. Coordinate related Work in accordance with provisions of Section 01 3113: Project Coordination.

PART 2 – PRODUCTS

2.01 GENERAL

A. Provide the following products if they are indicated in the Contract Documents or if they are required for the proper installation, function or operation of equipment, systems or components indicated in the Contract Document.

B. Provide the following products as a complete assembly with required accessories for a complete and functioning entity in compliance with governing codes and applicable standards as specified in Section 23 0500, manufacturer's instructions or as required.

1. Omission of minor details in the Contract Documents does not waive and/or otherwise relinquish compliance with the above requirements.

2.02 MANUFACTURERS AND MATERIALS

A. Air and Dirt Separators:

1. AS-1 Furnish Spirotherm, Bell and Gossett, or Wessels air and dirt separation fitting on the hot water heating system, chilled water system, and closed loop fluid cooler system. Fittings shall be fabricated steel, rated for 150 psig design pressure and selected for less than one foot of water pressure drop and entering velocity not to exceed 4 feet per second at specified GPM. Performance curves from the unit manufacturer shall be furnished as part of the submittal for each unit. Units shall be furnished with internal copper coalescing medium to facilitate maximum air and dirt separation and suppress turbulence. Units shall be furnished with stainless-steel strainer and collector tube. Provide integral high capacity float actuated air vent at top fitting of tank. Furnish cast iron float actuated air vent rated at 150 psig, threaded to the top of the fitting. Unit shall be furnished with the bottom of the vessel extended for dirt separation with the system connection nozzles equidistant from the top and bottom of the vessel and shall include a blowdown connection and valve.

2. Approved manufacturers: Bell and Gossett, Spirotherm, Wessels.

B. Ball Valves: Bronze, 2 inches and smaller:

1. BV-1 600 PSI CWP, 150 PSI SWP 2-piece construction reinforced Teflon seats, full port, adjustable packing gland, stainless ball and stem, threaded ends.

a. Approved products: NIBCO T-585HP-66-LF or T-585-70-66, Milwaukee BA-400S.

2. BV-2 600 PSI CWP, 150 PSI SWP 2-piece construction, bronze body, reinforced Teflon seats, adjustable packing gland, (no threaded stem designs allowed), threaded ends.

a. NIBCO T-585HP-LF or T-585-70, Milwaukee BA-400.

3. Ball Valves in Insulated Piping: Use extended operating handle of non-thermal conducive material, and protective sleeve that allows operation of valve

without breaking the vapor seal or disturbing insulation and memory stops that are fully adjustable after insulation is applied. NIBCO Nib-Seal Handle.

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C. Piping:

1. Piping shall be continuously and permanently marked with manufacturer's name, type of material, size, pressure rating, and the applicable ASTM, ANSI, and UL listing. On plastic pipe, date of extrusion must also be marked.

2. For hydronic piping and fittings refer to Above Ground HVAC Piping: Section 23 2013, and Underground HVAC Piping: Section 23 2016.

3. Refrigeration piping shall be ACR copper tubing, type L hard-drawn. In instances where refrigeration lines are installed in an inaccessible location and must be snaked through conduit or a trench, that portion of tubing required to complete connections through conduit or trench may be soft drawn. Maintain entire system clean and dry during installation. The pipe shall be sealed until installed. All fittings shall be WORT ACR type. Only LR 90 allowed for change of direction.

4. Unless otherwise indicated, main refrigerant lines from condensing unit to related indoor coil shall be of sizes specified by the manufacturer.

D. Pipe Isolators/Insulators:

1. PLA-1 Absorption pad shall be not less than 1/2 inch thick, unloaded. Pad shall completely encompass pipe.

   a. Approved manufacturers: Holdrite, LSP, Stoneman, Potter-Roemer, Trisolator, PR-Isolator.

2. lastic cushion to form an insulating liner and eliminate metal to metal contact when securing copper tubes and pipes in air conditioning and refrigeration insulation preventing galvanic erosion. (Acoustical Type for Sound Absorption)

   a. Provide Hydra-Zorb Cushion Clamps, LSP Products Group Acousto Clamp on non-insulated piping.

   b. Provide Klo-Shure coupling clamp on insulated piping.

PART 3 – EXECUTION

1.01 EXAMINATION

A. Examine areas and conditions under which Work of this Section shall be performed. Correct conditions detrimental to proper and timely completion of Work. Do not proceed until unsatisfactory conditions have been corrected.

1.02 INSTALLATION

A. Provide all materials and equipment for the Work. Furnish and install necessary apparatus, parts, materials, and accessories.

B. Pipe Installation:

1. Install piping at right angles and parallel to building walls and provide an orderly grouping of proper materials and execution. Diagonal runs are prohibited unless specifically indicated otherwise.

2. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal where applicable.

3. Piping system installation shall avoid obstructions, preserve headroom, and provide free and clear openings and passageways, whether indicated or not. Coordinate the work of other divisions to avoid interference.

4. If obstructions or the work of other divisions prevent installation of piping or equipment as indicated by the drawings, perform minor deviations in coordination with the Architect.

5. Reduce fitting where any change in pipe size occurs. Bushings shall not be furnished unless specifically reviewed by the Architect or indicated on Drawings.

6. Piping subject to expansion or contraction shall be anchored in a manner, which permits strains to be evenly distributed. Swing joints or expansion loops shall be installed. Seismic restraints shall be installed so as not to interfere with expansion and contraction of piping. Seismic loops made of braided SS connection required at all building separations.

7. Immediately after lines have been installed, openings shall be capped or plugged to prevent entrance of foreign materials. Caps shall be left in place until removal is necessary for completion of installation.

8. Couplings shall not be used except for the pipe runs longer than the standard pipe.

9. Heating Hot and Chilled Water piping shall pitch up to a high point at a slope of 1/4 inch in 10 feet in the direction of flow. Where supply and return lines are exposed, both lines shall pitch in same direction.

10. Install Brass ground joint union at points of connection between dissimilar metals for cathodic protection. Insulate copper tubing from ferrous materials and hangers with Hydrasorb pipe clamp.

11. Provide saddles to protect pipe insulation as required.

12. Install piping free of sags and bends.

13. Select system components with pressure rating two times greater than system operating pressure.

14. Arrange piping adjacent to the equipment to allow inspection, service, and maintenance. Install accessories in accessible locations to allow for service and inspection. Install access doors or panels as specified in Division 08 Section "Access Panels Frames" if valves or equipment requiring maintenance are concealed behind finished surfaces.

15. Refrigeration Piping:

    a. Arrange a refrigerant piping pre-installation meeting between Contractor, IOR, and OAR to review and confirm installation method.

    b. Install refrigerant piping according to current version of ASHRAE 15.

    c. Do not charge refrigerant into the split system prior to testing procedure by contractor and acceptance by LAUSD.

    d. Both hard and soft-drawn refrigeration piping shall be straight and free from kinks.

    e. Vapor line oil traps shall be installed on bottom of vertical risers and inverted oil trap shall be installed on top of vertical risers.

    f. Slope refrigerant piping as follows:

        1) Install horizontal suction lines and restrictions with a uniform slope of one-inch per 10 feet downward to compressor.

        2) Install traps and double risers to entrain oil in vertical runs.

    g. Flare nuts required on suction lines shall be of short forged or frost-proof type. Other fittings shall be standard sweat-soldered type. Elbows and return bends shall be long radius type. 45 degree fittings are prohibited.

    h. Joints shall be brazed and tested according to the section 23 0500 “Common Work Results for HVAC”. Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter. Field fabricated lines shall be thoroughly deburred, flushed and cleaned before

connection. Bleed nitrogen through lines during brazing, maintain Nitrogen flow rate of 1.75 cubic feet per minute or more using a pressure regulator. Cap and seal lines when not completed and connected to equipment.

i. Copper to copper joints shall be installed with Sil-Fos 15, Silvaloy 15.

j. Copper to steel and copper to brass joints shall be soldered with Harris Products Group Safety-Silv 56 or equal complying with ANSI/AWS A5.

k. When brazing or silver soldering nitrogen must be presented and flow in the piping. Remove solenoid-valve coils and sight glasses; also remove valve stems, seats, and packing, and accessible internal parts of refrigerant specialties. Do not apply heat near expansion-valve bulb.

l. Brazing or Debrazing shall always be conducted with nitrogen purging through the refrigeration system.

m. Insulate all refrigerant lines. For insulation materials, refer to Section 23 0700: HVAC Insulation.

n. Install pipe sleeves at penetrations in walls and floor assemblies, ceilings, etc. sized to permit installation of full-thickness insulation.

o. Install refrigerant piping in rigid or flexible conduit in locations where exposed to mechanical injury.

p. Install piping with adequate clearance between pipe and adjacent walls and hangers or between pipes for insulation installation.

q. Seal penetrations through fire and smoke barriers according to Division 07 Section "Penetration Firestopping."

r. Seal pipe penetrations through exterior walls according to Division 07 Section "Joint Sealants" for materials and methods.

s. Identify refrigerant piping and valves according to Division 23 Section "HVAC Identification."

16. Refrigerant Pipe Joint Construction:

Ream ends of copper pipes and tubes and remove burrs.

Pipe shall be free of any contamination before assembly.

Fill pipe and fittings with nitrogen during brazing to prevent oxidation.

C. Pipe Sleeves and Plates:

1. Pipe sleeves shall be provided where pipes intersect footings or foundation walls and sleeve clearances shall provide for footing settlement, but not less than one-inch all around pipe.

2. Provide and install pipe sleeves of Schedule 40 black steel pipe or Schedule 40 PVC plastic pipe in concrete or masonry walls, footings, and concrete floors below grade. Provide and install adjustable submerged deck type sleeves at locations where pipes pass through concrete floors, except concrete slab floors on grade, and at locations where soil pipe for floor type water closets passes through concrete floors.

3. Sleeve penetrations of floors, walls and ceiling to allow for free motion of piping. Provide 24 gage galvanized iron pipe and chrome-plated escutcheon plates. Pack annular space between pipe and sleeve with incombustible material such as fiberglass and seal each end with mastic to provide a waterproof seal.

4. Sleeves shall provide 1/2-inch clearance around pipes, except plastic pipe shall have 1-inch clearance. Caps of deck type sleeves shall be removed just prior to installation of pipe. Area around sleeves shall be smooth and without high or low spots. Sleeves in walls shall not extend beyond exposed surface of wall. Sleeves in concrete floors and walls shall be securely fastened to forms to prevent movement while concrete is being placed.

5. Piping installed on a roof shall clear the roof surface by 10 inches minimum, with or without insulation. Bottom of individual fittings may infringe on 10 inches clear space but not groups of fittings or fittings located within 27 inches of each other.

6. Stiles shall be provided to facilitate crossing of piping when parallel piping runs are laterally greater than 12 inches out-to-out, or any pipe is higher than 18 inches, and more than 40 feet long or runs between 2 or more major pieces of equipment or housings greater than 20 feet apart. Stiles shall be not less than 20 inches wide with a minimum tread depth of 10 inches. Where stiles are required, they shall be located so greatest obstructed distance is 30 feet.

7. Where pipes pass through waterproofed walls, floors, or floors on grade, sealant with Link-Seal Modular Seals, between pipe and sleeve to provide a waterproof joint. Where earth is in contact with pipe on both sides of a wall or foundation, the waterproof joint is not required. Commercial rubber compression units may be furnished instead of sealed sleeves if reviewed by the Architect.

8. A swing joint, or other required device, shall be furnished and installed in hot water lines with 10 feet of sealant or compression joint to allow for expansion.

~~D.~~ D:

D. Unacceptable Welds and Repairs to Welding:

1. Welds containing any of the following types of imperfections shall be deemed defective Work:

    a. Cracks of any type.

    b. Zones of incomplete (in excess of 1/32 inch) fusion or penetration.

    c. Elongated slab inclusions longer than 1/4 inch.

    d. Groups of slag inclusions in welds having an aggregate length greater than thickness of parent metal in a length 12 times the thickness of the parent metal.

    e. Undercuts greater than 1/32 inch.

    f. Overlaps, abrupt ridges or valleys.

2. When a defective weld is detected by examination as outlined above, two additional welds shall be tested at locations selected by the Project Inspector. If the two selected welds demonstrate compliant welding, then the two tested welds shall be deemed to be in compliance. Welding revealed by the tests to be defective work shall be removed, repaired, and re-tested.

3. If either of the two selected welds demonstrates welding deemed to be defective Work, all welding in that portion of the Work shall be deemed defective Work and either: all welds shall be cutout, prepare new ends for welding and weld to comply with this Specification, or test all welds, removing and repairing only such welding deemed to be defective Work.

4. Repair welding shall be performed in a manner in full compliance with ASME B31. The welded joints or repairs shall be spot examined with UT or radiographic tests in accordance with foregoing requirements.

5. Owner shall cause to be performed additional random UT or radiographic examinations of welds. Owner shall be responsible for the costs of any UT and radiographic examinations found to be in compliance with specified requirements.

6. Installer shall be responsible for the costs of UT and radiographic re-examinations of welds deemed defective Work and not in compliance with this Specification and shall repair or replace said welds in accordance with specified requirements.

E. Welding Rods: Submit a written list of materials and proposed type of welding rods for review by the Architect.

F. Backing Rings: Backing rings may be submitted for installation provided the Product Data is submitted with the material list.

G. Qualification Tests for Low-pressure Welding:

1. Tests shall be performed on 3-inch standard weight pipe ASTM A53, Grade A, and shall be welded by acetylene and electric arc. Each sample shall consist of two pieces, each 10 inches long, with 30-degree bevel at point weld.

2. Two 20-inch samples shall be performed in the 2G and two 20-inch samples in the 5G positions, with positions defined in Section IX, ASME Boiler and Pressure Vessel Code. Welds shall have reinforcement ground or machined flush to the surface of the pipe before testing. Samples shall be tested as full section tensile.

3. Weld shall develop a load of 90 percent of 50,000 psi, i.e., 45,000 psi or shall develop a fracture in parent metal.

4. Each qualified welder shall carry an identification card listing welder's name, date of test, and type of welding tests passed; signed by the welder and the laboratory.

5. A valid certificate of qualification issued in compliance with requirements of the ASME Boiler Pressure Vessel Code Section IX shall qualify a welder for issuance of a certificate for low-pressure pipe welding.

H. Certificates of Qualification for Welding of Unfired Pressure Vessels:

1. Certificates of qualification shall be issued by a laboratory recognized by the Owner in compliance with the requirements of the ASME Boiler Pressure Vessel Code Section IX. Qualifications shall be for both acetylene and arc welding of Schedule 40 ASTM A53, Type B, steel welded or seamless pipe in the Horizontal Position (2G) and the Horizontal Fixed Position (5G) as defined by said code.

a. Note: Certificate described above is not valid unless it has been issued while welder was working for his current employer, and unless welder has performed type of work described by certificate in the preceding three months. Requirements for possession of a valid certificate shall not be waived for welders fabricating unfired pressure vessels when the Specifications require compliance with ASME code or when welding pipe carries working pressures greater than 75 psi and temperatures greater than 250 degrees F.

I. Pipe Joints and Connections:

1. Pipe and tubing shall be cut per IAPMO Installation Standards. Pipe shall have rough edges or burrs removed so that a smooth and unobstructed flow shall be provided.

2. Threaded Pipe: Joints in piping shall be installed according to the following service schedule:

   a. Refrigerant and Soap Piping: Litharge and glycerine, or Expando, Gasoila.

   b. All other services Furnish sealant, suitable and as reviewed by the Architect.

3. Threads on pipe shall be cut with sharp, clean, unblemished dies and shall conform to ANSI/ASME B1.20.1 for tapered pipe threads.

4. Joint compounds shall be smoothly placed on male thread and not in fittings. Threaded joints shall be installed tight with tongs or wrenches and sealant of any kind is not permitted. Failed joints shall be replaced with new materials. Installation of thread cement or sealant to repair a leaking joint is not permitted.

5. Sharp-toothed Stillson, or similar wrenches, is not permitted for the installation of brass pipe or other piping with similar finished surfaces.

J. Copper Tubing and Brass Pipe with Threadless Fittings:

1. Silver brazed joints shall be used for attaching fittings to non-ferrous metallic refrigerant piping.

2. Non-pressure gravity fed condensate lines may be soldered with 95/5 solder.

3. Silver brazing alloy, Class BCUP-5. Surfaces to be joined shall be free of oil, grease, and oxides. Socket of fitting and end of pipe shall be thoroughly cleaned with emery cloth and wiped to remove oxides. After cleaning and before assembly or heating, flux shall be installed to each joint surface and spread evenly. Heat shall be applied in accordance with instructions in the Copper Tube Handbook issued by Copper Development Associates. Joints constructed of rough bronze fittings shall be provided as recommended by manufacturer.

4. Do not overheat piping and fittings when installing silver brazing.

5. Joints in non-ferrous piping for services not covered above shall be installed with solder composed of 95/5 tin/antimony, ASTM B32, Grade 5A. Surfaces to be jointed shall be free of oil, grease, and oxides. Sockets of fitting and end of pipe shall be thoroughly cleaned with emery cloth to remove oxides. Solder flux shall be sparingly installed, and solder added until joint is completely filled. Do not overheat. Excess solder, while plastic, shall be removed with a small brush in order to provide an uninterrupted fillet completely around joint. Random inspection of joints shall be conducted by Project Inspector to ensure joints are lead-free.

K. Strainers: Strainers shall be installed on each water main (except for fire line) downstream of the meter, above grade, when a pressure regulator assembly is not installed. Main strainer shall be of Y-flange type. On closed loop chilled and heating hot water systems pump systems, a strainer shall be installed at each pump inlet and upstream of each flow control valve assembly. The control valve assembly may include a modulating temperature control valve and a flow-limiting valve, manufactured by Griswold, AutoFlow, Flow Control Industries, Inc..

L. Hangers and Supports:

1. Piping shall be securely fastened to building structure by approved iron hangers, supports, guides, anchors, and sway braces to maintain pipe alignment to prevent sagging and to prevent noise or excessive strain on piping due to uncontrolled or seismic movement under operating conditions. Hangers and supports shall conform to Manufacturer's Standardization Society Specification SP-69. Hangers shall be relocated as required to correct unsatisfactory conditions that may become evident when system is placed into operation. Appliances, heat exchangers, storage tanks, and similar equipment shall be securely fastened to structure in accordance with seismic requirements. Outdoor metal hangers and supports shall be hot-dipped galvanized steel, unless otherwise specified.

2. Piping shall not be supported by wire, rope, wood, plumbers' tape, or other non-recognized devices.

3. Hangers and supports shall be designed to support weight of pipe, fittings, weight of fluid and weight of pipe insulation, and shall have a minimum factor of safety of 5, based on ultimate tensile strength of material installed.

4. Burning or welding of any structural member under load is not permitted. Field welding not specified on Drawings or reviewed Shop Drawings is not permitted without review by Architect and DSA.

5. Burning holes in beam flanges or other structural members is not permitted without review by the Architect and DSA.

6. Pipe hangers on piping covered with low temperature insulation shall be installed on outside of insulation and not in contact with pipe unless otherwise detailed on Drawings. Insulation shall be protected by 18 gage galvanized steel shield, with a minimum length of 10 inches, installed completely around pipe covering between covering and hanger. Installing hangers directly on pipe and butting adjoining sections of insulation against hanger is permitted provided void and hanger rod are properly insulated and sealed so that no sweating occurs at hangers.

7. Hanger rods shall be fastened to structural steel members with suitable beam clamps. Clamps shall be Tolco, Carpenter & Patterson, Fee and Mason, or equal, as follows:

a. Tolco I beam, Fig.62 for maximum 1000 lbs.

b. Tolco I or WF beam, Fig. 329, for maximum of 1290 lbs.

8. Hanger rods shall be fastened to concrete inserts in concrete slabs or beams. Inserts shall be Tolco, Carpenter & Patterson, Fee and Mason, or equal, as follows:

a. Tolco Fig.310 for maximum of 600 lbs.

b. Tolco Fig. 309 for maximum of 1140 lbs.

9. For fastening to wood ceilings, beams, or joists, furnish Anvil Fig. 128R, Anvil Fig. 153, Tolco 78, or equal pipe hanger flange fastened with drive screws. Under wood floors, 3/8-inch hanger rods shall be hung from 2-inch by 2-inch by 1/4-inch angle clips 3-inch long, with two staggered 10d nails, clinched over joist.

10. Hanger rod sizes for copper, iron, or steel pipe: 3/8 inch for pipe sizes 1/2 inch through 2-inch, 1/2 inch for pipe sizes 3-inch, 4-inch and 5-inch, 5/8 inch for pipe size 6-inch, and 3/4 inch for 8-inch and 10-inch pipe.

11. Turnbuckles, if furnished, shall provide a load carrying capacity equal to that of the pipe hanger with which they are being installed.

12. Pipe hangers shall be of the same size, or nearest larger manufactured size available, as pipe or tubing on which they are being installed.

13. Hangers, clamps, and guides furnished for support of non-metallic pipe shall be padded with 1/8-inch-thick rubber, neoprene, or soft resilient cloth.

14. Where special pipe-supporting requirements in the Specifications conflict with any standard requirements specified herein, the Specification requirements shall govern.

15. Vertical Piping:

a. Vertical pipe risers shall be securely supported with riser clamps of recognized type. Risers in reinforced concrete buildings shall be furnished with extension clamps fastened to pipe above each concrete floor slab with extended arms of clamp to rest on slab. Clamps shall be provided with lead or Teflon liners when installed on copper tubing. Clamps shall be plastic-coated when installed on non-ferrous pipe or tubing.

a. Copper tubing in sizes 1 ½-inches and larger and steel pipelines passing up through building shall be supported at each floor of building or every 15 feet whichever is less.

b. Copper tubing sizes 1 ¼-inch and smaller shall be supported at not intervals not more than 6 feet on center. Special provisions shall be installed for vertical lines subject to expansion and contraction caused by operating temperature differences.

c. Vertical cast iron pipelines shall be supported from each floor and at its base. Malleable iron or steel pipe clamps with minimum thickness of 1/4 inch shall be furnished and fastened around pipe for support.

16. Horizontal Piping:

a. Roof Mounted Piping: Pressure and non-pressure piping shall be supported from channels, stands, clamps, trapezes, rollers, or structures mounted on 100% rubber, UV resistant rooftop supports with reflective strips, Dura-Block. Roller type supports shall be provided below and above pipe to prevent its dislodgement. Bottom of pipes shall clear the roof surface by 10 inches.

1) At PVC roofing provide walk tread, polyester reinforced, UV resistant, with surface embossment at rooftop supports. Heat welding of walk pads shall only be done by manufacturer certified installers.

a) Sika-Sarnafil and Carlisle: Walk tread shall be no more than one inch larger than the plan area of the pipe support blocks and adhered to the roof membrane with Sika 1A or Carlisle Universal Single-Ply sealant, as applicable.

b) Johns Manville: Walk tread shall be installed under the pipe support blocks and adhered to the blocks, if possible, and left loose laid on top of the PVC roof system. Walk-pad shall have a minimum of 4 inches of material past perimeter on all 4 sides of block.

2) Built-up roofing: Provide APP granulated modified torch-down at each pipe support block. Torch-down shall extend 2 to 4 inches beyond the edges of the block and adhered by torch application over existing cap sheet membrane. This work shall be performed by a certified roofer.

b. Piping Mounted to Underside of Roof and Decks and from Structure:

1) Insulated space heating hot water supply and return piping shall be supported with Tolco Figure 4, B-Line Figure B3140, Anvil Figure 212, or equal, steel hangers with welded eye rods to permit hinge movement at point of attachment of hangers. Hinge movement at point of support shall be provided by

welded eye linked rods Tolco Figure 101L, B-Line Figure B3211X, Anvil Figure 278X.

2) Chilled water supply and return piping, condenser water piping, insulated refrigerant piping may be supported with Tolco Figure 1, B-Line Figure B3100, Anvil Figure 260, or equal, hangers with rods, turnbuckles and inserts suitable for above hangers.

c. Maximum hanger and support spacing shall conform to CPC schedule for horizontal piping installed above grade.

17. A hanger or support shall be installed close to the point of change in direction of a pipe run, in either a horizontal or vertical plane.

18. When practicable, supports and hangers for cast iron soil pipe shall be installed as close as possible to joints and when hangers or supports are not located within one foot of a branch line fitting, an additional hanger or support shall be installed at fitting.

M. Flashings:

1. Each pipe, duct, or gas-fired equipment vent passing through roof shall be installed with waterproof flashing.

2. Flashing or flanges on pipes, vents, and ducts passing through a tile or slate roof shall be constructed of sheet lead. Flashing for pipes and heater vents passing through a roof shall be 4-pound soft sheet lead. Flashing and flanges for ducts and heater vents passing through exterior walls shall be 22 gage sheet metal. Flanges and flashing shall be installed waterproof at point of connection with pipe or duct. No soldered joints or welding on roof flashings will be allowed.

3. Lead flashing and flanges shall be constructed of 4-pound sheet lead with burned joints. Flange of lead flashing or lead flange on a duct shall extend out onto roof a minimum of 12 inches from pipe or duct. Lead flashing shall extend up the pipe or duct not less than 7 inches.

4. Sheet metal flashing shall be constructed of 24 gage galvanized sheet steel. Flanges on these flashings shall extend out onto roof a minimum of 10 inches from pipe or duct. Flanges on ducts through exterior walls shall extend out from duct a minimum of 2 ½ inches. Flanges on gas-fired equipment single-wall vents shall be of ventilated type. Type B gas vents through a roof shall be furnished with non-ventilated flashing as per NFPA Pamphlet 211.

5. Cast iron, steel, brass, and copper pipe, which terminate less than 18 inches above roof, shall be furnished with a combination counter-flashing and vandal-proof hood for protection against water, birds and foreign matter. Cast iron, steel, brass and copper pipe, which does not terminate within 18 inches of roof,

shall be furnished with a counter-flashing sleeve. Pipe, which terminates more than 18 inches above roof, shall be furnished with protection against entrance of water, birds, and foreign matter.

6. Counter-flashing and combination counter-flashing sleeves and vandal-proof hoods shall be cast iron, vandal-proof, threaded, sealed or approved gas-heated sleeve type. Counter-flashing sleeves on each of these items shall extend down over flashing a minimum of 3/4 inch.

7. Flashing and flanges on ducts shall be installed waterproof at point of connection to the duct by mechanical means. Storm collars shall be securely screwed and installed waterproof around appliance vent pipe immediately above flashing.

8. Vent piping above roof shall be furnished with a combination counter-flashing sleeve and vandal-proof hood.

9. All outdoor air distribution flexible connectors shall be provided with sunshield.

N. Equipment Installation: Install roof or floor mounted equipment on level platforms, housekeeping pads or curbs and provide sound, vibration and seismic control measures per Section 23 0548, unless indicated otherwise whether indicated on drawings or not.

END OF SECTION

SECTION 23 0553

HVAC IDENTIFICATION

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes: Marking and identification required on mechanical piping systems, ducts, controls, valves, apparatus, etcetera.

B. Related Requirements:

1. Division 01: General Requirements.

2. Section 23 0513: Basic HVAC Materials and Methods.

3. Section 23 0900: HVAC Instrumentation and Controls.

12. Section 23 8000: Heating, Ventilating and Air Conditioning Equipment.

1.02 SUBMITTALS

A. Submit in accordance with Division 01 and Section 23 0500: Common Work Results for HVAC.

B. Submit product data and installation instructions for each item specified.

C. Submit Samples of materials.

1.03 QUALITY ASSURANCE

A. Comply with provisions of:

1. Section 23 0500: Common Work Results for HVAC.

2. ANSI/ASME A13.1: Scheme for the Identification of Piping Systems.

3. APWA: Uniform Color Code.

Or

4. IAPMO: Uniform Plumbing Code (UPC).

PART 2 – PRODUCTS

2.01 MATERIALS

A. General: Piping systems, controls, valves, apparatus, etc., except those that are installed in inaccessible locations in partitions, walls, and floors, shall be permanently identified.

2.03 INSTRUMENTS AND CONTROLS

A. Identify panel-mounted instruments and controls with engraved bakelite nameplates permanently affixed to panel boards.

B. Identify alarm indicating devices and alarm reset devices by nameplates.

C. Identify damper motors and automatic valves, flow switches, pressure switches, etc., with embossed aluminum or plastic tape affixed to controller, indicating service and setting.

2.04 EQUIPMENT

A. Identify each major piece of equipment with engraved bakelite nameplates permanently affixed to the equipment, indicating the room numbers it services, Equipment identification designation shall be the same to its designation indicated on the "As-Built Drawings". Room numbers in the nameplates shall correspond to the final room numbers.

2.05 ABOVE GRADE PIPE IDENTIFICATION

A. Identify pipes by means of colored labels with directional flow arrows and identification of the pipe content, in conformance to ANSI/ASME A13.1 or the UPC.

B. Materials: Precoiled acrylic plastic with clear polyester coating, all-temperature, self-adhering, as manufactured by Brady, Brimar Industries, Seton, Stranco, Inc., or equal.

C. Size:

Outside Diameter of Pipe or Insulation	**Length of Color Field**	**Size of Letter**
¾ to 1 ¼-inch	8-inch	½-inch
1 ½ to 2-inch	8-inch	¾-inch
2 ½ to 6-inch	12-inch	1 ¼-inch"
8 to 10-inch	24-inch	2 ½-inch"
over 10-inch	32-inch	3 ½-inch

D. Colors: As indicated in schedule.

E. Locations:

1. On accessible piping, whether insulated or not (including mechanical rooms, attic and ceiling spaces); except that labels shall be omitted from piping where contained material is obvious due to its connection to fixtures (such as faucets, water closets, etc.).

2. Near each valve and branch connection in such accessible piping.

3. At each pipe passage through wall or floor.

4. At not more than 20 feet spacing on straight pipe run between bands required in 2 and 3 above.

5. At each change in direction.

F. Application: Install on clean surfaces free of dust, grease, oil, or any material that will prevent proper adhesion. Replace non-adhering or curling labels with new labels, as required by the Project Inspector.

G. Schedule:

Content of Pipe	**Legend**	**Background Color**	**Lettering Color**
Steam	Steam	Yellow	Black
Steam condensate	Stm. Cond.	Yellow	Black
Chilled water supply	Chill water supply	Green	White
Chilled water return	Chill water return	Green	White
Instrument air	Inst. Air	Green	White
Heating hot water supply	Heating hot water supply	Yellow	Black
Heating hot water return	Heating hot water return	Yellow	Black
Air conditioning condensation drain	A/C condensate drain	Green	White

2.07 IDENTIFICATION OF AIR CONDITIONING EQUIPMENT

A. Provide identification markers to locate air conditioning equipment above T-bar ceilings. Install 3/4 inch to one inch diameter colored self-adhesive dots to T-bar ceiling grid indicating point of access. The following identification markers shall be recorded on the project record documents:

1. Fire Damper and Combination Fire/Smoke Fire Damper: Red.

2. Manual Volume Dampers, Relief Dampers, Motorized Volume Dampers: Blue.

a. Supply air: Full dot.

b. Return air: Half dot.

3. Fan coil unit: Green.

4. Filter Location if separate from fan coil: Yellow.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Correct detrimental conditions prior to commencing the Work of this Section. Install markers and identification tags as specified with materials and installation procedures recommended by manufacturer.

B. Place tracer wire on top of non-metal utility lines allowing some slack. Do not wrap tracer wire around pipe. Fasten tracer wire in place at approximately 10 feet on centers with non-metal ties.

C. Install underground detectable pipe marking tape continuously buried 8 to 10 inches above the buried utility pipe. Wrap tape on pipe risers up to a height of 12 inches above grade.

3.02 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 23 0700

HVAC INSULATION

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. Condensate drain piping from air conditioning equipment.
2. Vacuum and condensate pump discharge lines over 50 feet in length.
3. High and low temperature equipment.
4. Heating hot water supply and return piping.
5. Chilled water supply and return piping.
6. Refrigerant piping.
7. Supply and return air ducts for heating and cooling systems air ducts.

B. Related Requirements:

1. Division 01: General Requirements.
2. Section 23 0500: Common Work Results for HVAC.
3. Section 23 0513: Basic HVAC Materials and Methods.
4. Section 23 0553: Mechanical Identification.
5. Section 23 2013: Above Ground HVAC Piping.
6. Section 23 2016: Underground HVAC Piping.
7. Section 23 3000: Air Distribution.
8. Section 23 5000: Central Heating Equipment Condensing Boilers In-Kind Replacement.
9. Section 23 5001: Central Heating Equipment Non-Condensing Boilers In-Kind Replacement.
10. Section 23 5007: Central Heating Equipment Electric Boilers.

11. Section 23 8000: Heating, Ventilating and Air Conditioning Equipment.

1.02 REFERENCES

A. American Society for Testing and Materials International (ASTM):

1. ASTM C167 - Standard Test Methods for Thickness and Density of Blanket or Batt Thermal Insulations.

2. ASTM C209 - Standard Test Methods for Cellulosic Fiber Insulating Board.

3. ASTM C302 - Standard Test Method for Density and Dimensions of Preformed Pipe-Covering-Type Thermal Insulation.

4. ASTM C411 - Standard Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation.

5. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

6. ASTM C533 - Standard Specification for Calcium Silicate Block and Pipe Thermal Insulation.

7. ASTM C534 - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form.

8. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation.

9. ASTM D5116 - Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products.

10. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

11. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials.

12. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

13. ASTM G22 - Standard Practice for Determining Resistance of Plastics to Bacteria.

B. Underwriters Laboratories Inc.:

1. UL 181 - Standard for Factory-Made Air Ducts and Air Connectors.

2. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials.

C. National Fire Protection Association:

1. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems .

2. NFPA 90B - Standard for the Installation of Warm Air Heating and Air-Conditioning Systems.

3. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials.

1.03 SUBMITTALS

A. Submit in accordance with Division 01 and Section 23 0500: Common Work Results for HVAC.

1. Complete material list of items to be furnished and installed under this Section.

2. Manufacturer's specifications and other data required demonstrating compliance with the specified requirements.

3. Shop Drawings, catalog cuts and manufacturer's data indicating insulation, jacketing, adhesives, and coating. Insulating materials shall be certified by manufacturer to comply with the California quality standards for insulating materials.

4. Display sample cutaway sections.

5. Manufacturer's recommended method of installation procedures, which will become part of this Section.

1.04 QUALITY ASSURANCE

A. Qualifications of Manufacturer and Installer, Materials, Fabrication, Execution, and Standard of Quality: Comply with provisions stated under Section 23 0500: Common Work Results for HVAC and Section 23 0513: Basic HVAC Materials and Methods.

B. Test Ratings:

1. Comply with provisions stated under Section 23 0500 and 23 0513 with emphasis on ASTM E84, NFPA 255, or UL 723. ASTM C167, ASTM

C302, UL label or listing of satisfactory test results from the National Institute of Standards and Technology, or a satisfactory certified test report from an acceptable testing laboratory. Approval by the State Fire Marshal is required.

2. Furnish labels, legibly printed with the name of the manufacturer or listings indicate that fire hazard ratings do not exceed those specified for materials proposed for installation. Flame spread index of not more than 25 and smoke developed rating not exceeding 50.

3. Tests shall be performed on each item individually when insulation, vapor barrier covering, wrapping materials, or adhesives are installed separately at the Project site.

4. Test insulation, vapor barrier covering, wrapping materials and adhesives as an assembly when they are factory composite systems.

C. Regulatory Requirements: Insulation furnished and installed under this Section shall conform to the requirements of the California Building Code Parts 4, Mechanical Code, Part 5, Plumbing Code and Part 6, Energy Code.

D. All chemically based products such as sealers, primers, fillers, adhesives, etc. shall meet the California air quality regulations.

1.05 PRODUCT HANDLING

A. Protection, Replacement, Delivery and Storage: Comply with provisions stated under Sections 23 0500: Common Work Results for HVAC and 23 0513: Basic HVAC Materials and Methods.

PART 2 – PRODUCTS

2.01 MATERIALS

A. General:

1. Piping insulating material shall be fire resistant, non-corrosive, shall not break, settle, sag, pack or disintegrate under vibration, nor absorb more than 1 percent moisture by weight.

2. Piping insulating material shall be furnished with thickness indicated in Table 1, unless otherwise noted on the drawings, and shall furnish thermal resistance in the range of R-4.0 to 4.6 in accordance with inch at 75 degrees F. For any other value of R, insulation thickness shall be calculated accordingly and submitted for review.

3. Asbestos in any quantity in insulating material is not permitted.

4. Provide insulation materials, adhesives, coatings, sealants, fitting covers, and other accessories with a fire hazard rating not to exceed 25 for flame spread, 25 for fuel contributed and 50 for smoke developed, except for materials listed as follows:

   a. Nylon anchors for installing insulation to ducts or equipment.

   b. Treated wood blocks.

5. Flame-proofing treatments subject to moisture damage are not permitted.

6. Minimum insulation thicknesses of piping systems shall be according to Table 1.

TABLE 1 - MINIMUM PIPING INSULATION THICKNESS (in Inches)

Piping System Type	**Temp. Range (Degrees F)**	**For all accessories at equipment connections**	**< 1.0 "**	**1.0" to 1.5"**	**1.5" to 4"**	**4" to 8"**	**8" and larger**
Space Heating Systems (Hot Water)							
Hot Water	Up to 200	0.5	1.5	1.5	2.0	2.0	2.0
Space Cooling Systems (Chilled Water and Refrigerant)							
Chilled Water and refrigerant	40-60	0.5	0.5	0.5	1.0	1.0	1.0
Low Pressure Refrigerant	Below 40	1.0	1.0	1.5	1.5	1.5	1.5
Condensate Drain from Air Conditioning Equipment	Insulate condensate drain lines within building, in room, inside walls and above ceilings.	0.5	0.5	0.5	0.5		

7. For Underground HVAC Piping requirement refer to section 23 2016 Underground HVAC Piping.

8. For exterior piping, increase thicknesses of pipe insulation by 0.5 inch.

B. Lagging Adhesives: Shall be nonflammable and fire-resistant and shall have a maximum flame spread index of 25 and a maximum smoke developed index of 50 when tested in accordance with ASTM E84. Insulation finished with canvas shall be provided with laps adhered in accordance to manufacturer's recommendation. A

finish coat of same material shall be applied to entire outer surface of lagging cloth at coverage specified by manufacturer.

C. Canvas Jackets: Furnish 6 ounce in accordance with square foot minimum, 48 by 48 thread count canvas jacketing.

D. Insulation Jackets:

1. Exterior insulation exposed to weather shall be weatherproofed with Childers aluminum jacketing as basis of design, or Pabco, RPR, or equal. Jacketing shall be manufactured from 1100, 3105 or 5010 aluminum alloy with 3/16-inch corrugations. Smooth or embossed jackets may be permitted in special situations to match an existing installation. Jacketing shall be furnished with an integrally bonded moisture barrier over entire surface in contact with insulation. A minimum thickness of 0.016 aluminum jacketing is to be provided on ducts and piping. A minimum thickness of 0.020 shall be provided on tanks, equipment, and heat exchangers.

2. Insulated elbows, of 90 degrees and 45 degrees, with a nominal iron pipe size of ½-inch to 8-inch shall be provided with Childers aluminum Ell-Jacs insulation covers as basis of design, or Pabco, RPR, or equal, manufactured from 1100 aluminum alloy of 0.024-inch thickness. Insulated elbows with a nominal pipe size of 10 inches to 18 inches shall be provided with Childers 4-piece aluminum Ell-Jacs as basis of design, or Pabco, RPR, or equal.

3. Tees, Flanges, and Valve Insulation in Conjunction with Aluminum Jacketing: Furnish Childers Aluminum Special Fabrications Insulation Covers as manufactured by Childers Products Company, Pabco, RPR, or equal.

E. Adhesives: Adhesives shall be water based, UL Classified, meet the requirements of NFPA 90A and NFPA 90B, have been tested according to relevant ASTM requirements, and be acceptable to the State Fire Marshal. Name, type and method of installation shall be submitted for review.

F. Valve and Fitting Cover: When installed in conjunction with PVC jacketing, furnish Zeston 25/50 rated polyvinyl chloride fitting covers as manufactured by Johns Manville, Knauf Insulation, Speedline, or equal.

2.02 SPACE HEATING PIPING SYSTEM

A. General: Insulate heating hot water supply and return piping, including valves, strainers and fittings with insulation thickness as indicated on Table 1.

B. Materials:

1. Classes of Insulation:

a. Class A: Calcium silicate molded pipe insulation, suitable for service temperature up to 1200 degrees F, ASTM C533; Johns Manville Thermo-12 Gold, or equal. Fittings: diatomaceous silica thermal insulating cement.

b. Class B: Glass fiber molded pipe insulation suitable for service temperatures up to 850 degrees F. Pipe insulation shall be one piece, preformed, and provide a minimum R factor of 4.0 at 75 degrees F mean temperature. Insulation shall be faced with all-purpose fire-retardant vapor barrier jacket. Pipe insulation shall be Johns Manville Micro-Lok, Knauf Redi-Klad 1000, Owens Corning FIBERGLAS Pipe Insulation SSL II-ASJ, or equal.

c. Class C: Flexible open-cell melamine (foam insulation) suitable for service temperature -150 degrees F to 400 degrees F. Thermal conductivity at 75 degrees F, K = 0.26. Pipe insulation, one-piece pre-formed, laminated to heavy non-reinforced PVC jacket, with locking track, factory installed to jacket, to snap insulation and jacket onto pipe. Similar to TechLite 079 Series as manufactured by Accessible Products Co., or equal. Installation shall comply with manufacturers recommendations.

d. Class D: Mineral fiber pipe insulation suitable for service temperatures up to 1,200 degrees F. Pipe insulation shall be one-piece, preformed up to 3 inches thickness, and provide a minimum R factor of 4.0 at 75 degrees F mean temperature. Insulation shall be faced with all-purpose fire-retardant vapor barrier jacket. Pipe insulation shall be 8 pounds in accordance with cubic foot density by Roxul Techton 1200, Fibrex COREPLUS 1200, Industrial Insulation Group, LLC (IIG) MinWool-1200, or equal.

2. Locations and Class of Insulation Required:

TABLE 2 – LOCATIONS AND CLASS OF INSULATION REQUIRED

LOCATION	CLASS OF INSULATION
Boiler and Mechanical Equipment Room	A, B, C, or D
All Other Locations	A, B, C, or D

3. Fittings on indoor piping shall be covered with flush, hand-wrapped Class A, B, C, or D insulation, to match the adjoining pipe insulation and

covered with polyvinyl chloride fitting covers: Zeston 2000 25/50 by Johns Manville, Knauf Insulation Proto PVC Fitting Cover, Speedline Polyco Smoke Safe, or equal.

4. Adhesive: Fibrous Adhesive to bond calcium silicate to itself and non-porous surfaces.

2.03 COOLING PIPING SYSTEM INSULATION

A. General: Insulate chilled water supply and return piping and refrigerant piping.

B. Materials:

1. Classes of Insulation:

a. Class A: Expanded polystyrene pipe insulation, self-extinguishing type, either molded or extruded; Dow Chemical Co. STYROFOAM, ITW Insulation Systems XPS PIB, Foam-Control EPS, or equal.

b. Class B: Glass fiber molded pipe insulation ASTM C547. Pipe insulation shall be one piece, preformed, and provide a minimum R factor of 4 at 75 degrees F mean temperature. Insulation shall be faced with all-purpose fire-retardant vapor barrier jacket. Pipe insulation shall be Johns Manville Micro-Lok, CertainTeed Snap-On, Owens Corning FIBERGLAS SSL II-ASJ, or equal.

c. Class C: Expanded (foamed) urethane (polyurethane) or polyisocyanurate pipe insulation of self-extinguishing type molded or fabricated, Dyplast Products, LLC ISO-C1/2.0, ITW Trymer, Specialty Products & Insulation Co. Polyisocyanurate Pipe Insulation, Armacell Armalok, or equal.

d. Class D: Foamed plastic pipe insulation, self-extinguishing type, ASTM C534 Type 1 - tubular. Pipe insulation shall be one-piece preformed, flexible tubing type and provide a maximum K factor of 0.28 at 75 degrees F mean temperature. Pipe insulation shall be Armacell Armaflex, Aeroflex Aerocel, Rubatex INSUL-TUBE 180, or equal.

2. Locations and Class of Insulation Required: For thickness required, refer to Table 1 of this Section.

TABLE 3 – SERVICE, LOCATION AND CLASS OF INSULATION REQUIRED

SERVICE	LOCATION	CLASS OF INSULATION

Condensate drains from air conditioning equipment	Indoors at all locations including above ceilings and between stud walls	D
Refrigerant suction Liquid line as required	All locations except underground	D
All other piping, except underground	All locations except underground	A, B, C

3. Adhesives:

   a. Polystyrene adhesives: Synthetic rubber and resin adhesives specifically designed to adhere extruded and expanded rigid polystyrene and urethane insulation to themselves and to other porous and non-porous substrates.

   b. Vapor barrier laps and penetrations: Furnish protective coating and lagging adhesive on butt joints of foil-faced vapor barriers, and where pins and staples puncture facings.

2.04 HIGH TEMPERATURE EQUIPMENT INSULATION

A. General:

1. Insulate heat exchangers, hot water storage tanks, flash tanks, boiler breechings, and similar equipment operating at elevated temperatures up to 450 degrees F or 850 degrees F with high temperature insulation, jacket and material.

2. Do not insulate condensate receivers, hot water expansion tanks, hot water pump casings, chemical feeders, and factory insulated boilers.

B. Materials:

1. Equipment insulation shall be 1½-inch minimum fiberglass board or insulating blocks, or molded calcium silicate, ASTM C533-Type I, Johns Manville Thermo-12 Gold or 1000 Series Spin-Glas, Knauf Insulation Board, Owens Corning Fiberglas Series 700 or Fiberglas Insul-Quick, or equal.

2. Boiler breeching insulation shall be same as above except 2-inch thick minimum.

3. Adhesive: For calcium silicate, furnish fibrous adhesive of sodium silicate base.

2.05 LOW TEMPERATURE EQUIPMENT INSULATION

A. General:

1. Insulate water chillers, heat exchangers, air eliminators and similar equipment operating at reduced surface temperatures.

2. Do not insulate chilled water expansion tanks, and chemical feeders.

B. Materials:

1. Expanded polystyrene, 2-inch thick, self-extinguishing type, Dow Chemical Co.'s STYROFOAM, Owens Corning FOAMULAR, Foam-Control EPS, or equal, or 1½-inch thick expanded urethane (polyurethane) or polyisocyanurate, self-extinguishing type, Dyplast Products, LLC ISO-C1/2.0, ITW Trymer, Specialty Products & Insulation Co. Polyisocyanurate Pipe Insulation, or equal.

2. Canvas Jackets: 6 ounce in accordance with square foot minimum.

3. Vapor Barrier Laps and Penetrations: Furnish protective coating and lagging adhesive on butt joints of foil-faced vapor barriers and where pins and staples puncture facings.

2.06 DUCTWORK AND PLENUM INSULATION

A. General: Insulate ductwork and plenums with not less than the amount of insulation tabulated in Table 4. Insulation may be omitted under the following conditions:

1. Exposed return and supply air ductwork in the related conditioned space where the temperature sensor is located.

TABLE 4 – SUPPLY & RETURN AIR DUCTWORK AND PLENUMS MINIMUM INSULATION REQUIREMENTS

Location	Insulation Type per paragraph B
Exposed interior round and oval supply air ductwork located at Gyms and MPR.	DW-a
Exposed interior rectangular supply air ductwork located at Gyms and MPR.	L-a
Exterior locations of Health Units and Clinics.	DW-b
Exterior locations other than Health Units and Clinics.	L-b
All Sound Traps installed at Exterior locations.	DW-b
Ductwork in walls, within floor/ ceiling spaces.	F-a
Attics, Garages, Crawl Spaces, and other unconditioned spaces outside the thermal envelope.	F-c
Direct evaporative coolers ductwork.	DW-a

B. Insulation Types:

1. DW-a: 1-inch thick insulation sandwiched inside double-wall type ducts and fittings.

2. DW-b: 2-inch thick insulation sandwiched inside double-wall type ducts and fittings. Duct joints shall be waterproofed.

3. F-a: 1½-inch blanket fiberglass, factory-laminated with all-service jacket vapor barrier.

4. F-b: 2-inch blanket fiberglass, factory-laminated with all-service jacket vapor barrier.

5. F-c: 3-inch blanket fiberglass, factory-laminated with all-service jacket vapor barrier.

6. L-a: 1½-inch Internal duct lining applied to rectangular ductwork only.

7. L-b: 2-inch Internal duct lining applied to rectangular ductwork only.

C. Notes:

1. Ductworks installed within semi-concealed ceiling spaces such as ceiling clouds shall be considered exposed.

2. Minimum insulation provided shall be as required by the current California Mechanical Code Title 24 for the most restrictive condition.

3. Refer to the materials indicated in this section for external insulation & Internal Lining.

4. Installation of internal duct lining is not allowed inside the round and oval ductworks.

5. All exterior insulated ductworks shall be waterproofed at joints, seams, and duct penetrations.

D. Materials:

1. Fire-Resistive Insulation Materials and Coatings: Submit State Fire Marshal pre-approved materials only.

2. Adhesives: See Paragraph 2.01.E for applicable products.

3. External Insulation: Provide glass fiber blankets that are factory-laminated with Foil Reinforced Kraft (FRK) vapor barrier facing; Johns Manville Microlite, Owens-Corning SOFTR Duct Wrap, Knauf Insulation Friendly Feel Duct Wrap, or equal. Provide a minimum installed R value as required by the CEC Building Energy Efficiency Standards; but not less than scheduled on Table 5:

TABLE 5

INSULATION OF DUCTS AND PLENUM INSTALLED

THERMAL RESISTANCE "R" VALUES

Type	Labeled Thickness (in inches)	Installed R Value ($hr.ft^2.°F/Btu$)
F-a	1 ½	4.2
F-b	2	5.6
F-c	3	8.3
DW-a	1	4.2
DW-b	2	5.6
L-a	1 ½	6.0
L-b	2	8.0

4. Internal Lining: Internal Lining shall be of the type that inhibits the growth of mold, mildew and fungi and shall not contain harmful VOC's or contain glass fiber. Approved Material:

a. Polyester Duct Liner:

1) Polyester duct liner shall be an engineered nonwoven, thermally bonded Polyester with a smooth and durable FSK facing.

2) Polyester duct liner must be able to withstand a constant internal temperature up to 250°F must be compliant with Greenguard Environmental Institute and contain zero VOCs per ASTM D5116. Liner must comply with all applicable standards including ASTM E84, ASTM C411, ASTM C518, ASTM G21, NFPA 90A and 90B, and UL 181.

3) Approved Manufacturer: Ductmate Industries “PolyArmor” duct liner or approved equal.

b. Elastomeric duct liner:

1) Closed-cell, sponge- or expanded-rubber materials. Elastomeric liner must be able to withstand a constant internal temperature up to 300°F and must comply with all applicable standards including ASTM E84, ASTM E96, ASTM C209, ASTM C534 - Type II sheet materials, ASTM C411, ASTM C518, ASTM G21, ASTM G22, NFPA 90A and 90B, and UL 181.

2) Approved Manufacturer: Armacell LLC “AP Armaflex FS” duct liner, K-flex, or approved equal.

c. Duct liner must be attached per manufacturer’s requirements using a non-flammable, low VOC water-based adhesive. When applicable, apply a non-flammable, low VOC water-based lagging adhesive to the exposed leading edge of the insulation. Install fasteners per SMACNA HVAC Duct Liner installation instructions.

d. Duct liner must be installed per SMACNA Manual, “HVAC Duct Construction Standards, Metal and Flexible,” Third Edition unless otherwise specified.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Except as specified herein, install material in accordance with recommendations of manufacturer. Do not install insulation materials until tests specified in other sections are completed. Remove foreign material such as rust, scale, or dirt. Surfaces shall be clean and dry. Maintain insulation clean and dry at all times.

B. On cold surfaces where a vapor barrier must be provided and maintained, insulation shall be installed with a continuous, unbroken moisture and vapor seal. Hangers, supports, anchors, or other projections that are fastened to cold surfaces shall be insulated and vapor sealed to prevent condensation.

C. Surface finishes shall be extended in such a manner as to protect raw edges, ends, and surfaces of insulation.

D. Pipe or duct insulation shall be continuous through walls, ceiling or floor openings, or sleeves; except where fire-stop or fire-safing materials are required.

E. Metal shields shall be installed between hangers or supports and the piping insulation. Rigid insulation inserts shall be installed between the pipe and the insulation shields. Inserts shall be of equal thickness to adjacent insulation and shall be vapor sealed accordingly.

F. Insulation shall not be installed in the following locations unless otherwise noted:

1. On vacuum return lines less than 50 feet long.

2. On unions, flanged connections or valve handles.

3. Over edges of any manhole, clean-out hole, clean-out plug, access door or opening to a fire damper, so as to restrict opening or identification of access.

4. Over any label or stamp indicating make, approval, rating, inspection, or similar data, unless provision is made for identification and access to label or stamp.

3.02 INSTALLATION OF HEATING HOT WATER PIPING SYSTEM INSULATION

A. General: Space heating hot water piping system after having been tested, shall be cleaned and insulated.

B. Application: Insulate hot water supply and return piping in accordance with manufacturer's instructions and as specified herein.

1. Install insulation on valve bodies up to valve bonnet. Fill void in saddles, in accordance with Section 23 0513: Basic HVAC Materials and Methods, with insulation and seal joints.

2. Install insulating material to fittings, valves, and strainers and smooth to thickness of adjacent covering. Leave strainer clean-out plugs accessible. Covers fabricated from polyvinyl chloride shall be furnished.

C. Insulation Jackets in Exposed Indoor Locations:

1. Cover completed insulation with canvas jacket tightly pasted to covering with lagging adhesive. Lap jacket seams 1-1/2-inch minimum. Finish the entire jacket with coating of undiluted adhesive.

2. Equivalent factory applied pre-sized, glass fiber reinforced, or glass fiber jackets may be furnished. Seal jacket seams with adhesive in accordance with manufacturer's instructions.

3. Johns Manville Zeston 2000, Knauf Insulation Proto PVC Fitting Cover, Speedline Polyco Smoke Safe, or equal, fitting covers may be furnished, with molded or segmented insulation equal to specified insulation applied to fittings. Secure covers in accordance with manufacturer's instructions.

4. In addition to above requirements, cover exposed insulated piping within a distance of 8 feet above floors with 26 gage galvanized steel jacket. Omit jacket in areas accessible only to maintenance personnel, such as mechanical equipment rooms, utility corridors, accessible pipe tunnels and manholes.

D. Concealed Indoor Locations: Cover insulation over fittings, valves, and strainers with canvas. Provide pipe insulation with factory or field applied standard jacket of 4-ounce minimum canvas, fiberglass cloth, or glass fiber reinforced jacket. Seal jacket laps with adhesive in accordance with manufacturer's instructions.

E. Exposed Outdoors: In addition to canvas or fiberglass cloth cover, pipe insulation exposed to weather shall be provided with an additional 0.016-inch thick aluminum jacket with 2-inches lap connected with 1-inch hem overlap joint located on side of pipe and turned down to shed water. Jacket shall be strapped 12-inch on center with ½-inch wide stainless-steel strapping and wing seals. Aluminum jacket shall be mitered to fit fittings.

3.03 INSTALLATION OF COOLING PIPING SYSTEM INSULATION

A. General: Chilled water supply and return piping, refrigerant piping and condensate drain lines, after having been tested, shall be cleaned and insulated.

B. Application: Insulation on chilled water lines, refrigerant suction lines and liquid lines, if indicated, and air conditioner interior drain lines shall be jacketed with fire-resistant vapor barrier of laminated aluminum foil consisting of 2 plies with glass-yarn reinforcing. Jacket joints shall be lapped and sealed with an approved adhesive. Insulation shall be secured with aluminum bands not less than 0.005-inch thick by ¾-inches wide, spaced not over 12-inch on centers, or as recommended by manufacturer.

1. Longitudinal Seams: Butt hinged sections of covering tightly together and seal down jacket flap with adhesive, or with factory-applied, self-sealing lap with pressure-sensitive sealer protected with release paper.

2. End Joints: Wrap joint with a 3-inch wide (minimum) self-sealing tape.

3. Fittings and Valves: Fittings and valves shall be covered with same material of same thickness as pipe insulation, sealed with an approved, vapor-sealing tape or compound and covered with Johns Manville Zeston polyvinyl-chloride cover, Knauf Insulation Proto PVC Fitting Cover, Speedline Polyco Smoke Safe, or equal.

4. Pipe hangers shall be insulated or attached to pipe by an insulating insert, butted between adjoining insulation sections.

C. Additional Jackets:

1. Exposed Indoor Insulation: Cover with 26 gage galvanized sheet metal jacket to 8 feet above floors, except in mechanical equipment rooms and accessible pipe tunnels.

2. Exposed Outdoor Insulation: In addition to canvas or fiberglass cloth cover, provide 0.016-inch thick aluminum jacket with 1-inch wide aluminum bands and seals. Install appropriate jackets on valves and fittings.

3.04 INSTALLATION OF HIGH TEMPERATURE EQUIPMENT INSULATION

A. General: Provide insulation over parts of heat exchangers and similar equipment requiring insulation having removable head or sections.

B. Application:

1. Equipment: Securely tie insulation on with copper clad wire. Install tack coat weather barrier coating at a thickness specified by manufacturer. While tack coat is still wet, a layer of 10 open weave glass cloth membrane shall be embedded with fabric seams overlapped a minimum of 2-inch. Install a finish coat fully covering membrane at coverage rate specified by manufacturer.

2. Boiler Breechings: Wire securely V-rib wire lath, ¾-inch minimum depth to boiler breechings, connections and stacks inside boiler rooms, and cover with insulation and jacket as specified above.

3. Manholes and Hand Holes: Maintain accessible by beveling off permanent insulation around manhole and cover manhole plate with removable blanket.

3.05 INSTALLATION OF LOW-TEMPERATURE EQUIPMENT INSULATION

A. General: Provide removable sections of insulation over parts of chillers and similar equipment requiring insulation and having removable heads or sections.

B. Exterior surfaces of chilled water system expansion tanks and chilled water pumps shall be insulated with not less than 2-inch thick expanded polystyrene or fiberglass, as specified. Fill spaces between insulation and equipment with granulated polystyrene or urethane to eliminate voids. Insulation shall be secured with metal band, and covered with one inch, 20 gage hexagon galvanized mesh and ¼-inch thick insulating cement toweled smooth. Cement surface shall then be covered with 0.002-inch aluminum foil applied smoothly and secured with suitable adhesive, and a layer of 6-oz. canvas.

C. Coat joints of polyurethane insulation with neoprene based contact adhesive. Adhesives furnished shall be approved by insulation manufacturer. Fill and seal external voids and seams with non-shrinking sealant.

D. Canvas Jacket: Cover completed insulation with canvas jacket tightly pasted to covering with lagging adhesive. Lap jacket seams a minimum of 1 ½-inch. Finish entire surface of canvas jacket with one brush coat of diluted lagging adhesive, Childers CP-50A, Foster 30-36, Mon-Eco Industries (MEI) Eco-Lag Adhesive, or equal, and heavy final coat of undiluted adhesive.

3.06 INSTALLATION OF DUCTWORK AND PLENUM INSULATION

A. Ductwork External Covering:

1. Before installing duct insulation, sheet metal ducts shall be clean, dry, and tightly sealed at joints and seams, inspected pressure tested, and accepted by LAUSD OAR/ Inspector.

2. Duct exterior insulation shall be firmly wrapped around ductwork with joints lapped a minimum of 2-inch. Insulation shall be securely fastened with 18 gage copper-lined steel wire, or 16 gage soft-annealed galvanized wire spaced approximately 12-inch on centers and at loose ends, presenting a neat and workmanlike appearance. Where duct width is such that wiring will not fasten insulation firmly against duct an adhesive shall be furnished to fasten insulation to duct with wiring being installed at ends of insulation segment.

3. Insulation on ductwork transporting conditioned air, both supply and return, and outside air intake ducts when pre-conditioned, shall be furnished with a factory-applied, fire-resistant vapor barrier.

4. Exposed Ducts or Plenum:

a. Install insulation on ducts or plenums furnished with butt joints, without voids and with adhesive over entire surface of duct. Cover insulation with canvas jacket, fastened tightly to insulation with lagging adhesive. Install 2 finish coats of undiluted adhesive.

b. When installing jacket, finished covering shall be even and level, without humps, with constant diameters on round ducts maintained.

B. Ductwork Internal Insulation - Lining:

1. Dimensions of ducts indicated are net inside dimensions and must include thickness of duct liners to obtain the required duct size.

2. Install insulation in square turns, where required, to cover internal surfaces before duct turns are installed.

3. Install lining material during fabrication of duct with sealed face only exposed to air stream.

4. Internal insulation in ducts or plenums shall not have exposed edges. Edges open to entering or leaving air streams shall be covered, secured in place and sealed with approved duct liner edge sealers.

5. Insulation shall be fastened to sheet metal with an approved fire-retardant adhesive, with minimum 90 percent coverage and edges firmly adhered.

6. Mechanical fasteners shall supplement the adhesive on top sections of ducts more than 12-inch wide and on sides of ducts more than 24-inch high and shall be spaced on 16-inch centers maximum. Fastener posts shall be cut off approximately ¼-inch from metal disc.

3.07 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

3.08 PROTECTION

A. Protect the Work of this Section until Substantial Completion.

END OF SECTION

SECTION 23 0800

HVAC SYSTEMS COMMISSIONING

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. General requirements for Commissioning (Cx) of HVAC systems and equipment including installation, start-up, testing, documentation, and training according to the Construction Documents.
2. Standard procedures for the execution of commissioning work shall be in conformance with Division 01, Section 01 9113: General Commissioning Requirements. Coordinate work with the Commissioning Services Provider (CxSP).

B. Related Requirements:

1. Division 01: General Requirements.
2. Section 01 4523: Testing and Inspection.
3. Section 01 4525: Testing, Adjusting, and Balancing for HVAC.
4. Section 23 0500: Common Work Results for HVAC.
5. Section 23 3000: Air Distribution.
6. Section 23 8000: Heating, Ventilating and Air Conditioning Equipment.
7. Project Commissioning Plan (CxP).

1.02 REFERENCES

A. Applicable codes, standards, and references: inspections and tests shall be in accordance with the following applicable codes and standards:

1. InterNational Electrical Testing Association – NETA.
2. National Electrical Manufacturers Association – NEMA.
3. American Society for Testing and Materials – ASTM.
4. Institute of Electrical and Electronics Engineers – IEEE.
5. American National Standards Institute – ANSI.
6. National Electrical Safety Code – NESC.
7. California Building Code – CBC.
8. California Electrical Code – CEC.
9. California Mechanical Code – CMC.
10. Insulated Cables Engineers Association – ICEA.

11. Occupational Safety and Health Administration – OSHA.
12. National Institute of Standards and Technology – NIST.
13. National Fire Protection Association – NFPA.
14. American Society of Heating and Air-Conditioning Engineers – ASHRAE (The HVAC Commissioning Process, ASHRAE Guideline).
15. Associated Air Balance Council – AABC (National Standards for Total System Balance).

1.03 SUBMITTALS

A. Submittals package shall include the following:

1. Commissioning required submittals in accordance with Division 01 Specification Sections.
2. Copy of the Architect's reviewed and accepted submittals to the CxSP via the OAR.
3. List of team members who will represent the Contractor in the Pre-functional Equipment Checks (PEC) and Functional Performance Tests (FPT), at least six weeks prior to the start of Pre-functional Equipment Checks.
4. Detailed manufacturer installation and start-up, operating, troubleshooting and maintenance procedures, a copy of full details of Owner-contracted tests, full factory testing reports, if any, and Warranty information, including responsibilities of Owner to keep Warranty in force clearly defined.
5. Installation and checklist documentation shipped with equipment and field checklist forms to be used by factory or field technicians.
6. Detailed manufacturer's recommended procedures and schedules for PECs, supplemented by Contractor's specific procedures, and FPTs, at least four weeks prior to the start of PEC.

1.04 MEETINGS, SEQUENCING AND SCHEDULING

A. Meetings: Attend the Cx meetings as required under Section 01 9113 and Cx Plan.

B. Sequencing and Scheduling: The work described in this Section shall begin only after work required in related Divisions 23 and 26 Sections has been successfully completed and tests, inspection reports, and Operation and Maintenance manuals required have been submitted and accepted. The start-up and PEC shall be completed and submitted to the Owner at least two weeks prior to beginning FPT.

1. Coordinate HVAC work with the work of other trades prior to scheduling of any Cx procedures.
2. Coordinate the completion of HVAC testing, inspection, and calibration prior to start of Cx activities.

1.05 QUALITY CONTROL

A. Comply with Division 01 quality control specifications.

B. Incorporate manufacturer's recommended Cx procedures for the systems and equipment to be commissioned under this Section.

C. Comply with Section 01 4525: Testing, Adjusting, and Balancing for HVAC.

1.06 EQUIPMENT AND SYSTEMS TO BE COMMISIONED

A. Split Systems.

B. Fan Coil Units.

C. Variable Volume and Temperature System.

D. Exhaust Fans.

E. Air Conditioning Units.

PART 2 – PRODUCTS

2.01 TEST EQUIPMENT

A. Equipment to be utilized in the commissioning process shall meet the following requirements:

1. Provide test equipment as necessary for the testing of the equipment and systems to be commissioned.

2. Provide testing equipment and accessories that are free of defects and certified for use.

3. Provide testing equipment with current calibration labels as per NIST Standards.

4. Equipment shall be calibrated on the manufacturer’s recommended intervals with calibration tags affixed to the instrument. In the absence of calibration tags, calibration documentation shall be submitted to the CxSP at least thirty days prior to use; this documentation shall include description and serial number of instrument and calibration data and date.

5. Testing equipment shall be maintained in good operating condition for the duration of the project.

PART 3 – EXECUTION

3.01 COMMISSIONING PROCESS REQUIREMENTS

A. Work to be performed prior to commissioning:

1. Complete phases of the work so the system(s) can be started, tested, adjusted, balanced, and otherwise commissioned.

2. If modifications or corrections to the installed system(s) are required to bring the system(s) to acceptance levels due to Contractor's incorrect installation or defective materials, such modifications shall be made at no additional cost to the Owner.

3. Normal start-up services required to bring each system into full operational state:

a. Testing, motor rotation check, control sequences of operation, full and part load performance.

b. Commissioning shall not start until each system is complete and start-up has been performed.

B. Pre-Commissioning responsibilities:

1. Inspection, calibration and testing of the equipment required to commission the following systems:

a. HVAC System(s).

C. Commissioning Process Requirements:

1. Refer to Section 01 9113: General Commissioning Requirements and related Sections for information on meetings, start-up plans, Pre-Functional and FPT, operations and maintenance data, training requirements, and other Cx activities.

3.02 PREPARATION

A. Provide certified HVAC technicians as required, with tools and equipment necessary to perform Cx activities specified.

B. Provide certified testing agency personnel and equipment factory representatives as require in the Cx plan and other related Sections.

C. Verify that work required in this Section and in Section 01 9113 is complete prior to starting of FPT.

D. Verify that complete operational manuals have been reviewed and accepted by the CxSP as specified before starting FPT.

3.03 TESTING

A. Testing procedures shall include the following minimum information:

1. Test number.

2. Equipment used for the test, with manufacturer and model number and date of last calibration.

3. Date and time of the test.

4. Indication of whether the record is for a first test or retest following correction of a problem or issue.

5. Identification of the system, subsystem, assembly, or equipment.

6. Conditions under which the test was conducted, including (as applicable); ambient conditions, set points, override conditions, status, and operating conditions that impact the results of the test.
7. Systems and assemblies test results and performance and compliance with contract requirements.
8. Issue number, if any, generated as the result of the test.
9. Name(s) and signature(s) of witnesses and the person(s) performing the test.

B. Contractor shall participate and perform Cx related testing requirements as specified.

C. General Requirements for Mechanical, Controls, and Testing and Balance:

1. Construction and Acceptance Phases:
   a. Provide assistance to CxSP in preparing FPT procedures specified. Sample test forms are included in the project Cx Plan.
   b. Develop full startup and initial checkout plan using manufacturer's start-up procedures and Cx checklists for commissioned equipment. Submit to CxSP for review and approval prior to startup.
   c. During startup and initial checkout process, execute mechanical-related portions of PEC for the equipment and systems to be commissioned.
   d. Perform and clearly document completed startup and system operational checkout procedure. Providing four copies of the results to the Owner.
   e. Resolve any open punch list items before FPT. Air testing and balance shall be completed with discrepancies and problems remedied before FPT of respective air -related systems.
   f. Provide skilled technicians to execute starting of equipment and to execute PFT. Ensure that technicians are available and present during agreed upon schedules and for sufficient duration to complete necessary tests, adjustments, and solutions to identified problems.
   g. Maintain a log of events and issues of tests and related Cx activities. Submit handwritten reports of discrepancies, deficient or uncompleted work by others, contract interpretation requests, and lists of completed tests as specified.
   h. Correct open issues and re-test as needed to prove compliance with system operational standards.

i. Prepare Operation and Maintenance Manuals and provide training for the Owner maintenance personnel and end-users per Section 01 7900.

j. Coordinate with equipment manufacturers to determine specific requirements to maintain validity of Warranty and notify the Owner.

k. Execute simulated seasonal FPT, witnessed by the Owner and the CxSP, as specified. Document results and perform corrections as needed for system acceptance and make necessary adjustments to Maintenance and Operations Manuals and Record Drawings.

3.04 SENSOR CALIBRATION

A. Field-installed temperature, relative humidity, CO_2, pressure sensors, pressure gages, and actuators (dampers and valves) shall be calibrated using the methods described below. Calibration procedures shall be documented during execution of the Start-up and the PEC. Alternate methods may be used, if approved by the CxSP.

B. Test instruments shall have had a NIST certified calibration within the last 12 months. Sensors installed in the unit at the factory with provided calibration certification need not be field calibrated.

C. Sensors:

1. Verify that sensor locations are appropriate and away from causes of erratic operation.

2. Verify that sensors with shielded cable are grounded only at one end.

3. For sensor pairs that determine a temperature difference, make sure they are reading within 0.2 degrees F of each other.

4. For sensor pairs that determine a pressure difference, make sure they are reading within 2 percent of each other.

5. Calibration: Put the equipment in operation. Make a reading with a calibrated test instrument within six inches of the site sensor. Verify that the sensor reading (via the permanent thermostat or gage) is within the tolerance listed in the table below of the instrument-measured value. If not, calibrate or replace sensor.

6. Tolerances:

Sensor	Required Tolerance (+/-)
AHU wet bulb or dew point	2.0 degrees F
Outside air, space air, duct air temps	0.4 degrees F

Watt-hour, voltage, and amperage	1 percent of design
Pressures, air, water and gas	3 percent of sensor range (inc. design value)
Flow rates, air	10 percent of sensor range (inc. design value)
Flow rates, natural gas	5 percent of sensor range (inc. design value)
Relative humidity	4 percent
CO_2 monitor	100 ppm
Sound level	5 db - Type 1 meter (Per Calibrator Mfg.)
Domestic Hot Water Temperature	1.5 degrees F
Domestic Hot Water Pressures Water and Gas	3 percent of sensor range (inc. design value)
Flow Rates, Domestic Water	4 percent of sensor range (inc. design value)
Flow Rates	5 percent of sensor range (inc. design value)

3.05 ADJUSTING

A. Perform work required to rectify installations not meeting contract requirements at no additional cost to the Owner.

B. Corrective work shall be completed in a timely manner to permit completion of the Cx process.

C. If systems' Cx deadline, as defined in the Project Schedule, goes beyond the scheduled completion without resolution of the problem(s), the Owner reserves the right to obtain supplementary services or equipment to resolve the problem.

3.06 TRAINING

A. Provide training plan for systems to be commissioned as required in applicable Division 23 specification sections and Section 01 7900.

END OF SECTION

SECTION 23 3000

AIR DISTRIBUTION

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes: Ductwork and appurtenances required for a complete air transmission and distribution system for the heating, ventilating, and air conditioning systems indicated on Drawings and as specified.

B. Related Requirements:

1. Division 01: General Requirements.
2. Section 09 9000: Painting and Coating.
3. Section 23 0500: Common Work Results for HVAC.
4. Section 23 0800: HVAC Systems Commissioning.
5. Section 23 0513: Basic HVAC Materials and Methods.
6.
6. Section 23 8000: Heating, Ventilating and Air Conditioning Equipment.

1.02 SUBMITTALS

A. Provide in accordance with Division 01 and Section 23 0500: Common Work Results for HVAC.

B. Manufacturer's Data:

1. Complete list of items to be furnished and installed under this Section. Material lists that do not require performance data shall include manufacturer names, types and model numbers.
2. Manufacturer's specifications and other data required to demonstrate compliance with specified requirements.
3. Literature shall include descriptions of equipment, types, models, sizes, capacity tables or curves marked to indicate performance characteristics, electrical requirements, options selected, space requirements, including allowances for servicing, and other data. Data shall include name and address of nearest service and maintenance organization that regularly stocks repair parts. Listings of items that function as parts of an integrated system shall be furnished at one time.

4. Submit complete acoustical test reports showing that proposed products have been tested in accordance with latest editions of relevant ASHRAE and AHRI Standards (ANSI/ASHRAE Standard 70 for air inlets and outlets; ANSI/ASHRAE Standard 130 and AHRI 880 for terminal units) and will be suitable for operation in Project spaces with specified maximum noise criteria (NC) requirements. The results of all testing shall be certified by an independent testing agency and submitted to the ARCHITECT for approval. The submittal shall include a complete description of the test conditions, methods and procedures.

5. Submittals shall include a tabulation of proposed products, identification of Project spaces where proposed products are to be installed, maximum allowable NC for all Project spaces, and product NC (at specific design air volume) for all Project spaces.

6. Shop Drawings: Shop Drawings indicating methods of installation of equipment and materials, sizes and gages of ducts, and details of supports. Items to be covered shall include but not be limited to following:

    a. Layout of ductwork and equipment drawn to scale to establish that equipment will fit into allotted spaces with clearance for installation and maintenance. Indicate proposed details for attachment, anchoring to, and hanging from structural framing of building. Indicate vibration isolation units, foundations, supports, and openings for passage of pipes and ducts.

    b. Drawings indicating locations and sizes of sleeves and prepared openings for pipes and ducts.

    c. Typical details of supports for equipment and ductwork.

1.03 QUALITY ASSURANCE

A. Installer's and Manufacturer's Qualifications: Comply with provisions stated under Section 23 0500: Common Work Results for HVAC.

B. Sound power level measurements and Manufacturers' NC value calculations shall be conducted in complete accordance with the latest version of ANSI/ASHRAE Standards 70 and 130 and AHRI 880.

1.04 DELIVERY, STORAGE AND HANDLING

A. Comply with provisions stated in Section 23 0500: Common Work Results for HVAC.

B. Ensure ducts are clean and free of dirt, dust, moisture, oils and other contaminants that can lead to poor air quality. Cover openings of ductwork with a self-adhering protective film. Film shall not leave a residue on metal after removal, and shall be highly resistant to tears and punctures.

1.05 COORDINATION

A. Coordinate activities in accordance with provisions of Section 23 0500: Common Work Results for HVAC.

PART 2 – PRODUCTS

2.01 GENERAL

A. Unless otherwise noted, provisions, including amendments thereto, of the latest edition of the HVAC Duct Construction Standards of Sheet Metal and Air Conditioning Contractor's National Association (SMACNA) and the California Mechanical Code (CMC), are hereby made part of this Section.

B. Rectangular, round and flat oval ducts shall be manufactured and installed in accordance with requirements of the latest edition of the HVAC Duct Construction Standards – Metal and Flexible of SMACNA.

C. Sheet metal ducts shall be fabricated from galvanized steel, aluminum or stainless steel.

D. Galvanized steel ducts shall be fabricated of galvanized steel sheet, lock forming grade, conforming to ASTM A653 and A924.

E. Galvanized steel ducts gage thickness and permissible joints and seams of ductwork shall conform to requirements of the latest edition of the HVAC Duct Construction Standards – Metal and Flexible of SMACNA and the CMC unless noted otherwise on the drawings. The more stringent requirements shall prevail.

F. Button punch snap-lock seams, using Lockformer or equal, shall be permitted only in concealed areas using 20 and 22 gage galvanized steel ducts with screws added at the ends. Button punch snap-lock is not permitted for aluminum or duct lighter than 22 gage.

G. Ducts shall be reinforced in accordance with the latest edition of the SMACNA HVAC Duct Construction Standards: Cross-broken Duct: Duct sizes 19 inches wide and larger which have more than 10 square feet of unbraced panel shall be beaded or cross-broken. This requirement is applicable to 20 gage or less thickness and 3 inches w.g. or less pressure. For details, refer to SMACNA manual.

H. Round and Oval Galvanized Steel and Aluminum Ducts:

1. Round Spiral Ducts and Fittings: Fabricated from galvanized sheet steel shall be machine-formed spiral pipe with sealed spiral locking joints. Fittings shall be furnished with continuous corrosion-resistant welds. Provide gages of ducts and fittings recommended by manufacturer.

2. Details of seams and transverse joints for round duct and fittings shall conform to SMACNA standards.

3. Flat oval ducts shall be provided as indicated on the Drawings. Reference standard details in SMACNA manual.

4. Minimum duct wall thickness, and permissible joints and seams of ductwork for flat oval duct construction shall conform to requirements in the latest edition of the HVAC Duct Construction Standards – Metal and Flexible of SMACNA and the CMC. The more stringent requirements shall prevail.

5. These provisions apply for ducts furnished for indoor comfort heating, ventilating and air conditioning service only.

I. Flexible Ducts

1. Flexible duct shall be non-metallic, insulated for conditioned air supply and return. The flexible ducts shall be factory fabricated with exterior reinforced laminated vapor barrier, 1 ½-inch thick fiber glass insulation (K = 0.25 at 75 degrees F), encapsulated zinc-coated spring steel wire helix and impervious, smooth, non-perforated interior vinyl liner and factory fabricated steel connection collars. For the composite assembly, including insulation and vapor barrier, comply with NFPA Standard 90A or 90B and tested in accordance with UL Standard, UL 181. Non-insulated metallic ducts shall be provided for exhaust only.

2. Methods of installations, standards for joining and attaching, and supporting flexible duct shall conform to applicable provisions of SMACNA manual.

3. Specifications herein shall not supersede installation requirements by flexible duct manufacturer if those are more stringent.

J. Aluminum Ducts:

1. Material for aluminum duct shall be of 3003-H14 alloy aluminum sheets, with such designation embossed or stenciled on each sheet. Minimum tensile strength shall be 19,000 psi.

2. Aluminum duct thickness and permissible joint and seams shall conform to requirements of the latest edition of the HVAC Duct Construction Standards-Metal and Flexible of SMACNA, and CMC.

3. Aluminum ductwork shall be furnished to transport moisture-laden air from shower rooms, shower drying rooms, dishwashers and discharge ducts from evaporative condenser and cooling towers.

4. Unless otherwise noted, follow SMACNA Duct Construction Details for steel construction standards as indicated for unreinforced duct, reinforced duct, or cross-broken duct.

5. Button punch snap-lock seams on aluminum ducts are not permitted.

K. Stainless Steel Duct:

1. Materials for stainless steel duct shall be stainless steel conforming to ASTM A167 and A480.

2. Stainless steel ducts shall be provided as required and indicated on the Drawings.

3. Fume hood exhaust shall be stainless steel Type 304.

4. Kitchen exhaust duct system shall be stainless steel Type 304.

5. Stainless steel ducts shall be constructed with welded joints except for connections to equipment which shall be flanged joints with gaskets.

6. Entire stainless steel duct systems shall comply with current CMC requirements for product conveying ducts except where the requirements of this Section are more stringent.

L. Fittings and Other Construction Details: Details of fittings such as elbows, turning vanes, branch take-off and connections, duct access doors, connections for grilles, registers and ceiling diffusers, flexible connector at fan, etcetera, shall conform to applicable provisions of this Section or SMACNA manual.

M. Duct Seam and Joint Sealant: Provide sealant for metal ducts at duct joints which are defined as transverse joints between duct sections including girth joints, branch and sub-branch intersections, duct collar tap-ins, fitting subsections, louver and air terminal connections, access doors and frames, and abutments to building structure. Also provide the same at duct seams which are defined as longitudinal joint between duct sections. Spiral lock seams in factory fabricated round or oval ducts are excluded.

1. Sealant for low-pressure ducts shall be: Design Polymerics DP1010 or DP1020, Childers CP-145A/CP-146 Chil-Flex, Foster's 32-19 Duct-Fas, Miracle-Kingco Glenkote Seal-Flex, Ductmate Industries PROseal or FIBERseal, or equal.

2. Provide sealing material for medium-pressure ducts as described in the SMACNA manual for those pressures.

3. Sealant materials shall comply with the flame spread and smoke developed rating of current CMC when tested in accordance with ASTM E84.

4. Sealant for exposed to weather ducts shall pass the Weather Resistance Test per ASTM G154 at 2000 hours QUV.

N. Restrictions:

1. Zinc-coated steel duct shall not be installed for ductwork transporting moisture-laden air. Flexible duct may only be furnished where specifically indicated on

Drawings. Aluminum ducts shall not be installed for internal pressures above 2 inches of water.

2. Fiberglass duct is not permitted as a substitute for sheet metal duct.

2.02 DAMPERS

A. Manually Operated Volume Control Dampers:

1. VD-1, Rectangular: Multi-blade type, opposed blade operation, 16 gage galvanized steel blades; center pivoted on 3/8 inch diameter steel trunnions; interlocking edges; dampers shall be in own angle frame, full duct size as indicated on Drawings; frame of minimum 16 gage steel channel construction. Provide with damper operator and axles positively locked to blade. Ruskin MD35, Pottorff MD-42, Greenheck MBD-15 or equal.

2. VD-2, Round: Frame shall be constructed of not less than 20 gage galvanized steel, blades of not less than 20 gage galvanized steel channel construction with factory neoprene seals, ½ inch diameter axle shafts and locking hand quadrant. Ruskin MDRS25, Greenheck MBDR-50, or equal.

3. VD-3, Oval: Frame shall be constructed of not less than 14 gage galvanized steel channels with factory blade seals of not less than 12 gage galvanized steel with not less than ½ inch diameter axle shafts. Provide Ruskin standard construction for frame, blade and axle size, thickness and material variation. Provide adjustable locking hand quadrant. Ruskin CDO25, or equal.

B. Motorized Volume Control Dampers:

1. MVD-1, Rectangular: Multi-blade type opposed blade operation, 16 gage minimum steel channel frame construction; 16 gage galvanized steel blades center pivoted on ½ inch diameter steel trunnions. Interlocking edges. Dampers shall be in own angle frame. Full duct size as indicated on the Drawings. Provide with matching two position motorized actuator with linkages, 24VAC by Belimo, Honeywell, Invensys, or equal. Ruskin CD35, Pottorff CD-42, Greenheck VCD Series, or equal.

2. MVD-2, Round: Butterfly type constructed with minimum 20 gage galvanized steel frame with steel angle reinforcement on above 20-inch diameter. Blade shall be 14 gage minimum thickness. Neoprene seal to ensure air tightness in closed position. Furnish with matching two position motorized actuator with linkage 24 VAC by Belimo, Honeywell, Invensys, or equal. Ruskin CDRS25, American Warming and Ventilating (AMV) VC-25, Air Balance, Inc. AC530, or equal.

3. Electronic Damper Actuators: Belimo, Honeywell, Invensys, or equal.

   a. Sized for torque required for damper seal at load conditions.

b. Coupling: V-bolt dual nut clamp with a V-shaped toothed cradle. Aluminum clamps or set screws are not acceptable.

c. Overload Protection: Microprocessor or an electronic based motor controller providing burnout protection if stalled before full rotation is reached. Actuator shall be electronically cut off at full open to eliminate noise generation with the holding noise level to be inaudible.

d. Power Requirements: As indicated on Drawings.

e. Actuator Timing: Shall meet 15 seconds.

f. Temperature Rating: Actuator shall have a UL 555S listing by damper manufacturer for 350 F.

g. Auxiliary Switches: Provide for signaling, fan control, and position indications.

C. Relief Dampers: Parallel multi-blade, counter balanced type with adjustable counter weights. Constructed of 20 gage galvanized sheet steel or extruded aluminum with solid stops all around. Bearings shall be dust proof, ball bearings. Damper shall open on a positive pressure of 0.01 inch within space and close to a backdraft. Interlocking edges shall prevent dust infiltration when closed. Air Balance, Inc., Pottorff, Ruskin, Metal Form Manufacturing Co. Inc., or equal.

D. Duct Access Panels: Provide factory fabricated access panels in ducts where required for servicing fire or smoke dampers, and at other locations as specified in this Section. Units shall consist of removable panel, gasketed and pressure sealed by controlled spring tension locks. Construct unit, including interior parts, of same material as duct. Units shall be constructed to be suitable for installation in systems of up to 5 inches water gage static pressure.

2.03 AIR DISTRIBUTION DEVICES

A. General:

1. Grilles, registers, diffusers and appurtenances shall conform to requirements specified herein and shall be of type and sizes as specified and indicated on Drawings. Performance shall be in accordance with ANSI/ASHRAE Standard 70 including airflow velocity, pressure, temperature, and sound measurements.

2. Sponge neoprene, rubber, vinyl or felt border gaskets shall be provided for surface-mounted registers, grilles or diffusers.

3. The noise generating characteristics of all specified grilles, registers, and diffusers shall be tested to, and comply with, all requirements of this specification. Representative samples shall be subjected to tests in accordance with applicable standards and procedures in order to demonstrate such compliance. A special test for this project is not required if the manufacturer has

previous certified test results that can be made applicable to this project. Maximum Sound Levels of diffusers, grilles and registers shall be as follows:

Administrative office area:	NC 30
Classrooms:	NC 20
Libraries and other noise sensitive areas:	NC 25
Gymnasiums, cafeterias, lockers areas:	NC 30

4. Provide suitable frame types to match the ceiling types as specified or indicated on the Architectural Drawings.

5. Ceiling diffusers shall be provided with equalizing grids.

6. Ceiling mounted grilles, registers and diffusers shall be provided with a factory applied, baked enamel, dull finish, bone white to match acoustical ceiling tile.

7. Grilles or registers mounted on painted walls or other surfaces shall be furnished with a baked prime coat and finish painted in accordance with Section 09 9000: Painting and Coating.

8. Do not provide opposed blade dampers at diffusers and registers to balance the airflow, as they tend to create noise. Provide a manual volume damper at each branch take-off and also at branch duct to each diffuser and register upstream of the flexible duct connections. Air throw patterns shall be as indicated on the drawings.

9. Diffusers, registers and grilles indicated or scheduled on the drawings to comply with special requirements shall take precedence over the standard items specified.

B. Ceiling Diffusers - Round, Square, Rectangular:

1. CD-1 For non-classroom areas of less than 10 feet ceiling height only. Units shall be square or rectangular modular core type as indicated on the drawings. Anemostat QC Series, Krueger Model 1240, Price SMCD Series, Titus MCD Series, or equal.

2. CD-2 For typical classrooms. Units shall be square plaque type. Anemostat PG Series, Krueger Model PLQ, Price SPD Series, Titus OMNI Series, or equal. The horizontal air discharge pattern shall be 360-degree radial type with factory installed blank-offs for three way, two way corner, two way opposite, or one way discharge pattern.

3. CD-3 For non-classroom areas of higher than 10 feet ceiling height. Units shall be square or rectangular louver faced type. Anemostat D Series, Krueger Model SH, Price SMD/AMD Series, Titus TDC/TDC-AA Series, or equal.

4. CD-4: Units shall be round, adjustable pattern, and surface-mounted type. Anemostat C-27, Krueger RM Series, Price RCDE Series, Titus TMR Series, or equal.

5. CD-5: Units shall be adjustable linear slot type. Anemostat SLAD Series, Krueger Model 1900, Price AS Series, Titus FL Series, or equal.

C. Grilles - Return, Exhaust, Ceiling, Square, Rectangular:

1. GR-1 Acoustical Tile on Plaster Ceiling: Return and exhaust grilles shall be single deflection type with horizontal fixed face bars set at straight or 45 degree angle, ½ inch spacing and flush and flanged for surface mounting. Anemostat S3HD Series, Kruger Model S80/S85, Price 500/600 Series, Titus 350/355 Series, or equal.

2. GR-2 Prefabricated Acoustical Tile Ceiling with Inverted Exposed T-Bars: Return and exhaust grilles shall be with single deflection horizontal fixed face bars, set at straight or 45 degree angle, ½ inch spacing and flush, lay-in panel type with nominal overall dimension of 24-inch by 24-inch. Anemostat Type SAC3L Series, Krueger Model S80/S85, Price 500/600 Series, Titus 350/355 Series, or equal.

D. Registers, Supply, Return, Wall:

1. WR-1: Sidewall supply register shall be double deflecting type with loose key-operated opposed blade volume control. Anemostat S2 Series, Krueger Model 80/880, Price 500/600 Series, Titus 300 Series, or equal.

2. WR-2: Sidewall return register shall be single deflecting type with horizontal fixed face bars set at 45 degree angle flush and flanged for surface mounting and complete with loose key-operated opposed blade volume control. Anemostat S3 Series, Krueger Model S80/S85, Price 500/600 Series, Titus 350/355 Series, or equal.

2.04 SOUND ATTENUATING EQUIPMENT - DUCT SILENCERS

A. Provide factory fabricated duct silencers of tubular or rectangular type, for high or low velocity service, with arrangements, sizes and capacities as indicated on Drawings. Construct silencers of galvanized steel with casing seams sealed or welded to be airtight at a pressure differential of 8 inches water gage between inside and outside of unit, and stiffen or brace as required to prevent structural failure or deformation at same condition, or audible vibration during normal operation. Filler material shall comply with the following:

Fire Safety Standards:	NFPA 90A and 90B
Temperature:	ASTM C411
Air velocity:	ASTM C1071, UL 181
Fire Hazard Classification:	ASTM E84, UL 723-Class 1, NFPA 255
Corrosion Resistance:	ASTM C739, C665

Fungi Resistance: ASTM G21
Water Vapor Sorption: ASTM C1104, less than 1 percent by weight
Formaldehyde, Phenoloc Resins or other Volatile Organic compounds: 0 percent.

B. Select and provide silencers from acoustical and aerodynamic rating tables based on actual test readings or interpolated values of such readings obtained from tests made by recognized independent laboratories. Tests shall be in accordance with ASTM E477.

C. Select and provide silencers for air pressure drops not exceeding those indicated on Drawings, and of types, sizes and models for which noise reduction values, dynamic insertion loss, in decibels reference 10 to 12 watts, are not less than indicated on Drawings.

2.05 ZONE TEMPERATURE CONTROL DEVICES

A. Variable Air Volume Control Terminals:

1. VAV-1: AHRI 880 certified, single duct, pressure independent, variable air volume control terminal with reheat coil, sound attenuators, multi-point flow sensor, electric actuators and electronic direct digital controls. The controllers shall comply with Section 23 0923: Environmental Control and Energy Management Systems. The coils shall be copper tubes with copper fins. Casings shall be 22 gage galvanized steel lined with minimum ½ inch, 1.5 pound density, foil faced insulation that complies with NFPA 90A and UL 181.

   Anemostat, Krueger, Price, or equal.

2.06 SMOKE DETECTORS

A. Refer to Section 28 3100: Fire Detection and Alarm.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions under which Work of this Section will be performed. Correct conditions detrimental to proper and timely completion of Work. Do not proceed until unsatisfactory conditions have been corrected.

3.02 DUCTWORK

A. Construct ductwork according to details of fabrication and methods of support, as indicated in the SMACNA manuals and CMC, unless specified or indicated otherwise in this Section or on Drawings. In event of conflict, the most stringent requirement shall be provided.

B. Unless otherwise required, construct ducts to conform accurately to dimensions indicated and to be straight and smooth on inside, with joints neatly finished.

C. Duct dimensions indicated are net inside dimensions.

D. Where aluminum is welded, provide a minimum thickness of 16 gage, and use gas inert tungsten process of welding.

E. Anchor ducts to building structural slab, framing and roof decking and detail method of anchoring and fastening if not indicated on Drawings. Supports shall be seismically constructed as required by the latest edition of the SMACNA guidelines.

F. Construct and install ducts to be completely free from vibration under operating conditions.

G. Indicate on layout drawing, required for suspended ductwork, location of supports, loads imposed on each fastening or anchor, typical details for anchorage, and details for special anchorage for supports attached to metal roof decking.

H. Attach supports only to building structural framing members and concrete slabs.

I. Where supports are required between structural framing members, detail and install suitable intermediate metal framing.

J. Ducts transporting air-conditioned or heated supply air shall be insulated in accordance with requirements of Section 23 0700: HVAC Insulation.

1. Ducts exposed to weather shall be prefabricated double wall type from HVAC equipment through building envelope.

K. Ferrous angles and structural members and joining collars specified for construction and support of ductwork and plenums shall be primed with one heavy coat of required asphaltic aluminum paint before installation or fabrication. Metal surfaces shall be thoroughly cleaned before installation of paint. Galvanizing may be provided instead of painting. Installed duct hanger rods concealed in furred ceilings and walls are not required to be primed or painted.

L. Broken places in galvanized coating shall be acid washed and then completely soldered over or painted with galvanizing paint.

3.03 DUCT CONSTRUCTION

A. Minimum ductwork gages, joints, reinforcing, and bracing of ductwork shall conform to SMACNA and CMC. The most stringent standards shall prevail. Additional bracing shall be provided to prevent objectionable panel vibration.

B. Button punch snap-lock seams, using Lock-former or equal, shall be permitted only in non-accessible areas using 20 and 22 gage galvanized steel ducts with screws added at

the ends. Button punch snap-lock is not permitted for aluminum or duct lighter than 22 gage.

C. Provide longitudinal seams of the grooved snap lock, or Pittsburg and standing, sealed spiral or continuously welded.

D. Ferrous angles and structural members and joining collars specified for the construction and support of ductwork and plenums shall be primed with one heavy coat of asphalt aluminum paint before installation or fabrication. The metal surface shall be thoroughly cleaned before application of the paint. Galvanizing may be provided instead of painting. Installed duct hanger rods concealed in furred ceilings and walls is not required to be primed or painted.

E. Broken places in galvanized coating shall be acid washed and then completely soldered over or painted with galvanizing paint.

F. S-type or drive-slip type girths or longitudinal seams shall not be furnished for ductwork installed outdoors or mounted on roofs.

G. Broken places in galvanized coating shall be acid washed and then completely soldered over or painted with galvanizing paint.

3.04 DUCT ELBOWS AND TURNING VANES

A. Duct elbows, including supply, exhaust, and return, shall be provided with a centerline radius of 1.5 times duct width parallel to radius whenever possible; centerline radius shall not be less than width of duct parallel to radius.

B. Where space does not permit above radius, or where square elbows are indicated on Drawings, turning vanes shall be installed whether indicated on Drawings or not.

C. Turning vanes shall conform to SMACNA and CMC.

3.05 DUCT JOINTS AND SEAMS

A. Conditioned air supply ducts shall be furnished with joints and seams sealed, welded for air tightness, except spiral seam factory machine formed duct components. Spiral seam is exempted. Joints between slip-fit components may be assembled with all seams and joint connections fastened with screws.

B. Other ducts shall be furnished with joints and seams sealed by using sealant, taping, soldering, or welding. Ducts for grease hood exhaust shall be furnished with grease-tight welding or brazing on external surface for joints and seams. Fiberglass ducts shall be provided with a thermally activated closure system, Johns Manville Fortifiber Therm-Lock with Automatic Bond Indicator dots, or equal.

C. S-slip or drive-slip type girths or longitudinal seams are not permitted on exterior or exposed rooftop mounted ductwork.

D. Caulking, taping, or other joint or seam treatment shall be provided in accordance with recognized standards.

E. Seams around fan, coil housing and plenums shall be sealed with gaskets or sealing compound to provide an airtight assembly.

F. Stainless steel ductwork connected to range hoods and fume hoods shall be provided with grease-tight, gas tight welded seams, and shall be constructed and installed so that grease or other material cannot become pocketed in any portion thereof, and system shall slope downward toward hood not less than 1/4 inch per lineal foot. Gasketed flanged joints with sealing compound shall be used only at fan and fume hood connections.

G. Alternative duct connectors such as Ductmate Industries, Mez Industries, or equal may be used if the following conditions are met:

1. One of the specifically listed connectors is submitted and approved by the ARCHITECT and OAR.

2. The correct size connector, application, and gage of material conform to SMACNA Standards.

3. The connector is installed per manufacturer's specifications.

3.06 DUCT TRANSITION

A. Slopes in sides of transition pieces shall be no greater than 1 to 5. Abrupt changes or offsets in duct system are not permitted, except when reviewed by the ARCHITECT.

3.07 DUCT TEST HOLES

A. Holes in ducts and plenums shall be provided for pilot or static tubes for obtaining air measurements to balance or check air systems. Holes shall be covered with neoprene gasketed sheet metal cover or plugged with a fitted neoprene plug chained to duct.

3.08 SOUND ATTENUATING EQUIPMENT

A. Install sound attenuators where required and indicated on Drawings. Refer to manufacturer's instructions for required installation.

3.09 FLEXIBLE CONNECTIONS

A. At points where sheet metal connections are installed to fans or air handling units, or where ducts of dissimilar metals are connected, a flexible connection of commercial grade, Duro Dyne Durolon, Ventfabrics Ventglas, Ductmate Industries Proflex, or equal, non-combustible material shall be installed and securely fastened by zinc-coated steel clinch-type bands or a flange type connection. Inlet and outlet openings shall be axially in-line, maximum deviation of centerline shall be less than 5 percent of diameter

or shortest dimension of a rectangular inlet of fan or air handling unit, with system at rest. Duct end of connection shall be seismically restrained if more than 4 feet from last support.

3.10 AIR TERMINAL DEVICES

A. General: Install supply devices after ducts, plenums, and casings have been cleaned and blown free of small particles, as specified. Devices shall be aligned to be parallel to ceiling construction or walls and ceiling surfaces, and shall be pulled tightly to compress gaskets and to fit neatly against surfaces.

B. Diffusers: Support surface mounted ceiling diffusers from angles or channels resting on and fastened to ceiling construction. Do not support from ducts. Install lay-in diffusers on T-bar ceilings with hanger wires from each corner and not supported by ceiling structure. Provide sheet metal adaptor box above each diffuser to allow space for volume controller with round collars for connection to round ducts where indicated on Drawings. Fasten duct-mounted diffusers to duct collars.

C. Registers and Grilles:

1. Install wall supply registers at least 6 inches below ceiling, unless otherwise indicated. Locate return and exhaust registers 6 inches below ceiling unless otherwise indicated.

2. Support ceiling diffuser type inlets, registers, and grilles as required above for ceiling diffusers.

3. Fasten wall mounted and duct mounted registers and grilles to flanges of duct collars.

3.11 DAMPERS

A. Manually operated dampers, gravity dampers, fire dampers, and motor operated dampers shall be furnished and installed as specified and indicated. Upon completion of installation, dampers shall be checked, lubricated, and adjusted so that they operate freely, without binding. Dampers shall be of standard commercial manufacture, complete with damper frame. Where painting is required, they shall be shop finished unless otherwise noted.

1. Provide and install manual volume dampers per SMACNA standards to allow balancing per AABC, NEBB or TABB Procedures and Standards whether indicated on the drawings or not.

2. Balancing dampers shall be installed in main supply ducts from fan discharge plenums, where two or more ducts are connected to each plenum, although such balancing dampers may not be indicated. Each zone shall be provided with a manual volume damper. Sheet metal screws shall be installed through handles and into ducts to lock damper in place after test and balance.

3. Each supply, return, and exhaust branch shall be provided with manual volume dampers.

4. Do not provide opposed blade dampers at air inlets and outlets.

5. Each supply, return, and exhaust inlet or outlet shall be provided with a manual volume damper. This damper shall be a minimum of 5 feet upstream of the air outlet and inlets. An acoustic flexible duct should be provided between the outlet and inlet and the damper for concealed ducts.

6. Dampers installed in accessible locations shall be provided with locking and indicating quadrants. Ventfabrics Ventlok, Duro Dyne, Young Regulator Co., or equal.

7. Dampers installed in ductwork in furred ceiling spaces or in roof spaces with less than 30 inches of clearance below beams, joists, or other construction, and where access panels are not provided shall be furnished with damper rods extended below ceiling and terminated with a concealed damper regulation. Ventfabrics Ventlok, Young Regulator Co., Duro Dyne, or equal.

8. Dampers not identified as splitter, extractor, or butterfly dampers shall be of multi-louver type arranged for opposed blade operation. Damper shall be same dimension as adjoining duct and be tight closing. Blades shall not be greater than 9 inches. Dampers shall be not less than 18 gage steel.

9. Motor operated dampers shall be furnished by temperature control manufacturer as part of temperature control equipment and shall conform to requirements of Section 23 0900: HVAC Instrumentation and Controls.

10. Dampers shall be provided with accessible operating mechanisms. Where operators are exposed in finished portions of building, operators shall be chromium-plated with exposed edges rounded. Splitter dampers are not permitted unless specified and reviewed by the ARCHITECT.

11. Dampers shall not be installed in combustion air ducts.

12. Access panels shall be installed for access at each damper's operating mechanism.

3.12 FIRE AND SMOKE DAMPERS

A. Fire dampers or combination fire and smoke dampers shall be installed and accessible at duct penetrations of rated walls and partitions and as required by State Fire Marshal and NFPA 90A, 92A, 92B, and 101.

B. Fire dampers shall be sized, and adjoining duct enlarged, to assure full size air passage of connecting ductwork.

C. Install smoke dampers as indicated on Drawings and as required in ducts penetrating smoke isolation separations.

D. Fire dampers or combination fire and smoke dampers shall be electrically actuated, power open-fail close type, UL 555 and UL 555S classified for 1-1/2 hours.

E. Provide a service disconnect switch for each and every combination smoke and fire damper.

3.13 DETECTORS

A. Smoke detectors shall be installed in accordance with requirements of the California Mechanical Code.

B. Smoke detectors shall be installed in systems of over 2000 CFM capacity to detect presence of smoke and automatically shut down air handling units or fans unless it has been verified with the electrical installer that Exception 1 to CMC 609.0: Automatic Shutoffs, regarding automatic shutdown of systems with total coverage smoke detection systems is applied.

C. Smoke detectors shall be installed in supply system downstream of filters.

~~3.14 BACKDRA~~

~~3.15 FT DAMPERS~~

~~A. Backdraft dampers shall be installed at locations indicated in accordance with the State of California Building Energy Efficiency Standards, Title 24, CCR.~~

3.16 DUCT SLEEVES AND PREPARED OPENINGS

A. Furnish duct sleeves for 15-inch diameter ducts or less passing through floors, walls, ceilings, or roof and install during construction of the floor, wall, ceiling, or roof. Install round ducts larger than 15 inches diameter and square and rectangular ducts passing through floors, walls, ceilings or roof through prepared openings. Provide duct sleeves and prepared openings for duct mains and duct branches.

B. Provide one inch clearance between duct and sleeve or between insulation and sleeves for insulated ducts, except at grilles, registers and diffusers.

C. Provide prepared openings for round ducts larger than 15 inches in diameter and for square and rectangular ducts with one inch clearance between duct and openings or between insulation and opening for insulated ducts, except at grilles, registers and diffusers.

D. Provide closure collar of galvanized sheet metal not less than 4 inches wide unless otherwise indicated on Drawings on each side of walls or floors where sleeves or prepared openings are provided except where grilles or diffusers are installed. Install

collar tight against surface. Fit sharp edges of collar installed around insulated duct to preclude tearing or puncturing insulation covering vapor barrier. Fabricate collars from round ducts in steel. Provide not less than 4 nails to attach collar where openings are 12 inches in diameter or less and not less than 8 nails where openings are 20 inches in diameter or less.

E. Pack space between sleeve or opening and duct or duct insulation with commercial grade packing yarn.

3.17 FLEXIBLE DUCT RUNOUTS

A. Runouts from branches, risers or mains to air terminal units and outlets may be pre-insulated, factory fabricated flexible ducts complying with NFPA 90A. Flexible ductwork shall not exceed 7 feet in length. When required to suspend flexible ducts, furnish hangers of type recommended by manufacturers of pre-insulated flexible duct and install at intervals recommended. Method of attachment to other components of air distribution system for a vapor-tight joint shall be in accordance with printed instructions of flexible duct manufacturer. Bend radius shall be 1-1/2 times diameter of duct, measured from centerline. Bends greater than 90-degree angle are not permitted. Non-metallic flexible duct shall be permitted only in T-bar suspended ceilings.

3.18 DUCT HANGERS AND SUPPORTS

A. Exposed or easily accessible ductwork: All exposed ducts shall be supported by all-thread Rod as a single hanger and or a trapeze support for rectangular duct work in accordance with requirements of the latest edition of the HVAC Duct Construction Standards – Metal and Flexible of SMACNA.

B. Non-accessible ductwork: Non-exposed and hidden from sight during regular school operations ductwork, rigid round, rectangular, and flat oval metal ducts, shall be installed with support systems conforming to SMACNA Standards.

C. Where ducts are installed one above the other, they shall be individually supported on a trapeze of steel angles with 3/8 inch supporting steel rods securely fastened to overhead construction. A minimum distance of 3 inches shall be maintained between ducts wherever possible, but in no event shall distance be less than 2 inches. Minimum sizes of steel angles shall be 1 ½-inch by 1 ½-inch by 1/8 inch for duct sizes through 60 inches in greatest dimension, 2-inch by 2-inch by 1/8 inch for duct sizes 61 inches through 84 inches, 2-inch by 2-inch by 3/16 inch for duct sizes 85 inches through 96 inches, and 2-inch by 2-inch by 1/4 inch for duct sizes over 97 inches.

D. Ducts six square feet area and greater and or minimum 28” round or greater shall be seismically restrained. Refer to Section 23 0548: HVAC Sound, Vibration and Seismic Control.

E. Hangers shall not be supported by, or fastened to, non-structural members including blocking. Toggle or Molly type bolts are not permitted.

F. Vertical ducts shall be supported with suitable angles on each side of each duct located at each floor and at intervals not to exceed 8 feet. Angles shall be sized and installed according to SMACNA Standards for required span so that they will be rigid, without bending or sagging.

G. Roof-mounted ductwork shall be installed a minimum 12 inches above roof and shall be supported by galvanized welded pipe, one on each side, fastened to roof structure, flashed and sealed to roof membrane. Install supports at each turn, unit connections, and each penetration, and space at maximum 6 feet off-center in general. Pitch pockets are not allowed.

3.19 ACCESS PLATES AND DOORS

A. Access plates and doors shall be furnished and installed where stops, valves, fire dampers, fusible links, coils, damper operating mechanism, control equipment, lubrication fittings, air filters, air handling equipment and similar items normally requiring adjustment or servicing are installed in concealed spaces.

B. Access plates and doors shall be located to permit convenient access to equipment sized to permit removal of equipment for servicing. Access plates shall be no less than 12-inch by 12-inch in clear opening. Proper servicing of equipment requires adequate access for maintenance personnel. Access doors shall not be less than 24-inches by 24-inch, unless otherwise detailed. Two or more valves shall not be located in same access area unless sufficient clearance is provided for operation, servicing and removal of each valve.

C. Openings in ducts or plenums whose longer dimension does not exceed 12 inches may be covered by a plate of same material as duct, gasketed and fastened to duct or plenum with sheet metal screws.

D. Access plates in floors shall not be less than 8-inch by 8-inch and shall be carborundum surface brass with cast brass frames anchored into concrete. Access plates in tile walls shall be chromium plated brass and polished. Serrated plates furnished as part of a clean-out assembly are permitted in floors instead of a separate plate.

E. Access plates and doors in walls and ceilings of finished rooms and in locations normally accessible to students shall be furnished with continuous piano hinges, unless otherwise specified, and a special flush type spring-loaded latch requiring an Allen wrench to operate. Access devices shall be installed after plastering in plaster ground openings.

F. Access panels or doors penetrating one-hour fire resistive ceilings shall meet code requirements for such openings.

G. Access panels shall be fire-rated; Milcor, or equal. Access doors shall be as required for installation in openings penetrating one-hour fire resistive ceilings. Access doors shall be furnished with a flush, key-operated cylinder lock, furnished with two keys each, instead of Allen headlock for non-rated ceilings.

H. Access panels that are part of an integrated ceiling are specified in Section 09 8433: Cementitious Wood Fiber Acoustical Units. Identification markers shall be affixed to adjacent supports, under this portion of Work, to indicate location and type of mechanical device to be serviced.

I. Access panels installed in ducts or plenums located in heater or equipment rooms containing gas-fired equipment shall be furnished with heavy-duty spring closing hinges and refrigerator door type catches unless otherwise required. When these panels are intended for maintenance personnel access, catches shall be operable from both interior and exterior.

J. Other access panels, except those specified above, shall be furnished with suitable hinges and one or more sash fasteners.

K. Panels located in ducts and plenums shall be installed with gaskets made of synthetic rubber, felt, or similar material to provide an airtight installation. Panels shall be constructed and reinforced to prevent vibration.

L. Label the words "FIRE DAMPERS" on panels over fire dampers and words "DO NOT OPEN - HEATER IS OPERATING" on panels located in heater or equipment rooms. Letters shall be approximately 3 inches high, if space is available.

M. Furnish a key to operate latch access plates, one for each access plate, but not to exceed five keys for any one Project.

N. Access plates and panels shall be furnished with manufacturer's name or trademark and model number cast or stamped thereon, or upon a label permanently affixed thereon.

O. Provide duct through roof flashing as detailed in the SMACNA standards or as indicated on Drawings.

P. Refer to SMACNA for access plate and door construction.

3.20 CLEANUP

A. Remove rubbish, debris and waste materials and legally dispose off the Project site.

3.21 PROTECTION

A. Protect the Work of this Section until Substantial Completion.

END OF SECTION

SECTION 23 7000

AIR HANDLING UNITS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Indoor and outdoor air handling units with capacities of 4,000 CFM and above.
2. Indoor and outdoor air handling units with capacities lower than 4,000 CFM.

B. Related Requirements:

1. Division 01: General Requirements.
2. Section 23 0500: Common Work Results for HVAC.
3. Section 23 0513: Basic HVAC Materials and Methods.
4. Section 23 0548: HVAC Sound, Vibration and Seismic Control.
5. Section 23 0700: HVAC Insulation.
6. Section 23 0923: Environmental Controls and Energy Management Systems.
7. Section 23 2013: Above Ground HVAC Piping.
8. Section 23 8000: Heating, Ventilating and Air Conditioning Equipment.
9. Section 26 2913: Variable Frequency Drives.

1.02 REFERENCES

A. Air Movement and Control Association International, Inc. (AMCA):

1. AMCA 211 – Certified Ratings Program - Product Rating Manual for Fan Air Performance.
2. AMCA 300 – Reverberant Room Method for Sound Testing of Fans.
3. AMCA 301 – Methods for Calculating Fan Sound Ratings from Laboratory Test Data.

B. Air-Conditioning, Heating, and Refrigeration Institute (AHRI):

1. AHRI 410 – Forced Circulation Air-Cooling and Air-Heating Coils.

2. AHRI 430 Performance Rating of Central Station Air Handling Units Supply Fans.

C. American Society for Testing and Materials International (ASTM):

1. ASTM B117 – Standard Practice for Operating Salt Spray (Fog) Apparatus.

2. ASTM D2247 – Standard Practice for Testing Water Resistance of Coatings in 100 Percent Relative Humidity.

3. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials.

D. National Fire Protection Association (NFPA):

1. NFPA 90A – Standard for the Installation of Air-Conditioning and Ventilating Systems.

E. Underwriters Laboratories, Inc. (UL):

1. UL 50: Enclosures for Electrical Equipment, Non-Environmental Considerations.

2. UL 181 – Standard for Factory-Made Air Ducts and Air Connectors.

3. UL 268A: Standard for Smoke Detectors for Duct Application.

4. UL 508: Standard for Control Panel Assemblies.

5. UL 555S: Standard for Smoke Dampers.

6. UL 723 – Standard for Test for Surface Burning Characteristics of Building Materials.

7. UL 900: Standard for Air Filter Units.

8. UL 1995 –Heating and Cooling Equipment.

F. Underwriters Laboratories of Canada (ULC):

1. CAN/ULC-S102.2 – Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies.

G. American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE):

1. ASHRAE Standard 62.1 – Ventilation for Acceptable Indoor Air Quality.

H. National Electrical Manufacturers Association (NEMA):

1. NEMA – MG 1, Table 12-10: NEMA Threshold Full-Load Nominal Efficiency Values for Energy-Efficient Motors.

I. NFPA:

1. NFPA 70: National Electric Code.

J. ANSI/ANSI/IES:

1. ANSI/ANSI/IES Standard 90.1: Energy Standard for Buildings Except Low-Rise Residential Buildings.

2. IEEE Standard 112.

1.03 SUBMITTALS

A. Comply with provisions of Division 01 and Section 23 0500: Common Work Results for HVAC.

B. Manufacturer's Data:

1. Complete materials list of items proposed to be furnished and installed under this Section. Materials lists, which do not require performance data, shall include manufacturer's name, type, and model number for indicated installation.

2. Manufacturer's specifications and other data required to demonstrate compliance with specified requirements. Literature shall include descriptions of equipment, types, models and sizes proposed, capacity tables or curves marked to indicate performance characteristics, electrical requirements, options selected, space requirements and other data necessary to ensure compliance with requirements of this Specification and performances indicated on Drawings.

3. Provide data of filter media, filter performance data, filter assembly, and filter frames.

C. Shop Drawings indicating methods of installation of equipment and materials, and details of supporting structures for items indicated. Items to be submitted shall include but not be limited to the following:

1. Layout Drawings of Equipment: Include plans, elevations, and sections, of proposed equipment drawn to scale, to establish which equipment shall fit in allotted spaces with clearance for installation and maintenance. Indicate proposed details for attachment. Indicate vibration isolation units, foundations, supports, and openings for passage of pipes and ducts.

2. Electrical interlock or control diagrams for electrically controlled components furnishing more than one automatic or manual control devices, which are not indicated on Drawings.

D. Manufacturer's Recommended Installation Procedures: Manufacturer's recommended installation procedures, when reviewed by the ARCHITECT shall become basis for inspecting actual installation procedures provided.

E. Acoustical Test Report: Submit complete acoustical test reports showing that proposed products have been tested in accordance with latest versions of AMCA Standard 300,

Reverberant Room Method for Sound Testing of Fans, and AMCA Standard 301, Methods for Calculating Fan Sound Ratings from Laboratory Test Data.

F. Submit test certification stating compliance with the maximum requirement of 1.5 percent cabinet leakage of the specified airflow at 8” WG internal test pressure.

G. Operations and Maintenance Data: Include instructions for lubrication, filter replacement, motor and drive replacement, spare parts list and wiring diagrams.

1.04 QUALITY ASSURANCE

A. Qualifications of Manufacturers and Installers: Comply with provisions in Section 23 0500: Common Work Results for HVAC.

B. Sound Level Measurements and Calculations:

1. Sound power level measurements and calculations shall be made in complete accordance with latest version of AHRI 260 Standard, Sound Rating of Ducted Air Moving and Conditioning Equipment.

2. The results of all testing shall be submitted to ARCHITECT, mechanical engineer, and acoustical engineer for approval. The submittal shall include a complete description of test conditions, methods and procedures, including specific installation type used for measurements, as detailed in AHRI 260 Standard.

C. Factory Leak Testing: Manufacturer shall provide a factory leak test on units. Cabinet leakage shall not exceed 1.5% of the specified air flow at 8" static pressure, A written test report shall be prepared by the manufacturer and submitted to the ARCHITECT.

1.05 DURABILITY

A. Design and manufacture air-handling units with underlying requirement to provide a highly durable piece of equipment.

B. Unit Life Expectancy: 25 years. Submit documentation showing proposed products to consider and include design features, components, and materials to satisfy requirement.

1.06 SERVICEABILITY

A. Hoisting Provisions: Fans and motors weighing more than 150 lb to have full-length hoist rails mounted over the equipment to facilitate service, removal, and replacement.

B. Mounting Location: Install internal components in readily accessible locations to facilitate ease of service and replacement.

C. Service Access:

1. Internal components shall be serviceable through access sections with doors indicated on Drawings.

2. Internal components shall be removable and replaceable through access doors or panels.

3. Review requirements for access doors and panels indicated and recommend additional access doors and panels if required for uninhabited service, removal, and replacement of components.

4. Tripping Hazards: Floors in accessible sections of air-handling unit shall be free of standing seams, reinforcing, supports, or section splits located in the walking path that can cause a tripping hazard. Locate section splits immediately adjacent to internal walls.

1.07 QUALITY

A. Type and thickness of materials indicated are the minimum acceptable. Provide better-quality materials of a heavier thickness if required to comply with performance requirements indicated.

B. If manufacturer's standard construction exceeds requirements indicated, use manufacturer's standard construction.

C. If manufacturer's standard construction does not comply with requirements indicated, modify manufacturer's standard construction to comply with requirements.

1.08 VIBRATION PERFORMANCE

A. Air-handling unit manufacturer shall evaluate vibration of internal components installed inside of air-handling units and include internal vibration isolation required to limit the vibration.

1.09 PROJECT RECORD DOCUMENTS

A. Provide OWNER instructions on equipment operation and maintenance procedures, as indicated in Section 23 0500: Common Work Results for HVAC.

1.10 PRODUCT HANDLING

A. Protection, Replacements, Delivery and Storage: Comply with provisions stated under Section 23 0500: Common Work Results for HVAC.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Casing:

1. Sections of unit shall be of same construction and finish except for interior panels that are specified differently for individual sections.

2. Casing construction shall not rely on the casing panels for structural integrity.

3. Casing panels shall be 2” double-wall construction with thermal break. Thermal break shall be between interior and exterior liner of the panel assembly, and between the panel and casing framework.

4. Panel assembly shall meet UL standard 1995 for fire safety. Panel insulation shall comply with the requirements of NFPA 90A

5. Unit shall conform to ASHRAE Standard 111 Class 6 for casing leakage no more than 1.5% of design airflow at 8 inches w.g. in positive pressure sections and -8 inches w.g. in negative pressure sections.

6. Provide wall panels and access doors that deflect no more than L/240 when subjected to 1.5 times design static pressure up to a maximum of 8 inches w.g. in positive pressure sections and -8 inches w.g. in negative pressure sections. ‘L’ is the panel-span length and ‘L/240’ is the deflection at panel midpoint.

B. Insulation for Casing Walls, Floors, and Roofs:

1. Materials: Injected polyurethane foam with a minimum nominal density of 3 lbs./cu. ft.

2. Provide casing with minimum thermal resistance (R-value) of 13 hr-ft2-°F/BTU. Exposed insulation is not acceptable.

3. Thickness: Minimum 2 inches.

4. Insulation shall completely fill the casing cavity, so no voids exist. Thermal Breaks: Casing construction downstream of the cooling coil shall consist of thermal break panels to prevent condensation from accumulating on outer walls.

5. Insulation system provided shall be resistant to mold growth in accordance with a standardized test method such as UL 181 or ASTM C 1338

6. Encapsulate insulation with sheet metal so that air does not contact insulation. Solid lined double-walled panels insulated with injected foam shall be hermetically sealed at each corner and around their entire perimeter to eliminate airflow through the panel and to eliminate microbial growth potential within the casing wall

C. Access doors:

1. Access doors shall be of double wall construction with injected insulation between the two walls and shall be installed on stainless steel hinges for outward opening applications.

2. Minimum R-value for door panel assemblies shall be R-13.

3. Provide each door with a single handle linked to multiple latching points or a separate handle for each latching point. Doors serving access segments shall have an interior latch handle.

4. Multiple handles of no more than four shall be provided to assure positive closure. Handles shall be zinc alloy or glass reinforced nylon and rated to meet 500-hour salt-spray requirements.

5. Doors shall open outward for negative pressure and inward for positive pressure applications so that operating pressure compresses gasket seals.

6. Provide ETL, UL, and CAL/OSHA approved tool operated safety latch on all fan section access doors. Access doors and panels downstream of the coils shall have thermal break.

7. Provide industrial-style stainless steel hinges that permit 180 degrees of door swing.

D. Roof (Outdoor Units):

1. Roof shall be double wall with injected polyurethane foam of the same thickness and characteristics of panels.

2. Pitched away from control side of unit at a minimum roof pitch of ¼ inch per foot across width of unit.

3. No penetrations shall be permitted in pressure-sensitive panels. Roof shall incorporate a standing top seam. All seams shall be gasketed and capped to prevent water infiltration into unit.

E. Roof Curbs (Outdoor Units):

1. Roof curb shall be constructed of 14-gauge galvanized steel, with heights specified on the drawings and schedules.

2. Full perimeter wood nailers shall be securely mounted to curb sheet metal.

3. Curb channel supports shall be supplied on all curbs as needed.

4. Gasketing between curb and unit shall be provided and shipped with the unit curb for field installation.

5. Roof curbs shall be rectangular without any offsets for coil piping to ensure a watertight roof connection.

6. All utilities and piping that penetrate roof must be externally located from primary unit curb.

F. Hoods and Louvers:

1. Outside Air Hoods:

a. Rain hoods shall be provided on outdoor unit air intakes, as shown on drawings. Moisture screens shall be provided on outdoor air inlet rain hoods.

b. Hoods shall include easily accessible 1-in. moisture eliminators with a maximum velocity of no more than 500 fpm.

2. Exhaust/Power Exhaust Air Hoods:

   a. Exhaust air hoods shall be constructed of same material as unit casing.

   b. Expanded metal bird screen shall be provided to prevent entry of unwanted materials into air handler.

   c. Backdraft dampers shall be provided with extruded aluminum blades and galvanized steel braces and vinyl blade seals. Blades shall be mechanically fastened to axle rods rotating in corrosion resistant, synthetic bearings. Blades shall begin to open at 0.12 in. wg and be fully open at 0.2 in. wg.

3. Intake Louvers:

   a. Frames and blades shall be extruded aluminum mechanically fastened with stainless steel fasteners. Frame depth shall be 6 inches.

   b. Vertical blades shall be designed to collect and drain water to exterior at sill by means of a center rain hook and channels in jambs and mullions.

   c. Louvers shall have 1/2-in. mesh removable aluminum bird screen.

   d. Visible mullions required for louver widths greater than 96 inches.

   e. Sill-flashing pans of 4 in. high by full depth formed from minimum 0.060 in. thick aluminum shall be provided.

G. Finish:

1. Manufacturer shall clean the exterior surfaces of units prior to application of exterior protective coating.

2. Outdoor Units: Manufacturer shall paint exterior surfaces of outdoor units prior to shipment.

   a. Exterior finish coating shall show a breakdown of less than 1/8” on either side of a scribed line when subjected to ASTM B117 2,000-hour, 5% salt spray conditions. This is equivalent to an ASTM D1654 rating of ‘6.’ Also, per ASTM D610, degree of rusting to meet #8-G and per ASTM D714 degree of blister to meet #6 medium.

H. Supply and Return Fan Sections:

1. Fan sections shall be furnished with structural steel base for integral mounting of fan assembly and casing panels.

2. Fan scroll, wheel, shaft, bearings, drives, and motors shall be installed on a structural steel base frame assembly isolated from outer casing with factory-installed, spring isolators of required deflection. These base frame assemblies shall be seismically braced.

3. Flexible isolation connectors shall be provided between fans and stationary part of unit.

4. Wiring shall be in flexible conduit. Comply with Section 23 0548: HVAC Sound, Vibration and Seismic Control. Hinged access doors, as specified in this specification shall be provided on both sides of units.

5. When multiple fan arrays are provided:

    a. Fan arrangement within fan array shall produce a uniform airflow and velocity profile across air-handling unit air tunnel and at the inlet and outlet.

6. Finish and Coating: Fans shall be constructed of corrosion resistant galvanized steel. Aluminum components shall be unpainted.

7. Fan motors:

    a. Fan motors shall be standard Alternating Current motors, non-ECM type, installed within fan section casing.

    b. Motors shall be open drip-proof, NEMA Design B with size and electrical characteristics as indicated on equipment schedule.

    c. Each motor shall be tested to IEEE Standard 112, test method B, and NEMA MG 1 Article 12.58.2 and 12.59 Table 12-10 and bear a factory certification run test label to verify compliance.

    d. Motors shall be premium efficiency, inverter duty rated., with minimum 90 percent efficiency for motors greater than 3 horsepower.

    e. Motor starting torque shall exceed fan speed-torque requirements.

    f. Fan RPM shall not exceed RPM on motor nameplate.

8. Fan Drives:

    a. Only direct drive fans shall be used.

9. Fan Array Operational and Service Requirements:

    a. If one or more fans fail in the array, the remaining fans shall continue to operate.

    b. Each fan/motor assembly of fan array shall be capable of lock-out/tag-out procedure without interrupting operation of other fans in the array.

    c. Each fan/motor assembly shall be controlled through a dedicated variable-frequency drive with by-pass capability.

    d. Maximum design air flow at scheduled external static pressure shall be achieved at VFD frequencies of not higher than 60 HZ. Designs that would require VFD’s to speed above 60 HZ are not acceptable.

e. Fans shall be unhoused and incorporate a non-overloading type backward inclined airfoil blade wheel, heavy-gauge galvanized G90 steel frame, and front panel. The front panel shall have a removable inlet cone designed for smooth airflow transition into the wheel. The motor base shall be designed to endure proper alignment of the fan wheel, motor and inlet cone. The design shall also ensure the structural integrity of the base to minimize vibration.

10. Fan Sound Ratings: Fans shall be AMCA 211 rated for performance and AMCA 300 and 301 rated for sound.

11. Accessories: The fan section shall be furnished with double pane glass viewport with safety wire reinforcement, field wired service light with safety cage.

I. Coil Sections:

1. Coils shall be easily removable from side of units. Where 2 or more coils are installed in a coil bank, 304 stainless steel intermediate drain pans that extend a minimum of 6 inches from coil face shall be provided and condensate shall be piped to bottom drain pan. The bottom coil shall not serve as a drain path for upper coil.

2. Main drain pan shall be insulated double-wall 304 stainless steel, sloped toward drain fitting. Drain fitting shall be flush with bottom pan for side discharge, FPT 304 stainless steel connection and shall comply with ASHRAE Standard 62 recommendations on cooling coil pressure drop restrictions. A maximum of one drain shall be furnished for each cooling coil section. Moisture shall not carry over past coil.

3. All coils shall come with factory applied Corrosion-Resistant Epoxy Coating and casing made of 304 stainless steel. Field applied coating is not acceptable.

4. Coils at locations within two miles from ocean shall be furnished with copper plate fins mechanically bonded to enhanced copper tubes with factory applied Corrosion-Resistant Epoxy Coating and casing made of 304 stainless steel. Field applied coating is not acceptable.

5. Hydronic Heating and Cooling Coils:

a. Headers shall be constructed of copper with MPT connections. Headers shall have drain and vent connections accessible from the exterior of the unit. Non-ferrous headers and red brass MPT connections shall be supplied if specified.

b. Configuration: Coils shall be drainable, with non-trapping circuits. Coils shall be suitable for a design working pressure of 325 psig at 250°F. Incorporate into coils section.

6. Refrigerant Coils:

a. Headers shall be constructed of copper with brazed joints.

b. Refrigerant distributors shall be brass and distribution tubes shall be made of seamless copper.

7. Coil Test and Standards:

a. Coils shall be provided with performance certified in accordance with AHRI Standard 410 for coil capacity and pressure drop, wherever applicable. Coils circuits shall be designed such that the fluid velocity is within the range of certified rating conditions at design flow.

b. Water coils shall be operable at 325 psig working pressure and up to 250 deg F. Factory test water coils with 325 psig compressed air under water.

c. Direct expansion (DX) coils shall conform to UL-207, “Standard for Safety: Refrigerant Containing Components and Accessories, Nonelectrical,” when operating with a maximum refrigerant pressure of 600 psig. Factory shall test DX coils with 600 psig compressed air under water. DX coils shall be dehydrated and sealed prior to installation.

d. Water coils shall be provided with a tube OD of 5/8”. Mechanically expand tubes shall form fin bond and provide burnished, work-hardened interior surface.

e. DX coils shall be provided with brass distributor and Brazed-type connections containing at least 45% silver. Inlet and Outlet connections shall be on the same end regardless of coil depth. DX coils shall be provided with a hot gas bypass port on distributor.

f. Minimum tube wall thickness shall be 0.016 inches unless specified differently on drawings and schedules.

g. Continuous aluminum or copper fins shall be provided for coils with die-formed fins. Fins shall have fully drawn collars to accurately space fins and protect tubes. Fins shall be minimum 0.008 " thick.

h. Coil performance shall be submitted for the system with coated fins and tubes to design engineer, showing scheduled capacities.

J. Dampers

1. Mixing boxes, filter-mixing boxes, and exhaust boxes shall have parallel or opposed blade dampers.

2. Dampers shall have airfoil blades, extruded vinyl edge seals, and flexible metal compressible jamb seals.

3. Dampers shall have a maximum leakage rate of 4 CFM/square foot at 1" w.g. and shall comply with ASHRAE 90.1.

4. Damper blades shall be aluminum.

K. Filter Section:

1. Each filter section shall be designed and constructed to house standard size panel filters with efficiencies indicated on equipment schedules.

2. Flat filter sections shall be constructed for 4-in. filters. Sections shall include side access slide rails. 4-inch pre-filter sections shall be provided if specified by schedules.

3. Angle filter sections shall consist of 4-in. filters of standard sizes, arranged in a horizontal V formation.

4. Filter sections on wide air handling units shall have access doors on both sides so that filters can be reached and replaced more easily from the closer side. Provide system to ease replacement of the filters.

5. Filter rack system shall be designed to minimize air bypass on all sides of the rack system.

L. Inlet, Discharge, Access and Plenum Sections:

1. Air Inlet and exhaust sections (for outdoor units) shall be provided with galvanized stationary louvers. Louvers shall be drainable type with built in downspouts and furnished with bird-screen. Louvers shall be painted to match unit exterior.

2. Access sections: Access sections shall be provided with double-walled insulated hinged doors.

3. Down-blast discharge sections requiring through-roof openings, shall be furnished with grating of sufficient thickness and strength with a maximum opening of 6”x6” installed over the duct opening if applicable to support a minimum weight of 300 pounds.

M. Diffuser Sections:

1. Diffuser sections shall be provided when specified, to ensure uniform and even air distribution over adjacent downstream component.

2. Diffuser sections shall be available and required if a filter section is installed immediately downstream of a fan.

N. Sound attenuators shall be provided as integral part of the air handling units and shall not contain glass fiber products.

O. Electrical Requirements:

1. The units shall be factory pre-wired for a single point electrical power connection. Manufacturer shall provide a factory furnished and wired step-down transformer with a fused disconnect for 120 Volt 20 Amp service.

2. Furnish a 120 Volt duplex GFCI convenience outlet in the control compartment.

3. Provide a main disconnect switch for each unit.

4. On multiple fan configurations, A separate NEMA 12 Variable Frequency Drive (VFD) with bypass shall be provided for each motor. Drives shall be factory mounted and wired to motor. VFD shall be cooled by cold deck supply air.

5. The unit shall be furnished with vapor-proof LED light fixtures with guard for each accessible compartment.

6. Lights shall be controlled by one light switch mounted in the control compartment.

7. Approved VFD manufacturers are Danfoss and ABB. Refer to specification section 26 2913: Adjustable Frequency Drives.

8. Maximum design air flow at specified external static pressure shall be achieved with VFD frequencies not exceeding 60 HZ. Designs requiring VFD to rise above 60 HZ are not acceptable.

2.02 CENTRAL STATION AIR HANDLING UNITS (INDOOR OR OUTDOOR) WITH AIR FLOWS OF 4,000 CFM OR ABOVE

A. Central station air-handling unit, fabricated and factory tested for the capacity, configuration, arrangement and components as indicated on Drawings.

B. Base:

1. Provide a full perimeter welded or bolted base frame capable of mounting to a curb as necessary. Base frame shall be manufactured with formed bolted or welded galvanized structural steel tubing or C-Channel support members. Base and unit frame shall be painted with a gray phenolic, corrosion inhibitive primer. Base rails shall be fitted with lifting lugs. Base rail shall overhang curb to facilitate water run-off and protection of curb-to-base connection from water intrusion.

2. All curb mounted units shall be provided with floor constructed of minimum 20-gauge galvanized steel at the bottom, and 14-gauge galvanized steel top walk-on surface, with 2-inch injected foam insulation between the two layers.

3. All floor seams shall be sealed for an airtight unit.

4. Where access is provided to unit interior, floor openings shall be covered with walk on steel safety grating. Single wall floors with glued and pinned insulation are not acceptable. Base frame shall be attached to unit at factory.

C. Casing:

1. Exterior panels including cooling coil sections shall be minimum 2-inch thick formed 16-gauge galvanized steel. Provide necessary support to limit casing deflection to 1/200 of narrowest panel dimension. If panels cannot meet this deflection, add additional internal reinforcing. Panel seams shall be fully welded or sealed for an airtight unit. Leakage rates shall be less than 1 percent at design external static pressure. The exterior panel finish shall have a polyurethane paint system that is designed for long term corrosion resistance meeting or exceeding ASTM B117, Salt Spray Resistance, at 95 degrees F, 4,000 hrs. and ASTM D2247, Humidity Resistance, at 95 degrees F, 4,000 hrs. The color shall be sterling gray.

2. Interior Panels shall have double wall construction with 20-gauge interior galvanized steel liner in all sections.

D. Approved Manufacturers:

1. Energy Labs.

2. Temtrol.

3. Alliance Air Products.

4. Scott Springfield Mfg. Inc.

5. Seasons•4.

6. Carrier.

7. Trane.

8. York.

9. Aaon.

10. Or equal.

2.03 AIR HANDLING UNITS (INDOOR AND OUTDOOR) WITH AIR FLOWS LOWER THAN 4,000 CFM

A. Manufacturers: Carrier, Trane, York, Aaon, Daikin, and VTS.

1. Furnish air handling units as floor mounted, suspended, or roof mounted with all required accessories. Units shall include all necessary components based on the intended application and design.

2. Suspended units shall come with built-in provisions for proper suspension without blocking access doors and service clearances.

3. DX air handling units shall be specified with matching condensing units or heat pumps and shall comply with EER/SEER, IEER and HSPF required by CCR, Title 24, Building Energy Efficiency Standards for Nonresidential Buildings.

4. Units shall be UL or ETL listed.

B. Cabinets:

1. Cabinets shall be fabricated of double wall galvanized steel or aluminum panels with injected foam insulation between the walls and finished with baked enamel coating.

2. Access doors shall be double wall with injected foam insulation, furnished with stainless steel hinges.

3. Doors shall be provided with latching door handles and adequate seals to ensure a complete air-tight cabinet. Unit air leakage shall not exceed 1% of the total scheduled air flow at designed external static pressure.

C. Cooling Coils:

1. Aluminum plate fins mechanically bonded to enhanced copper tubes with joints brazed and factory applied Corrosion-Resistance Epoxy Coating.

2. Tube sheet openings shall be belled to prevent tube wear.

3. Evaporator coil shall be of full-face active design. Dual circuit models shall have face-split type evaporator coil.

D. Fans:

1. Fan shall be direct drive, centrifugal, forward, or backward curved or airfoil type.

2. Fan shall be statically and dynamically balanced.

3. Fan motor shall be premium efficiency, inverter duty rated or electronically commutated motor (ECM) with speed control capability.

4. Fan shall be furnished with Variable Frequency Drive (VFD) or ECM speed controller.

E. Filters:

1. Filters shall be 4-inch standard size high-capacity replaceable media type, installed in a 4-inch rack filter section with hinged access door.

PART 3 – EXECUTION

3.01 GENERAL

A. Examine areas under which Work of this Section will be performed. Correct conditions detrimental to proper and timely completion of Work. Do not proceed until unsatisfactory conditions have been corrected.

3.02 EQUIPMENT FOUNDATIONS

A. Equipment foundations shall be of sufficient size and weight, and of proper design to preclude shifting of equipment under operating conditions, or under any abnormal conditions imposed upon equipment.

B. Foundations shall meet requirements of equipment manufacturer. When required by the ARCHITECT, approval of foundation design and construction shall be obtained from equipment manufacturer. Equipment vibration shall be maintained within design limits and shall be dampened and isolated. Isolators shall be bolted to a steel member so as to be readily removable.

3.03 EQUIPMENT INSTALLATION

A. Equipment installation shall be in strict accordance with these Specifications and installation instructions of manufacturers. Equipment installed on concrete foundations shall be grouted before piping is installed. Piping shall be installed in such a manner as not to place a strain on any of the equipment. Flanged joints shall be adequately extended before installation.

1. Install equipment in a neat and skillful manner, properly aligned, leveled, and adjusted for satisfactory operation.

2. Install flexible connections to isolate piping and ductwork from equipment.

3. Install so that connecting and disconnecting of piping and accessories can be readily accomplished, and parts are readily accessible for inspection, service and repair. Adequate space shall be provided to readily remove filters and frequently serviceable accessories. Follow manufacturer's instructions on clear spaces needed on each side of equipment.

4. Provide G90 galvanized secondary drain pans under all indoor suspended HVAC units. Secondary drain pans shall be 2" deep and extended 2" beyond all sides of the main units. Provide and install conductivity moisture detection sensor with manual reset, Asurity WS-1, to disable compressor. Provide ¾" secondary pan discharge line piped to above a sink if available and if not, to a readily visible location within 6 feet from the main doorway. Direct the discharge away from locations where it may cause harm to students and damage to electronic equipment, and books.

5. Provide freeze stats for DX equipment.

3.04 NOISE AND VIBRATION

A. Operation: Mechanical equipment and connected ducting and piping systems shall operate without exceeding specified noise and/or vibration levels.

B. Corrective Measures: If specified noise and/or vibration levels are exceeded, provide necessary changes to reduce noise and/or vibration levels to within specified levels.

3.05 FIELD TESTS AND INSPECTION

A. General: Perform field inspections, field tests, and trial operations as specified in Section 23 0500: Common Work Results for HVAC. Provide labor, equipment and incidentals required for testing. The Project Inspector will witness field tests and trial operations as specified in Section 23 0500: Common Work Results for HVAC. Refer to 23-0800: HVAC Systems Commissioning, and 23-0813: Environmental Controls and Energy Management Systems Commissioning.

B. Equipment and Material: Equipment and material certified as being successfully tested by manufacturer, in accordance with referenced Specifications and standards, will not require re-testing before installation. Equipment and materials not tested at the place of manufacture shall be tested after installation , to determine compliance with reference Specifications, standards, and schedules.

C. Start-Up and Commissioning Operational Test: System shall be started up and initially operated with components operating. During this test, filters shall be periodically replaced until no further accumulation of foreign material occurs. Adjust safety and automatic control instruments as required to provide proper operation and control sequence. Refer to Section 23 0500: Common Work Results for HVAC, 23-0923: Environmental Controls and Energy Management Systems, 01-4525: Testing, Adjusting, and Balancing for HVAC, and 23-0800: HVAC Systems Commissioning, and 23-0813: Environmental Controls and Energy Management Systems Commissioning.

D. Operation and Maintenance Data: Provide required operation and maintenance data as specified in Section 23 0500: Common Work Results for HVAC.

3.06 TRAINING

A. Provide a 4-hour on-site training by equipment manufacturer's certified instructor specialized in installed air handler to LAUSD maintenance personnel for adjusting, operating, and maintenance of the air-handling units.

B. Training shall include, but not be limited to, procedures and schedules related to performance, safety, startup and shut down, troubleshooting, servicing, preventive maintenance, and how to obtain replacement parts.

3.07 PROTECTION

A. Protect the Work of this Section until Substantial Completion.

3.08 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 23 8000

HEATING, VENTILATING AND AIR CONDITIONING EQUIPMENT

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes: Heating Ventilation and Air Conditioning equipment including but not limited to:

1. Rooftop Packaged Heat Pump Units.
2. Split System Heat Pumps.
3. Fans.
4. Air Filters.

B. Related Requirements:

~~1.~~ Division 01: General Requirements.
2. Section 22 1000: Plumbing.
3. Section 23 0500: Common Work Results for HVAC.
4. Section 23 0513: Basic HVAC Materials and Methods.
5. Section 23 0548: HVAC Sound, Vibration and Seismic Control.
6. Section 23 0553: HVAC Identification.
7. Section 23 0700: HVAC Insulation.
8. Section 23 0800: HVAC Systems Commissioning.
9. Section 23 3000: Air Distribution.
10. Section 23 7000: Air Handling Units.
11. Section 26 2913: Variable Frequency Drives.

1.02 DESIGN REQUIREMENTS

A. Work of this Section is based on HVAC equipment units indicated as Basis of Design in Part 2 of this Section. Products from different HVAC equipment manufacturers listed are never identical, although equivalent in capacity, performance and quality. In the

cases where dimensions, weight, configuration and utility requirements differ from the products used as a basis of design, the Contractor, at no additional cost to the Owner, shall coordinate and submit, for Architect review, revisions to the design.

1.03 SUBMITTALS

A. Provide in accordance with Division 01 and Section 23 0500: Common Work Results for HVAC.

B. For products listed that are not the basis of design, submit the following in addition to above requirements:

1. Title 24 Calculations: Replace HVAC unit values in calculation files provided by the Architect and submit for review.

1.04 QUALITY ASSURANCE

A. Provide submittals in accordance with Section 23 0500: Common Work Results for HVAC.

1.05 PROJECT RECORD DOCUMENTS

A. Provide OWNER instructions on equipment operation and maintenance procedures, as indicated in Section 23 0500: Common Work Results for HVAC.

1.06 WARRANTY

A. Compressors shall be provided with manufacturer's five-year warranty, replacement only.

B. Manufacturer shall warrant all parts for a period of five years.

PART 2 – PRODUCTSEQUIPMENT

A. Capacities of Heat Ventilation and Air Conditioning equipment indicated on Drawings are net required capacities. Standard catalog ratings shall be adjusted to actual Project site environmental conditions.

2.02 ROOFTOP PACKAGED HEAT PUMP UNITS

A. Manufacturers: Carrier, Trane, Lennox, American Standard Heating & Air Conditioning.

1. Basis of Design: [Carrier] [Trane]

B. Furnish packaged Heat Pump unit for rooftop installation. Unit shall be self-contained, completely factory assembled, with complete internal wiring and controls. Unit shall also be provided with a fully piped refrigerant circuit, fully charged with a refrigerant that is not scheduled for phase out and approved by LAUSD OEHS. Unit shall be field configurable for down-flow or horizontal discharge. Cooling and heating capacities, electrical characteristics, and operating conditions shall be as indicated on Drawings.

C. Quality Assurance:

1. Cooling capacity shall be rated in accordance with current ANSI/AHRI Standard 210/240.

2. Unit shall be UL or ETL listed and designed to conform to ANSI/ASHRAE Standard 15 Safety Code for Mechanical Refrigeration.

3. ANSI/NFPA 70: National Electrical Code.

4. Provide units with Minimum SEER of 16.1, HSPF 8.3 rated at AHRI conditions and calculated in accordance with AHRI Standard 210/240.

5. The unit roof curbs shall conform to NRCA standards.

6. Insulation and adhesive shall meet NFPA 90A and 90B requirements for flame spread and smoke generation.

7. Unit casing shall be capable of withstanding ASTM B117 500-hour salt spray test.

8. Each unit shall be run tested at factory per ANSI/ASHRAE 37 and provided with a certificate indicating tested pressures, amperages, dates, and inspector.

D. Unit Cabinet:

1. Galvanized steel with baked enamel finish on external surfaces that are exposed to weather.

2. Interior surfaces exposed to conditioned and return air streams shall be insulated with a minimum ½-inch thick, 1-pound density foil-faced cleanable insulation.

3. Cabinet top cover shall be of one-piece construction or where seams exist, shall be double hemmed and gasket sealed.

4. Cabinet panels shall be hinged access panels for filter, compressors, evaporator fan, and control box areas. Each panel shall use multiple quarter-turn latches. Each major external hinged access panel shall be permanently attached to rooftop unit. Panels shall also include tiebacks.

5. Return air filters shall be accessible through a hinged access panel and be on a track using standard size filters.

6. Holes shall be provided in base rails (minimum 16 gage) for rigging shackles and level travel and movement during overhead rigging operations.

7. Unit shall have a factory-installed internally sloped condensate drain pan, providing a minimum ¾-inch NPT connection to prevent standing water from accumulating. Pan shall be fabricated of high impact polycarbonate material or stainless steel and shall slide out for cleaning or maintenance. An alternate vertical drain (¾-inch NPT) connection shall also be available. Drain pans shall conform to ASHRAE 62 self-draining provisions.

E. Compressors:

1. Unit shall be furnished with single (If single compressor is used, then it shall be Two Stage type) or multiple fully hermetic scroll compressors with internal vibration isolators.

2. Dual electrically and mechanically independent refrigerant circuits for 7.5 tons and above.

3. Compressors shall be provided with service access valves.

4. Compressor motors shall be cooled by refrigerant passing through motor windings.

5. Compressors shall be provided with line break thermal and current overload protection.

6. Compressors shall be provided with crankcase heaters, internal high-pressure and temperature protection.

7. Compressors on unit rated 90,000 BTU and below shall be of two stage types.

F. Hot Gas Reheat System: Provide the unit with hot gas reheat system.

G. Refrigerant circuit components:

1. Thermostatic expansion valve (TXV) or Electronic Expansion Valve (EEV).

2. Service gage connections on suction, discharge, and liquid lines.

3. Solid core bi-flow refrigerant filter driers.

4. High-pressure safety switch.

5. Low-pressure safety switch.

6. Minimum off-time relay.

H. Evaporator and Condenser Coils: Standard Evaporator and condenser coils shall be furnished with:

1. Acceptable Condenser Coils:

a. Copper-tube, Aluminum-fin coil, with liquid sub-cooler. Internally enhanced OD seamless copper tubing mechanically bonded to aluminum fins in combination with a factory applied Corrosion-Resistant Epoxy Coating. Provide Protective Hail Guard.

b. Spine Fin condenser coil shall be continuously wrapped, corrosion resistant aluminum with minimum brazed joints. This coil is 3/8-inch OD seamless aluminum tubing glued to a continuous aluminum fin. Coils are lab tested to withstand 2,000 pounds of pressure per square inch. The outdoor coil provides low airflow resistance and efficient heat transfer. The coil is protected on four sides by louvered panels.

2. Evaporator coils

a. Tube sheet openings shall be belled to prevent tube wear.

b. Evaporator coil shall be of full-face active design.

c. Dual circuit models shall have face-split type evaporator coil.

I. Evaporator and Condenser Coils shall be furnished with copper plate fins mechanically bonded to enhanced copper tubes with copper tube sheets and brazed joints with a factory applied Corrosion-Resistant Epoxy Coating utilizing dipping process. Provide protective Hail Guard.

J. Fans and Motors:

1. ECM Direct -drive indoor fans shall be provided for the AC Units with the cooling capacity of less than or equal to 60,000 BTU/H.

2. If the RTU comes with VFD system, then the VFD system shall include LCD display showing all operating parameters and statuses, including Alarm Alerts.

3. Outdoor fan shall be a dynamically balanced, low-noise propeller type. Outdoor air shall be discharged vertically. Outdoor fan motor shall be ECM type motor and provide cooling operation down to 25 degrees Fahrenheit outdoor temperature with automatic-reset thermal overload protection.

K. Controls, Safeties and Diagnostic Points:

1. Unit Controls: Unit shall be furnished with self-contained, BACnet MS/TP Direct Digital Controls.

a. Controls shall be factory-installed.

b. Controls shall operate with zone control systems as needed.

c. Controls shall furnish built-in diagnostics for thermostat/sensor commands for staged heating and cooling, evaporator-fan operation, and economizer operation.

d. Controls shall be furnished with a time delay between modes of operation.

e. Control circuit shall be protected by a fuse on 24-V transformer side.

f. Control shall incorporate passive infrared detection for sensing occupancy in space serve.

2. Compressor high temperature, high current, internal overloads, internal thermostat.

a. Compressor reverse rotation protection.

b. Loss-of-charge/low-pressure switch.

c. Freeze-protection thermostat, evaporator coil.

d. High-pressure switch.

e. Internal relief valve.

f. Anti-recycle relay, or time cycle device to prevent rapid cycling of compressor after any off cycle.

3. Operating Characteristics:

a. Unit shall be capable of starting and operating at 125 degrees F ambient outdoor temperature, meeting maximum load criteria of AHRI Standard 210/240 or 360 at plus or minus 10 percent voltage.

b. Compressor with standard controls shall be capable of operation down to 25 degrees F ambient outdoor temperature.

4. EMS Diagnostic Points: Provide diagnostic points for units.

a. Supply air temperature.

b. Return/Space air temperature.

c. RH and CO2 sensors and display.

d. Outdoor air temperature.

e. Fan/ Filter status, via pressure transducer with display on analog point.

f. Economizer damper current position.

g. Other diagnostic point required by current Title 24, automated fault detection and diagnostics (FDD).

L. Filter Section:

1. Provide filter section with factory-installed low-velocity, throwaway, 4-inch (if available), or 2-inch thick high capacity, MERV 13 Class 2, filters of commercially available sizes unless noted otherwise on the drawings.

2. Filter face velocity shall not exceed 300 fpm at nominal airflows.

3. Filter section shall allow installation of standard size air filter.

4. Return air filters shall be accessible through a hinged or tool-less access panel.

M. 100 Percent Outdoor Air Economizer:

Provide the following as applicable to the project:

1. 100 percent outdoor air economizers as indicated on drawings.

2. Gear-driven integrated economizers.

3. Integrated integral-modulating type capable of simultaneous economizer and compressor operation.

4. Differential temperature controller unless indicated otherwise on drawings.

5. Furnish hardware and controls to provide cooling with outdoor air.

6. Provide units with centrifugal power exhaust controlled by a differential pressure sensor between space and outdoor. The controller shall modulate NEMA 12 VFD in centrifugal power exhaust to maintain a pressure differential of 0.03 inch of water between indoor and atmospheric pressure. Power exhaust module shall be mounted on springs and isolated from air distribution ducts. Furnish field wiring to power exhaust and install space pressure sensing tubing in space. Provide other accessories as required to comply with UL or ETL requirements.

7. Base Rail: Factory installed on both horizontal and down-flow units.

8. Dampers Using Electronic Actuators:

a. Manufacturer: Belimo, Honeywell, Johnson Controls, or equal.

b. Size for torque required for damper seal at load conditions.

c. Coupling: V-bolt dual nut clamp with a V-shaped, toothed cradle or gear driven damper blades.

d. Overload Protection: Electronic overload or digital rotation-sensing circuitry without the use of end switches to prevent damage to the actuator during a stall condition.

e. Fail-Safe Operation: Mechanical, spring-return mechanism.

f. Proportional Actuators shall be fully programmable. Control input, position feedback and running time shall be factory or field programmable by use of external computer software. Diagnostic feedback shall provide indications of hunting or oscillation, mechanical overload and mechanical travel.

g. Actuators shall be listed by ISO 9001, ULC, and CSA C22.2.

N. Furnish programmable digital thermostat with following features for single zone units that are not provided with variable volume and variable temperature type controls:

1. Heat, cool, automatic changeover, CO2 Sensor, PIR occupancy sensor, and Humidity Sensor.

2. Occupied/ Unoccupied modes.

3. Schneider Electric SE8650U5B11, or equal.

4. Thermostat shall have a complete unobstructed view of the space to achieve proper occupancy sensing.

5. Gymnasiums and Auditoriums shall be provided with thermostats located in a space such as a hopper room, office, electrical room, etc. not accessible to students with remote stainless-steel wall plate temperature sensor with override/HVAC enabling pushbutton and ON/OFF indicator LED light. Verify remote location of sensors and thermostats with Architect/Mechanical Engineer. RH and CO2 Sensors shall be installed in the return ductwork.

O. Demand Controlled Ventilation:

1. Units shall be provided with modulating outside air dampers for demand control ventilation through Indoor Air Quality (CO_2) Sensor.

2. The IAQ sensor shall be wall mounted unless otherwise indicated on Drawings. The set point shall be adjustable.

3. The IAQ sensor shall provide a 0-10 VDC signal.

2.03 SPLIT SYSTEM HEAT PUMPS

A. Condensing Unit Manufacturer: Carrier, Trane, Lennox, American Standard Heating & Air Conditioning.

1. Basis of Design: [Carrier] [Trane]

1. Quality Assurance:

1. Cooling capacity rated in accordance with current AHRI Standard 210/240 and 270. Units shall be AHRI listed.

2. Unit construction shall comply with ANSI/ASHRAE 15, latest revision, and with NEC.

3. Units shall be constructed in accordance with UL standards and shall carry UL/ETL label of approval.

4. Unit cabinet shall be capable of withstanding ASTM B117 500-hour salt spray test.

5. Provide units with Minimum SEER/IEER of 17, and EER/SEER/IEER/HSPF complying with CCR, Title 24, Building Energy Efficiency Standards, whichever is more stringent. The ratings shall not be less than what indicated on drawings.

B. Air Handling Unit (Fan Coil Unit): For the selection of the matching Air Handling Unit Refer to guide specification section “23 7000 Air Handling Units”.

C. Heat Pump Condensing Unit: Furnish heat pump, split type, air-cooled, roof or ground installation. Unit shall be factory assembled and furnished with direct-drive Outdoor fans with horizontal or vertical air discharge, scroll type compressor, refrigerant coil, fan motors, pre-wired control panel. Unit shall also be provided with a fully piped refrigerant circuit, charged with a refrigerant that is not scheduled for phase out and approved by LAUSD OEHS. Actual unit cooling and heating capacities, electrical characteristics, and operating conditions shall be as indicated on Drawings.

D. Outdoor coils: Outdoor coils shall be copper with mechanically bonded, smooth aluminum plate fins. Tube joints shall be brazed with copper or silver alloy. Coils shall be pressure-tested at factory. Protective metal guard for inlet and outlet of outdoor coil.

Fans:

1. Outdoor Fan and Motors: Outdoor fan shall be ECM motor driven, propeller type arranged for horizontal or vertical discharge.

E. Unit Casing:

1. Casing shall be fabricated of galvanized steel, bonderized and finished with baked enamel.

F. Compressor: Compressor shall be two stage or variable speed type hermetic scroll/rotary.

1. The compressor shall be variable speed type for cooling only applications such as IDF, MDF, electrical, and Elevator machine rooms.

a. Provide one spare OEM temperature controller kept in the control compartment of the fan coil unit for the purpose of M&O trouble shooting.

2. Compressors shall be installed on rubber isolators to reduce sound vibration.

3. Each heat pump shall be furnished with a factory installed suction accumulator. Field installed accumulators are not permitted.

4. Condensing Unit shall be furnished with high and low-pressure protection, thermostatic expansion valves, and a holding charge of refrigerant.

G. EMS Diagnostic Points:

1. Supply air temperature.

2. Return air temperature.

3. Outdoor air temperature.

4. Filter/ blow motor status, via Pressure transducer with display on analog point.

5. Other diagnostic point required by current Title 24, automated fault detection and diagnostics (FDD).

H. Low Ambient Operation: Head pressure control shall be provided for operation at outside air temperature below 45 degrees Fahrenheit.

I. Provide programmable digital thermostat with following features:

1. Heat, cool, automatic changeover.

2. Occupied / Unoccupied modes.

3. Schneider Electric or Viconics 8650 with CO2 sensor, or equal with built-in PIR occupancy sensor.

J. Start-up: Factory test each unit before shipment to Project site. Performance test shall include full refrigeration start-up, fan and controls start-up. Each unit shall be

provided with its own report with its own serial number. Non-tested units are not permitted to be delivered to Project site. Provide full start-up of units to include full refrigeration and provide a written report.

2.04 ROOF MOUNTED POWER EXHAUST VENTILATORS

A. RMEV-1:

1. Manufacturer:

CARNES	GREENHECK	LOREN COOK	PENNBARRY	TWIN CITY	OR EQUAL
VUBK Series	CUBE Series	ACRUB	Fumex-Belt Drive	BCRU	

2. Spun aluminum, roof mounted, belt driven, upblast centrifugal exhaust ventilator, with components as indicated and specified. Sizes, performances, and accessories shall be as indicated on equipment schedules on Drawings. Also, provide accessories for proper operation and balancing of fans in accordance with design intent and sequence of operation.

3. Certification: Fan shall be listed by Underwriters Laboratories Inc. (UL 705). Fan shall bear AMCA Certified Ratings Seals for Fan Sound and Air Performance.

4. Housing: The fan shall be of bolted and welded construction utilizing corrosion resistant fasteners. The spun aluminum structural components shall be constructed of minimum 18 gage Aluminum, bolted to a rigid aluminum support structure. The aluminum base shall have a one-piece inlet spinning and continuously welded curb cap corners for maximum leak protection. The windband shall have a rolled bead for added strength. A two-piece top cap shall have stainless steel, or galvanized quick release latches to provide access into motor compartment without use of tools, or screws. An integral conduit chase shall be provided into motor compartment to facilitate wiring connections. The motor, bearings and drives shall be mounted on a minimum 16 gage steel power assembly, isolated from unit structure with rubber vibration isolators. These components shall be enclosed in a weather-tight compartment, separated from exhaust airstream. Lifting lugs shall be provided to help prevent damage from improper lifting. Unit shall bear an engraved aluminum nameplate.

5. Wheel: Wheel shall be centrifugal backward inclined, constructed of 100 percent aluminum, including a precision machined cast aluminum hub. Wheel inlet shall overlap an aerodynamic aluminum inlet cone to provide maximum performance and efficiency. Wheel shall be

balanced in accordance with AMCA Standard 204, Balance Quality and Vibration Levels for Fans.

6. Motor: Motor shall be heavy-duty ECM type with permanently lubricated sealed ball bearings and furnished at specified voltage, phase, and enclosure.

7. Bearing: Bearings shall be designed and individually tested specifically for use in air handling applications. Construction shall be heavy-duty regreasable ball type in a cast iron pillow block housing selected for a minimum L50 life in excess of 200,000 hours at maximum cataloged operating speed.

8. Belts and Drives: Belts shall be oil and heat resistant, non-static type. Drives shall be precision machined cast iron, or galvanized steel type, keyed and securely attached to wheel and motor shafts. Drives shall be sized for 150 percent of installed motor horsepower. The variable pitch motor drive must be factory set to specified fan RPM.

B. RMEV-2:

1. Manufacturer:

CARNES	GREENHECK	LOREN COOK	PENNBARRY	TWIN CITY	OR EQUAL
VUDK Series	CUE Series	ACRUD	Fumex-Direct Drive	DCRU	

2. Spun aluminum, roof mounted, direct driven, upblast centrifugal exhaust ventilator, with components as indicated and specified. Sizes, performances, and accessories shall be as indicated on equipment schedules on Drawings. Also, provide accessories for proper operation and balancing of fans in accordance with design intent and sequence of operation.

3. Certification: Fan shall be listed by Underwriters Laboratories Inc. (UL 705). Fan shall bear AMCA Certified Ratings Seals for Fan Sound and Air Performance.

4. Housing: Fan shall be of bolted and welded construction utilizing corrosion resistant fasteners. The spun aluminum structural components shall be constructed of minimum 18 gage Aluminum, bolted to a rigid aluminum support structure. The aluminum base shall have a one-piece inlet spinning and continuously welded curb cap corners for maximum leak protection. The windband shall have a rolled bead for added strength. An integral conduit chase shall be provided into motor compartment to facilitate wiring connections. The motor shall be enclosed in a weather-tight compartment, separated from exhaust airstream. Unit shall bear an engraved aluminum nameplate.

5. Wheel: Wheel shall be centrifugal backward inclined, constructed of 100 percent aluminum, including a precision machined cast aluminum hub. An aerodynamic aluminum inlet cone shall be provided for maximum performance and efficiency. Wheel shall be balanced in accordance with AMCA Standard 204, Balance Quality and Vibration Levels for Fans.

6. Motor: Motor shall be heavy-duty ECM type with permanently lubricated sealed bearings and furnished at specified voltage, phase, and enclosure.

2.05

2.05 CEILING CABINET FANS

A. CCF-1:

1. Manufacturer:

CARNES	GREENHECK	LOREN COOK	PENNBARRY	TWIN CITY	OR EQUAL
VCDK or VCDD Series	SP or CSP Series	GC 200 or 900 Series	Zephyr Fans	T or TL Series	

2. Provide ceiling, wall, or inline mounted, direct driven, centrifugal exhaust fans of sizes, capacities and configurations indicated on drawings, complete with accessories for installation of fans. Also, provide accessories for proper operation and balancing of fans in accordance with design intent and sequence of operation.

3. Certification: Fan shall be listed by Underwriters Laboratories (UL 507 & 705). Fan shall bear AMCA Certified Ratings Seal for Sound and Air Performance.

4. Housing: The fan housing shall be minimum 22 gage galvanized steel and acoustically insulated. Blower and motor assembly shall be mounted to a minimum 16 gage reinforcing channel and shall be easily removable from housing. Motor shall be mounted on vibration isolators. Unit shall be supplied with integral wiring box and disconnect receptacle shall be standard. Discharge position shall be convertible from right angle to straight through by moving interchangeable panels. The outlet duct collar shall include a reinforced aluminum damper with continuous aluminum hinge rod and brass bushings. To accommodate different ceiling thickness, an adjustable prepunched mounting bracket shall be provided. A powder painted white

5. steel grille shall be provided as standard.

6. Wheel: Wheel shall be centrifugal forward curved type, constructed of galvanized steel. Wheel shall be balanced in accordance with AMCA Standard 204, Balance Quality and Vibration Levels for Fans.

7. Motor: Motor shall be ECM type with permanently lubricated bearings, built-in thermal overload protection and disconnect plug. Motor shall be furnished at specified voltage.

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2.06 AIR FILTERS

A. Air filter media shall be minimum 2-inch thick, MERV 13 Class 2, 100% synthetic, high capacity, pleated, disposable type, with support grid and enclosing frame, continuously laminated on a supporting moisture resistant beverage board type frame that conforms to the configuration of the pleats. Media shall be glued to the frame along all four sides and glued horizontally & diagonally to grill members on both sides. The media shall be unaffected by water and humidity, be non-toxic, non-allergenic, and shall not support the growth of any fungi or bacteria. Filter shall have rigid outer frame that will not bend or distort under normal usage. Filter shall be UL 900 listed, Class 2.

B. Filter media shall provide an average efficiency as specified on drawings per ASHRAE Standard 52.2.

C. Initial resistance of air filters shall not exceed following limits for each efficiency level at face velocities indicated. Lower resistance requirements, if indicated on drawings shall have precedence.

85 percent (MERV 13) 0.30-inch water gage at 500 feet per minute

D. Use standard size Filter Medias only.

E. Media support shall be a welded wire grid or a rigid frame with an effective open area of not less than 96 percent.

1. Media support shall be bonded to filter media to eliminate possibility of media oscillation and media pull-away.

2. Media support grid shall be formed in such a manner that it effectively forms a radial pleat design, providing total use of filter media.

F. Enclosing frame shall be bonded to air entering and air exit side of each pleat, to ensure pleat stability. Inside periphery of enclosing frame shall be bonded to filter pack, thus eliminating possibility of air bypass.

G. Holding frames shall be factory fabricated of 16 gage galvanized steel, or equivalent and shall be furnished with gaskets and spring type positive sealing fasteners. Fasteners shall be capable of being attached or removed without use of tools.

H. Manufacturers: Camfil Farr, Koch, or AAF.

2.07 LOUVERS, AIR CONDITIONING (use in conjunction with relief damper)

A. Standard steel louvers shall be heavy duty and vandal resistance type, furnished complete with frames, blades, finishes, and installation details.

B. Louvers shall be furnished with horizontal blades, 2 inches deep for air through wall installation in conjunction with relief damper for backdraft protection that will open via motorized damper actuator. Blades shall be drainable. Provide bird screen.

PART 3 – EXECUTION

3.01 GENERAL

A. Examine areas under which Work of this Section will be performed. Correct conditions detrimental to proper and timely completion of Work. Do not proceed until unsatisfactory conditions have been corrected.

3.02 EQUIPMENT FOUNDATIONS

A. Provide foundations (housekeeping pads, level platforms or curbs) for mechanical equipment whether indicated on drawings or not. Equipment foundations shall be of sufficient size and weight, and of proper design to preclude shifting of equipment under operating conditions, or under abnormal conditions imposed upon equipment.

B. Provide foundations (housekeeping pads, level platforms or curbs) for mechanical equipment whether indicated on drawings or not. Foundations shall meet requirements of equipment manufacturer and, when required by Architect, obtain from equipment manufacturer, approval of foundation design and construction, for equipment to be installed. Equipment vibration shall be maintained within design limits and shall be dampened and isolated. Isolators shall be bolted to a structural member so as to be readily removable.

3.03 EQUIPMENT DESIGN AND INSTALLATION

A. Uniformity: Unless otherwise specified, equipment of same type or classification shall be product of same manufacturer.

B. Application: Only provide equipment as reviewed by Architect.

C. Equipment Installation: Equipment installation shall be in strict accordance with these Specifications, and installation instructions of manufacturers. Equipment installed on concrete foundations shall be grouted before piping is installed. Piping shall be installed in such a manner as not to place a strain on equipment. Flanged joints shall be adequately extended before installation. Piping shall be graded, anchored, guided and supported, without low pockets.

1. Install equipment in a neat and skillful manner, properly aligned, leveled, and adjusted for satisfactory operation.

2. Install so connecting and disconnecting of piping and accessories can be readily accomplished, parts are readily accessible for inspection, service and repair. Space shall be provided to readily remove filters, coils, compressors and fan wheels. Access doors shall be hinged with cam lock door handles.

3. Provide flexible connections for duct, pipe and conduit connections at moving equipment.

3.04 ROOF-TOP EQUIPMENT MOUNTING

A. Downflow Packaged Units: Install unit on a prefabricated mounting frame or curb secured directly to roof. Follow manufacturers recommended installation manuals. Submit Shop Drawings for review by Architect.

B. Horizontal Flow Packaged Units: Install unit on platform or prefabricated mounting frame or curb secured directly to roof designed to suit roof conditions and requirements of provided unit. Submit Shop Drawings for review by Architect.

3.05 REFRIGERANT PIPING INSTALATION

A. For refrigerant piping requirements and specifications refer to Section 23 0513: Basic HVAC Materials & Methods, and Section 23 0500: Common Work Results for HVAC.

3.06 FIELD TESTS AND INSPECTION

A. General: Perform field inspections, field tests, and trial operations as specified in Section 23 0500: Common Work Results for HVAC. Provide labor, equipment and incidentals required for testing. The Project Inspector will witness field tests and trial operations as specified in Section 23 0500: Common Work Results for HVAC.

B. Equipment and Material: Equipment and material certified as being successfully tested by manufacturer, in accordance with referenced Specifications and standards, will not require re-testing before installation. Equipment and materials not tested at place of manufacture will be tested before or after installation, as applicable or necessary, to determine compliance with reference Specifications and standards.

C. Start-Up and Operational Test: System shall be started up and initially operated with components operating. During this test, various strainers or filters shall be periodically cleaned until no further accumulation of foreign material occurs. Adjust safety and automatic control instruments as required to provide proper operation and control sequence. Refer to Section 23 0500: Common Work Results for HVAC.

D. Extent of Field Tests: After installation and before completion, Work of this Section shall be subjected to required field tests, including those specified here and in Section 23 0500: Common Work Results for HVAC.

E. Operation and Maintenance Data: Provide required operation and maintenance data as specified in Section 23 0500: Common Work Results for HVAC.

3.07 CLEANUP

A. Remove rubbish, debris and waste materials and legally dispose of off Project site.

3.08 PROTECTION

A. Protect Work of this Section until Substantial Completion.

END OF SECTION

SECTION 26 0500

COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies the basic requirements for electrical installations and includes requirements common to more than one section of Division 26. It expands and supplements the requirements specified in sections of Division 01.

B. Related Requirements:

1. Division 01 – General Requirements.
2. Section 03 3000 – Cast-in-Place Concrete.
3. Section 09 9000 – Painting and Coating.
4. Division 14 – Conveying Equipment.
5. Division 23 – HVAC.
6. Division 26 – Electrical.
7. Division 27 – Communications.
8. Division 28 – Electronic Safety and Security.
9. Division 31 – Earthwork.
10. Division 32 – Exterior Improvements.
11. Division 33 – Site Improvements.

C. Related Industry Standards: The most current version of the following industry standards.

1. ASTM D 709 – Laminated Thermosetting materials.
2. ANSI/NEMA FB-1 – Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable.
3. ANSI/NEMA 250 – Enclosures for Electrical Equipment (1000 Volts Maximum).
4. California Electrical Code (CEC).
5. IEEE C57.12.28 – Standard for Pad-Mounted equipment Enclosure Integrity.

6. IEEE 1584 – Performing Arc-Flash Hazard Calculations.

7. UL/ANSI 1 – Standard for Flexible Metal Conduit.

8. UL/ANSI 1242 – Standard for Electrical Intermediate Metal Conduit.

9. UL/ANSI 506 – Standard for Specialty Transformers.

10. UL/ANSI 6 – Electrical Rigid Metal Conduit-Steel.

11. UL/ANSI 6A – Electrical Rigid Metal Conduit-Aluminum, Red Brass, and Stainless Steel.

12. UL 797 – Electrical Metallic Tubing-Steel.

13. UL/ANSI 870 – Standard for Wireways, Auxiliary Gutters, and Associated Fittings.

14. UL/ANSI 891 – Standard for Safety Switchboards.

1.02 BASIC ELECTRICAL REQUIREMENTS

A. Quality Assurance:

1. Work shall be performed by CONTRACTOR'S personnel possessing the skills and experience obtained in performing work of similar scope and complexity.

2. Refer to related division(s) specifications for other requirements.

B. Drawings and Specifications Coordination:

1. For purposes of clearness and legibility, Drawings are essentially diagrammatic, and the size and location of equipment is indicated to scale whenever possible. Verify conditions, dimensions, indicated equipment sizes, and manufacturer's data and information as necessary to install the Work of this Division. Coordinate location and layout with other Work.

2. Verify final locations for rough ins with field measurements and with the requirements of the equipment to be connected.

3. Drawings indicate required size and points of termination of conduits, number and size of conductors, and diagrammatic routing of conduits. Install conduits with minimum number of bends to conform to structure, avoid obstructions, preserve headroom, keep openings and passageways clear, and comply with applicable code requirements.

4. Routing of conduits may be changed provided that the length of any conduit run is not increased more than 10 percent of length indicated on the Drawings.

5. Outlet locations shall be coordinated with architectural elements prior to start of construction. Locations indicated on the Drawings may be distorted for clarity; CONTRACTOR shall coordinate in the field prior to rough-in work.

6. Coordinate electrical equipment and materials installation with building components and the Work of other trades.

7. Equipment disconnects shall be readily accessible and free of obstructions.

8. When extending or intercepting existing electrical facilities, CONTRACTOR shall Coordinate and verify existing conditions.

C. Terminology:

1. Signal Systems: Applies to clock, bell, fire alarm, annunciator, sound, public address, buzzer, telephone, television, inter-communication, elevator access controls, lighting control systems and security systems.

2. Low Voltage: Applies to signal systems operating at 120 volts and less, and power systems operating at less than 600 volts. Medium voltage: Applies to power systems operating at more than 600 volts.

3. UL: Underwriter's Laboratories Inc, Nationally Recognized Testing Laboratory (NRTL), or equal.

D. Regulations: Work shall comply with the requirements of authorities having jurisdiction and the California Electrical and Building Codes. Material shall conform to regulations of the National Board of Fire Underwriters for electrical wiring and apparatus. Materials shall be new and listed by UL, or another NRTL.

E. Structural Considerations for Conduit Routing:

1. CONTRACTOR shall provide DSA approved calculations and drawings as necessary for any construction and/or alterations requiring conduits to pass through or interfere with any structural members, or where notching, boring or cutting of the structure is necessary, or where special openings through walls, floors, footings, or other buildings elements, or where notches and bored holes in wood or steel are required. All work shall conform to CBC, Part 2, Title 24 requirements.

2. Concrete encasement for underground conduits that abuts a foundation wall or underground structure shall rest on a haunch integral with wall or structure, or shall extend down to footing projection, or shall be doweled into structure unless otherwise indicated. Underground structures shall include maintenance holes; pull boxes, vaults, and buildings.

F. Electrically Operated Equipment and Appliances:

1. Furnished Equipment and Appliances:

a. Work shall include furnishing and installing wiring enclosures and complete connections of electrically operated equipment, appliances and electrical control devices, which are specified to be furnished and installed in this or other sections of the Specifications. Wiring enclosures shall be concealed except where exposed work is indicated on the drawings.

b. Provide all connections necessary for installation of equipment.

1) Equipment shall be tested for proper operation, including proper rotation of motorized equipment.

2) If outlets are of incorrect electrical characteristics, or any specified equipment fails to operate properly, CONTRACTOR shall repair and/or replace the outlet and/or equipment.

3) Utility connections (electrical, controls, gas, etc.) to roof mounted mechanical equipment shall be made through the side of the equipment and not from beneath the unit to facilitate future replacement.

2. Equipment and Appliances Furnished by Others:

a. Equipment and appliances indicated on Drawings as "not in contract" (NIC), "furnished by others," or "furnished by the OWNER," will be delivered to the Project site. Required electrical connections shall be performed for such equipment and appliances. Motorized equipment will be furnished factory-wired to a control panel or junction box unless otherwise indicated. Appliances will be furnished equipped with portable cord and cap. Provide disconnect switches where required.

b. Connections to equipment furnished under this Division shall be part of the Work of this section. Work shall include internal wiring, installation, connection and adjustment of bolted drive motors in which the motor is supplied as a separate unit, and connections only for equipment furnished with factory installed internal wiring, except as further limited by Drawings and this Specification. Work shall include furnishing and installing suitable outlets, disconnecting devices, starters, push-button stations, selector switches, conduit, junction boxes, and wiring necessary for a complete electrical installation. Work shall also include furnishing and installing conduit and boxes for HVAC control systems, furnished under Division 23. Devices and equipment furnished shall be of same type used elsewhere on the Work or as specified.

c. Electrical equipment furnished under other sections, for installation and connection under Work of this section, will be delivered to the Project site ready for installation.

d. Mechanical equipment furnished under other sections, and requiring electrical connection under this section, will be set in place as part of the Work of the section furnishing such equipment unless noted otherwise.

e. Suitability and condition of equipment furnished under other sections shall be determined in advance of installation. Immediate notice of damage, unsuitability, or lack of parts shall be given to the entity providing such equipment.

G. Power Distribution System Reports: For fault current, coordinatization and Arc-Flash system report requirements refer to applicable electrical distribution equipment sections. for specific requirements.

H. Protection of Materials:

1. Protect materials and equipment from damage and provide adequate and proper storage facilities during progress of the Work. Damaged materials and/or equipment shall be replaced.

I. Cleaning:

1. Exposed parts of Work shall be left in a neat, clean, usable condition. Finished painted surfaces shall be unblemished and metal surfaces shall be polished.

2. Thoroughly clean parts of apparatus and equipment. Exposed parts to be painted shall be thoroughly cleaned of cement, plaster, and other materials. Remove grease and oil spots with solvent. Such surfaces shall be wiped, and corners and cracks scraped out. Exposed rough metal shall be smooth, free of sharp edges, carefully steel brushed to remove rust and other spots, and left in proper condition to receive finish painting.

3. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

J. WARRANTIES

1. Provide one-year warranty on all material and labor performed, unless noted otherwise in specific sections.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

A. Advise the Inspector before starting the Work of this Division.

B. Exposed conduits shall be painted to match the surfaces adjacent to installation.

C. Salvaged materials removed from buildings shall be removed from the Project site as required by the OAR.

D. Trenches outside of barricade limits shall be backfilled and paved within 24 hours after being inspected by the Inspector. Provide traffic plates during the time that trenches are open in traffic areas and in areas accessible to students and staff.

E. Where existing structural walls are cored for new conduit runs, separation between cored holes shall be three inches edge to edge from new or existing holes, unless otherwise required by the Architect. All coring to be laid out and reviewed by Architect prior to drilling. CONTRACTOR to verify location of structural steel, rebar, stress cabling or similar prior to lay out.

F. Electrical equipment shall be braced and anchored for CBC Seismic Design requirements, or as otherwise indicated on the Drawings.

3.02 DELIVERY STORAGE AND HANDLING

A. Deliver products to project site with proper identification, which shall include names, model numbers, types, grades, compliance labels, and similar information needed for District identification; all products and materials shall be adequately packaged and protected to prevent damage during shipment, storage, and handling.

B. Coordinate deliveries of electrical materials and equipment to minimize construction site congestion.

3.03 CUTTING AND PATCHING

A. Cutting and patching of electrical equipment, components, and materials shall include the removal and legal disposal of selected materials, components, and equipment.

B. Do not endanger or damage installed Work through procedures and processes of cutting and patching.

C. Repair or restore other work or surfaces damaged as a result of the work performed under this contract.

3.04 CLEANUP

A. Remove rubbish, debris and waste materials and legally dispose off the Project site.

B. Remove equipment and implements of service, and leave entire work area neat and clean, to the satisfaction of the OWNER Authorized Representative.

3.05 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 26 0513

BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Boxes, enclosures, keys and locks.
2. Receptacles and switches.
3. Identifications and signs.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Division 26 – Electrical.
3. Division 27 – Communications.
4. Division 28 - Electronic Safety and Security.

PART 2 - PRODUCTS

2.01 BOXES, ENCLOSURES, KEYS AND LOCKS

A. Outlet Boxes and Fittings:

1. Outlet boxes installed in concealed Work shall be galvanized steel, pressed, or welded type, with knockouts.
2. In exposed Work, where conduit runs change direction or size, outlet boxes and conduit fittings shall be malleable (FS type) metal with threaded hubs cast integral with box or fitting.
3. Fittings shall be cast metal and non-corrosive. Ferrous metal fittings shall be cadmium-plated, or zinc galvanized. Castings shall be true to pattern, smooth, straight, with even edges and corners, of uniform thickness of metal, and shall be free of cracks, gas holes, flaws, excessive shrinkage, and burnt-out sand.
4. Covers for fittings shall be galvanized steel or non-corrosive aluminum and shall be designed for the fitting installed.
5. Light fixture outlets shall be 4-inch octagon, 4-inch square, 2 1/8-inch deep, or larger based on code requirements for the number of conductors and conduits.

6. Plaster rings shall be furnished with round opening with two ears drilled 2 23/32 inches center to center.

7. For local device outlets provide 4-inch square 2 1/8-inch deep, boxes for single gang, 5-inch square boxes for two-gang, and special solid gang boxes with gang plaster ring for more than two switches.

8. For horns and strobes provide manufacturer's supplied back box as needed.

9. For television outlets, provide 4-gang deep boxes and 4-gang plaster rings.

10. Plaster rings shall be provided on flush-mounted outlet boxes except where otherwise indicated or specified. Plaster rings shall be same depth as finished surface. Install approved ring extension to obtain depth to finish surface.

11. In existing plywood wall or drywall construction, and where flexible steel conduit is fished into walls, single-gang and 2-gang outlets for wiring devices may be sectional steel boxes with plaster ears. Boxes shall be fastened to plywood with flat-head screws in each plaster ear screw hole. Boxes fastened to gypsum board shall be Raco, Appleton, Cooper, Bowers, or equal.

12. Altered knockouts shall be sealed with properly NEMA rated factory made knockout seals.

13. Provide and install weatherproof universal box extension adapters where flexible conduit is extended from flush outlet boxes.

B. Junction and Pull boxes:

1. Junction and pull boxes shall only be used in compliance with codes, recognized industry standards, and contract documents.

2. Interior and non-weatherproof boxes shall be constructed of blue or galvanized steel, boxes shall be provided with ample laps, be spot welded, and be rigid under torsion and deflecting forces. Furnished auxiliary angle iron framing where necessary to ensure rigidity.

3. Covers shall be fastened to box with enough machine screws to ensure continuous. Flush type boxes shall be drilled and tapped for cover screws if boxes are not installed plumb.

4. Surfaces of pull and junction boxes and covers shall be labeled with black marker ink designating system, panelboard and circuit designation shall be indicated in box interiors. In exposed Work, designation shall be located on inside of pullbox or junction box cover.

5. Weatherproof NEMA 3R pull and junction boxes installed in buildings interior shall conform with the following:

a. Cover of flush mounting boxes shall be furnished with a weather-tight gasket cemented and trimmed even with cover all around.

b. Surface or semi-flush mounted pull and junction boxes shall be listed by UL or another Nationally Recognized Testing Laboratory (NRTL) as rain-tight and be furnished complete with threaded conduit hubs.

c. Exposed portions of boxes shall be galvanized, finished with one prime coat and one coat of baked-on gray enamel, unless box(es) are already furnished with factory baked-on finish.

6. Junction and pull boxes shall be rigidly fastened to structure. Junction and pull boxes shall not depend on conduits for support. Plastic anchors or EZ (drywall type) anchors shall not be used.

7. Underground Concrete Pull Boxes:

a. Pre-cast concrete pull boxes. Concrete pull boxes shall be traffic type, reinforced for H-20 wheel loading, pre-cast concrete. Pull boxes with inside dimensions of 2 feet by 3 feet by 3 feet deep shall consist of a base section, top ring, and cover. Base section shall be furnished with 2 knockouts measuring 10 inches by 10 inches in each 3 feet side, and one 20 inches by 20 inches knockout in each 2-foot side. Pull boxes with inside dimension 4 feet by 4 feet by 4 feet deep shall consist of a base section, midsection, topping, and cover. Base section shall be furnished with 2 knockouts measuring 8-inch by 16-inch on each of two opposite sides, and one 20-inch by 20-inch knockout on each of other two opposite sides. Pull boxes shall be furnished with a minimum of 6-inch diameter sump knockout and one-inch diameter ground rod knockout.

b. Provide pull boxes with installed cable racks on interior walls. Racks shall be furnished with 3 porcelain cable holders on vertical steel mounting bars. All racks shall be effectively grounded.

c. Pull boxes shall be furnished with 3/4-inch diameter pull irons. Covers shall be traffic-type consisting of steel safety plate(s) bolted to frame. Covers shall be marked as electrical, power, or signal as required, and shall have code approved size openings for lifting the cover.

d. Boxes larger than 2 feet wide by 3 feet in length shall have hinged two section traffic type covers that comply with other requirements indicated herein.

e. Underground pull boxes without a concrete base are not acceptable.

f. Provide end bells in duct entrances and terminate them flush to inside of vault.

g. Terminate each metal conduit with insulated bushings. Effectively ground bushings at grounding terminals.

h. Install pulling irons on opposite walls and below horizontal centerlines of ducts and bricked-up openings, and in bottom. Install pulling irons with each end hooked around a reinforcing bar.

i. Remove floor drain knockout and provide a depth of 24 inches of crushed rock below box extending a minimum of 12 inches beyond on all sides.

j. Permanently and effectively ground metal equipment cases, cable racks, pull box covers/lids, and similar items in pull boxes to site grounding electrode system. Provide grounding conductor in compliance with CEC Article 250.

k. Provide 6-inch deep sand base under pull boxes and a black cloth between sand and rock.

l. Identify power and signal cables by tagging in manholes and pull boxes. Tie securely to cables with nylon cord.

m. Top of steel plate shall provide a minimum coefficient of static friction of 0.5 for either wet or dry locations, when tested for any shoe sole material. Test shall comply with ASTM D 2047 or F 489 or F 609 standards. Submit manufacturer's test results for Architect's review as part of materials and equipment submittals.

n. The use of underground extension boxes shall be limited to not more than ½ times the original depth of pull box.

o. Manhole type boxes are not acceptable.

p. Approved Products: Oldcastle Precast, Jensen Precast, Kistner, Western Precast, or OWNER approved equal.

8. Underground utility boxes shall be reinforced concrete with non-setting shoulders to prevent settlement following installation. Boxes shall be furnished with cast iron cover with finger hole, size as indicated on Drawings. Utility boxes shall be as manufactured by Oldcastle, Jensen, Kistner, Western Precast, or equal.

9. Manholes, vaults, and pull boxes required by a utility company, and installed as part of this Contract, shall meet requirements of servicing utility company.

C. Floor Outlets:

1. Floor Outlets (except for extension outlets) shall be cast iron, watertight floor boxes with flush brass floor plates, and shall be set to finish flush with finish floor covering, whether it be carpeted, wood, resilient floor covering, or other finish materials.

a. Floor boxes shall be used in offices, classrooms, and in library areas only.

b. Approved Products: Harvey Hubbell Inc. B-2503, Thomas & Betts 640 series, Legrand Omnibox, or OWNER approved equal.

2.02 RECEPTACLES AND SWITCHES

A. Receptacles:

1. Duplex receptacles shall be heavy-duty specification grade, grounding type. Terminal screws shall be wired on the side and back with internal screw pressure plates. Mounting strap shall feature heavy-duty brass construction. Receptacle back body shall be PVC. Receptacle face shall be ivory, impact resistant nylon. Receptacles shall have triple wipe brass power contacts. Approved products:

NEMA #	Pass & Seymour	Hubbell	Leviton
(20 amps) NEMA 5-20	PS5362-I	HBL5362-I	5362-I
(15 amps) NEMA 5-15	PS5262-I	HBL5262-I	5262-I

Equal products approved by OWNER may be acceptable.

2. Duplex receptacles on circuits supplied by panel boards with integral surge suppression shall be:

Pass & Seymour model number PS5262BL (blue).
Hubbell DRUBTVSS15.
Leviton 5262-SBU, 15-amps, 120-volts.
Equal products approved by OWNER may be acceptable.

3. Single receptacles shall be heavy-duty specification grade, grounding type. Terminal screws shall be back and side wire with internal screw pressure plates. Mounting strap shall feature heavy-duty brass construction. Receptacle back body shall be thermoplastic. Receptacle face shall be ivory, impact resistant nylon. Receptacles shall have triple wipe brass power contacts. For circuits consisting of one single receptacle only, ampere rating of receptacle shall be same as circuit breaker or fuse. Approved products:

NEMA #	Pass & Seymour	Hubbell	Leviton
(20 amps) NEMA 5-20R	5361-I	HBL5361-I	5361-I
(15 amps) NEMA 5-15R	5261-I	HBL5261-I	5261-I

Equal products approved by OWNER may be acceptable.

4. Single 15 and 20-amps receptacles on circuits supplied by panel boards with integral surge suppression shall be blue in color. Approved products:

Pass & Seymour NEMA 5-20R model number 5361-BL (blue).
NEMA 5-15R model number 5261-BL (blue).
OWNER approved equal.

5. Ceiling Mounted Retractable Power Cord Receptacles. Duplex 20-amps heavy duty retractable cord reel with cord length and color as indicated in drawings, Reel shall be equipped with lift/drag ratchet lock and be NEMA 5-20 cap. listed industrial grade steel housing with welded steel frame.
Approved Manufactures: KH Industries RTB series, REELCRAFT H-7122, or OWNER approved equal.

6. Kiln and range receptacles. provide 3-pole, 4-wire, grounding type, rated 50 amps or as indicated on plans. Receptacle shall be rated 125/250 volts NEMA 14-50R. Provide 2-gang, stainless steel plates. Approved products:

NEMA #	Pass & Seymour	Hubbell	Leviton
NEMA 14-50R	3894	HBL9450A	279

WALL PLATE	SS703	S703	84026

Equal products approved by OWNER may be acceptable.

7. Dryer receptacles. Provide 3-wire, non-grounding type, rated 30 amps at 125/250 volts, NEMA 10-30R, with 2-gang stainless steel plates. Coordinate location of junction box with the work of Section 10 2815, Hand and Hair Dryers. Approved Products:

NEMA #	Pass& Seymour	Hubbell	Leviton
NEMA 10-30R	3860	HBL9350	5207
WALL PLATE	SS703	S703	84026

Equal products approved by OWNER may be acceptable.

8. Provide specification grade ground-fault circuit interrupter (GFCI) type receptacles in accordance with 2010 UL standards. GFCI receptacles shall have a trip indication light. Receptacle terminal screws shall be back and side wire with internal screw pressure plates. Test and reset buttons shall match device body and shall be ivory. GFCI receptacles shall be manufactured in standard configuration for installation with stainless steel smooth plates. Exterior mounted receptacles shall be mounted inside weatherproof enclosure. Approved products: Provide student restroom receptacles mounted at 80 inches above finished floor with lockable CAT 60 stainless steel cover.

NEMA #	Pass & Seymour	Hubbell	Leviton
NEMA 5-20R	2097TRI	GFRST20IB	G5362-WTI
NEMA 5-15R	1597TRI	GFRST15IB	G5262-WTI

Equal products approved by OWNER may be acceptable.

9. Provide weatherproof receptacles as indicated or specified, Receptacles shall be GFCI type receptacles, with metal plates with die-cast lockable hinged lids and weatherproof mats. Receptacles shall be tamper-resistant with thermoplastic dual mechanism shutter system to help prevent insertion of foreign objects. Receptacles shall have extra heavy-duty brass, and one-piece mounting strap with integral ground. Receptacles shall be ivory color, impact resistant nylon face and back body. Approved products:

NEMA #	Pass & Seymour	Arrow Hart	Leviton
NEMA 5-20R	TR63-I	TR8300V	8300SGI
NEMA 5-15R	TR62-I	TR8200V	8200SGI

Equal products approved by OWNER may be acceptable.

10. Standard GFCI cover plates shall be Pass & Seymour 4600, Raco 5028-0, or equal. GFI cover plates shall be provided with a CAM lock mechanism with two keys or a padlock hasp that does not protrude through the face of the cover and will allow the shank of locks keyed Corbin No. 60 keys.

11. Provide transient voltage surge suppression (TVSS) receptacles offering metal oxide varistors (MOVs) protecting normal and common modes, (L-N, L-G, N-G) with 500V suppressed voltage. TVSS devices shall offer 3-mode equal protection with 210 joules minimum per mode of energy absorption and 13,000-amp maximum surge capability. TVSS devices shall have 3 thermal fuses and two over-current protection fuses. TVSS devices shall have LED visual only

surge status indicator to alert user to surge suppression circuit condition. Visual indicator will be illuminated (red) when power is on and surge suppression circuit is fully functional. Visual indicator will not be illuminated when power is off or unit experiences loss of surge suppression protection. Terminals shall be back and side wire including ground terminal. Color shall be blue. Approved Products

NEMA #	Pass& Seymour	Hubbell	Leviton
NEMA 5-20R	5352BLSP	HBL5360SA	5380B
NEMA 5-15R	5252BLSP	HBL5260SA	5280B

Equal products approved by OWNER may be acceptable.

B. Switches

1. Local Switches:

a. Local switches shall be high strength thermoplastic toggle, industrial grade, rated 20 amps at 120-277 volts AC only, with plaster ears, external screw pressure plate back and side wired, and standard size composition cups which fully enclose mechanism. Switches shall be approved for installation at currents up to full rating on resistive, inductive, tungsten filament lamp and fluorescent lamp loads, and for up to 80 percent of rating for motor loads. Switches shall have oversized silver alloy contacts for long life and better heat dissipation. Provide switches as single pole, double pole, 3-way, 4-way, non-lock type. Provide non-lock type switches with ivory handles;

	Pass & Seymour	Hubbell	Leviton
Single pole	PS20AC1I	HBL1221I	1221-2I
Double pole	PS20AC2I	HBL1222I	1222-2I
Three-way	PS20AC3I	HBL1223I	1223-2I
Four-way	PS20AC4I	HBL1224I	1224-2I

Equal products approved by OWNER may be acceptable.

b. Lock type switches shall be specification industrial grade, 20 amp, 120-277 volts with metal or nylon key guides with on/off indication, and operable by same key. Key shall be District standardized vertically oriented, tamper resistant, forked key with two each 5/16-inch long forks, 5/32-inch spacing between forks and 5/16-inch width overall. Approved products:

	Pass & Seymour	Arrow Hart
Single pole	PS20AC1L w/#500 Key-2L	1221L w/1201LK Key
Double pole	PS20AC2Lw/#500 Key	1222L w/1201LK Key
Three-way	PS20AC3L w/#500 Key	1223L w/1201LK Key
Four Way	PS20AC4L w/#500 Key	1224L w/1201LK Key

Equal products approved by OWNER may be acceptable.

c. Rotary lock switches shall incorporate a tumbler type lock to prevent unauthorized operation. Lock shall be tumbler type by Corbin, keyed to a HH41 key. Lock switch to be installed with pin tumblers facing downward. Key shall be removable in all positions. Each device shall be

complete with 2 keys. Keys shall be delivered only to the OAR. Switches shall be rated at 20 amps, 120-volt or 277-volt AC. Switch plates shall be of stainless steel, engraved with on and off positions indicated. Approved products:

	Arrow Hart
Single pole	AH1191N
Double pole	AH1192N
Three-way	AH1193N

Equal products approved by OWNER may be acceptable.

d. Pilot light switches shall be rated 20 amps and shall conform to specifications for local switches. Switches shall be furnished with red, Lexan handles that are lighted by LED lamps. Pilot light shall light when load is on. Approved products for 120 and 277 Volts:

1) Pilot light 120-Volt switches. Approved products. Approved products:

	Pass& Seymour	Hubbell	Leviton
Single pole	PS20AC1-RPL	HBL1221-PL	1221-PLR
Double pole	PS20AC2-RPL	HBL1222-PL	1222-PLR
Three-way	PS20AC3-RPL	HBL1223-PL	1223-PLR

Equal products approved by OWNER may be acceptable.

2) Pilot light 277-Volt switches shall be single pole and shall conform to specifications for local switches, and the requirements of paragraph d above. Approved Products:

Pass & Seymour	Leviton	Hubbell
PS20AC1-RPL	1221-7PR	HBL1221-PL7

Equal products approved by OWNER may be acceptable

e. Provide remote control switches for mechanically held contactors arranged for 3-wire control, toggle type, momentary contact, single pole, 3-position with center off position, rated 20 amps at 120-277 volts AC only, with plaster ears, binding screws for side wiring, standard size composition cups which fully enclose mechanism, and ivory handles. Approved products:

Pass & Seymour	Hubbell	Leviton
1251-I	HBL1557-I	1285-I

Equal products approved by OWNER may be acceptable.

f. Provide remote control switches for magnetically held contactors arranged for 3-wire control, toggle type, maintained contact, single pole, 3-position with center off position, rated 20 amps at 120-277 volts AC only, with plaster ears, binding screws for side wiring, standard size composition cups which fully enclosed mechanism, and ivory handles. Approved products:

Pass and Seymour	Hubbell	Leviton
1225-I	HBL 1385	1285-I

Equal products approved by OWNER may be acceptable.

g. Momentary Contact locking key type switch. 20A 120/277V center off. Key shall be District standardized vertically oriented, tamper resistant, forked key with two each 5/16" long forks, 5/32" spacing between forks and 5/16" width overall. Approved products:

Arrow Hart AH1995L w/ AH2000 key
Equal products approved by OWNER may be acceptable.

h. Momentary Contact switch low voltage 1 pole 3A 24VAC 3 position center off. Key for locking switch shall be District standardized vertically oriented, tamper resistant, forked key with two each 5/16" long forks, 5/31" spacing between forks and 5/16" width overall. Approved products:

Pass and Seymour Toggle 1081I, Locking 1081KGRY w/#500 Key.
Equal products approved by OWNER may be acceptable.

2. Time Switches and Photoelectric Controls for existing construction.

a. Provide time switches with a 7-day, solid-state, electronic type capable of fully automatic or manual operation and housed in a sheet steel enclosure unless built into a panel or switchboard. Resistive or inductive contacts rated for 25-amps, each pole 240-VAC; 5-amps tungsten or 277-VAC pilot duty, each pole 240-VAC. Time switches to contain a non-volatile clock and non-volatile memory with a built-in rechargeable super capacitor power carry-over system. Battery carryover is not acceptable. Provide a minimum of 15 on/off set points per week. Timing to be in one-minute increments with a minimum on or off time of one minute. Time switch digital displays to indicate days of week, hours, and minutes. Display to contain a load status light to indicate when equipment is in operation.

b. Required additional features:

1) Liquid crystal display panel.

2) Holiday scheduling: Up to 40 dates may be assigned special holiday schedules, up to one year in advance.

3) Automatically adjusts to and from daylight savings time and for leap year.

4) Contact ratings: 10 amp at 240 VAC.

5) Safety override switch for each circuit to either provide shut down of circuit or to override on.

6) Selective review: All or part of schedule shall be displayed at touch of a key.

7) Super Capacitor for power carry-over system.

8) Supply voltage: 120/277-Volt.

9) 365-day advance scheduling.

c. Approved products: Tork Model EW 101B series, Intermatic ET2125C series, or OWNER approved equal.

d. Photoelectric control: Shall be rated 2,000 watts, 120V with single pole, single throw, normally closed contact, enclosed in a die-cast aluminum gasketed enclosure with 1/2-inch conduit fitting. Approved products: Tork series 2100, or OWNER approved equal.

3. Heavy Duty Disconnect Switches

a. Heavy duty type switches shall be 240 volts or 480 volts as required, totally enclosed, externally operated, with quick-make, quick-break operating mechanism, interlock cover, and provisions for locking cover in closed position and locking switch in on and off positions. Switches shall be single throw, unless otherwise indicated or specified. Switches controlling direct current loads shall be DC rated.

b. Switches shall be furnished with fully visible switch blades in off position when switch door is open. Current carrying parts shall be plated to resist corrosion and promote cool operation.

c. Switches shall be furnished with removable arch suppressors where necessary to permit easy access to line side lugs. Lugs shall be front removable.

d. Switches shall be UL or NRTL listed and shall comply with NEMA Standard KS-1. and UL, or other Nationally Recognized Testing Lab listed for no less than 75 degrees C. copper wires.

e. Switch enclosure shall be NEMA Type 1 for indoor locations, and NEMA Type 3R, rainproof for outdoor locations.

i. NEMA Type 3R enclosures shall be manufactured from galvanized steel with gray baked enamel and shall be furnished complete with rainproof bolt on hubs.

ii. Covers shall be attached with pin type hinges. Removable closing cap types are not permitted.

iii. In kitchen area, provide disconnect switchers in a NEMA type 4 stainless steel enclosure.

f. Quick release latches shall be permitted only when switches are furnished tamper resistant.

g. Switches shall be furnished with Corbin 66 locks keyed to Corbin 60 key.

h. Switches shall be fusible or non-fusible as indicated on Drawings. Fusible switches shall accept cartridge fuses.

i. Current rating of switches, number of poles, solid neutral facilities, and current rating of fuses shall be as indicated on Drawings.

j. Switches shall have proper horsepower rating equal to or greater than horsepower of motor controlled. Only lower horsepower rating of dual rated switches will be permitted as a switch rating. Switches shall accept Class H, Class J, and Class R fuses.

k. Padlocking device shall lock operating handle and cover with one padlock regardless of on or off position. Furnish a minimum of two padlocks and two keys with each switch. Padlocks shall be Corbin No. 66 keyed to Corbin No. 60 keys.

l. Furnish one spare fuse for each fusible disconnect switch installed. Spare fuses shall be same type and rating as those installed.

m. Square D, General Electric, Cutler Hammer or equal approved by OWNER.

4. Emergency Lighting Control Unit

a. The Emergency Lighting Control Unit shall provide all required functionality to allow a standard lighting control device to control emergency lighting in conjunction with normal lighting in any area within a building.

b. The emergency lighting control unit shall allow control of emergency lighting fixture in tandem with normal lighting in an area while ensuring that emergency lighting will turn on immediately to full brightness upon loss of normal power supplying the control device. Emergency lighting operation shall be independent for each controlled area and shall not require a generalized power failure for proper operation.

c. The device shall have normally closed dry contacts capable of switching 10-amp emergency ballast loads at 120-277 VAC, 60 Hz., 2-amp tungsten loads at 120 VAC, 60Hz., LED loads at 120-277V VAC, 60 Hz

d. The device shall have universal rated voltage inputs provided for normal power sense and normal switched power at 120-277 VAC, 60 Hz.

e. The device shall provide separate LEDs to indicate the presence of normal and emergency power sources. The LEDs shall indicate the unit’s current operational mode (normal or emergency)

f. The device’s normal power input terminal shall be connected to the line side of the control device such that any upstream fault causing a loss of

power, including the tripping of the branch circuit breaker, will force the unit into the emergency mode and turn on the emergency lighting.

g. The unit shall automatically switch emergency lighting on and off as normal lighting is switched. When normal power is not available, the unit shall force and hold emergency lighting on regardless of the state of any external control device until normal power is restored.

h. Approved products: WattStopper ELCU-100 Emergency Lighting Control Unit, LVS #EPC-PM Series, Lighting Control Design #GR 2001 series, or OWNER approved equal.

5. School Main Entrance Intercom Station: Refer to specification section 28 1000 – Access Control System.

6. Kitchen Service Entry Doorbell and buzzer: Provide 24-Volts heavy duty corrosion resistant doorbell and buzzers. Buzzer shall sound in the kitchen's office and kitchen's work area. Push button shall be protruding type, AC or DC up to 48 volts. Protruding button shall have a polish anodized aluminum shell, snap fit or locknut mounted with normally open momentary contacts.

a. Approved Products: Bell and Buzzer - Edwards AdaptaBuzzer 343A series, Edwards Adaptabel 340-Gridor OWNER approved equal.

b. Push button – Edwards Recessed Center Push Button 694-B, or OWNER approved equal.

2.03 IDENTIFICATION AND SIGNS

A. Identification Plates:

1. Provide identification plates for the following unless otherwise specified, for switchboards, unit substations, motor control centers, control panels, push-button stations, time switches, contactors, motor starters, motor switches, panelboards, and terminal cabinets.

2. Identification plates shall be of plastic stock and shall adequately describe function, voltage and phase of identified equipment. Where identification plates are detailed or described on Drawings, inscription and size of letters shall be as indicated. For lighting and power panels, identification plates shall indicate panel designation, voltage, and phase of panel. For terminal cabinets, identification plates shall indicate system contained in terminal cabinet.

3. Identification plates shall be black-and-white nameplate stock of bakelite with characters cut through black exposing white. Plates shall be furnished with beveled edges and shall be securely fastened in place with No. 4 Phillips-head, cadmium-plated steel, self-tapping screws. Characters shall be 3/16 inch high, unless otherwise indicated.

B. Markings:

1. Install identification markings to surface-mounted starters, switches, disconnect switches, contactors, and other devices controlling motors and appliances.

Provide abbreviations required along with an identifying number. Markings to be provided with locking type stencils using paint of a contrasting color. Figures shall be 3/8 inch high unless otherwise indicated. Dymo Industries Inc., self-sticking plastic labels, with embossed characters made with a typewriter may be installed instead of stencils and paint; p-touch self-adhesive plastic, or Brother P-Touch self-sticking laminated plastic labels may be installed.

2. High Voltage: High voltage switchboards, cabinets, boxes, and conduits exposed in accessible locations, including under buildings and in attics, are required to be marked "WARNING-HIGH VOLTAGE – ABOVE 600 VOLTS". Markings for switchboards shall consist of 18 gage steel, porcelain enamel sign of standard manufacture. Markings for boxes, cabinets, and conduits shall be by means of stenciling or printed self-adhesive markers, Westline Tel-A-Pipe, or equal. Provide letters of black on orange background and not less than 1-7/8 inches high. On conduit runs, install markings at intervals not exceeding 10 feet in any individual area. Markings shall be installed after other painting Work is complete.

C. Warning Signs:

1. Provide a warning sign on outside of each door or gate to rooms or enclosures containing high voltage equipment. Signs required reading, "WARNING - HIGH VOLTAGE - KEEP OUT". Provide 2-inch high lettering.

2. Provide a warning sign on each high-voltage non-load break disconnect and fused cutout (not oil filled). Signs required reading, "DO NOT OPEN UNDER LOAD". Provide 2-inch-high lettering.

3. Provide signs of standard manufacture, 18 gage steel, with porcelain enamel finish. Provide red lettering on a white background.

PART 3 - EXECUTION

3.01 INSTALLATION AND SUPPORT OF BOXES

A. Install outlet boxes flush with finished surface of wall or ceiling. Install plumb and securely fastened to structure, independent of conduit. Except where otherwise indicated, provide factory-fabricated adjustable attachment bar hangers between studs to support outlet boxes. When installation is performed in fire rated walls, maintain the wall’s rating integrity by means of approved fire stop methods.

B. Outlet boxes installed in suspended or furred ceilings with steel runner or furring channels shall be supported, except where otherwise indicated, by a Unistrut P-4000, Tessco A1200HS-10, or Cooper B-Line B22s-HG, or OWNER approved equal channel spanning main ceiling runner channels.

1. Each box shall be supported from its channel by a 3/8-inch 16 threaded steel rod with a Unistrut P-4008, Fastenal #48604, Copper B-Line 78101140346 or OWNER approved equal; and nut and Tomic No. 711-B Adapta-Stud, or OWNER approved equal.

2. Rod shall be tightened to a jamb fit with channel and its nut. Box shall be locked to rod by means of a 1/2-inch locknut on stud and a 3/8-inch 16 hex nut locking stud to rod.

C. Heights of outlets and equipment indicated on Drawings shall govern. In absence of such indications, following heights shall be maintained with heights measured to centerline unless otherwise noted. Compliance with American with Disability Act is required. Coordinate with Architect and OWNER prior to installation.

1. Install wall-mounted switches at 48 inches above finished floor.

2. Outlet boxes for fire alarm pull stations shall be mounted at a mounting height above finished floor that ensures that the operating handle of the initiating device is no higher than 48 inches from finished floor.

3. Wall mounted fire alarm strobe or horn/strobe devices shall be mounted such that the entire lens is not less than 80 inches above finished floor. If ceiling heights allow, wall mounted appliances shall have bottom of lens a minimum of 80 inches but not more than 96 inches to the top of lens.

4. Install outdoor fire alarm audible devices or fire alarm sprinkler flow bells at least 10 feet but not more than 12 feet above finished floor to center. Provide STI or other OWNER approved protective covers as required in plans.

5. Voice evacuation speakers mounted indoors shall be mounted in ceiling space or if mounted on wall shall not be less than 10 feet to center above finished floor.

6. Install clocks and speakers, in classrooms and offices, 8 feet above finished floor. Unless otherwise indicated.

7. In rooms other than places of assembly such as, but not limited to, multipurpose rooms, auditoriums, and libraries, clock outlets and speakers in classrooms and offices shall be mounted 8 feet above finished floors. Other assembly areas such as gymnasiums shall be mounted 10 to 12 feet above finished floor. Provide STI, or equal protective covers for clocks when required.

8. Install fire alarm strobe lights 80 inches to bottom of light above finished floor.

9. Install outside bells and yard light outlets 4 feet above second floor level for 2 or more story buildings, 12 inches below top plate level for one story buildings without covered porch or arcade, and 12 inches below covered porch and arcade ceilings.

10. Install desk telephones, power receptacle outlets, and data outlets 15 inches above finished floor.

11. Install panelboards and terminal cabinets 6 feet 6 inches from finish floor to top of cabinet.

12. Install television outlets at a height corresponding to location of television monitor, or as indicated on plans.

13. The use of extension boxes shall be limited to not more than 1 times the original depth of junction box.

3.02 COVER PLATES

A. Provide a plate on each switch, plug, pilot light, data, interphone, public telephone, and television outlet, and on existing and reset outlets where so indicated or required. Plates shall be of stainless steel unless otherwise specified.

B. Flush wiring device and signal system outlets indicated to be blank covered, shall be covered with blank stainless-steel plates. Flush lighting outlets to be blanked shall be covered with Wiremold 5736 steel covers, or equal, painted to match surrounding finish. Provide stainless steel covers to blank indicated or required surface-mounted outlets.

C. In the following cases, and at required locations. Switch and receptacle plates shall be engraved with the device(s), or fixtures being controlled, or as indicated:

1. Three-gang and larger gang switches in locations other than classrooms.

2. Lock switches.

3. Pilot switches.

4. Switches so located that operator cannot see fixtures, or items of equipment controlled while his hand is on the switch.

5. Switches not in same room with fixtures or items of unit heaters, air curtains, fly fans, etcetera.

6. Receptacles operating at other than 120 V shall be identified with the operating voltage.

7. Switches operating on 277 V shall be identified with the operating voltage.

8. Where indicated on Drawings.

D. Designations shall be as indicated on Drawings or as specified by Architect.

3.03 IDENTIFICATION OF CIRCUITS AND EQUIPMENT

A. Provide descriptive nameplates or tags permanently attached to switchboards, motor control centers, transformers, panelboards, circuit breakers, disconnect switches, starters, pushbutton control stations and other apparatus installed for operation or control of circuits, appliances, fire alarm control panel(s), fire alarm annunciator(s), power supplies, terminal cabinets, energy management control units, and Information technology system backbone and distribution equipment points.

B. Provide nameplates of engraved laminated plastic, or etched metal. Submit Shop Drawings denoting dimensions and format to Architect before installation. Fasten to equipment with escutcheon pins, rivets, self-tapping screws, or machine screws. Self-adhering or adhesive backed nameplates are not permitted.

C. Fasten tags to feeder wiring in conduits at every point where runs are broken or terminated, including pull wires in empty conduits. Indicate circuit, phase, and function. Tag branch circuits in panel boards and motor control centers. Tags may be manufactured of pressure-sensitive plastic or embossed self-attached stainless steel or brass ribbon.

D. Provide circuit identification cards and cardholders in all panel boards. Cardholders shall consist of metal frame retaining a clear plastic cover permanently attached to inside of panel door. List of circuits shall be typewritten on a card. Circuit description shall include name or number of circuit's area and connected load.

E. Junction and pull boxes shall have covers stenciled with box number when indicated on Drawings, or circuit numbers according to panel schedules. Data shall be lettered in a conspicuous manner with a color contrasting with finish.

F. Name shall be correctly engraved, with a legend indicating function or areas, when required by codes or indicated on Drawings.

3.04 PROTECTION

A. Protect Work of this section until Substantial Completion.

3.05 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off Project site.

END OF SECTION

SECTION 26 0519

LOW-VOLTAGE WIRES (600 VOLT AC)

PART 1 - GENERAL

1.01 SUMMARY

A. Provisions of Division 01 apply to this section.

B. Section Includes: Low-voltage wire, splices, terminations and installation.

1.02 SUBMITTALS

A. Provide in accordance with Division 01.

B. List of Materials: Submit a complete list of proposed materials.

C. Shop Drawings: Provide detailed and dimensioned Shop Drawings indicating kind, weight and thickness of materials, insulation type, resistivity, conductivity, impedance, and conductance. Drawings shall contain sufficient information to assemble and install equipment at the Project site without further instructions.

D. Prior to start of construction; provide letter from wiring and electrical cables manufacturer certifying that the products are qualified/ listed as low electromagnetic field products.

1.03 SUBSTITUTIONS

A. Deviations/Substitutions from these requirements shall not be accepted without written approval from OWNER'S Design Standards Section and Maintenance and Operations Technical Unit. When deviating are proposed the following information shall be submitted:

1. Substitution request form stating reasons and benefits to OWNER.

2. OWNER'S approval shall be obtained for any equipment or materials substitutions.

3. Proposed substitutions requests shall provide proof of compliance with OWNER'S requirements and applicable standards.

B. Submittals must comply with contract general provisions.

1.04 QUALITY ASSURANCE

A. Components and materials shall be listed and approved for the intended application by Underwriter's Laboratories (UL), or other Nationally Recognized Testing Laboratory (NRTL), and in compliance with applicable industry standards and codes.

B. Wiring installation shall be performed under the supervision of state certified electricians. Contractor or Installer’s electricians shall be certified in accordance with Labor Code sections 3099, and 3099.2 and section 209.0 of the California Code of Regulations.

C. Contractor shall have adequate experience installing systems of similar size and complexity.

1. Qualifications of Installer: Minimum five years of experience installing products and systems of similar scope and complexity.

2. Installer shall have completed at least five projects of equivalent scope and complexity.

3. Contractor shall have completed and commissioned a minimum of five service agreements that provide similar support services to those needed for this project.

4. System startup and testing shall be performed under direct observation of the Project Inspector and OAR.

D. The Project Inspector will observe installation of feeder cables. Notify the Project Inspector not less than two working days in advance of the proposed time of feeder installation.

1.05 WARRANTY

A. Provide a one year labor warranty.

B. Provide material warranty of no less than 10 years.

C. Warranty period begins at substantial completion or project acceptance for beneficial occupancy.

D. CONTRACTOR shall warranty all products and materials. Multiple warranty sources is not acceptable.

PART 2 - PRODUCTS

2.01 WIRES

A. Pressure cable connectors shall be pre-insulated 3M Scotchlok, Ideal Wing Nut, O-Z/Gedney or equal.

B. Wires shall be single conductor type THHN or THWN insulated with polyvinyl chloride and covered with a protective sheath of nylon, rated at 600 volts. Wires may be operated at a maximum continuous conductor temperature in dry locations of 90 degrees C. and 75 degrees C. in wet locations. Wires and cables shall be listed by Underwriter's Laboratories (UL) Standard 83 for thermoplastic insulated wires, and listed for installation in accordance with Article 310 of the California Electrical Code (CEC).

C. Conductors shall be solid copper for 12 AWG and smaller conductors, and stranded copper for 10 AWG and larger conductors.

D. Conductors shall be insulated with PVC and sheathed with nylon.

E. Wires shall be identified by surface markings indicating manufacturer's identification, conductor size and metal, voltage rating, UL symbol, type designations and optional rating. Indentations for lettering are not permitted.

F. Wires shall be tested in accordance with the requirements of UL standard for types THWN and THHN.

G. Conductors shall be solid Class B or stranded Class C annealed uncoated copper in accordance with UL standards, or another Nationally Recognized Testing Laboratory (NRTL).

2.02 STANDARDS

A. THWN/THHN wires shall comply with the following standards:

1. UL 83 for thermoplastic insulated wires.

2. UL 1063 for machine tool wires and cables.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Wires shall not be installed until debris and moisture is removed from conduits, boxes, and cabinets. Wires stored at site shall be protected from physical damage until they are installed and walls are completed.

B. Wire-pulling compounds furnished as lubricants for installation of conductors in raceways shall be compounds approved and listed by UL, NRTL, or equal. Oil, grease, graphite, or similar substances are not permitted. Pulling of 2 AWG or larger conductors shall be performed with a cable pull machine. Any runs shorter than 50 feet are exempt. When pulling conductors, do not exceed manufacturer’s recommended values

C. At outlets for light, power, and signal equipment, pigtail splices with 8-inch circuit conductor leads for connection to fixtures, equipment, and devices.

D. Pressure cable connectors, Yellow, Red, or Blue spring-loaded twist-on type, may be furnished in splicing number 8 AWG or smaller wires for wiring systems. Listed Push-in spring clamp wire connectors, Ideal In-Sure, or equal may be used in luminaires for fixture wiring.

E. Joints, splices, taps, and connections to switchboard neutral, bonding or grounding conductors, conductors to ground busses, and transformer connections for wires 6 gage and larger shall be performed with high-pressure cable connectors approved for installation with copper conductors. Connectors shall be insulated with heavy wall heat shrink WCSM, or cold-applied roll-on sleeve RVS. Insulation level shall be a minimum of 600V and joints, splices, and taps shall be qualified to ANSI C 119.1, UL, NRTL, or equal listed mechanical pressure connections.

F. Connections to any bussing and high-press cable connectors shall be securely bolted together with corrosion-resistant plated carbon steel, minimum grade five machine screws secured with constant pressure-type locking devices.

G. Connection of any bonding or grounding conductors shall be securely bolted together with corrosion-resistant plated carbon steel, minimum grade five machine screws secured with constant pressure-type locking devices.

H. Wire switchboards, panel cabinets, pull boxes, and other cabinets except public address, shall be neatly grouped and tied in bundles with nylon ties at 10-inch intervals. In switchboards, panels and terminal blocks, wires shall be fanned out to terminals. If bundles are longer than 24 inches, a maximum of nine current carrying conductors may be bundled together.

I. Install conductor lengths with a minimum length within the wiring space. Conductors must be long enough to reach the terminal location in a manner that avoids strain on the connecting lug.

J. Maintain the conductor required bending radius.

K. Neutral conductors larger than 6 gage, which are not color identified throughout their entire length, shall be taped, painted white or natural gray, or taped white where they appear in switchboards, cabinet, gutters or pull boxes. Neutral conductors 6 gage and smaller shall be white color identified throughout their entire length.

L. Fire alarm and clock wiring shall be continuous from terminal cabinets or from equipment to each device. Splices are not permitted between devices and/or terminal cabinets at junction and pull boxes. Wiring shall be terminated at terminal blocks or devices only.

M. Wiring systems shall be free from short circuits and grounds, other than required grounds. The contractor shall be responsible for the testing of feeder and branch

circuit conductor's insulation resistance. The insulation of the conductors shall be tested prior to connections to any panelboards, switchboards, variable frequency drives, lighting control systems, ballasts, and wiring devices such as but not limited to GFI receptacles, TVSS receptacles, or equipment. Insulation testing of panelboards and switchboards shall be independently performed from the insulation testing of any conductors as specified in other sections of this specification.

1. Utilize the services of an approved independent testing laboratory to perform megger time-resistance insulation testing of feeder conductors. Tests must be conducted with wires disconnected at both ends.

    a. Provide calibration program records to assure the testing instrument to be within rated accuracy. The test equipment accuracy shall be in accord with the requirements stated by the National Institute of Standards and Technology (NIST).

    b. Test equipment shall be provided with a label stating the date of last calibration. As a minimum the equipment shall have been calibrated within the past 12 months.

    c. Test reports shall include the following:

        1) Identification of the testing organization.

        2) Equipment identification.

        3) Ambient conditions.

        4) Identification of the testing technician.

        5) Summary of project.

        6) Description of equipment being tested.

        7) Description of tests.

        8) Test results.

        9) Analysis, interpretation and recommendations.

2. Utilize the services of an approved independent testing laboratory or a qualified contractor's employee (Technician certified in accordance with ANSI/NETA ETT-2000 Standard for Certification of Electrical Testing Personnel) to perform megger time-resistance insulation testing of branch circuit conductors. Tests must be conducted with wires disconnected at both ends.

    a. Test equipment and report requirements stipulated under paragraph 3.01.N.1 apply to branch circuit testing.

3. Tests shall be performed in the presence of the Project Inspector.

4. Insulation resistance shall not be less than 100 mega-ohms.

3.02 COLOR CODES

A. General Wiring:

1. For phase and neutral conductors 6 gage or larger, permanent plastic-colored tape may be furnished to mark conductor end instead of coded insulation. Tape shall cover not less than 2 inches of conductor insulation within enclosure.

2. Color code conductor insulation as follows:

SYSTEM VOLTAGE		
Conductor	208Y/120	480Y/277
Phase A	Black	Brown
Phase B	Red	Orange
Phase C	Blue	Yellow
Neutral	White	Natural Gray

Neutrals shall be colored-distinguished if circuits of two voltage systems are used in the same raceway.

3. Where two voltage systems are combined in an enclosure; CONTRACTOR shall apply a permanent color code label where the circuits originate.

B. Signal Systems: Wires for signal systems shall be color-coded and installed under observation of the Project Inspector. Except where otherwise specified, color-coding shall be as follows:

EDIT NOTE: IN NEW SCHOOLS AND SOME EXISTING SCHOOLS THE PROGRAM SIGNAL IS THROUGH THE PA SYSTEM; PROGRAM BELLS ARE NOT PRESENT. DELETE REFERENCE TO PROGRAM BELLS AS NEEDED.

SYSTEM	COLOR CODE
Clocks	Pink, Gray and Orange
Program Bells (some existing elementary schools)	White (Common)Black
Initiating Devices (Non-Addressable)	Red (+) and Black (-)
Program Bells (some existing secondary schools)	White (120 volt, common) Black (C.R. program) Blue (Shop program) Brown (Gym program) Yellow (Auditorium fire alarm)
Fire Alarm Horns	Pink (+) and Gray (-)
Fire Alarm Strobes	Orange (+) and Blue (-)
Un-Interruptible 24 Volt	Yellow (+) and White (-)

Power (Annunciator, Water Flow, and Audible Device)	Note: A single white wire may be common to both
Interruptible 24 Volt Power (4 wire smoke detectors, duct detectors)	Brown (+) and White (-) Note: A single white wire may be common to both
Switch-Leg Sprinkler Bell (Between water flow and audible device)	Violet (+) and White (-)
Door Holding Magnets (Non Power Limited)	Black (+) and White (-)

3.03 FEEDER IDENTIFICATION

A. Feeder wires and cables shall be identified at each point the conduit run is broken by a cabinet, box, gutter, etc. Where terminal ends are available, identification shall be by means of heat shrink wire markers, which provide terminal strain relief. Markers shall be by Tyco Electronics, Panduit, Brady Perma-Sleeve, or equal. Identification in other areas shall be by means of wrap-around tape markers from Tyco Electronics, Panduit, Brady Perma-Code or equal. Markers shall include feeder designation, size, and description.

3.04 TAPE AND SPLICE KITS

A. Splices, joints, and connectors joining conductors in dry and wet locations shall be covered with insulation equivalent to that provided on conductors. Free ends of conductors connected to energized sources shall be taped. Voids in irregular connectors shall be filled with insulating compound before taping. Thermoplastic insulating tape approved by UL, NRTL, or equal for installation as sole insulation of splices shall be furnished and shall be installed according to manufacturer's printed specifications.

3.05 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.06 CLEANUP

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 26 0526

GROUNDING AND BONDING

PART 1 - GENERAL

1.01 SUMMARY

A. Provide and install an effective grounding and bonding system.

B. Related Requirements:

1. Refer to related sections for their system grounding requirements.
2. Division 01 - General Requirements.
3. Division 26 – Electrical.
4. Division 27 – Communications.
5. Division 28 - Electronic Safety and Security.

1.02 QUALITY ASSURANCE

A. Reference Standards:

1. IEEE 142 Green Book.
2. Underwriter's Laboratories (UL).
3. California Electrical Code.
4. Building Industry Consultant Services International (BICSI).
5. EIA/TIA (Signal and power).
6. Nationally Recognized Testing Laboratory (NRTL).

1.03 SYSTEM DESCRIPTION

A. Equipment, components, or materials that enclose electrical conductors, or are likely to be energized by electrical currents shall be effectively grounded.

B. Metal equipment parts such as switchboards, panelboards, metal enclosures, raceways, equipment grounding conductors, and earth grounding electrodes shall be effectively bonded into a continuous grounding path.

C. Metallic systems or electrically conductive materials shall be effectively bonded to the building's grounding electrode system.

D. A separately derived AC system shall be grounded to the equipment grounding conductor and to a separate "made" electrode of building grounding electrode system.

E. Provide effective electrical equipment bond continuity to all metal raceways and enclosures. Grounding shall be achieved through a code sized green insulated grounding conductor provided within each raceway.

1. Each flexible conduit over six feet in length shall be provided with a green insulated grounding conductor of required size.

2. Provide code sized equipment grounding conductor in all flexible conduits as required by CEC.

3. The length of flexible conduit installations shall not be less than six feet.

4. Effectively ground metal raceways and enclosures at each end.

F. Cold water, or other utility piping systems, shall not be utilized as grounding electrodes. In addition to bonding to cold water pipe provide at least one of the following made grounding electrodes:

1. Provide a dedicated "made" electrode for new buildings and existing facilities service upgrades. The made electrode shall be fabricated of at least 20 feet of uncoated galvanized 1/2 inch diameter rebar encased by at least two inches of concrete, and placed next to the bottom of a concrete foundation, or footing in direct contact with earth A welded extended portion shall surface at the location of the common grounding electrode bus bar and be extended by a 3/0 exothermic welded bare copper cable, or be welded directly to the bus. The exothermic weld shall be at least four inches above finished floor in a dry location. The main grounding electrode and associated grounding conductors shall be in an enclosure and in conduit.

2. The concrete enclosed electrode shall be fabricated of at least 20 feet of code sized bare copper conductor. The electrode conductor shall never be smaller than No. 2 AWG. Electrode shall be encased by at least two inches of concrete, located within or near bottom of a concrete foundation, or footing in direct contact with earth. Footing rebar shall be connected to electrode conductor with approved connectors.

3. An external grounding electrode, as specified hereafter or as required by the CEC shall be installed and connected to foundation or footing rebar.

G. Non-current carrying metal parts of equipment enclosures, signal and power conduits, switchboard and panelboard enclosures, motor frames, equipment cabinets, and metal

frames of buildings shall be permanently and effectively bonded to the grounding system. Provide a CEC sized equipment grounding conductor in every raceway.

H. Metallic or semi-conducting shields and lead sheaths of cables operating above 1000 Volts shall be permanently and effectively grounded at each splice and termination.

I. Neutral of service conductors shall be grounded as follows:

1. Neutral shall be solidly grounded at only one point within the Project site for that particular service. Preferable location of grounding point shall be at the service switchboard, or main switch.

2. Equipment and conduit grounding conductors shall be bonded to that grounding point.

3. If other buildings or structures on the Project site are served from a switchboard or panelboard in another building, power supply is classified as a feeder and not as a service.

4. Equipment grounding conductor shall be installed from switchboard to each individual building. At building, grounding conductor shall be bonded with power equipment enclosures, metal frames of building, etc., to “made” electrode for that building.

5. Feeder neutrals shall be bonded at service entrance point only; neutrals of separately derived systems shall be bonded at the source only.

J. If there is a distribution transformer at a building the secondary neutral conductor shall be grounded to “made” electrode serving the building.

K. Within every building, the main switchboard or panelboard, shall be bonded to the cold-water line. Metallic piping systems such as gas, fire sprinkler, or other systems shall be bonded to the cold-water line.

1.04 SUBMITTALS

A. Provide in accordance with Division 01.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Furnished yard boxes shall be precast concrete and shall be approximately 14 inches wide by 19 inches long by 12 inches deep or larger.

1. Boxes shall be furnished with bolt-down, checkered, cast iron covers and cast-iron frames cast into the yard boxes.

2. Yard boxes shall comply with LAUSD standard detail E-102.

3. Provide yard boxes with hinged Frame Locking Cover.

4. Approved products include Brooks No. 36 HFL, Jensen Precast, Oldcastle Precast, Western Precast, Kistner, or equal.

B. External ground electrodes shall be copper-clad steel ground rods, minimum 3/4-inch diameter by ten feet long.

C. Clamps and fittings used in ground boxes below grade shall be listed for direct burial.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Grounding electrodes shall be installed in the nearest suitable planting area, where not otherwise indicated on Drawings, and each electrode shall terminate within a concrete yard box installed flush with finish grade. In planting areas, finish elevation of concrete yard boxes shall be two inches above planting surfaces.

B. If concrete enclosed electrode is provided, grounding wire shall be terminated to a suitable copper plate with grounding lugs and must be enclosed in a raceway or box.

C. Grounding rods shall be driven to a depth of not less than eight feet. Permanent ground enhancement material, (GEM) as manufactured by Erico Electrical Products, Loresco Powerset, Tessco Ultrafil or equal, shall be installed at each ground rod to improve grounding effectiveness. Install in accordance with manufacture's installation instructions.

D. Grounding electrodes shall provide a resistance to ground of not more than 25 ohms.

E. When installing grounding rods, if resistance to ground exceeds 25 ohms, two or more rods connected in parallel, or coupled together shall be provided to meet CEC grounding resistance requirements.

F. Ground rods shall be separated from one another by not less than ten feet.

G. Parallel grounding rods shall be bonded together with listed fittings and grounding conductors in galvanized rigid steel conduit, buried not less than 12 inches below finish grade.

3.02 TESTING

A. Provide the services of an approved independent testing laboratory to test grounding resistance of “made” electrodes, ground rods, bonding of building steel, water pipes, gas pipes and other utility piping. Tests shall be performed as follows:

1. Visually and mechanically examine ground system connections for completeness and adequacy.

2. Perform fall of potential tests on each ground rod or ground electrode where suitable locations are available per IEEE Standard No. 81, Section 8.2.1.2. Where suitable locations are not available, measurements will be referenced to a known dead earth or reference ground.

3. Perform the two-point method test per IEEE No. 81, Section 8.2.1.1 to determine ground resistance between ground rod and building steel, and utility piping - such as water, gas and panelboard grounds. Metal hand railings at building entrances and at handicapped ramps shall also be tested.

4. Test shall be performed in the presence of the Inspector.

B. Submit 3 copies of test results to the Architect. Test results shall be submitted on an official form from the independent testing laboratory recording Project location, test engineer, test conditions, test equipment data, ground system layout or diagram, and final test results.

3.03 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.04 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 26 0533

RACEWAYS, BOXES, FITTINGS, AND SUPPORTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Raceways and wire ways.
2. Conduit installation.
3. Underground requirements.

B. Related Requirements:

1. Section 26 0500: Common Work Results for Electrical.
2. Section 26 0513: Basic Electrical Materials and Methods.
3. Division 27: Communications.
4. Division 28 - Electronic Safety and Security.

C. Applicable Standards and Codes.

1. EIA/TIA 569 Standards.
2. National American Standards Institute (ANSI).
3. National Electrical Manufacturer’s Association (NEMA).
4. Nationally Recognized Testing Laboratory (NRTL).
5. California Electrical Code (CEC).
6. Uniform Building Code (UBC).
7. Underwriters Laboratory (UL).

1.02 SUBMITTALS

A. Materials List: Provide in accordance with Division 01.

PART 2 - PRODUCTS

2.01 RACEWAYS

A. Conduit Materials:

1. Metallic conduit, and tubing shall be manufactured under the supervision of an UL, or another NRTL factory inspection and label service program. Each ten-foot length of conduit and tubing shall bear the UL or another NRTL label and manufacturer's name.

2. Rigid metallic conduit shall be rigid steel, heavy wall, mild steel, zinc-coated, with an inside and outside protective coating manufactured in accordance with ANSI C 80.1. Couplings, elbows, bends, conduits, bushings and other fittings shall be the same materials and finish as the rigid metallic conduit. Fittings, connectors, and couplings shall be threaded type, manufactured in accordance with ANSI C 80.1 and UL 6.

3. Electrical metallic tubing shall be steel tubing, zinc-coated with a protective enamel coating inside, manufactured in accordance with NEMA C 80.3. Fittings, couplings, and connectors shall be gland compression type, set screw couplings and connectors not permitted. All parts shall be manufactured in accordance with NEMA C80.3 and UL 6A Electrical metallic tubing is designated hereinafter as EMT. Steel and rain tight fittings shall be approved and listed for the intended application.

4. Flexible steel conduit shall be of flexible interlocking strip construction with continuous zinc coating on strips, manufactured in accordance with UL 1.

   a. Connectors and couplings shall be required fittings of the type, which threads into convolutions of flexible conduit.

5. Liquid-tight flexible metal conduit shall be galvanized heavy wall, flexible locked steel strip construction, UV rated, with smooth moisture and oil-proof, abrasion-resistant, extruded plastic jacket. Connectors shall be as required for installation with liquid-tight flexible conduit and shall be installed to provide a liquid-tight connection.

6. Non-metallic conduit shall be rigid PVC electrical conduit extruded to schedule 40 dimensions of Type II. Grade 1 high impact, polyvinyl chloride, sweeps, couplings, reducers and terminating fittings shall be listed under the UL, or another NRTL, and shall bear the manufacturer's listed marking.

7. Multi-cell raceway shall be four inch PVC, Type 40, UL or another NRTL listed for underground use with optical fiber and signal system cables. Raceway shall be furnished with 3-1/2 inch factory installed inner ducts with required internal spacers, and required couplers, sweeps, and end bells. Multicell raceway shall be Carlon Multigard, or District approved equal.

8. Metal Clad (MC) cable system is not allowed.

B. Sleeves for Conduits: Sleeves shall be adjustable type by Carlon, U.S. Plastic, PEP Plastic or equal.

C. Where conduit enters a building through a concrete foundation below grade, or ground water level, or where it is necessary to seal around a conduit where it passes through a concrete floor or wall, provide O-Z/Gedney Type FSK Thru Wall and Floor Seal, equivalent Cooper Crouse Hinds Thru-Wall, Legrand Thru-Wall, or equal.

D. Expansion Joints-Seismic Separations between building(s) and other locations as indicated on drawings:

1. Provide Thomas & Betts XJG-TB, O-Z/Gedney. type AX with bonding strap and clamps, Cooper XJGD or equal. At exterior locations, provide Thomas & Betts XJG-TB, O-Z/Gedney type EX, Cooper XJGD, or equal. Provide O-Z/Gedney type AXDX, or equal combination deflection/expansion fittings at all seismic separations. Provide manufacture's internal and external bonding jumpers at all locations. Liquid-tight metal conduit or flexible metal conduit shall not be approved at expansion joints, separations between buildings or seismic separations.

2. Provide expansion fittings at intervals not exceeding 100 feet in conduits exposed to direct sunlight. Fittings may be installed in the conduit run or where conduit attaches to junction or pull boxes. OZ/Gedney type AX, TX or EXE series, or equivalent by Thomas and Betts, Crouse-Hinds or approved equal.

E. Surface Steel Raceway:

1. The surface steel raceway system for branch circuit wiring, data network, voice, video, and other low voltage wiring shall be as manufactured by the Wiremold Company, Hubbell, or Mono-Systems, Inc. or equal. The raceway system may be supplied pre-wired in accordance with all sections of these specifications and requirements herein, and shall be UL or another NRTL listed. Computer data installation shall be as required by other sections of this Division.

   a. If furnished pre-wired, the system must be listed in accordance with UL or another NRTL for "Multiple Outlet Assemblies" and so labeled on interior of the assembly. The pre-wired installation must contain no extra wire splices in the raceway as compared to a contractor assembled installation assembled from components. The pre-wired steel raceway shall be Hi-Pot tested at the factory to prevent any potential bare wire or shot circuit defects.

2. The raceway base, cover, and device bracket shall be manufactured of steel and finished in ivory, gray enamel or custom colors suitable for field painting to match adjacent finishes.

3. The raceway shall be a two-piece design with a metal base and snap-on metal cover, except for the Wiremold V700 system, Hubbell HBL750 series and Mono-Systems Inc. S145-700 series that shall be a one-piece design. The base and cover sections shall be a minimum of 0.040 inch wall thickness. The base section shall be available in ten-foot lengths. A hand-operated cutting tool shall be available for the base and cover to ensure clean, square cuts. Wiremold V500, Hubbell V500, and Mono Systems inc. SM500 series are not permitted.

4. A full complement of fittings shall be furnished, including but not limited to, flat internal and external elbows, tees, entrance fittings, wire clips, cover clips, couplings, support clips, C-hangers and end caps. The fitting color shall match the raceway color. Fittings shall be supplied with a base where indicated and/or required. A take-off fitting shall be furnished as required to adapt to existing flush wall boxes.

5. Device brackets shall be furnished for mounting single or two-gang devices within the raceway. Devices shall be provided with the ability of mounting flush or in conjunction with standard steel, stainless steel, or manufacturer's metal faceplates.

6. The raceway shall be furnished with a complete line of connectivity outlets and modular inserts for unshielded twisted pair including category 5, fiber-optic, coaxial, and other cabling types with face plates and bezels to facilitate installation. Computer data installation shall be as required by other sections of this Division, and Division 27.

7. Raceway shall be furnished with corner elbows and tee fittings to maintain a cable bend radius which meets the requirements of fiber-optic and copper cables under EIA/TIA 569 for communications pathways.

F. Factory Pre-Wired Surface Metal Raceway:

1. Furnish and install pre-wired surface metal raceways as indicated on Drawings and as specified.

2. Metal Raceway shall be galvanized steel Wiremold V4000, Hubbell 4000 series, or Mono-Systems Inc. SMS-4000 series complete with raceway base, cover, fittings, receptacles and mounting plates required for a complete assembly. Raceway shall have two wiring compartments with integral dividing barrier for isolating the wiring compartments.

3. Pre-wired assembly shall be UL, or another NRTL listed as a multi-outlet assembly and surface raceway as labeled on interior of assembly.

4. Wiring devices and other components shall be factory installed, electrically wired and covers labeled as indicated on drawings. Each receptacle shall be identified with panelboard and circuit number from which it was fed. Grounding shall be maintained by means of factory installed grounding conductors.

5. Where shown on Drawings, Raceway covers shall have provisions for mounting computer data outlets.

6. Complete assembly is to consist of required fittings such as elbows, slide couplings for joining raceway sections, blank end caps and flat tees.

7. Prewired assembly must contain no wire splices.

8. Receptacles and wiring shall be as indicated on drawings and as specified.

9. Where raceway is used for power and computer data outlets, installation of data outlets shall be as required by other sections of this specification.

10. Prior and during installation, verify and comply with manufacturer's installation instructions.

11. Entire assembly shall be tested for shorts, opens, ground faults, and wire insulation at factory and certified. Raceways shall be electrically continuous and bonded in accordance with California Electrical Code.

12. Submit shop drawings for approval showing the complete layout of all components of each raceway, raceway lengths, each component description, location and circuit identification.

13. All wiring devices shall be removable without requiring disassembly of wireway.

14. Standard non OEM wiring devices shall be used as specified in District's specifications.

G. Wireways shall be 16 gage galvanized steel enclosed hinge/screw wiring troughs, surface metal raceway, wireway, and auxiliary gutter designed to enclose electrical wiring. Wireway fittings shall be furnished with removable covers and sides to permit complete installation of conductors throughout the entire wireway run. Cover shall be furnished with keyhole slots to accept captive screws locking the cover securely closed. Wireways shall be UL or another NRTL listed, and shall be Square D Type LDB NEMA-1 enclosure for interior applications, or Type RDB NEMA-3R enclosure for exterior applications, or equal by Cooper B-line, Hoffman, Wire Guard, or Circle AW.

H. Penetration in Fire-Rated Structures: Provide 3M, or equal, sealant and fire barriers for installing fire-rated seals around penetrations through floors, walls, and elevator hoistways. Fire stop system must be UL, or another NRTL listed, and classified for through-penetration applications of metallic conduits and busways.

I. Pull Wires: Install 1/8 inch polypropylene cords in empty or spare conduits.

PART 3 - EXECUTION

3.01 CONDUIT INSTALLATION

A. General Requirements:

1. Provide complete and continuous systems of rigid metallic conduit, outlet boxes, junction boxes, fittings and cabinets for systems of electrical wiring including lighting, power, and signal systems, except as otherwise specified.

2. EMT may be installed in interior concealed applications and in areas approved by owner. EMT shall not be installed in concrete, directly buried underground, outdoors, in boiler rooms, elevator pits, or where subject to damage.

3. Within buildings, flexible steel conduit may be installed instead of rigid steel conduit where permitted by code. Flexible steel conduit shall be installed:

a. For continuous lengths not exceeding more than 50 feet between pull points (pull boxes, outlet boxes, etcetera).

b. With no maximum total raceway length located within a building interior when the flex is located in concealed locations.

4. Flexible Steel conduit shall not exceed 1-1/2 inches in size.

5. Liquid-tight flexible steel conduit shall only be installed, except where otherwise specified, for final connection of motor terminal boxes, shop equipment, cafeteria equipment, HVAC equipment and other equipment, or for frequent interchange, and shall be of sufficient length, not exceeding 36 inches, to permit full travel or adjustment of motor on its base. Liquid-tight flexible conduit shall not be used for equipment not requiring adjustment or frequent interchange.

6. Connectors for flexible metal conduit shall be made of steel, and of the types which threads into convolutions of conduit. Connectors for watertight flexible metal conduit shall be as required for installation and shall be installed to provide a watertight connection.

7. Exposed conduit shall be installed vertically and horizontally following the general configuration of the equipment, using cast threaded hub conduit fittings where required and shall be clamped to equipment with suitable iron brackets and one hole pipe strap.

8. If connection is from a flush wall-mounted junction box, install an approved extension box.

9. Underground feeder distribution conduits for systems may be non-metallic conduit instead of rigid conduit except where otherwise specified or indicated.

10. Conduit shall be concealed unless otherwise indicated. Conduits exposed to view, except those in attic spaces and under buildings, shall be installed parallel or at right angles to structural members, walls, or lines of building. Conduits shall be installed to clear access openings.

11. Bends or offsets will not be permitted unless absolutely necessary. Radius of each conduit bend or offset shall be as required by ordinance. Bends and offsets shall be performed with standard industry tools and equipment or may be factory fabricated bends or elbows complying with requirements for radius of bend specified. Heating of metallic conduit to facilitate bending is not permitted. Public telephone conduit bends and offsets shall be provided with a radius which is not less than ten times trade size of conduit unless otherwise permitted. Refer to underground installation, specified in this section, for radius of bends and offsets required for underground installations.

12. Running threads are not permitted. Provide conduit unions where union joints are necessary. Conduit shall be maintained at least six inches from covering of hot water and steam pipes and 18 inches from flues and breechings. Open ends of conduits shall be sealed with permitted conduit seals during construction of buildings and during installation of underground systems.

13. Expansion Joints/Seismic Separations/Separations between buildings/Locations Indicated: Provide Thomas & Betts XJG-TB, O-Z Electrical Mfg. Co. Inc. Type AX with bonding strap and clamps. Crouse Hinds XJGD, or equal. At exterior

locations, provide Thomas & Betts XJG-TB, O-Z Electrical Mfg. Co. Inc. Type EX, Crouse Hinds XJGD, or equal. Provide Crouse Hinds, Thomas & Betts, or O-Z Electrical Mfg. Co. Type AXDX, or equal Combination Deflection/Expansion Fittings at all seismic separations. Provide manufactures internal and external Bonding Jumpers at all locations. Liquid-tight flexible conduit shall not be approved at expansion joints or seismic separations.

14. Where conduits are terminated in groups at panelboards, switchboards, and signal cabinets, etc., provide templates or spacers to fasten conduits in proper position and to preserve alignment. Conduits terminating at signal cabinets shall only enter cabinets in the following locations:

    a. Conduits entering top, side, and bottom of cabinets shall be aligned in a single row, centered two inches from rear of cabinet.

    b. Conduits entering back of cabinet shall be aligned in a single row centered two inches from top of cabinet.

    c. Conduits shall not be spaced closer than three inches on centers.

15. Conduits above metal lath ceilings shall be rigidly suspended with pipe hangers or pipe racks or shall be secured to superstructure with factory fabricated pipe straps. Conduits in metal lath or steel stud partitions shall be tied to furring channels or studs. In ceiling spaces and in partitions, tie wires shall be spaced not more than 5 feet apart, shall fasten conduit tight against channels and studs at point of tie and shall not support any of conduit weight. Tie wire shall be 16 gage galvanized double annealed steel.

16. Where auxiliary supports, saddles, brackets, etc., are required to meet special conditions, they shall be fastened rigid and secure before conduit is attached.

17. Conduit in ceiling spaces, stud walls, and under floors, shall be supported with factory fabricated pipe straps or shall be suspended with pipe hangers or pipe racks. Pipe straps shall be attached to and shall fasten conduit tight at point of support against ceiling and floor joists, rafters, and wall studs, or two-inch x four-inch headers fitted between joists or wall studs.

18. Conduits installed on exposed steel trusses and rafters shall be fastened with factory fabricated conduit straps or clamps, which shall fasten conduit tight against supporting member at point of support.

19. Conduits installed under buildings shall be strapped with factory fabricated conduit straps to underside of concrete floor or joists, or wood floor joists, or shall be suspended with pipe hangers or pipe racks. Conduits under building are not permitted to be placed directly on grade; they shall be suspended from building or shall be buried below surface or ground. 1-1/4 inch and larger conduits under buildings shall be installed with conduit hangers or racks.

20. Pipe hangers for individual conduits shall be factory fabricated. Steel rods shall be 3/8 inch for two-inch conduit hangers and smaller and shall be 1/2 inch for 2 ½-inch conduit hangers and larger.

21. Pipe racks for groups of parallel conduits and for supporting total weights not exceeding 500 pounds shall be trapeze type and shall consist of a cross channel, Steel City Kindorf B-900, Unistrut P-1000, equivalent Cooper B-Line or equal, suspended with a 3/8 inch minimum diameter steel rod at each end. Rods shall be fastened with nuts, top and bottom to cross-channel and with square washers on top of channel. Conduits shall be clamped to top for cross-channel with conduit clamps, Steel City Kindorf C-105 or Unistrut P-1111 through P-1124, equivalent Cooper B-Line, or equal. Conduits shall not be stacked one on top of another, but a maximum of two tiers may be on same rack providing an additional cross-channel is installed. Where a pipe rack is to be longer than 24 inches, or if the supported weight exceeds 500 pounds, submit Shop Drawings of installation to the Architect for review.

22. Conduits suspended on rods more than two feet long shall be rigidly braced to prevent horizontal motion or swaying. Installation shall meet zone 4 seismic requirements.

23. Factory fabricated pipe straps shall be one or two-hole formed galvanized clamps, heavy-duty type, except where otherwise specified.

24. Hangers, straps, rods, or pipe supports under concrete shall be attached to inserts set at time concrete is placed, or with approved concrete anchors. Under wood, install bolts, lag bolts, or lag screws; under steel joists or trusses, install beam clamps. Contractor shall submit size of anchors, bolts, screws, and installation method to Architect for approval prior to start of any work.

25. Conduits shall be supported at intervals required by code, but not to exceed ten feet. One inch and smaller exposed conduits shall be fastened with one-hole malleable iron straps. Perforated straps and plumber's tape is not permitted for the support of conduits.

26. Conduits stubbed up through a roof or an arcade shall be flashed with a waterproof flashing. Refer to Division 07 for additional requirements.

27. Bushings and locknuts for rigid steel conduit shall be steel threaded insulating type. Setscrew bushings are not permitted.

28. Flex conduits shall be cut square and not at an angle.

29. Routing of conduits may be changed providing length of any conduit run is not increased more than ten percent of the length indicated on Drawings.

B. Underground Requirements:

1. Conduits and multicell raceways installed underground shall be entirely encased in three inch thick concrete on all sides , except where otherwise specified. Provide required spacers to prevent any deflection when concrete is placed and to preserve position and alignment. Conduits and raceways shall be tied to spacers. Anchors shall be installed to prevent floating of conduits and raceways during placing of concrete. Provide red colored concrete to encase conduits of systems operating above 600 volts.

2. Underground conduits and raceways shall be buried to a depth of not less than 24 inches below finished grade to top of the concrete envelope, unless otherwise specified.

3. Assemble sections of conduit with required fittings. Cut ends of conduit shall be reamed to remove rough edges. Joints in conduits shall be provided liquid-tight. Bends at risers shall be completely below surface where possible.

4. Conduits and raceways in a common trench shall be separated by at least three inches of concrete. Electrical power and/or lighting conduit runs installed in a common trench with conduits containing signal system wiring such as public address, telephone, intrusion detection, fire alarm, television, computer networking, and clock systems shall maintain a separation of a minimum of six inches from these types of signal system conduits and raceways. Electrical power, lighting and signal conduits and raceways installed in a common trench with other utility lines such as gas, water, sewer and storm lines shall maintain 12 inches separation from these types of utility lines.

5. The Inspector will observe underground installations before and during concrete placement. A mandrel shall be drawn through each run of conduit in presence of the Inspector before and after placing concrete. Mandrel shall be six inches in length minimum, and have a diameter that is within 1/4 inches of diameter of conduit to be tested.

6. Non-metallic conduit installations shall comply with following additional requirements. Joints in PVC conduit shall be sealed by means of required solvent-weld cement supplied by conduit manufacturer. Non-metallic conduit bends and deflections shall comply with requirements of applicable electrical code, except that minimum radius of any bend or offset for conduits sized from 1/2 inch to 1 ½-inch inclusive shall not be less than 24 inches. Bends at risers and risers shall be PVC-coated rigid steel conduit. Radius of curve of bends or offsets in non-metallic conduit for public telephone system shall be not less than ten times trade size of conduit, unless otherwise specifically permitted.

7. Furnish and install a six-inch wide, polyethylene, red underground barrier type 12 inches above full length of concrete reading, "CAUTION ELECTRIC LINE BURIED BELOW".

8. Underground conduit systems provided for utility companies shall be furnished to meet the requirements of the utility companies requiring service.

9. Protect inside of conduit and raceway from dirt and rubbish during construction by capping openings.

10. Add bell-end bushings for conduit stub-up including underground entries to pull boxes, and manholes. Under floor standing switchboards and motor control centers provide a four-inch galvanized nipple with ground bushing.

11. Underground conduit for systems operating above 600 volts shall be a minimum size of four inches.

12. At portable classroom all stub ups shall be installed with a coupling flush to finish grade.

13. Underground conduits and raceways shall be swabbed prior to wire pull.

C. Rooftop conduit shall be supported from channels, stands, clamps, trapezes, rollers, or structures mounted on 100% rubber, UV resistant rooftop supports with reflective strips, Dura-Blok, or equal. Roller type supports shall be provided below and above conduit to prevent its dislodgement. Bottom of conduits shall clear the roof surface by 10 inches.

1. At PVC roofing provide walk tread, polyester reinforced, UV resistant, with surface embossment at rooftop supports. Heat welding of walk pads shall only be done by manufacturer certified installers.

a. Sika-Sarnafil and Carlisle: Walk tread shall be no more than one inch larger than the plan area of the pipe support blocks and adhered to the roof membrane with Sika 1A or Carlisle Universal Single-Ply sealant, as applicable.

b. Johns Manville: Walk tread shall be installed under the pipe support blocks and adhered to the blocks, if possible, and left loose laid on top of the PVC roof system. Walk-pad shall have a minimum of 4 inches of material past perimeter on all 4 sides of block.

2. Built-up roofing: Provide APP granulated modified torch-down at each pipe support block. Torch-down shall extend 2 to 4 inches beyond the edges of the block and adhered by torch application over existing cap sheet membrane. This work shall be performed by a certified roofer.

D. General Installation Requirements for Computer Network System Conduits:

1. Location of outlet boxes and equipment on Drawings is approximate, unless dimensions are indicated. Drawings shall not be scaled to determine position and routing of wireways, drops, and outlet boxes. Location of outlet boxes and equipment shall conform to architectural features of the building and other Work already in place and must be ascertained in the field before start of Work.

2. The maximum pulling tensions of the specified cables shall not be exceeded and proper radius of cable bends shall be maintained.

3. For computer network wiring, conduit types shall be limited to rigid metal conduit, electrical metallic tubing, schedule 40 PVC, multi-cell raceways, and flexible metallic conduit for lengths less than six feet.

4. Interior section of conduit run shall be not longer than 100 feet and shall not contain more than two bends of 90 degrees between pull points or pull boxes.

5. The inside radius of a conduit bend shall be at least six times the internal diameter of the conduit. When the conduit size is greater than two inches, the inside radius shall be at least ten times the internal diameter of the conduit. For

fiber-optic cable, the inside radius of a conduit bend shall be at least ten times the internal diameter of the conduit.

6. Conduit shall be sized in accordance with Table 4.4-1 of EIA/ TIA 569 standard.

7. Splicing or terminating cables in pull boxes is not permitted.

8. For indoor application, a pull box shall be provided in conduit run where:

   a. The length is over 100 feet.

   b. There are more than two bends of 90 degrees.

   c. There is a reverse bend in the run.

9. Boxes shall be provided in a straight section of conduit and shall not be installed in lieu of a bend. The corresponding conduit ends are to be aligned with each other. Conduit fittings shall not be installed in place of pull boxes.

10. Where a pull box is provided with raceways, pull box shall comply with the following:

    a. For straight pull-through, provide a length of at least eight times the trade-size diameter of the largest raceway.

    b. For angle and U-pulls:

       1) Provide a distance between each raceway entry inside the box and the opposite wall of the box of at least six times the trade-size diameter of the largest raceway, this distance being increased by the sum of the trade-size diameters of the other raceways on the same wall of the box.

       2) Provide a distance between the nearest edges of each raceway entry enclosing the same conductor of at least:

          a) Six times the trade-size diameter of the raceway; or

          b) Six times the trade-size diameter of the larger raceway if they are of different size.

          c) For a raceway entering the wall of a pull box opposite to a removable cover, provide a distance from the wall to the cover of not less than the trade-size diameter of the largest raceway plus six times the diameter of the largest conductor.

11. Drawings generally indicate Work to be installed, but do not indicate all bends, transitions of special fittings required to clear beams, girders or other Work already in place. Investigate conditions where conduits and wireways are to be installed, and furnish and install required fittings.

E. Slabs on Grade:

1. Unless specifically reviewed by the Architect and DSA, conduits 1 ¼-inches and larger are not permitted to be installed in structural concrete slabs. Where

conduits are permitted, and are installed in concrete slabs on grade, slabs shall be thickened at bottom where conduits occur to provide three inches of concrete between conduit and earth. Required excavation shall be part of the Work of this section.

2. If concrete slab is five inches or more in thickness with a moisture barrier plastic sheet between earth and slab, one inch and smaller conduits shall be installed in the slab with a minimum of one inch concrete between earth and conduit.

F. Concrete Walls, Beams, and Floors: Provide sleeves where conduits pierce concrete walls, beams, and floors, except floor slabs on grade. Sleeves shall provide 1/2 inch clearance around conduits. Sleeves shall not extend beyond exposed surfaces of concrete and shall be securely fastened to forms. Where conduits pass through walls below grade, seal with required sealant and backer materials between conduit and sleeve to provide a watertight joint. Sealant shall be as indicated in Section 07 9200: Joint Sealants.

3.02 STUBS

A. Panelboard: Install two one inch conduits from each flush mounted panelboard to access under floor space and to access above ceiling space where these conditions occur. Cap conduits with standard galvanized pipe caps.

B. Floor: At points where floor stubs are indicated in open floor areas, for connections to machines and equipment, conduits shall be terminated with couplings, tops flush with finished floor. Stubs shall extend above couplings the indicated distance. Where capped stubs are designated, couplings shall be closed with cast iron plugs with screw drive slots.

C. Underground:

1. Underground conduit stubs shall be terminated at locations indicated, and shall extend five feet beyond building foundations, steps, arcades, concrete walks and paving. Rigid metallic conduit stubs and non-metallic conduit stubs shall be capped by installing a coupling flush in end wall of concrete encasement and plugging with a permitted plug. Project record drawings shall indicate location of ends of underground conduit stubs fully dimensioned and triangulated with reference to buildings or permanent landmarks. These dimensions, including depth below finished grade, shall be marked on project record drawings in presence of the Inspector before backfilling trench. Where extending existing concrete encased stubs, clean, chip and wire brush end of existing concrete and brush on a heavy coat of neat cement paste or epoxy bonding agent.

2. Over ends of individual underground conduit stubs or groups of conduit stubs, install four-inch by 18-inch deep PVC filled with concrete, flush with finished grade in asphaltic concrete or lawns, and two inches above finished grade in planting areas. Cast a three-inch by three-inch brass plate engraved "ELECT" flush in top of concrete. Secure plate to concrete with brass dowels or as indicated on drawings.

3.03 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.04 CLEANUP

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 26 2416

PANELBOARDS AND SIGNAL TERMINAL CABINETS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Lighting and power distribution facilities, including panelboards.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 26 0500: Common Work Results for Electrical.
3. Section 26 0513: Basic Electrical Materials and Methods.
4. Section 26 2600: Power Distribution Units.
5. Section 26 5000: Lighting.
6. Division 27: Communications.
7. Division 28: Electronic Safety and Security.

1.02 SUBMITTALS

A. Provide in accordance with Division 01.

B. Shop Drawings: Include a front elevation indicating cabinet dimensions, make, location and capacity of equipment, size of gutters, type of mounting, finish, and catalog number of locks. General layout of internal devices, wiring drawings with wire numbers and device connections, vendor cut sheets of devices in enclosure and bill of materials listing description, manufacturer, part number, and quantity of items shall be included.

C. Installation Instructions: Submit manufacturer's written installation instructions.

1.03 DESIGN REQUIREMENTS

A. Panelboards:

1. Panelboards shall be wall-mounted, enclosed safety type with 120/240 volt, three-wire solid neutral 277/480 volt, four-wire or 120/208 volt, four-wire solid neutral mains as indicated on Drawings or specified. First panelboard of each building shall be provided with main or sub-feeder circuit breakers where so indicated.

2. Single pole branches shall be molded case, thermal magnetic circuit breakers with inverse time delay, trip free, quick-make, quick-break mechanism and silver alloy contacts. Circuit breakers shall be fully rated, with ampere rating marked on handle and shall indicate on/off and tripped positions. Ground fault interrupters shall be incorporated into circuit breakers where indicated. They shall be listed by UL, or other NRTL as ground fault devices. Provide appropriate lug kit of sufficient size to accommodate the feeders.

3. Two- and three-pole branches shall be enclosed, and shall be thermal magnetic circuit breakers with inverse time delay, tamper-proof, ambient compensated, single handle, internal common trip, and quick-make, quick-break mechanism with silver alloy contacts. Circuit breakers shall be fully rated or as otherwise indicated on the Drawings.

4. Main and subfeeder circuit breakers shall be enclosed, thermal magnetic type with inverse time delay, single handle common trip, quick-make, quick-break mechanism, corrosion-resistant bearings and silver alloy contacts. Ampere frame size and trip rating shall be as indicated on Drawings. Breakers over 225 amperes shall be furnished with interchangeable trip units. Handles of main and subfeeder circuit breakers shall be provided cabinet door. Voltage rating shall be as indicated on Drawings.

5. Circuit breakers shall be fully rated and of one-piece, bolt-on type and shall meet short-circuit interrupting capacity requirements indicated on Drawings. Series rated circuit breaker combinations are not acceptable.

6. Internal connections shall be fabricated with plated copper bus bars and the busses shall extend for full length of space available for branch circuit breakers. Feeder cable connectors shall be installed at point of feeder entrance. Terminals shall be furnished with copper conductors. Panelboards fed by conductors having over-current protection greater than 200 amperes shall be protected on supply side by over-current devices having a rating not greater than that of panelboards. Copper bussing shall be fully rated. Heat rated bussing is not acceptable.

7. Except where otherwise indicated, circuit breakers shall be in two vertical rows connected to bus bars in a distributed phase arrangement. Two-pole branches shall be balanced on busses. Single pole branches shall be numbered adjacent to its circuit breaker, with odd numbers on left and even numbers on right.

8. Specified circuit breaker spaces shall be furnished with hardware required for future installation of circuit breakers.

9. Provide locking devices for individual circuit breakers. Padlocking devices shall be secured to circuit breakers and by panel dead front plates.

B. Surge Suppressors: Where indicated on Drawings, provide transient voltage surge suppressors as an integral part of panelboards. Panelboards shall be complete with 200

percent rated copper neutral bus, ground bus and isolated ground bus in addition to requirements of this section. Surge suppressors shall be as follows:

1. Surge Capacity:

   a. Line-to-neutral for wye systems: 80 KA.

   b. Line-to-ground: 80 KA.

   c. Neutral-to-ground: 80 KA, three-phase wye.

   d. Line-to-neutral plus line-to-ground: 160 KA.

2. UL 1449 2nd Edition Suppressed Voltage Rating for 208/120 Wye System:

   a. Line-to-neutral: 400 volts.

   b. Line-to-ground: 400 volts.

   c. Neutral-to-ground: 400 volts.

   d. Maximum continuous over-voltage: 150 volts.

3. EMI/RFI High-Frequency Noise Power Filter (Characteristics):

   a. 100 KHz at 444 dB.

   b. 100 MHz at 44 dB.

   c. 10 MHz at 44 dB.

   d. 100 MHz at 444 dB.

4. MOVs shall be thermally protected for low current faults and shall be fused with surge-rated fuses. The surge-rated surge current passes and clears the circuit safely if the surge capacity is exceeded. Enhanced diagnostics shall continuously monitor the unit's status and shall include LEDs to signal a reduction in surge capacity or the loss of a suppression circuit. An audible alarm, with test and silence features, shall be furnished in diagnostic package.

5. Each phase or the entire unit shall be replaceable and have bolted-on, tin-plated copper connections. Unit to have UL witnessed fault current rating of 65,000 symmetrical amperes.

6. Surge suppression units shall comply with the following:

   a. UL certified.

   b. UL 1283.

c. UL 1449.

d. IEEE C 62.45.

e. IEEE C 62.41.

f. Nationally Recognized Testing Laboratory (NRTL) or equal.

C. Panelboard Cabinets:

1. Panelboard cabinets shall be code gage galvanized steel or blue steel; fronts, doors, and trims shall be code gage furniture steel. Cabinets shall be furnished with at least six-inch high gutters at top and bottom where feeder cable size exceeds four gage or where feeder cable passes through cabinet vertically. Cabinets shall be furnished with top and bottom gutters sized as required by inspection department having jurisdiction, but never less than six inches where more than one feeder enters top or bottom of cabinets. Side gutters shall not be less than four inches wide. Width of cabinets shall be 20 inches, unless otherwise indicated on Drawings.

2. Doors shall be cut true, shall accurately fit opening and finish smooth across joints. Rabbets shall be inside. Hinges shall be entirely concealed except for barrels and pins. Hinge flanges shall be welded to door and trim. Doors shall be equipped with flush type, spring-latching, Corbin locks for metal doors, keyed to Corbin No. 60 keys.

3. Where contactors, time switches, and control devices are specified or indicated to be installed within panelboard cabinets, a separate compartment and door shall be provided at top of cabinet for such devices. Door shall be sized as required to permit removal of contactor and other devices intact. Gutters shall be provided at sides and top of compartment. Doors shall be equipped with flush type, spring-latching, Corbin locks for metal doors keyed to Corbin No. 60 keys.

4. Provide and install panelboard manufacturer’s permanent circuit number kit option.

5. Panelboards with control devices in compartment shall arrive at the Project site completely assembled with control devices installed and wired.

6. Outdoor cabinets shall be NEMA Type 3R. Construction shall be formed from code gage galvanized steel with ANSI No. 61 gray enamel finish. Provide heavy-duty, three point latching, vault type door handles with padlocking provisions. Provide stainless steel or galvanized butt hinges on doors. Padlocks shall be furnished, keyed to Corbin No. 60 keys.

7. Self-tapping screws and bolts not permitted.

D. Panelboard Schedule: Provide a neatly typewritten schedule with number or name of room or area, or load served by each panelboard circuit. Room numbers or names shall be determined at the Project site and shall not necessarily be those indicated on the Drawings. Schedule shall also indicate panel designation, voltage and phase, building and distribution panel or switchboard from which it is fed. Schedule shall be installed in a frame under transparent plastic 1/32 inch thick on inside of each panelboard cabinet door.

E. Panelboard nameplate: Provide a nameplate identifying panelboard. Plates shall be black and white plastic nameplate stock, with character cut through black exposing white and shall bare designation of service. Name plate shall be mechanically fastened to switchboard.

F. Provide additional labeling on dead-front of panelboard. Label shall be a P-Touch or equal with a minimum width of 3/8 inch with black letters on white background. Label shall re-identify panelboard and also identify name and location of power source feeding this panel. Location information shall include building name if located in different building and name or room location. If power source is installed in same room, label should indicate source name and "In this Room"

G. Panelboard Standards: Panelboards shall be UL, or other NRTL listed and labeled. Panelboards shall meet latest revisions of following standards:

1. California Electric Code, Article 384.

2. UL 67, Panelboards.

3. UL 50, Cabinets and Boxes.

4. UL 943, GFCI.

5. UL 489, Molded Case Circuit Breakers.

6. NEMA PB1.

7. Federal Specifications W-P- 115C and WC-375B.

H. Signal Terminal Cabinets:

1. Signal terminal cabinets shall conform to the Specifications for panelboard cabinets, except as modified herein.

2. Terminal cabinets shall be flush type, with two-inch trim or surface mounted type, as indicated on Drawings. Terminal cabinets shall be furnished with sections and barriers to separate each system. Sections over 24 inches in width shall be provided with double doors and locks. Terminal cabinets, or sections of terminals housing separate systems, shall measure 12 inches long by 18 inches

high by 5 ¾-inch deep, unless otherwise indicated on Drawings. Trims for sectional cabinets shall be of one-piece construction.

3. Terminal cabinets shall be furnished with ¾ inch thick plywood. Plywood shall be fastened in place with machine screws or factory installed mounting screws.

4. Flush-mounted terminal cabinets shall be finished as specified for flush-mounted panelboard cabinets. Surface and semi-flush mounted terminal cabinets shall be finished as specified for surface-mounted panelboard cabinets.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Panelboards shall be manufactured by Siemens, W.A. Benjamin, General Electric, Cutler Hammer, Square D or equal.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Panelboards shall be located so they are readily accessible and not exposed to physical damage.

B. Panelboards installed outdoors shall be specifically listed for wet locations and shall be weatherproof in NEMA Type 3R cabinets.

C. Panelboard locations shall provide sufficient working space around panels to comply with the California Electrical Code.

D. Panelboards shall be securely fastened to structure and mounted on surface by at least four points.

E. Unused openings in cabinets shall be effectively closed as required by the manufacturer.

F. Cabinets shall be grounded as specified in Article 250 of the California Electrical Code.

G. Conduits shall be installed so as to prevent moisture or water from entering and accumulating within the enclosure.

H. Lugs shall be suitable and listed for installation with the conductor being connected.

I. Conductor lengths shall be maintained to a minimum within the wiring gutter space. Conductors shall be long enough to reach the terminal location in a manner that avoids strain on the connecting lugs.

J. Maintain the required bending radius of conductors inside the cabinet.

K. Clean the cabinet of foreign material such as cement, plaster, and paint.

L. Distribute and arrange conductors neatly in the wiring gutters.

M. Use the manufacturer's torque values to tighten lugs.

N. Before energizing panelboards, the following steps shall be taken:

1. Retighten connections to the manufacturer's torque specifications. Verify that required connections have been provided.

2. Remove shipping blocks from component devices and panelboard interiors.

3. Manually exercise circuit breakers to verify they operate freely.

4. Remove debris from panelboard interior.

O. Follow manufacturer's instructions for installation.

P. Do not install in highly corrosive environments, unless rated for the application.

3.02 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.03 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 26 5010

SOLID STATE (LED) LIGHTING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: LED Luminaires, LED modules, drivers, wiring, and lighting controls.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 26 0500: Common Work Results for Electrical.
3. Section 26 0513: Basic Electrical Materials and Methods.
4. Section 26 0526: Grounding and Bonding.
5. Section 26 0519: Low-Voltage Wires (<600 Volt AC).
6. Section 26 0923: Lighting Controls Systems.
7. Section 26 5200: - Emergency Power Systems.
8. Section 32 1313 - Site Concrete Work.

1.02 REFERENCES

A. American National Standards Institute/American National Standard Lighting Group ANSI/ANSLG – C78.377 Specifications for the Chromaticity of Solid-State Lighting Products.

B. American National Standards Institute/American National Standard Lighting Group ANSI/ANSLG – C82.77 Harmonics Emission Limits.

C. Federal Communication Commission (FCC) 47 CFR Part 15 – Radio Frequency Devices.

D. Illuminating Engineering Society of North America (IESNA) LM-79-, LM-80-15, and TM-21.

E. National Electrical Manufacturers Association (NEMA) SSL-1 Electronic Drivers for LED Devices, Arrays, or Systems.

F. SSL-3-2010 Solid State Lighting High Power LED Binning for General Illumination.

G. SSL-4-2012 Solid State Lighting Retrofit Lamps.

H. National Fire Protection Association (NFPA) NEC-70.

I. Underwriters Laboratories (UL) 8750-Light Emitting Diode (LED) Equipment for Use in Lighting Products.

J. Underwriters Laboratories (UL) 1598C- Light Emitting Diode (LED) Retrofit Luminaire Conversion Kits.

1.03 SUBMITTALS

A. List of Materials: Submit a complete list of proposed materials.

B. Shop Drawings: Provide detailed and dimensioned Shop Drawings indicating kind, weight and thickness of materials, method of fitting and fastening parts together, location and number of sockets, size of lamps, and complete details of method of fitting suspension and fastening luminaires in place. Provide wiring diagrams for lighting control equipment. Drawings shall contain sufficient information to assemble and install equipment at the Project site without further instructions.

C. Prior to start of construction; provide photometric calculations with graphic of lighting foot-candle levels at work plane, ceiling and walls. Calculations shall comply with IESNA recommendations.

D. Installation Instructions: Submit manufacturer's written installation instructions for luminaires and accessories.

1.04 SUBSTITUTIONS

A. Luminaires that deviate from these requirements shall not be accepted without written approval from OWNER. When deviating or substituting luminaires, the following information shall be submitted:

1. Substitution request form with clear indication of reasons and benefits to OWNER.

2. Provide substantiating evidence of benefits and pros and cons on favor of the proposed material/equipment/components substitution.

3. Submit a completed OWNER’s LED luminaires evaluation form with supporting documentation for any and all fixtures’ performance claims. The form can be found at the following electronic address: http://www.laschools.org/documents/file?file_id=310976408

4. Fixtures manufacturer LM-79 and LM-80 test reports shall be from a third-party testing lab.

1.05 QUALITY ASSURANCE

A. Design of lighting luminaires, accessories, supports, and method of luminaire installation shall comply with requirements for earthquake-resistant construction of the State of California.

B. Provide suspension points at no more than two feet from luminaire ends. Spacing between supports shall not exceed eight feet.

C. Components and luminaires shall be listed and approved for the intended application by Underwriter's Laboratories (UL), or other Nationally Recognized Testing Laboratory (NRTL), and in compliance with applicable industry standards and codes, including those mentioned under article 1.02 – References.

1.06 COMMISSIONING

A. A Commissioning Services Provider (CxSP) retained by the OWNER will lead and provide Commissioning (Cx) of lighting systems and lighting controls, including submittal review, installation, testing, documentation, and training.

B. CONTRACTOR shall follow the commissioning responsibilities stated in Section 01 9113, General Commissioning Requirements.

C. CONTRACTOR shall provide all tools and personnel, and perform start-up, prefunctional and functional performance testing in the presence of the OWNER’s CxSP.

1.07 WARRANTY

A. Provide the following warranties:

1. One-year labor warranty.

2. Material warranty:

a. LED modules: five years minimum.

b. Drivers: five years minimum.

c. Lighting Pole (Standards): five year minimum.

B. Warranty period shall begin at substantial completion or at project acceptance for beneficial occupancy, whichever occurs first.

C. CONTRACTOR shall warranty Luminaires, including drivers, LED modules and ancillary components via a single warranty source. Multiple warranty sources are not acceptable.

PART 2 - PRODUCTS

2.01 MATERIAL AND FABRICATION

A. Luminaires of same type shall be of one manufacturer.

B. Manufacturer and model number references are indicated as a standard of performance and quality; other manufacturers' models may be submitted for review, provided the product meets or exceeds the product's specified requirements and substantially complies with OWNER'S LED Luminaires Evaluation Requirements Form.

C. Conductors that pass over edges or through metal opening(s) shall be secured from contacting the edges and be protected from cutting and abrasion. This requirement shall be met through one of the following:

1. Rolling the edge of the metal not less than 120 degrees.

2. A bushing or grommet of a material other than rubber at least 1.2 mm (0.047") thick.

3. Glass sleeving at least 0.025 mm (0.010") thick.

D. Lighting luminaires shall meet the following requirements:

1. Industry standards as indicated under Article 1.02.

2. Luminaire shall be from a manufacturer who has been in the business of manufacturing LED lighting luminaires for interior and exterior applications for a minimum of 5 years.

3. Luminaires shall comply with the California Health and Safety Code requirements for products containing substances identified in the California Lighting Efficiency and Toxics Reduction Act or follow the European Restriction of Hazardous Substances (RoHS), whichever is more stringent.

4. Luminaires shall be baked-on enamel or powder-coated, unless otherwise specified in this section.

5. The luminaire(s) lens, including end caps shall be 0.187 nominal thickness.

6. Drivers shall be easily accessible without the use of special tools.

7. Wiring cavity shall be field accessible for service or repairs.

8. Luminaires shall be capable of being operated by standard motion/ vacancy sensors, daylight sensors, and dimmers.

9. Luminaires shall be provided with a manufacturer's stencil or permanent legible sticker that states manufacturer business information and date of delivery.

10. Temperature rating; -20 degrees Celsius minimum starting temperature. Luminaire accessories including LEDs and drivers shall be able to withstand temperatures in excess of 110 Fahrenheit degrees.

11. Color Rendering Index (CRI):

    1) Interior Applications: +85 CRI.

    2) Exterior Applications: +70 CRI

12. Power factor: Greater than 0.9 at 120V and 277V.

13. Total Harmonic Distortion: Less than 17% at 120V and 277V.

14. Color Correlated Temperature (CCT): 4000K minimum ± 275K degrees.

15. LEDs and drivers' life expectancy: 50,000 minimum projected hours at 6,000 hours testing for both LEDs and drivers.

16. Luminaires in contact with insulation materials shall be IC rated.

17. Luminaires shall be listed for the application and installation location.

2.02 DRIVERS and LED MODULES

A. Drivers:

1. Approved Drivers Manufacturers:

    a. Osram – Optotronic.

    b. Signify – Advance and Xitanium.

    c. Universal Lighting Technologies – Everline.

    d. General Electric – Lightech.

    e. Thomas Research Products

f. Inventronics – EUC-060S -IPP66

g. Kenall – Low Profile LED Driver

h. EldoLED

i. Equal. Only if approved by OWNER's M&O Technical Services and Design Standards units through a deviation request.

2. Driver Type and Characteristics:

a. Comply with the state of California Health and Safety Code requirements for products containing substances identified in the California Lighting Efficiency and Toxics Reduction Act, or be RoHS compliant, whichever is more stringent.

b. Dimming for 0-10-volt DC control circuits. Drivers shall be specifically compatible with the lighting control system being provided.

c. Comply with applicable state, federal, and industry standards listed under References article.

d. Wattage as stated in Luminaire's LM-79 test report.

e. Driver performance requirements: Refer to Attachment A.

B. Light Emitting Diodes (LEDs):

1. Approved Manufacturers:

a. General Electric.

b. Signify.

c. NICHIA

d. Samsung LED Co.

e. CREE

f. Equal. With OWNER's approval.

2. LEDs Characteristics:

a. Color Correlated Temperature (CCT):

1) Chromaticity target Duv and tolerance 0.001 plus/minus 0.006.

2) Nominal CCT for 4000K, target CCT 3985K ± 275K.

3) CCT measurements in compliance with ANSI C78.377-2008.

b. Lumen Maintenance: Greater than 90% at 50^0 C degrees.

c. LEDs must be from same manufacturer and batch.

d. TM-21 and LM-80 reported hours of no less than 50,000 at minimum of 6000 hours testing.

e. LM-79 reported CCT and CRI in compliance with articles 2.01.D.11 and 14.

2.03 LUMINAIRES

A. Luminaires types and minimum requirements:

1. Type C, Wall-Mounted Luminaires:

APPLICATION – STAIRS (EXISTING CONSTRUCTION ONLY).

a. Fully enclosed, with high impact white acrylic diffuser.

b. Die-formed, prime quality 20 gage steel body, 48 inches long.

c. Approved luminaires: Prudential Lighting SNAP-X1LED4-WA-UNV, Luminaire LED TSL9-40K-2B-VOLT-CP, Luminaire LED Stair Lighter TSL-9 Series, Lithonia WL4-40L-EZ1-LP840, Hubbell Columbia Lighting LBIL-4-40-ML-EDU, or OWNER approved equal.

2. Type E1, Enclosed and Vandal Resistant Luminaires:

APPLICATION – STUDENT RESTROOMS, SHOWERS, LOCKER ROOMS, EXTERIOR FACILITY DINING AREAS AND EXTERIOR CANOPIES.

a. Luminaire shall be 20 gage extruded aluminum with die cast end caps.

b. Luminaire shall have opal polycarbonate lens.

c. Furnish luminaires with LED strips as indicated on drawings. Luminaire shall have tamper-resistant hardware.

d. Luminaire shall have the ability to be in continuous rows with seamless appearance.

e. Luminaire shall be listed for wet location.

f. Approved luminaires: Luminaire LED Vision 8-VPF84-4000K, Lithonia VAP-6000LM-FSTMD-MVOLT-GZ10-40K-80CRI, A Light Elements ALD3ST, Selux W60, or OWNER approved equal.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install a lighting luminaire for each lighting outlet indicated and label with day of installation.

B. Luminaire voltage shall be as indicated on Drawings.

C. Install recessed and surface-mounted luminaires, with plaster frames compatible with ceiling and wall systems employed; secure luminaires mechanically to frames.

D. Align rows of suspended and surface-mounted luminaires to form straight lines at uniform elevations.

E. Recessed luminaires shall fit snugly against ceilings to prevent light leakage.

F. Luminaire installations shall comply with CBC Seismic requirements

G. Support suspended recessed luminaires in T-bar ceilings as follows: Luminaires shall be attached to ceiling grid to resist a horizontal force equal to weight of luminaires. For heavy-duty grid systems, luminaires weighing less than 56 pounds must also have two 12 gage slack safety wires from diagonal corners to the structure above; luminaires weighing more than 56 pounds shall be independently supported by not less than four taut 12 gage wires capable of supporting four times the load. For intermediate duty grid systems, luminaires shall be independently supported by not less than four taut 12 gage wires capable of supporting four times the load. Luminaire hanger wire ends shall be twisted three tight turns within a 1 ½ -inch distance. Provide positive point of attachment to T-bar ceiling with four, #8 wafer head tek screws (one at each corner), avoiding conflict with operation of the lens. Luminaire installation shall be coordinated with acoustical ceiling installation.

H. Emergency light luminaires shall be labeled “Emergency Luminaire” with one inchone-inch high letters produced with a P-touch or similar labeling system.

I. Continuous suspended luminaires:

1. Luminaire suspension device shall allow vertical adjustment of luminaire without the use of tools. Cable shall be minimum seven strand twisted stainless steel capable of supporting minimum four times the luminaire weight. For continuous linear suspended luminaires longer than eight feet, provide not less than three suspension points.

2. Top of luminaire shall be suspended as shown on the Drawings, typically 24 inches below the ceiling and a minimum of 18 inches from the ceiling.

3. Luminaire shall utilize factory furnished or approved hardware and canopy for either hard or T-bar ceilings.

4. White Board Lights shall be suspended 24 inches from the wall unless specifically shown otherwise.

J. Surface mount luminaires shall be attached to structure. Toggle bolts are NOT permitted. Provide backing where required.

K. Low level exit signs shall be installed with the bottom of the sign not less than six inches, or more than eight inches above the floor level and shall indicate the path of exit travel. For exit and exit-access doors, the sign shall be on the door or adjacent to the door with the closest edge of the sign within four inches of the door frame.

3.02 TESTING

A. Check and adjust luminaires for required illumination.

B. Replace defective LED strips and drivers.

C. Test and adjust lighting control equipment for proper operation.

3.03 SPARE PARTS

A. Furnish ten percent spare LED strips with a minimum of one spare strip of each type.

B. Furnish ten percent spare motion detectors of each type with a minimum of one spare detector of each type.

C. Furnish ten percent spare drivers of each type with a minimum one spare driver of each type.

3.04 HAZARDOUS WASTE DISPOSAL

A. Hazardous waste disposals shall be handled and disposed of by an approved, licensed contractor.

B. Products with PCBs are not acceptable. Hazardous waste shall be placed in appropriate containers provided by hazardous waste contractor labeled clearly with:

1. Project Name

2. Quantity of materials

3. Date materials became waste

C. Store, remove, transport and dispose of hazardous materials in accordance with state and federal regulations.

D. Provide Owner with copy of manifest and certificate of destruction.

3.05 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.06 CLEANUP

A. Remove rubbish, debris, and waste materials from all areas of work each day.

B. Clean luminaire surfaces of dirt, cement, plaster and debris. Furnish cleansers compatible with material surfaces being cleaned.

END OF SECTION

ATTACHMENT A

DRIVERS PERFORMANCE CHARACTERISTICS		
No.	**Characteristic**	**Minimum Requirements**
1	Input Voltage range	120V, 277V
2	Input Overvoltage	320 VAC for 48 hours, 350 VAC for 2 hours.
3	Frequency	50/60 Hz Nominal
4	Power factor	+0.95 Minimum
5	Inrush Current	Less than 30 amps @ 120V Less than 70A @ 277V
6	Input Current Range	54A @ 120V, 23A @ 277V
7	Output Current	1670 mA Maximum
8	Maximum Power	65 Watts
9	Total Harmonic Distortion	Less than 20%
10	Leakage Current	Less than 500 mA
11	Output Protection	Short and Open Circuit Protection
12	Maximum Case Temperature	90^0 C
13	Minimum Starting Temperature	-20^0 C
14	Storage Temperature	No less than 70^0 C
15	Humidity	Rated for dry and damp locations
16	Cooling	Convection
17	Sound Rating	Class A
18	Life Expectancy	>50,000 hours at $+50^0$ C
19	Dimming, Motion Sensors and Daylight Sensors Controllability	0-10V

SECTION 27 4113

CLASSROOM SOUND ENHANCEMENT AND ASSISTIVE LISTENING SYSTEMS

PART I - GENERAL

1.01 SUMMARY

A. Principal items of Work in this Section include but are not limited to:

1. Sound enhancement system and interface between sound system amplifier and classroom audio and video components, including but not limited to DVD players, overhead video projectors, video screens, teacher's computer workstations.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 26 0500: Common Work Results for Electrical.

3. Section 26 0513: Basic Electrical Materials and Methods.

4. Section 26 0526: Grounding and Bonding.

5. Section 26 0519: Low-Voltage Wire (600 Volts AC).

6. Section 26 0533: Raceways, Boxes, Fittings, and Supports.

C. Codes and Applicable Standards: complete installation shall meet or exceed the latest edition of the following standards.

1. California Building Code (CBC).

2. California Electrical Code (CEC).

3. ANSI S12.60 Acoustical Performance Criteria, Design Requirements, Guidelines for Schools.

4. Building Industry Consulting Service International (BICSI) Telecommunications Distribution Methods Manual, current edition.

5. Federal Communications Commission (FCC) Listing requirements.

6. Underwriters Laboratory (UL) or other Nationally Recognized Testing laboratory (NRTL).

7. Telecommunications Industry Association (TIA), and Electronic Industries Alliance (EIA) applicable sections to sound amplification systems and loudspeakers.

1.02 SYSTEM REQUIREMENTS

A. The sound enhancement system includes components needed to provide amplification of the teacher's voice and full integration with other audio and video educational technology equipment.

1. Sound enhancement shall be clear, high fidelity, uniform, and enough to override typical classroom noise levels.

2. 2-way wireless audio communication of 1.9 GHz or equal with a wireless transmission range of 200 ft (60m) minimum.

3. Provide all labor, materials and testing.

4. System and peripheral components shall be from a single manufacturer.

1.03 SUBMITTALS

A. Provide the following submittals:

1. Materials: Submit a complete material list for the materials and products of this section. Each submittal shall be bound and shall contain an index organized vertically by assembly and item number, and horizontally by columns. The leftmost column shall be the item number; next shall be the description, followed by the applicable specification section number, followed by the specified item, which is followed by the submitted item. The rightmost column shall be for notes, which shall be used to reference the reason for submitting items other than as specified.

a. A substitution request form with all supporting documentation shall be submitted when Contractor proposes to utilize non-approved products.

b. Substitution materials and products shall not be used unless previous approval has been obtained.

c. Substitution requests shall comply with the requirements set forth in Division 01, section 01 3300 – Submittal Procedures.

B. Product Data: Include Product Data sheets or catalog cut sheets for items listed in index. Items shall be arranged in the same order as the index, and if more than one item is indicated, the submitted items shall be highlighted or marked with an arrow. Product Data shall be sufficiently detailed to allow the Architect to review the product

and to allow other trades to provide necessary coordination. Include in the Product Data list submission, installation instructions, parts list with products serial numbers, and copies of installer's manufacturer certificates.

C. Shop drawings shall include details with proposed means of support and attachment to wall and ceiling for the mounting of equipment and devices. Shop Drawings shall be prepared in the latest version of AutoCAD. Submit one CD-ROM electronic copy along with one set of full-sized Shop Drawings.

D. Provide details for sound enhancement system interface with equipment furnished by others including number of wires, termination requirements, voltages, mounting plate arrangement, and required coordination items.

E. Provide samples of material and equipment as required by the Architect. If samples are requested, they shall be submitted within ten days from date of request.

1.04 SYSTEM DESCRIPTION

A. The Classroom Sound Enhancement System shall be comprised of components needed to provide amplification of the teacher's voice, and full integration with other audio-visual educational technology equipment and teacher's computer station.

B. Each Classroom Sound Enhancement (CSE) System shall be complete and independent. A typical system shall have an audio amplifier, a teacher's (lapel, collar, or neck hang) wireless microphone, a handheld student wireless microphone, speakers evenly distributed throughout the classroom, and all required cables to interconnect the system to classroom audio/visual components and assistive listening equipment. The system shall deliver a uniform sound distribution regardless of the arrangement of teacher and students, and materials and equipment.

1. System shall function without audible or visual distortions, hum, buzz or rattle under normal operating conditions.

2. System signal shall be contained within the perimeter of the classroom and/or educational space.

3. The contractor is to provide and install a permanent 3.5 mm stereo audio cable attached to the CSE amplifier audio line out interface.

   a. A label with "For ALS" shall be affixed to the 3.5mm stereo cable (for use with Assistive Listening transmitter equipment).

4. The contractor shall provide and install "Assistive Listening Available" signage in all classrooms with the CSE amplification equipment.

C. The contractor shall provide one portable hearing assistive listening transmitter kit with one transmitter and two receivers with neck loops in a quantity to support 4% of the largest classroom occupancy in the project.

D. Ceiling tile bridges shall be provided to carry the weight of the speakers on the ceiling grid and not on the ceiling tile itself.

E. Speakers shall be equipped with adequate seals to prevent sound dissipation through the space above the finished grid ceiling.

1.05 QUALITY ASSURANCE

A. Only qualified Installers holding required state contractor's license shall do the work.

B. Work shall be performed by manufacturer certified system installers with at least five installed school systems of equivalent scope. The installer shall be engaged in the business of supplying and installing specified type of systems for at least five years. Installer shall maintain a fully equipped service organization capable of furnishing repair services.

C. The Installer shall use adequate numbers of skilled personnel who are manufacturer certified, trained and experienced on the necessary crafts and familiar with the specified requirements and methods needed for the proper performance of the work.

D. Installer shall be a factory authorized distributor and service provider for the brand of equipment offered and shall provide documentation to the Architect upon request.

E. The Installer shall provide personnel and tools required to participate in Owner's Quality Assurance and Testing.

1. Should the examination reveal deficiencies, the Owner's acceptance testing will be discontinued until corrections have been made. When the Installer has completed the corrections, a subsequent Quality Assurance test shall be initiated.

F. Materials and equipment installed shall be new and installed in compliance with prevailing national and local engineering practices, codes and standards.

G. System startup and testing shall be performed under the direct observation of the Project Inspector and Owner Authorized Representative.

H. Materials, surface, or existing work damaged in the performance of the Work shall be repaired or replaced at no cost to Owner. Examination of, or failure to examine work by the Owner shall not relieve Contractor from these obligations.

1.06 WARRANTY AND SPARE PARTS

A. Warranty that work executed and materials furnished are free from defects of material fabrication and execution for a period of three years from acceptance date of Substantial Completion. Immediately upon receipt of written notice from the Owner, repair or replace, at no expense to the Owner, defective material or work that may be discovered before final acceptance, or within warranty period.

1. Repairs shall also include damages caused to existing structure components or systems during the execution of this contract.

2. Damages to existing structure components or systems shall be repaired or replaced at no extra cost to the owner.

1.07 MAINTENANCE PERIOD

A. Make available a 12-month service contract offering continuing factory-authorized service of the System after the initial warranty period has expired. The service contract shall include unit pricing for equipment and labor.

B. Maintenance and testing shall be as required by local authorities having jurisdiction. Provide a maintenance schedule that describes the plan for preventive maintenance of devices and subassemblies requiring regular maintenance. The schedule shall include as a minimum the following items:

1. Systematic examination, adjustment and cleaning of main components, manual transmitters, speakers, and infrared domes.

2. Circuits in the sound enhancement system shall be tested semiannually.

3. Material matrix cost with a breakdown of unit and labor costs.

1.08 TRAINING

A. Upon Substantial Completion, provide a four-hour training session conducted by manufacturers approved technical personnel. Coordinate training session schedule with the Owner Authorized Representative.

B. Provide one copy of manuals and user guides for each person attending the training session.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Approved products: Lightspeed Technologies Inc., model 975-FD, or Audio Enhancement System, Model Sentinel XD, or District approved equal.

2.02 EQUIPMENT CHARACTERISTICS

The Classroom Sound Enhancement system shall be a scalable digital wireless communication solution that allows for growth as classroom instruction approaches evolve. The following specifications represent the minimum acceptable levels of performance and system characteristics.

A. Amplifier: Provide Portable Stereo PA system, with performance as follows: (Basis of Design: JBL EON208P Stereo PA system or Equal.)

1. Audio Power: 300 watts (All channels combined) minimum.

2. Frequency Response: 70 Hz to 18 KHz. Minimum.

3. Inputs 6 inputs (4 mono MIC/Line, 2 x Stereo) 1-4 are XLR/1/4" Jack Combo connectors, XLR is Mic level in, ¼" is line in, 5-6, one pair of ¼" balanced TRS jacks (stereo), and one pair of RCA jacks (stereo), 7-8, one pair of ¼" channels balanced TRS jacks (stereo), and a 3.5 mm stereo jack.

4. AC Input: 100-120 V, 220-240 V 50/60 Hz

5. Wireless communication: Bluetooth connectivity.

6. Auxiliary Volume and Controls required:

   a. Audio Input Volume Control.

   b. Teacher Band Equalizer or Tone Control.

   c. Audio Output Volume Control.

   d. Microphone Volume Controls.

B. Pendant Microphone: Integrated Pendant style transmitter with performance as follows:

1. Wireless communication.

2. Audio distortion: Less than 1.0 percent

3. USB-C 2-way audio digital interface-.

4. Equipped with microphone gain adjustment.

5. Provide Rechargeable Batteries with a minimum battery life of eight hours.

6. User Controls: On/Off/Mute.

7. Charging stand and batteries included.

8. Battery Power: 3.5V Li-Ion Battery Pack.

C. Handheld Microphone: Two-Channel Handheld Transmitter_with performance as follows:

1. Wireless communication 1.9 GHz.

2. Audio distortion: Less than one percent

3. Provide Rechargeable Batteries with a minimum battery life of eight hours.

4. User controls: On/Off/Mute.

5. Charging stand and batteries included.

6. Battery Power: 3.5V Li-Ion Battery Pack

D. Loudspeaker: Provide complete ceiling mounted speaker assembly with integral sealed back can and structural support tile bridge, speaker performance shall meet the following:

1. Power rating: 15 watts minimum.

2. Resistance: eight ohms maximum.

3. Frequency Response in the range of 40 – 20,000 Hz.

4. Quick connect and disconnect terminals

E. Wireless Microphone Antenna:

1. Wireless communication within classroom limits at 1.9 GHz or equivalent.

2. 200 ft minimum transmission range.

F. Portable Assistive Listening System:

1. The Portable Assistive listening system shall be manufactured by Williams Sound, Phonic Ear, or an equal established manufacturer.

a. The ALS system shall be capable of interfacing with the voice amplification systems and any media program audio systems installed and shall comply with CBC sections 11B-219 and 11B-706.

b. The ALS system shall be capable of providing a sound pressure level of 110 dB minimum and 118 dB maximum with a dynamic range on the volume control of 50 dB.

c. Signal-to-noise ratio for internally generated noise shall be 18 dB minimum.

d. Peak clipping shall not exceed 18 dB of clipping relative to the peaks of speech.

2. Provide electrical outlets or other wiring necessary to support the portable ALS systems.

3. Each Portable Assistive Listening System kit shall include the following or equal components:

a. (1) PPA T27 transmitter

b. (6) PPA R37 receivers

c. (6) BAT 001-2 AA alkaline batteries

d. (6) EAR 013 single mini earbuds

e. (6) NKL 001 neck loops

f. (1) IDP 008 ADA wall plaque

g. (1) ANT 021 Antenna

h. (1) TFP 036 Power Supply

i. (2) MIC 090 Mini lapel clip microphone

j. (3) BAT KT7 battery charger

4. The contractor shall deliver the classroom assistive listening transmitter and receiver equipment to the project OAR for delivery to school administration.

G. Wiring:

1. General wiring and cabling requirements:

a. Wiring shall be laced and securely fastened in place so that no weight is imposed on any equipment, control switches, or terminals.

b. Provide Class 2**,** or better loudspeaker and sensor wiring.

c. Wires shall be shielded.

d. Wires carrying power shall be shielded.

e. Cables shall be labeled with the description of the system and channel served.

f. Composite faceplate connectors shall be gold plated female/female coupler connectors.

g. RCA faceplate connectors shall be gold plated female/female coupler connectors.

h. Category 6 cables shall be terminated on an 8-conductor category 6 jack wired in accordance with the Telecommunication Industry Association standard T568B.

i. Cabling shall be plenum rated and installed on J-hooks above T-bar ceilings.

j. Cables length shall not cause strain on the connecting lugs.

k. Cables maximum bend radius shall not be exceeded.

l. Contractor shall be responsible for all labor, materials, and installation costs necessary for the replacement of installed cables damaged or subjected to installation practices outside of these specification requirements.

2. Cable Characteristics:

a. HDMI Audio Video Cable

1) Gold plated HDMI Type A molded male connectors.

2) 100% aluminum foil shield

3) Flexible plenum jacket.

4) Teflon insulation.

b. 3.5mm Audio Cable (L+R)

1) Gold plated 3.5mm molded male connectors.

2) Two individually shielded pairs.

3) 22 AWG Stranded (7X30) copper conductors.

4) Flexible plenum jacket.

5) Teflon insulation.

6) 100% aluminum foil shield

c. RCA L+R Stereo to 3.5 mm Stereo Cable

1) Two individually shielded pairs.

2) 22 AWG Stranded (7X30) copper conductors.

3) Flexible plenum jacket.

4) Teflon insulation.

5) 100% aluminum foil shield

6) Gold plated RCA solder cup male connectors.

d. Category 6 Cable

1) Category 6 rated

2) 24 AWG

3) 4 pair assemblies

4) Cable shall meet ANSI/TIA/EIA minimum requirements for return loss, propagation delays skew, NEXT loss, PSNEXT loss, FEXT loss, ELFEXT, and PSELFEXT for 4-pair Category 6 cabling as detailed in ANSI/TIA/EIA-568-C-2.

e. Coaxial Cable

Coax cable from assistive listening transmitter to wireless microphone antenna shall be RG-58 A/U, Belden 8219, or equal.`

H. Battery Charger: Provide battery charger stand for both pendant and hand-held microphone rechargeable batteries.

I. Grounding:

1. Wiring enclosures, cabinets, outlets, frames of cabinet racks and other enclosures shall be effectively grounded in accordance with requirements of California Electrical Code, and manufacturer's recommendations.

PART 3 - EXECUTION

3.01 SOUND ENHANCEMENT SYSTEM INSTALLATION

A. Amplifier and Receiver: Install in audio visual cabinet or media cabinet located in front of classroom, or at an alternative location approved by the projects' Design Manager and OAR. The system must allow for remote sensor(s) for signal reception.

B. Install a single gang A/V outlet box at 15" above finished floor on a wall near the teachers' desk and adjacent to the teachers' desk data and intercom telephone outlets. Stub up (1) 1-1/4" EMT conduit 4" above the ceiling from the teacher's desk A/V outlet box.

C. Install a four-gang outlet box at 60" above finished floor on the wall behind the classroom Audio Visual cabinet, or at an alternate location approved by the project's Design Manager and OAR. Stub up two 1 ¼-inch EMT conduits 4" above the ceiling from the classroom Audio Visual equipment cabinet four gang outlet box.

D. Install (2) HDMI connectors at the teacher's desk A/V faceplate. Terminate (1) Teacher's Desk HDMI cable at the classroom media cabinet A/V I/O panel and the second HDMI cable directly at the classroom projector.

1. Media Cabinet A/V Panel I/O description:

a. Terminate A/V faceplate cables as follows:

1) (1) HDMI cable to the teacher's desk.

2) (1) HDMI cable to each classroom projector.

3) (1) 3.5mm male/male stereo audio cable to each classroom projector.

4) (1) COAX cable to a ceiling mounted wireless microphone receiver.

5) Twisted pair speaker wires to each ceiling mounted speaker.

E. Wiring within cabinets shall be installed to conform to engineering practice standards. Wiring shall be cabled, laced and securely fastened in place so that no weight is imposed on equipment, control switches, or terminals. The contractor shall provide

wires and connectors in compliance with Audio/Video Cabling and test and acceptance requirements herein defined.

3.02 CERTIFICATION AND TESTING

A. Provide instruments for testing and demonstrate, in presence of the Owner, that circuits and wiring are free of shorts and grounds.

B. Furnish labor, instruments, equipment, and materials necessary to demonstrate to the Owner the installation performs as required and specified.

C. The Owner reserves the right to perform independent tests of equipment furnished, to determine whether equipment complies with the specified requirements.

D. Test each cable for continuity on all pairs and/or conductors.

E. Verify performance of all Enhanced Category 6 data cables using an automated test set for Category 6 link configurations.

F. Provide Cat.6 cable test results. Test results shall be printed directly from the test unit in native format, in both hard and soft copies in native format. The printed test results shall include tests performed, expected test results, and the actual test result.

G. Perform the following XGA (1024x768) test over the computer monitor HDMI cable and the projector HDMI cable in the presence of the owner:

1. Bad Pixels
2. Color Wheel Operation
3. Blank Raster
4. Convergence
5. Linearity
6. Color Balance
7. Screen Alignment
8. Interconnecting Cable Quality

3.03 PROJECT RECORD DOCUMENTS

A. As-Built Documentation

1. Provide three hard copies size D (24 inches by 36 inches) of Project site and building plans, indicating location of equipment, conduits, cable routing, Audio Visual cabinets, pull boxes and other installation information.

2. Provide one copy of the record Drawings in DWG format prepared using the most recent version of AutoCAD on a labeled CD-ROM for use on a Windows platform.

    a. Owner utilizes layers as a key tool in controlling visibility of drawing elements and to provide consistent information between drawings yet provide control over what is seen on each sheet. Classroom Sound Enhancement System wiring shall be shown on a separate layer. The use of version control blocks or company logos shall be on a layer separate from the premise wiring as-built drawings.

3. Floor plans indicating devices, terminal cabinets and cross connect locations, conduit runs, wire types, cable routing of cables in each building with conduit fill, and as-built coding used on each cable.

    a. Drawings shall include a block diagram indicating items and their point-to-point connections in a manner following floor and plan layouts.

B. Operating and Servicing Manuals, Record Drawings:

1. Deliver three copies of operating and servicing manual. Each complete manual shall be bound in three ring binders. Data shall be typewritten or drafted.

    a. Each manual shall include a page with Project site and Project name, date of Substantial Completion, Contractor name, address, telephone, and fax numbers.

    b. Each manual shall contain a letter, signed by an officer of the company indicating the beginning and ending date of warranties described in subsection 1.06 of this specification and shall describe the company’s commitment to service the warranty during the terms specified.

    c. Each manual shall include instructions necessary for proper operation and servicing of system and shall include the following:

        1) A single line diagram of the system indicating items and their point-to-point connections in a manner following floor plans layouts.

        2) A complete wire diagram of connections made between components inside the Audio-Visual console.

3) Custom fabricated circuits, components and connections not detailed in the manufacturer's manuals shall have wiring diagrams detailing to component level, and circuits connectivity.

d. Each manual shall also include as-built drawings size B (11 by 17) bound into the manual.

3.04 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.05 CLEANUP

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

3.06 OWNER ORIENTATION

A. After Substantial Completion, provide a four-hour Owner instruction period to designated personnel.

B. Instruction shall be based on manufacturers written operating instructions covering those features of interest to the Owner and applicable to the work.

END OF SECTION

SECTION 28 3100
FIRE DETECTION AND ALARM

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Fire alarm system shall consist of fire alarm control panel or networked nodes of the same make and be CSFM (California State Fire Marshall) listed for the application.
2. Labor, equipment, materials, connections, testing, and performance of operations in the installation of fire alarm system.

B. Related Requirements:

1. Division 01 General Requirements.
2. Section 14 2423: Hydraulic Passenger Elevators.
3. Section 21 1313: Fire Suppression Sprinkler Systems.
4. Section 23 0900: HVAC Instrumentation and Controls.
5. Section 23 3813: Kitchen Ventilation System.
6. Section 23 8000: Heating, Ventilating, and Air Conditioning Equipment.
7. Section 26 0500: Common Work Results for Electrical.
8. Section 26 0513: Basic Electrical Materials and Methods.
9. Section 26 0519: Low-Voltage Wire (600 Volt AC).
10. Section 26 0526: Grounding and Bonding.
11. Section 26 0533: Raceways, Boxes, Fittings, and Supports.
12. Section 26 5563: Theatrical Lighting and Stage Dimming Systems
13. Section 27 5313: Clock and Program Systems.
14. Section 27 5116: Public Address and Intercommunication Systems.
15. Section 27 5127: Public Address Systems (Small Gymnasiums – Multi-Purpose Rooms) (ES).
16. Section 27 5128: Public Address Systems (Auditoriums, Performing Art, M-P Rooms) (MS and HS).
17. Section 27 5129: Public Address Systems (Gymnasiums).
18. Section 27 5130: Public Address Systems (Athletic Fields).

1.02 SYSTEM REQUIREMENTS

A. Fire detection system shall continually supervise and monitor the following initiating, signaling, and monitoring circuits:

1. Manual fire-pull stations.
2. Smoke and heat detectors, duct detectors, multicriteria detectors, combination smoke/heat/CO Detectors, including detectors installed under other sections.
3. Fire sprinkler flow and tamper switches. In existing installations also include PIV tamper switches.
4. Alarm signaling circuits including alarm bells, horns and visual alarm units.
5. Annunciators.
6. Power supplies and batteries.
7. Interconnection with Central and Autonomous Public Address systems, telephone network system, Clock System-Classroom or Program schedule change, HVAC system where applicable, kitchen fire suppression system, Theatrical and House Lighting, elevator equipment for control of recall function and elevator circuit breaker shunt trip, and other systems required by code.

B. System controls shall be UL listed for power limited applications in accordance with California Electrical Code.

C. System shall be listed for Internet of Things (IoT) security in compliance with UL 2900.

D. The fire alarm devices and equipment shall be listed for installation for the fire alarm control panel to which they are being connected.

E. Complete installation shall conform to the version of NFPA 72, California Fire Code, California Building Code (CBC), and California Electrical Code (CEC) as approved by DSA on stamped drawings.

F. System labels and devices programming addresses shall be based on final signage and building labeling submittals. For existing facilities contractor shall obtain from Owner Authorized Representative a copy of the current site layout and building labeling designations.

1.03 CERTIFICATION

A. Certification: Installation of fire alarm system shall not begin until Shop Drawings, including State Fire Marshal listing numbers of fire alarm components, are submitted and reviewed by the Architect. Written certification by fire alarm equipment distributor or manufacturer shall be submitted to the Architect stating that system and its component parts are as approved and listed by the State Fire Marshal, and that the design conforms to requirements set forth in CBC.

1.04 PERFORMANCE

A. System shall be fully programmable, configurable, and expandable in the field without special tools or PROM programmers and shall not require replacement of

memory ICs. Installer shall provide a CD of system installed software, site specific system programming and information and tools required to re-program or modify the system.

1.05 SYSTEM FUNCTIONAL OPERATION

A. When a fire alarm condition is detected by one of the system initiating devices, the following functions shall occur:

1. System alarm LED shall flash.

2. Local sounding device in panel shall be activated.

3. The LCD display shall indicate type of device, custom label location label and point status alarm condition.

4. Appropriate change of status message shall be transmitted to remote annunciator(s).

5. Automatic programs assigned to alarm point shall be executed and associated indicating devices and relays activated.

6. In the event of a fire alarm control panel activation, manual and automatic electronic tone or electromechanical bell class passing signals shall be disabled.

7. In the event of a fire alarm condition the Central and Autonomous Public Address System shall be overridden.

8. UDACT (Universal Digital Alarm Communicator Transmitter) shall activate.

9. Provide necessary hardware and labor for a complete and tested interfacing of the fire alarm system with the lighting controls systems in Auditoriums, Multi-Purpose rooms, and Gymnasiums; lighting in these areas shall be brought to full brightness in the event of a fire alarm.

B. Trouble and Supervisory Conditions.

1. When any trouble condition is detected the following functions shall occur:

a. System trouble LED shall flash.

b. Local sounding device in panel shall be activated.

c. The LCD display shall indicate the type of trouble and custom label location associated with the trouble condition and its location. Unacknowledged alarm messages shall have priority over trouble messages. If such an alarm is displayed, then trouble messages shall not be displayed.

d. Appropriate message shall be transmitted to remote annunciators.

e. UDACT shall activate.

C. When any supervisory condition occurs such as a sprinkler valve tamper, the following function shall occur:

1. System supervisory LED shall flash.

2. Local sounding device in panel shall be activated.

3. Appropriate message shall be transmitted to remote annunciators.

4. UDACT shall activate.

D. Activation of control panel ACKNOWLEDGE switch in response to a single new alarm, trouble or supervisory condition shall silence panel sounding device and change system alarm, trouble, or supervisory LED from flashing to steady-ON. If additional new alarm, trouble, or supervisory conditions exist in the system; activation of this switch shall advance display to next alarm, trouble, or supervisory condition that exists, and shall not silence local audible device or change LED to steady until new conditions have been so acknowledged. New alarm conditions shall always be displayed before new trouble conditions. Occurrence of a new alarm, trouble, or supervisory condition shall cause panel to resound, and sequences as described above, shall repeat.

E. Activation of the signal silence switch shall cause appropriate notification (indicating) appliances and relays to return to normal condition. Selection of notification appliance circuits and relays silenced by this switch shall be fully programmable.

F. Activation of system reset switch shall cause electronically latched initiating devices or zones, as well as associated output devices and circuits, to return to normal condition after sixty seconds of alarm. If alarm conditions exist in system after system reset switch activation, system shall then re-sound alarm conditions as indicated hereafter.

G. Activation of lamp test switch shall turn on LED indicators, LCD display, and local sounding device in panel, and then return to previous condition.

H. Fire alarm indicating appliances may be silenced or extinguished, after one minute, by operating signal silence switch at the FACP or by use of key supervised alarm silence switch at remote annunciators. A subsequent zone alarm shall reactivate signals. Audible indicating appliances shall be automatically silenced after no less than five nor more than ten minutes of operation. Visual indicating appliances shall be extinguished at system reset, or automatically after no less than five nor more than ten minutes of operation. Fire sprinkler flow alarm bells shall not silence until the contacts in the fire sprinkler flow switch return to the normal non-alarm state. Appropriate signage must be installed on or next to the sprinkler alarm bell.

I. Elevator lobby, machine room and hoistway smoke detectors shall, in addition to operations listed above, cause elevator cars to be recalled as follows:

1. Elevator cars shall be recalled to main level of egress through the use of a primary recall interface relay.

2. Elevator cars shall be recalled to predetermined alternate level if main lobby smoke detector is activated.

3. Fire Fighter’s hat light indicator in elevators shall provide visual warning when elevator lobby, machine room, and hoistway smoke detectors are activated.

J. System's circuits including but not limited to initiation, indicating, and equipment interfacing shall be monitored for open or short circuit and ground fault conditions, these conditions shall be indicated on the Fire Alarm Control Panel and Annunciator displays while remaining circuits continue to operate normally.

K. Notification appliance circuits shall be silenceable for testing purposes by authorized persons. Protected passcodes, keys, or another secure method that does not require entering into the system programming shall be used.

1.06 POWER REQUIREMENTS

A. The fire alarm control panel and remote power supply shall receive 120 VAC power, 60 Hz, through a dedicated 20 amps circuit. Circuit breaker protection for the dedicated fire alarm power circuits shall be equipped with a handle lock-on device; the breaker handle shall be colored red and labeled "FIRE ALARM". Clearly label the Electrical panel name, location and circuit number on the inside of the fire alarm control panel and remote power supplies using a p-touch style labeling system. Transient voltage surge suppression shall be provided at the 120VAC input terminal.

B. System shall be provided with sufficient battery capacity to operate entire system upon loss of normal 120 VAC power, in a normal quiescent mode, for a period of 24 hours with five minutes of alarm indication at end of this period. System shall automatically transfer to standby batteries upon power failure. Battery charging and recharging operations shall be automatic. Batteries, once discharged, shall recharge at a rate to provide a minimum of 70 percent capacity in 12 hours.

C. Circuits requiring system operating power shall be 24 VDC and shall be individually protected at control panel.

1.07 SUBMITTALS

A. Provide in accordance with Division 01.

B. Component Plan Submittal: Availability and listing for its application shall be verified for system components before presentation of the submittal. Include the following information and details as applicable:

1. Installer name, address, telephone number.

2. List of system components, equipment and devices, including manufacturer model numbers, quantity and California State Fire Marshal listing numbers, mounting heights, and symbols per LAUSD symbol list.

3. Copies of manufacturer specification sheets for equipment and devices indicated. Highlight or identify the specific components on Catalog cut sheets.

4. Voltage Drop Calculations: Include the following information for the worst case:

a. Point-to-point or Ohms law calculations.

b. Zone used in calculations.

c. Voltage drop percent. Voltage drop shall not exceed manufacturer's requirements. If voltage drop exceeds ten percent, indicate manufacturer listed operating voltage ranges for equipment and devices.

5. Battery types, amp hours, and load calculations including the following:

a. Normal operation: 100 percent of applicable devices for 24 hours to equal control panel amps plus list of amps per device that draw power form the panel during standby power condition including, but not limited to, zone modules, detectors and devices as identified.

b. Alarm condition: 100 percent of applicable devices for five minutes to equal control panel amps plus list of amps per device that draw power from panel during alarm condition including, but not limited to, the following:

1) Zone modules.

2) Signal modules.

3) Detectors.

4) Signal devises.

5) Annunciator.

6) Other devices as identified.

c. Normal operation plus alarm operation load calculation shall include total amp hours required and total amp hours provided.

6. Provide one copy of testing procedures.

C. Shop Drawings: Provide Shop Drawings, in the same size as the design Drawings, include the following:

1. Provide drawing scale, elevations of system enclosures, and actual layout of the Fire Alarm Control Panel, power supply, annunciator, and main system components.

2. Site Plan indicating PIV and related fire sprinkler system devices and equipment to be monitored or supervised; such as water flow valves, and main equipment such as control panels, power supplies, annunciators, and components such as outdoor wall-mounted horns, sprinkler bells, pull boxes, underground pull boxes , wiring routes on buildings exteriors and underground locations. In each conduit or raceway run indicate conduit sizes, and quantities and type of wires.

a. In existing facilities make a distinction between existing and new installation.

3. Complete battery calculations, and voltage drop calculation shall be included; these calculations shall be based on the devices maximum UL current rating.

4. One line drawing for the entire system network indicating system components and wiring. The one line diagram shall show but not be limited to panel to panel interconnections, conductors gage and quantity, conduit size and type (designation) and specific function.

5. System panel one-line drawings indicating the quantity and type (designation) of conductors entering and exiting the fire alarm terminal cabinet in each building (enclosure) for initiating, notification, or other command control functions required for complete system operation:

    a. Individual floor or building plan view drawings indicating device locations including end of line resistors “EOLR” in accordance with the legend provided.

    b. Individual point addresses for initiation and notification devices.

    c. Device “typical” wiring diagrams. These drawings shall indicate specific termination details for peripheral equipment and interface devices.

6. Provide interfacing with equipment furnished by others including voltages, and other required coordination items. Refer to 3.01-B.

7. Each of the pictorial diagrams included shall appear identical to the products they are intended to depict, in order to speed installation of the system, and to enhance the accuracy of the installation Work. Typical wiring diagrams or catalog sheets are not permitted.

8. Background Drawings with device locations of DSA approved drawings are available in electronic format and may be obtained from the Owner Authorized Representative (OAR). Contractor is solely responsible for the accuracy and completeness of shop drawings. Buildings that are not part of the contract shall be clearly identified “NOT IN CONTRACT”. Shop Drawings shall be prepared in the latest version of AutoCAD with three – CD ROM electronic copies submitted along with full sized Shop Drawings.

9. Other installation and coordination drawings specifically related to this section shall be included as follows:

    a. Size A (8 ½ by 11) and size B (11 by 17) shall be bound into the manual.

    b. Larger drawings shall be folded and inserted into transparent envelopes and bound into the manual.

10. Installation and coordination drawings for items in other sections shall be included with submittal of Shop Drawings. Submit blue line copies and one reproducible copy of installation and coordination drawings.

11. Samples: Provide Samples of material and equipment as required by the Architect. If Samples are requested, they shall be submitted within ten days from date of request.

D. In addition to the above requirements, provide submittals to meet any additional requirements of DSA.

E. Submittal of Equivalent Systems:

1. In addition to the submittal requirements of this section, if an equivalent system listed in Section 2.01A is submitted in lieu of the designed system shown on DSA approved drawings, the Contractor shall also submit a letter stating that the system is equivalent, and that device locations and quantities of devices are unchanged. Attached to this letter shall be a copy of the revised equipment schedule with corresponding CSFM numbers and a cut sheet for each item.

F. Modifications or additions to existing fire alarm systems shall be compatible and of the same manufacturer as the existing system. Contractor shall be solely responsible for engineering, plan check and any fees resulting from an installation that deviates from this requirement.

G. Prior to Substantial Completion submit to the Architect or Engineer of Record and to Owner Authorized Representative a complete updated set of the Shop Drawings showing changes made to the Fire Alarm System during construction. These drawings will become the System As-Built Drawing set for the Fire Alarm System Owner's Manual.

1.08 QUALITY ASSURANCE

A. Installer shall have successfully completed at least five projects of equal scope in the past five years, and have been in business of furnishing and installing fire alarm systems of this type for at least five years.

B. Installer shall be a factory authorized distributor and service provider for the brand of equipment offered and shall provide documentation to the Architect upon request.

C. Installer shall maintain a fully equipped service organization capable of furnishing repair service to the equipment and shall maintain a spare set of major parts for the system at all times.

D. Installer shall furnish a letter from manufacturer of equipment certifying equipment has been installed according to factory standards and that system is operating properly.

E. Certifications: Installer shall submit certification from the equipment manufacturer indicating that installer is an authorized representative of the equipment manufacturer and is trained on network applications.

F. Materials and equipment installed shall be new.

G. Equipment in this specification shall be furnished and installed by the Authorized Factory Distributor of the equipment. Furnish a letter from the manufacturer of major equipment, which certifies that the installer is an authorized distributor and that the equipment has been installed according to factory intended practices. Furnish a written guarantee from the manufacturer that they will have a service representative assigned to this area for the life of the equipment.

H. Installer shall be Underwriters Laboratory (UL) listed company under the UUJS classification, and shall certify that the installation has been made in accordance with UL requirements.

I. The fire alarm contractor shall have a NICET II Certified Technician on staff in their facility directly involved with this project to ensure technical expertise to this project and adherence with these specifications.

J. Contractor or Installer's Electricians and fire and life safety technicians shall be certified in accordance with Labor Code sections 3099, and 3099.2, and section 209.0 of the California Code of Regulations.

K. System startup and testing shall be performed under the direct observation of the Project Inspector and OAR. Provide a legible half size reproduction of the original completed fire alarm red-line drawings (this copy will be retained by the Owner), an accurate copy of the fire alarm system points list, and a copy of the construction drawings on CD in AutoCAD format.

L. At the time of installation the most current software package available shall be provided.

M. Provide at the time of Owner Acceptance of the installation, equipment, and updated software which is to include the appropriate operating system, pass-codes, electronic keys and program disks, manuals and cables employed in the installation of the system. These components shall be delivered to the OAR.

N. Provide a backup copy of the most current software revision, in disk format. This copy shall be delivered to the OAR

O. A software license agreement shall be made available for the responsible Owner representative to sign at the time of training.

1.09 WARRANTY

A. The Fire Alarm Equipment Manufacturer shall provide a three year material warranty. Installer shall provide a three year labor warranty.

B. Complete maintenance and repair service for the fire alarm system shall be available from a factory trained authorized representative of the manufacturer for a period of five years after expiration of the warranty.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Fire alarm equipment shall be standard products of the Notifier Co

B. Catalog and model numbers listed are intended to establish type and quality of equipment and system design as well as operating features required. Deviations from intended functions of specified system are not permitted. Equipment shall not be ordered or installed until such equipment has been reviewed and approved by the Architect.

C. Products requirements indicated in articles 2.02 through 2.05 are based on Notifier system components. Refer to Attachment A – Fire Alarm Approved System Components for a complete list of approved products.

2.02 FIRE ALARM CONTROL PANEL (FACP) OR NETWORK NODES

A. Furnish Fire Alarm Control Panels as indicated on drawings.

B. Operator Control:

1. Acknowledge Switch: Activation of control panel acknowledge switch in response to a single new trouble or alarm condition shall silence panel sounding device and change system alarm or trouble LED from flashing to steady-ON. If additional new alarm or trouble conditions exist in system, activation of this switch shall advance display to next alarm or trouble condition that exists, and shall not silence local audible device or change LED to steady until new conditions have been so acknowledged. New alarm conditions shall always be displayed before new trouble conditions. Occurrence of a new alarm or trouble condition shall cause panel to resound, and sequences as described above, shall repeat.

2. Signal (Alarm) Silence Switch: Activation of the signal silence switch shall cause programmed alarm notification appliances and relays to return to the normal condition after an alarm condition. The selection of notification circuits and relays that are silenceable by this switch shall be fully fielded programmable within the confines of applicable standards at the job site. The FACP software shall include silence inhibit and auto-silence timers.

3. Alarm Activate (Drill) Switch: Alarm activate switch shall activate notification appliance circuits. The drill function shall latch until the panel is silenced or reset.

4. System Reset Switch: Activation of the System Reset switch shall cause electronically-latched initiating devices, appliances or software zone, as well as associated output devices and circuits, to return to their normal condition.

5. Lamp Test Switch: Switch shall activate local system LEDs, light each segment of the liquid crystal display and display the panel software revision for service personnel.

6. Hot Button Switch: Hot Button Key switch shall be provided in FACP to disable all output devices for testing or repair of system. Key switch shall silence all horn and strobes, disable PA cutouts, HVAC shutdowns, door closures, and Autonomous PA systems. Key switch shall be password protected to enable function. LED indicator shall illuminate a trouble condition while Hot Button Switch is activated and shall turn off when system is re-enabled.

C. System Capacity and General Operation

1. The control panel or each network node shall provide or be capable of expansion to 636 minimum intelligent addressable devices in smaller systems, and 3180 intelligent addressable devices for larger systems.

2. The control panel or each network node shall include Form-C alarm, trouble, supervisory, and security relays rated at a minimum of two amps at 30 VDC. It shall also include four Class B (NFPA Style Y) or Class A (NFPA Style Z) programmable Notifications Appliance Circuits.

3. The control panel or each network node shall support up to eight output modules (signal or relay), each with eight circuits for a total of 64 circuits for the smaller capacity panels, and 12 output modules for a total of 96 circuits for the larger capacity panels. Programmable notification appliance circuits shall be class B.

4. The system shall include a full featured operator interface control and annunciation panel that shall include a backlit Liquid Crystal Display (LCD), individual color coded system status LEDs, and an alphanumeric keypad with easy touch rubber keys for the field programming and control of the fire alarm system.

5. The system shall be programmable, configurable, and expandable in the field without the need for special tools, PROM programmers or PC based programmers. It shall not require replacement of memory ICs to facilitate programming changes.

6. The system shall allow the programming of any input to activate any output or group of outputs. The FACP shall support up to 20 logic equations, including “and” “or” and “not”, or timed delay equations to be used for advanced programming. Logic equations shall require the use of a PC with software utility designed for programming.

7. The FACP or each network node shall provide the following features:

    a. Drift compensation to extend detector accuracy over life. Drift Compensation shall also include a smoothing feature, allowing transient noise signals to be filtered out.

    b. Detector Sensitivity tests, meeting requirements of NFPA 72 Chapter seven.

    c. Maintenance alert, with two levels (maintenance alert or maintenance urgent), to warn of excessive smoke detector dirt or dust accumulation.

    d. Nine sensitivity levels for alarm, selected by detector. The alarm level range shall be 0.5 to 2.35 percent per foot for photoelectric detectors and 0.5 to 2.5 percent per foot for ionization detectors. The system shall also support sensitive advance detection laser detectors with an alarm level range of 0.03 percent per foot to one percent per foot. The system shall also include up to nine levels of Pre- alarm, selected by detector, to indicate impending alarms to maintenance personnel.

e. Circuit boards, programming, and interconnecting cables to enable the system to display or print system reports.

f. Alarm verification, with counters and a trouble indication to alert maintenance personnel when a detector enters verification 20 times.

g. PAS pre-signal testing in accordance with California Fire Code (CFC) and NFPA 72 requirements.

h. Rapid manual station reporting (less than three seconds) shall meet CFC and NFPA 72 requirements for activation of notification circuits within ten Seconds of initiating device activation.

i. Periodic detector test, conducted automatically by the software.

j. Self-optimizing pre-alarm for advance fire warning, which allows each detector to learn its particular environment and set its pre-alarm level to just above normal peaks.

k. Cross zoning with the capability of counting: two detectors in alarm, two software zones in alarm, or one smoke detector and one thermal detector.

l. Walk test, with a check for two detectors set to same address.

m. Control-by-time for non-fire operations, with holiday schedules.

n. Day or night automatic adjustment of detector sensitivity.

o. RS 232 serial port to support a District supplied printer to be used for silent testing and certification of the system.

8. The FACP shall be capable of coding main panel(s) node notification circuits in temporal code (NFPA 72 A-2-2.2.2).The panel shall also provide a coding option that will synchronize specific strobe lights designed to accept a specific “sync pulse”.

9. Network Communication:

a. The network architecture shall be based on a Local Area Network (LAN), a firmware package that utilizes a peer-to-peer, inherently regenerative communication format and protocol. The protocol shall be based on ARCNET or equivalent non-proprietary protocol.

b. Failure of any node shall not cause failure or communication degradation of any other node or change the network communication protocol among surviving nodes located within distance limitations. A node may be an intelligent Fire Alarm Control Panel (FACP), Network Control Station PC (NCS) or Network Control Annunciator (NCA).

c. Each network node address shall be capable of storing Event Equations which shall be used to activate outputs on one network node from inputs on other network nodes.

D. System Display:

1. Utilize the 640-character display option. The design of the CPU shall provide for a configuration with the 640-character display mounted on the front of the unit in place of the standard 80-character display.

2. The 640-character display shall provide the controls and indicators used by the system operator: The 640 character display shall include the following operator control switches; Acknowledge, Alarm, Silence, Alarm Activate (drill), System Reset and Lamp Test.

3. The display shall annunciate status information and custom alphanumeric labels for intelligent detector, addressable modules, internal panel circuits, and software zones.

4. The 640-character display shall provide ten Light-Emitting-Diodes (LEDs) that indicate the status of the following system parameters: AC Power and Network Communication, Fire Alarm, Pre alarm Warning, Security Alarm, Supervisory Event, System Trouble, Alarm Silence, Disabled Points, CPU failure.

5. The 640-character display shall use ten “soft” keys for screen navigation or to accomplish dedicated programming functions. Full programming access shall require use of a laptop and the proper programming utility. The programming utility shall be provided to the OAR who will forward it to the local maintenance area representative.

6. The system shall support the display of battery charging current and voltage on the LCD display.

E. Network Control Annunciator:

1. When a networked system is installed a network controlled annunciator (NCA) shall be provided to display system intelligent points. The NCA shall be capable of displaying information for all possible points on the network.

2. The NCA shall include a minimum of 640 characters, backlit by a long life, solid-state LCD display. Additionally, the network display shall include ten soft keys for screen navigation and the ability to scroll events by type. i.e. Fire Alarm, Supervisory Alarm, Trouble, etc.

3. The NCA shall have the ability to display up to eight events in order of priority and time of occurrence. Counters shall be provided to indicate the total number of event by type.

4. The NCA shall mount in a Notifier ABS-2DB or equal keyed box; provide a key enable or disable switch for the network node fire alarm control panels. The network display may mount in a backbox designed for this use. The network shall support the NCAs.

5. The network control annunciator shall have an event history buffer capable of storing a minimum of 1000 events in nonvolatile memory. Additionally, the NCA shall have a fire alarm history buffer capable of storing a minimum of 200 events in nonvolatile memory.

6. The NCA shall include two EIA-232 ports for UL864 listed printers and CRT's.

7. The NCA shall include control switches for system wide control of Acknowledge, Signal Silence, System Reset, Drill, and local Lamp Test. A mechanical means, by which the controls switches are locked out, such as a key, shall be provided.

8. The NCA shall include long life LEDs to display Power, Fire Alarm, Pre-Alarm, Security Alarm, System Trouble, Supervisory, Signals, Silenced, Disabled Prints, other (non-fire) Events, and CPU Failure.

9. The NCA shall include a Master Password and up to nine user Passwords. The Master password shall be required to access the programming and alter status menus. Each User password may have different levels of authorization assigned by the Master password. Passwords installed into the NCA shall be made available to the OAR who will forward them to the local maintenance area representative.

10. The NCA shall allow editing of label for points within the network, control on or off of outputs, enable or disable of network points, alter detector sensitivity, clear detector verification counters for any analog addressable detector within the network, clear any history log within the network, change the Time or Date settings, initiate a Walk Test.

11. The NCA shall include a time of day clock.

12. Each NCA shall support 80-character remote display annunciators for displaying network activity. These "Terminal Mode" displays will mimic the activity appearing on the corresponding NCA. There shall be only one annunciator or control system consisting of components manufactured by one manufacturer for the fire alarm system.

F. Signaling Line Circuits (SLC):

1. Each FACP or FACP network node shall support a minimum of one SLC for the smaller panels and ten SLC's for the larger panels. Each SLC interface shall provide power to and communicate with up to 159 intelligent detectors (ionization, photoelectric or thermal) and 159 intelligent modules (monitor or control) for a loop capacity of 318 devices.

2. CPU shall receive analog information from intelligent detectors to be processed to determine whether normal, alarm, pre-alarm, or trouble conditions exist for each detector. The software shall automatically maintain the detector's desired sensitivity level by adjusting for the effects of environmental factors including the accumulation of dust in each detector. The analog information shall also be used for automatic detectors testing and for the automatic determination of detector maintenance requirements.

G. Enclosures:

1. The control panel shall be housed in a UL-listed cabinet suitable for surface or semi-flush mounting. The cabinet and front shall be corrosion protected, given a rust-resistant prime coat, and manufacturer's standard finish.

2. The back box and door shall be constructed of 0.030 steel with provisions for electrical conduit connections into the sides and top.

3. The supplied door shall include a key lock and shall include glass or other transparent opening for viewing of indicators. For convenience, the door may be site configured for either right or left hand hinging.

H. Power Supply:

1. An off-line switching power supply shall be available for the fire alarm control panel or network nodes.

2. Provisions shall be made to allow the audio-visual power to be increased as required by adding modular expansion audio-visual power supplies.

3. Over-current protection shall be provided on power outputs. The power supply shall provide an integral battery charger. Battery arrangement may be configured in the field.

4. The power supply shall continuously monitor field wires for earth ground conditions, and shall have the following LED indicators:

a. Ground Fault LED.

b. AC Power Fail LED.

c. NCA-2 on LED (4).

5. The main power supply shall operate on 120 VAC, 60 Hz, and shall provide power for the FACP or network node(s).

6. The main power supply shall provide a battery charger using dual rate charging technology for fast battery recharge and be capable of charging batteries up to 60 AH for the smaller panels and 200 AH for larger panels.

2.03 REMOTE ANNUNCIATORS

A. A non-networked fire alarm system annunciator is required when there is only one FACP in the system. Provide alphanumeric display remote annunciator(s) per plans. A Network annunciator is required for any system that contains more than one fire alarm control panel (FACP) or network node. Display shall be back lit and be furnished with a maximum of 20 characters of 4 lines for the smaller panels, and 40 characters on 16 lines for the larger panels. Annunciators shall provide the following functions:

1. Control switches for system acknowledge, signal silence and system reset via a touchpad.

2. Time and date display field.

3. Local piezo sounder with alarm or trouble resound.

4. On-line green LED (flashing).

5. Evacuation and drill switches, via a touchpad.
6. Pre-signal hold via a touchpad.
7. System test at control panel and CTR.

B. Following additional features shall be furnished:

1. Device Fire Annunciation.
2. Device Trouble Annunciation.
3. System Operation Annunciation.
4. "Power On" LED.

C. Typewritten operating instructions and a site map shall be posted adjacent to remote annunciator(s). The site map shall be sized and include designations and devices as described in paragraph 3.02 N. of this specification. Project site map shall depict fire alarm devices in the building(s) in which they are installed. The instruction and site map shall be mounted in suitable document frames and attached to the wall with a minimum of two screws each. Contractor's name and telephone number shall not be placed on either the instruction or the site map.

2.04 POWER SUPPLIES

A. Remote Notification Appliance Circuit (NAC) extender power supplies shall be furnished with main printed circuit board, transformers, lockable cabinet, and batteries. Unit shall be configured to drive 4 notification appliance circuits. The remote power supplies shall be configured with a monitor module to report trouble conditions to the controlling FACP via an SLC. Triggering of NAC inputs shall be directly controlled from the FACP without the use of addressable control or relay modules.

2.05 PERIPHERAL DEVICES AND EQUIPMENT

A. Manual Stations (interior): Manual pull stations shall be addressable semi-flush, non-breakable glass type for building interiors. Station housing shall be fabricated of die-cast aluminum with reset lock and key. Provide an addressable monitor module for each manual station.

B. Manual Stations (exterior): Manual stations shall be addressable semi-flush, non-breakable glass type for building exteriors. Station housing shall be fabricated of die-cast aluminum with reset lock and key. Provide an addressable monitor module for each manual station.

C. Smoke Detectors: Smoke Detectors shall be addressable. Detector shall be microprocessor based, using a combination of photoelectric, and thermal sensing technologies. The smoke detector shall have its loop number and electronic address permanently and clearly labeled onto the device base using a p-touch type labeling system. The label shall be visible without re moving the detector head.

D. Non-Explosion Proof Automatic Addressable Heat Detectors shall be combination rate-of-rise and fixed-temperature type. When fixed-temperature portion is activated, units shall provide visual evidence of such operation (LED). The location

of the heat detector must be clearly marked below the ceiling and the detector must be readily accessible. The heat detector shall have its electronic address permanently and clearly labeled onto the device and be readily accessible. For spaces such as attics, where the ambient temperature can reach around 150^{o} degrees Fahrenheit in hot days, use detectors rated for the application. The heat detector shall have its loop number and electronic address permanently and clearly labeled onto the device using a p-touch labeling system. The label shall be visible without removing the detector head.

E. Explosion Proof Automatic Heat Detectors shall be rated for 135^{o} degree Fahrenheit alarm temperature. Mount the detector on a JL threaded hub cover manufactured by Killark Electric, or equivalent from other owner approved manufacturers. Seals, conduit type, and fittings shall be suitable for the hazardous zone and location where the device will be installed. Provide an appropriate wire protective cover over box and detector. Addressable module(s) associated with this type of devices shall be installed outside of the hazardous area.

F. Weatherproof Automatic heat Detectors: Detectors shall be rated for 135^{o} degree Fahrenheit alarm temperature. Detector shall be mounted horizontally in a two gang weatherproof box with cover manufactured by Hubbell/Bell or equivalent from other owner approved manufactures. Install an appropriate wire protective cover over box and detector. Conduit type and fittings shall be suitable for the environment where the device will be installed.

G. Duct Smoke Detectors: Duct smoke detectors shall be of solid-state photoelectric type and shall operate on light-scattering photodiode principle. The location of the duct detector must be clearly marked below the ceiling and the detector must be readily accessible. The duct smoke detector shall have its electronic address permanently and clearly labeled onto the device. The label shall be visible without removing the detector head. Duct smoke detectors that are already installed as part of packaged ventilation equipment that are not the detector specified above shall be connected to the fire alarm system via a monitor module. The existing power source shall be disconnected and resettable power from the FACP or Remote Power Supply shall be connected in place of the existing power source for fire alarm system resettable power and alarm initiation.

H. Projected Beam Infrared Type Smoke Detectors shall consist of a transmitter/ receiver unit and reflector to be used in accordance with manufacturer's recommendations. Each detector shall include six user-selectable sensitivity levels. Alignment shall be achieved with a signal strength meter incorporated into the beam detector. The detector shall feature automatic detection and adjustment to the optimum level for the specific environment. Provide remote Notifier Model RTS-451KEY test stations with key lock for detectors or equal, locate test stations below ceiling.

I. Linear Heat Detectors: Linear detectors shall be Protectowire or equal. linear detectors shall be rated for 150-degree Fahrenheit installed ambient temperature and 190-degree Fahrenheit alarm temperature. Damaged detector due to excessive bending or kinking during installation shall not be accepted. Interface the Protectowire detector with the FACP system via addressable monitor module(s) located on one extreme of the detector and an end of line resistor at the other

extreme. End of line resistor shall be readily accessible for testing. Provide appropriate signs indicating the existence of linear heat detectors at the entrances of areas protected with this type of fire detection. Installation shall be done in accordance with applicable codes and standards, and manufacturer's published installation recommendations.

1. Provide a system that utilizes linear heat detectors in concealed or controlled access areas. The detection wire shall be installed within 20 inches of the underside of the building roof or the above floor as recommended by the manufacturer. In shallow areas install the detection wire within the upper part of the space to be protected.

    a. One circuit of linear heat detection shall be utilized for areas not exceeding 4,000 square feet above multiple rooms.

    b. Areas above Gymnasiums and Auditoriums exceeding 4,000 square feet shall be considered one zone.

    c. Areas divided by a fire rated wall shall be protected separately and considered an independent zone.

J. Multi-Criteria Fire Detectors (MS and HS Only): These Detectors shall be used on performing stages and surrounding areas of the performing stage and other locations where the use of special effect smoke systems may be used.

1. Multi-Criteria Fire Detector shall combine four separate sensing elements into one unit:

    a. Photoelectric chamber shall sense airborne particulate for smoke detection.

    b. Electrochemical cell technology shall monitor carbon monoxide.

    c. Infrared sensing shall measure ambient light levels and flame signatures.

    d. Thermal detection shall monitor temperature.

2. Multi-Criteria Detector shall be capable of generating only one alarm signal from at least two sensors of the four when positively confirming a fire. The sensor output shall be mathematically evaluated to determine when a signal is warranted.

3. Twin LED indicators shall provide 360 degree visibility.

K. Monitor Modules:

1. Monitor modules shall connect a supervised zone of conventional initiating devices, N.O. dry contact devices, including four-wire smoke detectors, to one of SLC loops. Monitor module shall install in a four-inch square by 2 1/8-inch deep electrical box. The module shall have its loop number, electronic address, and function label on the front cover using a P-Touch type or equal labeling system.

2. Monitor module shall provide address-setting means using rotary decimal switches and shall store an internal type of device. An LED shall be

provided which shall flash under normal conditions indicating that monitor module is operational and in regular communication with control panel.

L. Control Modules:

1. Control modules shall be used to connect conventional indicating appliances or MR type isolation relays to one of the SLC loops. Control modules shall be installed in a standard four-inch square by 2 1/8-inch deep electrical box. Audio or visual or relay power shall be provided by a separate loop from main control panel or from supervised remote power supplies. Each module shall have its loop number, electronic address, and function label on the front cover using a p-Touch type or equal labeling system. Provide Air Products PAM-3 Relay Model or equal power supervision relay to monitor 24-volt DC power.

2. Control module shall provide address-setting means using rotary decimal switches and shall store an internal identifying code which control panel shall use to identify type of device. An LED shall be provided which shall flash under normal conditions, indicating that control module is operational and in regular communication with control panel.

M. Relay Modules:

1. Relay Module shall be Notifier FRM-1 or FMM-101 depending on requirements. Modules shall provide as a minimum one set of form “C” dry contacts and have its loop number, electronic address, and function labeled on the front cover using a P-Touch type labeling system.

2. Provide a buffer relay that is part of the control system if controlled circuit(s) exceeds the voltage or current rating of the relay module.

3. Relays used to interface control of other systems shall be electrically supervised and shall only be wired in a fail-safe mode of function during a power failure.

4. Relay modules for HVAC units on roof shall be located in a NEMA 3R box next to unit being controlled. Provide approved weather listed vibration connection conduit and fittings to interface fire alarm system module with HVAC controls compartment. Do not penetrate the HVAC unit from the bottom. Bottom penetrations shall not be accepted.

N. Isolator Modules:

1. Isolator module shall isolate wire-to-wire circuits on an SLC loop in order to limit number of other modules or detectors that are incapacitated by short circuit fault. If a wire-to-wire short occurs, isolator shall automatically open-circuit SLC loop. When short is corrected, isolators shall automatically reconnect isolated section of SLC loop.

2. Isolator module shall not require address setting, although isolators will electrically reduce capacity of loop by two detectors or module addresses. Isolator module will install in a standard 4-inch deep electrical box. It shall

include a single LED that shall flash to indicate that isolator is operational and shall illuminate steadily to indicate that a short has been detected and isolated.

O. Horns and Strobes: Horns and strobes shall be products of the same manufacturer. In order to establish a standard of quality, items are specified from the products manufactured by System Sensor, acceptable manufacturers are Honeywell, Wheelock Inc., Gentex or District approved equal. Addressable or multifunction two wire indicating (Audible or Visual) appliances shall not be acceptable.

1. Alarm horns shall be polarized and operated by 24 VDC. Entire unit shall be red finish. Horn assemblies shall be furnished with separate wire leads for in or out wiring for legs of associated signal circuits. T tapping of signal device conductors to signal circuit conductors is not permitted. Suitable gaskets shall be provided for weatherproof installation. Horns shall provide a minimum sound pressure level of 100 dB at 10 feet. Horns shall be mounted on manufacturer's recommended outlet boxes. Provide horns with a back box skirt on indoor surface mount outlet boxes.

2. Horn/strobe shall be wall mounted or ceiling mounted System Sensor or equal. Horn/strobe shall operate on two separate two wire 24 VDC polarized circuits and shall be provided with a semi-flush mounting plate. Entire unit shall be red finish. Strobe light shall have a clear Lexan lens. The word "FIRE" shall be printed on the two sides of the strobe body. Horn shall provide a minimum sound output of 100 dB at 10 feet. The strobe shall provide a selectable minimum light intensity of 15, 30, 60, 75, 90, 110, 135, 150, or 185 Candela as indicated on Drawings to meet or exceed requirements of CBC, CHAPTER 11B AND ADAAG and UL 1971. Horn/Strobes shall be mounted on manufacturer recommended outlet boxes. Weather proof horn or strobe shall be model No. P4RK or Model No. P4RHK. Provide a model No. BBS-2 back box skirt on indoor surface mounted outlet boxes.

3. Strobe indicating appliances shall be System Sensor or equal. Devices shall be UL listed and shall be wall-mounted. Entire unit shall be red finish. Strobe light shall have a clear Lexan lens. The word "FIRE" shall be printed on two sides of the strobe body. Strobes shall meet CBC, CHAPTER 11B AND ADAAG and UL 1971 requirements. The strobe shall provide a selectable minimum light intensity of 15, 30, 60, 75, 90, 110, 135, 150, or 185 Candela as indicated on the Drawings to meet or exceed requirements of CBC, CHAPTER 11B AND ADAAG and UL 1971. Strobes shall be mounted on manufacturer recommended outlet boxes. Weather proof strobe shall be model No. SRK or Model No. SRHK. Provide a model No. BBS-2 back box skirt on indoor outlet boxes.

4. Strobe synchronization modules if required shall be System Sensor or equal, to be installed in conjunction with two or more strobes located in same room or corridor or as indicated on Drawings. (Strobe synchronization modules must be compatible with installed strobes).

P. Electromagnetic Door Holder: Electromagnetic door holders shall be installed on doors as indicated on Drawings or as required. Electromagnetic Doors shall consist of a wall-mounted electromagnet and a door-mounted armature with an adjustable contact plate. Electromagnets shall provide a force of attraction of 35 pounds when energized and less than three pounds residual with power disconnected. Armature contact plates shall provide a horizontal adjustment of 25 degrees. The holding force of Electromagnetic Doors shall be totally electromagnetic and without the use of mechanical linkage or other moving parts. Electromagnetic Door Holders shall normally be energized, and a release shall be accomplished by interrupting the circuit. Door holders shall be Reliable Security Group DH Serie or Altronix. The power supply shall be equipped with a failsafe input trigger circuit and five individually protected outputs. (Electromagnetic Door holders shall not be powered by an FACP or remote NAC power supplies).

Q. Bells shall be System Sensor polarized type and operated by 24 VDC. Bell shall be powered from FACP or Remote NAC power supply. When used as a notification appliance to indicate fire sprinkler water flow the bell shall be directly controlled by contacts in the associated flow switch. Addressable relays or control modules shall not be used to supervise sprinkler bells. Bell assemblies shall provide separate wire leads for in or out wiring for legs of associated signal circuits. Bells shall be vibrating type providing a minimum sound pressure level output of 84 - 87 dB at ten feet. Bells shall be ten inches in diameter, finished with baked-on red enamel paint, UL listed for fire alarm installation, and suitable for surface or semi-flush mounting. Provide a sign adjacent to the water flow bell with one inch tall and 3/8 inch stroke white lettering on a bright red background. The sign shall read: “NOTIFY FIRE DEPARTMENT WHEN ALARM SOUNDS”.

R. Water-flow Switches:

1. Water-flow switches shall be Potter Electric or equal. Vane-type water-flow switches shall be installed on system piping as designated on Drawings or as required. Detectors shall install on clear pipe spans of appropriate nominal size, either a vertical or horizontal run, at least six inches from fittings or valves which may change water direction, flow rate or pipe diameter, and not closer than 24 inches to valves or drains. Detector shall respond to water-flow in specified direction after a preset time delay that is field adjustable. Actuation mechanism shall include a polyethylene vane inserted through a hole in the pipe and connected by a mechanical linkage to delay mechanism. Output shall consist of ten amps (dual SPDT switches form-C contacts). A conduit entrance for standard electrical conduit fittings shall be provided on detectors. Detectors shall be listed by UL for indoor or outdoor installation. No more than 18 inches of seal-tight flex may be used to connect the water flow or tamper switch to the site conduit system at any one location.

2. Sprinkler valve tamper switches shall be System Sensor for use with outside screw-and-yoke valves or for use with post indicating valves or equal, as indicated. Supervisory switch shall be installed on valves as designated on Drawings or as required. Switches shall be installed to not interfere with normal valve operation and shall be adjusted to operate within two

revolutions of valve control or when stem has moved no more than 1/5 of distance from its normal position. Mechanism shall be housed in a weatherproof die cast metal enclosure, also providing a 3/4 inch tapped conduit entrance to incorporate necessary facilities for attachment to valve. Switch mechanism shall be furnished with a minimum rated capacity of ten amps at 125 VAC and 2.5 amps at 24 VAC. Entire installed assembly shall be tamper-resistant. Tamper switches shall be UL listed. No more than 18 inches of seal-tight flex may be used to connect the water flow or tamper switch to the site conduit system at any one location.

S. Universal Digital Alarm Communicator Transmitter shall be Notifier Model No. UDAC-2 (CSFM 7165-0028:0243/7165-0028:0224). The UDACT is an interface for communication of digital information between a fire alarm control panel and a UL-Listed central station.

1. The UDACT shall be compact in size, mounting in a standard module position of the fire alarm control cabinet. Optionally, the UDACT shall have the ability for remote mounting, up to 6000 feet from the fire alarm control panel. The wire connections between the UDACT and the control panel shall be supervised with one pair for power and one pair for multiplexed communication of overall system status.

2. The UDACT shall include connections for dual telephone lines (with voltage detect), per UL or NFPA or FCC requirements. It shall include the ability for split reporting of panel events between up to three different telephone numbers.

3. It shall be completely field programmable from a built in keypad or laptop computer, and shall be capable of transmitting events in multiple formats.

4. Communication shall include vital system status such as:

   a. Independent Zone (Alarm, trouble, non-alarm, supervisory.

   b. Independent Addressable Device Status.

   c. AC (Mains) and Earth Fault.

   d. System Off Normal.

   e. 12 and 24 Hour Test Signal.

   f. Abnormal Test Signal (per UL requirements).

   g. EIA-485 Communications Failure.

   h. Phone Line Failure.

5. The UDACT shall support independent zone or point reporting when used in the Contact ID format. This enables the central station to have exact details concerning the origin of the fire or response emergency.

6. The UDACT shall be supplied with two eight conductor, two to six foot long line cords. One end of the cords shall plug into the jacks on the UDACT. The other end of the cords shall plug into industry standard RJ-31X surface mounted telephone jacks. Install jacks in a screw cover box

adjacent to the FACP if sufficient space is not available within the FACP, or adjacent fire alarm terminal cabinet. The line cords shall be installed in conduit when it is necessary to locate the jacks remotely from the FACP enclosure. The jacks shall be mounted to the rear of the box. The telephone number for each line shall be labeled on its respective jack.

T. Voice Evacuation System:

1. The Voice Evacuation Control (EVAC) Panel. The self-contained control panel shall be equipped with dual 25-watt audio amplifiers each with a single style Y (Class B) supervised 25 Vrms output circuit. The EVAC panel shall have the ability to record a minimum of two field-programmable messages of up to 60 seconds total duration with an integral microphone or an external source via an audio input jack. The messages shall be stored digitally onto a non-volatile EEPROM. The message(s) shall be individually field programmable for three, four, six, eight, or indefinite repeat while triggered by the host FACP. Any message being delivered at the time of the trigger circuit(s) reset shall not stop in mid-sentence but shall be completed to the end of the message. A tone generator shall be provided capable of emulating a field programmable lead-in or trailing alert tone or an Audible Emergency Evacuation Signal (Temporal Pattern). The EVAC panel shall be capable of electrically supervising in both active and standby conditions, the amplifier outputs, field wiring, message generator, tone generator, microphone and primary or secondary power supplies to an internal trouble relay(s). The trouble relay(s) contacts shall be accessible via a terminal strip and be configured and connected to report internal or external trouble conditions to the host FACP via the trigger circuit or a separate monitor module. The minimum of two trigger circuits shall be individually field-configurable for triggering with a NAC circuit or a supervised dry contact. The control panel shall be equipped with LED indicator lights for Power On, System Trouble, Message Generator Trouble, Tone Generator Trouble, Microphone Trouble, Battery Trouble, Charger Trouble, Ground Fault, Output Circuit Trouble and Amplifier Supervisory. The panel shall be equipped with an internal monitor speaker for reviewing the field recorded messages. The primary power supply shall operate at 120 VAC through a dedicated 20 amp. circuit and shall be capable of charging 18 AH lead acid batteries. Provide two 12 volt batteries that will provide a secondary power source for the same or longer duration than is required by the host FACP. An auxiliary 24 volt DC power output shall be provided for use by an associated addressable control module. The EVAC control panel shall be triggered either directly by the associated FACP with a NAC circuit or by an addressable control module. Provide 3/8 inch minimum P Touch labeling on the window in front of the built in microphone indicating that "THE INTERNAL MICROPHONE IS TO BE USED FOR THE RECORDING OF ANNOUNCEMENTS ONLY. NOT FOR USE BY STAFF OR FIRE DEPARTMENT PERSONNEL."

2. Ceiling Mounted eight-inch EVAC Speakers shall be mounted in a Notifier Model CBB-8 back box or equal. The speaker assembly shall be supplied with a white 12 inch round metal grill. The 8 inch speaker shall have an

impedance of 8 ohms, minimum 9.5 ounce magnet and an attached 25 volt audio line matching transformer with 1/8, 1/4, 1/2, 1, 2, 4 and 8 watt tap settings and DC blocking capacitor. Wattage shall be selectable by the use of a jumper or shunt. Audio levels shall be 75, 78, 81 87, 90 or 93 dba at ten feet. Input or output terminals that will accommodate 12 to 18 AWG wire shall be provided. Speakers orientated in the same direction shall be connected in phase with each other. Multiple speakers in areas such as Auditoriums or Gymnasiums shall be divided into two circuits in a checker board pattern and connected separately to the two audio output circuits.

3. Wall Mount four-inch EVAC Speakers shall be mounted on a manufacture recommended outlet box. When mounted on a surface mount outlet box, Provide a Model No. BBS-SP201R surface mount backbox skirt. The speaker assembly shall be supplied with a square high impact red grill. The four inch speaker shall have an attached 25 volt audio line matching transformer with 1/4, 1/2, 1 and 2 watt tap settings and a DC blocking capacitor. Wattage shall be selectable by the use of a jumper or shunt. Audio levels shall be 80, 84, 86 or 89 dba at ten feet. Input or Output terminals that will accommodate 12 to 18 AWG wire shall be provided. Speakers orientated in the same direction shall be connected in phase with each other; but when installed facing opposite directions they shall be connected out of phase.

U. Network Cables or SLC or Annunciator Data or Audio Output Cables: The construction and physical characteristics such as aqua-seal water block, wire gage, insulation and jacket types, etc. shall not be altered. Equivalent cables must be specifically approved and recommended by the manufacturer of the fire alarm system equipment. Substitutions will require review from the Architect or Engineer of Record.

V. The cable types listed below are based and specified on the recommendations of Notifier Fire Alarm Systems. If the submitted fire alarm system requires a different cable configuration with additional conductors, multi-conductor versus twisted pairs, etcetera, other than as is specified above, then request a substitution to supply and install the configuration of cables by the make and model of the fire alarm system that is to be installed.

1. Indoor Network and EVAC System Audio Output Circuit(s) applications shall be in conduit or in surface mounted raceway as indicated on drawings: West Penn No. D980, one pair 18 gage solid copper, unshielded, Copolene II insulated and PVC jacketed, or equal.

2. Indoor SLC applications in conduit or in surface mounted raceway where it is indicated on drawings: West Penn No. D990, one pair 16 gage solid copper, unshielded, Copolene II insulated and PVC jacketed, or equal.

3. Indoor Annunciator applications in conduit or in surface mounted raceway where it is indicated on drawings: West Penn No. D975, one pair 18 gage solid copper, shielded, Copolene II insulated and PVC jacketed, or equal.

4. Outdoor or Underground Network Applications: West Penn AQ224, two-conductor 18 gage stranded copper, unshielded, water-blocked construction and PVC insulated, or equal.

5. Outdoor or Underground SLC applications: West Penn AQ225, 2-conductor 16 gage, AQ226, 2 conductor 14 gage, or AQ227, 2 conductor 12 gage stranded copper, unshielded water-blocked construction and PVC insulated, or equal.

6. Outdoor or Underground Annunciator applications: West Penn AQ293, 2 conductors, 18 gage stranded copper, shielded water-blocked construction and PVC insulated, or equal.

W. Protective Covers

1. Provide protective covers for pull stations, smoke and heat detectors, and audible and visual devices located in areas occupied by students that can be subjected to vandalism such as gyms, restrooms, locker and shower rooms, and all hallways and corridors associated with these spaces. Installation of cover must not protrude over current ADA limitations.

PART 3 - EXECUTION

3.01 GENERAL

A. Fire alarm system shall not be used for any purpose other than fire alarm functions.

B. Fire alarm shall be interconnected but not limited to the following systems:

1. Systems required by code to be connected to the fire alarm systems shall be connected.

2. Public address system for disabling the manual and automatic bell or tone class passing signals. Manual and automatic class passing signals shall not be operable during alarm conditions.

3. Ventilation systems where required for the purpose of fan shutdown

4. Damper control or smoke management systems.

5. Water based fire sprinkler systems.

6. Chemical fire extinguisher systems.

7. Central and Autonomous PA system(s).

8. Theatrical lighting control system.

9. Elevator controls for the purpose of elevator cab Phase 1 recall and shunt trip control, circuit supervision and shunt trip power supervision.

10. Fire pump controller for required signaling and trouble supervision.

C. Fire alarm system shall not be interconnected to any of the following:

1. Sump warning systems,

2. Carbon monoxide detection systems.

3. Methane gas detection systems.

4. Elevator car alarm bell circuit.

5. Other unrelated system.

3.02 SYSTEM INSTALLATION

A. Install required conductors to devices indicated on Drawings. Provide required conductor terminations to devices for a complete system to function as specified and indicated on Drawings. Refer to Section 26 0519: Low-Voltage Wire (600 Volt AC), for installation and color coding requirements.

B. Splices are not allowed in junction boxes. Terminations shall be in terminal cabinets or on equipment terminals.

C. Conductors shall be installed within conduits, boxes, and terminal cabinets in a totally enclosed installation. Furnish and install conductors required to connect incoming and outgoing circuits, including spare conductors, to terminal strips within terminal cabinets.

D. Wiring within equipment and terminal cabinets shall be installed to conform to contract documentation and NFPA 72 standards, and shall be terminated on terminal blocks having terminals for required connections. Wiring shall be cabled, laced, and securely fastened in place so that no weight is imposed on equipment or terminals.

E. Install required terminal blocks within terminal cabinets. Terminal blocks shall be installed on inside back of cabinets only, not on side. Incoming wiring shall be terminated on the left side of terminal blocks; outgoing wiring shall be terminated on the right side of the terminal blocks.

F. Conductors shall be color-coded per specification section 26 0519 Low Voltage wires and tagged with code markers at terminal cabinets, and equipment. A wire index shall be typed and installed on terminal cabinet doors. Index shall be covered with clear plastic adhesive covers. Wiring shall be identified as to building and location of devices in the index.

G. Wiring within equipment and terminal cabinets shall be carefully strapped, and shall be formed in rectangular configuration. Wires shall be properly numbered in numerical order and shall maintain same number throughout the Project site.

H. Complete installation shall comply with local building codes and applicable provisions of the California Electrical Code, California Fire Code and the NFPA 72 National Fire Alarm Code.

I. Location of outlet boxes and equipment on Drawings is approximate, unless dimensions are indicated. Do not scale Drawings to determine locations and routing of conduits and outlet boxes. Location of outlet boxes and equipment shall conform to architectural features of the building and other Work already in place, and must be ascertained in the field before the start of Work.

J. Drawings generally indicate Work to be provided, but do not indicate all bends, transitions or special fittings required to clear beams, girders or other Work already

in place. Investigate conditions where conduits are to be installed, and furnish and install required fittings.

K. Provide P-touch label of approximately one inch wide with red lettering for each initiating device that is hidden from view. Tags shall indicate the name and type of device: Heat Detector, or Duct Smoke Detector. Tags shall be permanently attached on access panel or t-bar grid which is used to access a hidden device.

L. Provide smoke and heat detectors in elevator hoist-ways if a fire sprinkler head is located at the top of the elevator hoist-way. Provisions shall be made for access to the detector without entering the elevator hoist-way. Access shall be provided through an approved enclosure with self-locking fire rated door. The detectors shall be so placed as to allow service to them without the service personnel having to reach into the hoist-way in the way of travel of the elevator car. Access to elevator hoist-ways and machine rooms (including escalators) must be supervised by the Owner's licensed elevator or escalator maintenance contractor. OAR is responsible for coordinating access in accordance with Contractor's schedule. Contractor shall provide a minimum of 48 hours' notice.

M. Provide adjacent to each annunciator a neatly typewritten copy of the Fire Alarm Operating Instructions. The instructions shall reflect the installed and programmed features of the system. Instructions that include information on non-installed or programmed features will not be acceptable. The instructions shall be placed into a suitably sized dark colored wood or metal frame with a glass document face cover. The frame shall be attached to the wall with a minimum of two screws into the wall material with appropriate anchors.

N. Provide adjacent to each annunciator a neatly drawn site map showing rooms with designations and buildings with names as programmed into the system. This map shall be sized to allow (normal vision) reading of the designations, names etc. A map so reduced in size to the point of not being readable will not be acceptable. This map shall include symbols indicating the locations of installed fire sprinkler flow switches, riser shut off valves, post indicating valves and manual pull stations. Provide a symbol list on the map for the symbols used. The site map shall be placed into a suitably sized dark colored wood or metal frame with a glass document face cover. The frame shall be attached to the wall with a minimum of two screws into the wall material with the appropriate anchors.

3.03 SYSTEM PROGRAMMING

A. Programming shall be performed in accordance with District requirements set forth in this section – the local authority having jurisdiction and applicable codes. If a conflict arises or a clarification is required, the contractor through the project's OAR shall contact the Districts Fire Life Systems Testing Group (FLSTG) for clarification

B. As part of the 50 percent construction completion label devices and locations in the manner indicted in the attached guidelines on a separate copy of the shop drawings. Request a meeting with OAR, Project Inspector, and representative of FLSTG to review, finalize and obtain approval of the proposed device, equipment and location descriptors that will be programmed into the system. The District may at time of

substantial completion request minor changes to program descriptors if needed to conform to site conditions.

C. The following functions and features as required by the site or system configuration and installed peripheral equipment and systems shall be programmed into LAUSD fire alarm systems. The definition of programming shall include but not be limited to the use of a built in keyboard, the use of a connected PC with the appropriate software, dip or rotary switches, wiring or installable or removable jumpers as required or provided in the fire alarm equipment.

1. Signal Silence Switch Inhibit: The audible signal silence switch located on the remote fire alarm annunciator(s) or any fire alarm control panel(s) shall be programmed to not silence the audible or extinguish the visual alarm circuits during the first minute (60 seconds) of alarm activation. Activation of this switch shall silence only the audible signals. Enabling or disabling this feature shall be allowed only if approved by the local Fire Marshal and District's Supervising Electrical Engineer, and authorized District maintenance personnel. The activation feature shall be protected by a maintenance level password.

2. Fire Sprinkler Water Flow Audible Appliance: The fire sprinkler water flow appliance (bell) shall not require any programming but shall be directly controlled by a set of dry contacts within the associated sprinkler water flow switch(s). The 24 volt DC auxiliary power for the sprinkler water flow audible appliances shall be supplied by an FACP or a remote power supply. This audible appliance shall operate continuously during the detection of fire sprinkler water flow and shall not be coded in any manner nor silenced automatically by any FACP or manually by any user controls at any FACP or remote annunciator.

3. Fire Sprinkler Water Flow Switch: Fire sprinkler water flow switches shall be programmed in a manner that shall prevent the above Signal Silence Switch from silencing the audible coded signals or visual signals after the initiation of an alarm by a fire sprinkler flow switch.

4. Audible Notification Appliance Circuits: Audible notification appliance circuits shall be programmed to emulate the temporal code (ANSI S 3.41) from fire alarm audible appliances (horns). This coding shall originate and be controlled by a single coder residing within the FACP(s). The use of coders within remote power supplies either mounted adjacent to an FACP or at a remote location or directly by an audible notification appliance will not be permitted. Programmable audible notification appliances shall be configured to emulate a steady tone at approximately 1000 Hz. Audible notification appliance circuits shall be programmed to be silenced as described above. Notification appliance circuits throughout the site shall be activated by any alarm initiating device. Coded audible signals shall be controlled by a single synchronized FACP.

5. Visual Notification Appliance Circuits: Visual notification appliance circuits shall be programmed to provide steady non-coded power to the visual appliances (strobes). As required by code and the system

configuration, a synchronization signal shall be superimposed onto the NAC by the FACP, a remote power supply or an add-on synchronization module. Visual notification appliance circuits shall be programmed to be extinguished as described above. Visual notification appliance circuits throughout the site shall be activated by any alarm initiating device.

6. System Reset Button: The system reset button located on FACPs and remote annunciators in addition to resetting the fire alarm system and silencing or extinguishing notification appliances except for the sprinkler water flow appliances shall be programmed to reset analog and addressable smoke detectors, duct detectors, beam detectors and relays, addressable control modules and addressable relay modules used to interface to other systems and equipment. Each installed system reset button shall be programmed to operate as a "single point of reset" for the complete system.

7. HVAC Shutdown: Relays and addressable relay modules used to interface to HVAC equipment dampers, and supply and exhaust fan motors shall be programmed to shut down this equipment only within the same building where the detection of smoke, heat, carbon monoxide or fire sprinkler water flow has taken place. Manual pull stations within any building shall not affect the operation of the HVAC equipment. These relays shall return to normal only after the system is reset.

8. Elevator Recall: The addressable relay modules for the primary and alternate elevator recall function shall be programmed to activate only with the detection of smoke by a detector located in the elevator machine room, elevator hoistway or the main floor or alternate floor landing(s) smoke detector associated with that elevator or bank of elevators. Recall of an elevator shall be on a per-elevator or on a per-bank of elevators basis. Activation of other initiating devices shall not cause the recall of an elevator.

9. Fire Fighter Warning: In conjunction with the above elevator recall function, an additional addressable relay module shall be programmed to operate only with the detection of smoke by a detector located in an elevator machine room or elevator hoistway to provide a warning signal to fire fighters attempting to use the phase II elevator function.

10. Elevator Shunt Trip: The addressable control module or MR control relay for the elevator shunt trip shall only be activated by the heat detector located within the elevator machine room or elevator hoistway for each elevator or bank of elevators. Circuit integrity, and AC and DC power to the MR control relay shall be electrically supervised. Activation of other initiating devices shall not operate the shunt trip.

11. Smoke Detector Maintenance Alert: Addressable smoke detectors shall be programmed with the capability of initiating a maintenance alert when any one detector becomes obscured by dust or any other contaminates at approximately 10 percent below the level of obstruction that would initiate an alarm.

12. Disabling Class Passing Signals: The relay or addressable relay module shall be programmed to disable the class passing signals during any alarm condition at the site. This relay or addressable module shall return to normal only after the system is reset.

13. Disabling Audio of a Public Address System: The relay or addressable relay module shall be programmed to mute the audio output of the associated public address system during any activation of an audible notification appliance circuit or a voice evacuation announcement. This or these relays shall automatically restore to normal upon the silencing of the audible NACs and the voice evacuation announcement.

14. Release of Electro-Magnetically Held Doors: The relay or addressable relay module shall be programmed to open or close the control circuit as needed of the 24 volt DC door holder power supply. This relay(s) shall operate during any alarm condition within the same building as the door holders. The contacts shall return to normal only after system reset.

15. Illumination of House Lighting: The relay or addressable relay module shall be programmed to turn on to full brilliance the house lighting of an Auditorium, MP Room, etc. during any alarm condition at the site. This relay or addressable module shall return to normal only after the system is reset.

16. UDACT: The FACP and the associated Universal Digital Alarm Communication Transmitter shall be programmed to transmit to the central monitoring station separate indications for General Alarm, Fire Sprinkler Water Flow Alarm, System Trouble and Supervisory Conditions. These indications shall be in addition to any indications initiated by the UDACT itself.

17. Voice Evacuation Panel: The NAC originating at, or the addressable control module controlled by the associated FACP that is controlling the EVAC panel shall be programmed to emulate the above paragraph “E” Audible Notification Appliance Circuits except that it shall be non-coded. Trouble conditions at the EVAC panel shall report back to the associated FACP via the controlling NAC or addressable control module or a separate addressable monitor module. Transformer taps at the EVAC speakers shall be selected to provide the proper balance of audio volume in larger and smaller areas. The message shall be programmed in a female voice in the English language as follows: A minimum of two but no more than three cycle sounding of an approximate 1000 Hz tone in the pattern of the NFPA required temporal code followed by: “May I have your attention please. May I have your attention please”. The fire alarm has been activated in the building. The fire alarm has been activated in the building. Please proceed to the nearest exit and leave the building.” The sounding of the temporal patterned signal followed by the indicated message shall repeat indefinitely until the controlling NAC is reset.

18. Power Failure Reporting Time Delay: Main and remote NAC power supplies shall be programmed to delay the reporting of a site AC power failure for a minimum of 6 hours.

D. Device Descriptors:

1. Descriptors shall enable responding personnel to identify the location of a fire quickly and accurately, and shall indicate the status of emergency equipment or fire safety functions that might affect the safety of occupants. The minimum required information for devices intended to report smoke, fire, or fire sprinklers water flow include, but may not be limited to: Building, floor (if multiple floors exist in the building), room or space description, and device type and digital address (Smoke detector, Heat detector, Fire sprinkler water flow switch, etc.)

a. Building: The building must always be included in the descriptor, even if there is only one building one the site. Additional building(s) may be added at a later date creating the possibility of confusion by similar designated spaces, such as “Work room” or “Staff restroom” if more than one building has these similar designated spaces. The building designation in the descriptor must be what the site-based personnel call the building. The building should be provided with signage to aid fire department personnel in the identification of the building.

b. Floor: In multi-floor buildings the floor designation (1st, 2nd, etc.) must be included in the descriptor.

c. Room Description: The room or space description must be unique. Using the same designation for multiple spaces, such as “Workroom”, “Counselor’s Office”, or “Men’s restroom”, etc. is not acceptable. If, during a project, the room numbers or the use of the room changes then the room or space descriptor must be changed to agree with the change. Proper signage should be provided for each space to aid fire department personnel in the identification of the room or space.

d. Device Type, Address and Compass Designations: The device type and digital address must be included with the descriptor, such as smoke detector or heat detector, etc. Some systems provide this information automatically in the descriptor. Compass designations, (N, S, E, and W) are required in spaces such as corridors where there are multiple detectors and this information would be helpful to responding fire department personnel in locating the device reporting alarm. It is not necessary to include compass designations in smaller spaces where there are multiple detectors located in close proximity to each other.

E. ACCEPTABLE ABBREVIATIONS

Rm.- Room	Bldg.- Building	Smk. - Smoke

Corr.- Corridor	Lby- Lobby	Asst. - Assistant
Eng.- English	N – North	Nrs. - Nurse
Flr.- Floor	S – South	Cnclr - Counselor
Ht.- Heat	E – East	Off. - Office
Lib.- Library	W – West	PE – Physical Education
Lkr. – Locker	Kit- Kitchen	RR- Rest Room
Stu Str – Student Store	Sci - Science	By = near
Stor Rm – Store Room	Café - Cafeteria	PM – Plant Manager
1st- First	2nd- Second	3rd- Third
Hopr Rm – Hopper Room	Det - Detector	Elev - Elevator
Prin – Principal	Blr Rm – Boiler Room	Conf – Conference
Park – Parking	Bsmt –Basement	MPR.- Multi-Purpose room

3.04 SYSTEM OPERATION

A. Unless otherwise specified, but not limited to actuation of manual stations, smoke detectors, heat detectors, linear heat or smoke detectors, or water-flow switches shall cause the following operations to occur, refer to Attachment B:

1. Activate audible circuits.
2. Actuate strobe units until the panel is reset or strobe circuit time-out.
3. Release magnetic door holders to doors to adjacent zones on the floor from which the alarm was initiated.
4. Where required, return elevators to the primary or alternate floor of egress.
5. Smoke detectors in elevator lobbies shall, in addition to the above functions, return elevators to the primary or alternate floor of egress.
6. Smoke detectors in elevator machine rooms or tops of hoist-ways shall return elevators to the primary or alternate floor. Smoke detectors or heat detectors installed to shut down elevator power shall perform this function in accordance with ANSI A 17.1 requirements and shall be coordinated.
7. Duct type smoke detectors shall, in addition to the above functions, shut down the ventilation system or close associated control dampers as required.

8. Activation of fire sprinkler system low-pressure switches, post indicator valve or tamper switches shall initiate a system supervisory alarm indication.

9. UL listed central station shall be notified via – Universal Digital Alarm Communicator Transmitter (UDACT).

3.05 TESTING

A. A 48 hour notice shall be provided to the Project Inspector before final testing.

B. Testing of fire detection system shall be as required by the State Fire Marshal and local authorities having jurisdiction. Installer is responsible for identifying required testing, coordinating, scheduling, and conducting tests before Substantial Completion. Tests shall include the following:

1. Operation of signal-initiating devices (smoke detectors, heat detectors, pull stations etc.).

2. Operation of indicating devices (alarm horns, alarm bells and alarm strobes).

3. Operation of system features under normal operation.

4. Operation of system supervisory features.

5. Operation of system features on standby power, with primary power turned off.

6. Before energizing the cables and wires, check for correct connections and test for short circuits, ground faults, continuity, and insulation.

7. Close sprinkler system flow valves and verify proper supervisory alarm at the FACP.

8. Verify activation of flow switches.

9. Open initiating device circuits and verify that trouble signal actuates.

10. Open signaling line circuits and verify that trouble signal actuates.

11. Open and short notification appliance circuits and verify that trouble signal actuates.

12. Open and short (wire only) network communications and verify that trouble signals are received at network annunciators or reporting terminals.

13. Ground initiating device circuits and verify response of trouble signals.

14. Ground signaling line circuit and verify response of trouble signals.

15. Ground notification appliance circuit and verify response of trouble signals.

16. Check alert tone to alarm notification devices.

17. Check installation, supervision, and operation of intelligent smoke detectors.

18. Alarm conditions that the system is required to detect shall be introduced on the system. Verify the proper receipt and the proper processing of the signal at the FACP and the correct activation of the control points.

19. When the system is equipped with optional features, consult the manufacturer manual to determine proper testing procedures.

20. Theatrical lighting house light control override.

21. Central and Autonomous PA systems for muting during the sounding of the audible notification appliances and voice evacuation announcements.

22. Disabling electronic tone or electromechanical bell class passing signals until system reset.

C. Upon completion of installation of fire alarm equipment, provide to the OAR a signed, written statement confirming that fire alarm equipment was installed in accordance with the Specifications, Shop Drawings, instructions and directions provided by the manufacturer.

D. Demonstrate in presence of the Project Inspector that circuit and wiring tests are free of shorts and grounds and that installation performs as specified herein and within manufacturer's guidelines.

E. Software Modifications:

1. Provide the services of a factory trained and authorized technician to perform system software modification, upgrades or changes. Response time of the technician to the Project site shall not exceed 24 hours.

2. Provide hardware, software, programming tools, and documentation necessary to modify the fire alarm network on the Project site. Modification includes: addition and deletion of devices, circuits, zones and changes to system operation and custom label changes for devices or zones. The system structure and software shall place no limit on the type or extent of software modification on-site. Modification of software shall not require power-down of the system or loss of system fire protection while modifications are being provided.

F. Complete the inspection and testing form as required by NFPA 72, and submit one copy of the completed form to the Architect and Project Inspector.

3.06 SERVICE MANUALS

A. Deliver to OAR, three copies of the service manuals. Each manual shall include the following:

1. Installation manuals, programming manuals and user manual if applicable for every control panel, control panel power supply, FACP input or output or relay or control module, auxiliary power supply, UDACT, remote NAC extender power supply, door holder power supplies, installed annunciators, initiating and indicating devices and addressable monitor, relay and control modules. Catalog cut sheets are not acceptable.

2. A printed copy of the system configuration as programmed, including system labeling codes, and passwords.

3. An electronic copy on compact disk of the system configuration program

4. Final test report.

5. Detailed explanation of the operation of the system.

6. Instructions for routine maintenance.

7. Detailed wiring diagram for the connection of relays, addressable monitor, and control or relay modules as applied in the interfacing of peripheral systems or equipment to the fire alarm system. Updated shop drawings shall include revisions made in the field via plan changes, RFIs, Field Change Directives, and any other construction change documents including interface details with ancillary systems.

8. An electronic copy (CD) of the posted site or fire alarm map in Auto-Cad and pdf formats.

9. Provide a CD ROM electronic copy of the updated system As-Built Drawings to the OAR, prepare this copy in the latest version of AutoCAD; along with the electronic copy provide a full size bond copy. Include one CD-ROM of the up-dated As-Built Drawings into each of the Service Manuals. CD and folded drawings shall be secured and inserted into the Service Manuals via a three-hole punched protective CD case and protective envelopes for the drawings.

10. Provide codes and passwords for fire alarm system at testing.

3.07 SPARE PARTS

The following new spare parts shall be furnished in unopened boxes:

1. Five percent spare pull stations including the associated monitor module (minimum one spare pull station per type).

2. Five percent spare smoke and heat detectors (minimum one spare smoke and heat detector per type).

3. Five percent spare audible devices (minimum one spare audible device per type).

4. Five percent spare strobe devices (minimum one spare strobe device per type).

3.08 SYSTEM USER AND MAINTENANCE PERSONNEL TRAINING

A. Before Substantial Completion, provide one instruction period for the Project site based Owner operators and system users. The instruction period shall be scheduled and coordinated by the OAR.

B. Training materials and required deliverables shall be submitted to the OAR.

1. Prior to beginning the operational demonstration, notify Central monitoring Station that an instructional activity is beginning; inform them that it

includes setting and resetting the system in test mode. After the demonstration is completed and the system restored, notify the Central Monitoring Station that the system has been restored and it is back on line for continuous monitoring.

C. User Instruction and Training

1. Before substantial completion and with a fully functional fire alarm system installed at the site, the contractor shall provide a minimum of four hours of user training for site based staff. The date and time for this training shall be coordinated by the project OAR.

D. Instruction period training for site based staff shall consist of the following:

1. Overview:

a. Explain the fire system is “addressable” which means every device-smoke detector, heat detector, sprinkler water flow switch, manual pull station, etc. has a unique address or identity. This makes it possible to positively identify the exact device causing an alarm, trouble or supervisory condition.

b. Explain the fire alarm control panel also controls the horns and strobes throughout the campus or building.

c. Explain that the fire alarm system is interconnected to various other systems and equipment throughout the site such as:

1) Elevators to recall them to the main floor or to an alternate floor and as an option dependent circumstances turn off the power to the elevators.

2) Heating and air conditioning equipment to turn off fans and close dampers to stop the spread of smoke throughout a building.

3) The class passing signaling system to disable the bells or tones to not accidentally signal students and staff to return to the buildings.

4) Magnetically held doors to close them to stop the spread of smoke.

5) To turn up house lighting in an occupied Auditorium or Multi-Purpose room to provide adequate egress lighting.

6) The Central and Autonomous PA systems to mute them during the sounding of the alarm signal.

d. Explain the fire system has a battery backup in case of power failure and that it will continue to function for a minimum of 24 hours after a total power failure.

e. Explain that the fire alarm system components and wiring are monitored to report a malfunction, damage or vandalism. When this occurs, a trouble indication will appear on the fire alarm

annunciator and FACP and this indication will be transmitted to the central monitoring station.

f. Explain that other equipment and systems are monitored for abnormal conditions such as the fire sprinkler water being turned off. When this occurs, a supervisory condition is created. A supervisory indication will appear on the fire alarm annunciator and FACP and this indication will be transmitted to the central monitoring station.

g. Explain that the fire system in addition to notifying the occupants of a possible fire condition also transmits an alarm indication to the central monitoring station that will in turn notify and dispatch the local fire department to your site.

2. Basic:

a. Hand out the SYSTEM OPERATION instructions to attendees.

b. Point out the Fire Alarm Control Panel and have them observe the normal LED status (one green LED only should be on):

1) GREEN = Normal.

2) YELLOW = Trouble.

3) RED = ALARM.

c. Have the attendees observe the LCD display that should be indicating a SYSTEM NORMAL message.

d. Point out the Fire Alarm System Annunciator and have attendees observe the LCD display that should be indicating a SYSTEM NORMAL message.

3. Operation and Demonstration:

a. After putting the system or having someone put the system central station monitoring into the test mode demonstrate the following:

b. Activate a Manual Pull Station to demonstrate ALARM.

1) Demonstrate audible and visual notification appliances and if installed the voice evacuation signal announcement.

2) Demonstrate panel or annunciator sounder tone for ALARM.

3) Have staff SILENCE system.

4) Show LCD display and LED of alarm.

5) Demonstrate and have staff reset the manual pull station.

6) Have staff RESET fire system.

c. Activate Smoke Detector with canned smoke to demonstrate address identification:

1) Have staff SILENCE system.

2) Show LCD and display LED of ALARM.

3) Have staff RESET fire system.

d. Remove Smoke Detector to demonstrate SYSTEM TROUBLE.

1) Demonstrate panel or annunciator sounder tone for TROUBLE.

2) Have staff SILENCE system.

3) Show LCD display and LED of TROUBLE.

4) Replace the smoke detector.

5) Have staff RESET fire system.

e. Remove power to demonstrate function during power failure.

1) Have staff SILENCE system.

2) Show LCD display and LED of TROUBLE.

3) Activate Manual Pull station to demonstrate audible or visual functions in power failure mode.

4) Reset manual pull station.

5) Reset fire system.

6) If applicable, point out sprinkler riser and shut off valves.

7) Show location of a water flow switch.

8) Show location of a valve tamper switch.

9) Point out valves must always be OPEN or fully counter clock wise.

10) Point out PIV (Post Indicator Valves) if applicable.

11) Have water flow through the inspectors test valve and point out the ringing water flow bell.

12) After the horns are silenced by an assistant, show that the water flow bell is ringing continuously indicating water flow.

13) Have the assistant turn off the inspectors test valve to show that water flow alarm bell turns off.

14) Reset system.

15) Unlock and turn off a PIV or riser valve to show a supervisory condition.

16) Turn valve back on, lock the valve open and demonstrate the end of the indication of a supervisory condition.

4. Training documentation.

a. Insure fire panel is reset and indicates normal and central station monitoring is taken off of the test mode.

b. Have staff attendees sign off training sheet and provide a copy to the PROJECT INSPECTOR.

3.09 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.10 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off Project site.

END OF SECTION

FIRE ALARM SYSTEMS - APPROVED SYSTEMS COMPONENTS - ATTACHMENT A
LOS ANGELES UNIFIED SCHOOL DISTRICT FACILITIES SERVICES DIVISION

FIRE ALARM SYSTEMS APPROVED COMPONENTS - ATTACHMENT A

TYPE	EQUIPMENT	NOTIFIER		EDWARDS SYSTEMS TECHNOLOGY		SIMPLEX - GRINNELL		SIEMENS BUILDING TECHNOLOGIES		JOHNSONS CONTROLS		FCI - GAMEWELL	
		Catalog No.	CSFM No.	Catalog No.	CSFM No.	Catalog No.	CSFM No.	Catalog No.	CSFM No.	Catalog No.	CSFM No.	Catalog No.	CSFM No.
Controls	FACP	NFS2-640	7165-0028:0243	ES3	7165-1637:0126	4100-9311	7165-0026:0251	FC922-US	7165-0067:0264	IFC2-640	7165-0554:0153	E3 SERIES	7165-1708:0123
		NFS2-3030	7165-0028:0224	NA	NA	4100-9311	7165-0026:0252	FC924-US	7165-0067:0264	IFC2-3030	7165-0028:0149	S3 SERIES	7165-1708:0176
	Network Control Annunciator	NCA-2	7165-0028:0224	ES3-LCDANN	7120-1637:0193	4606-9101	7120-0026:0179	FT2015-US	7165-0067:0264	JNCA-2	7165-0554:0153	NGA	7165-1708:0123
	Remote Annunciator [with Microphone]	LCD-280 or 160	7165-0028:0224	ES3-LCDANN	7120-1637:0193	4606-9101	7120-0026:0179	FT2008-U1	7165-0067:0264	LCD-280 or 160	7165-0554:0153	LCD-E3 or LCD-S LP	7165-1708:0123
	Remote Annunciator-Power Supply	FCPS-24S6	7315-0028:0225	EST BPS6A, BPS10A	7300-1637:0229	4606-9601	7300-0026:0373	PAD-4	7315-0067:0268	FCPS-24S6	7315-0554:122	HPPS 24S6	7315-1637:0102
	Voice Evacuation System	NFC - 50/100 DVC-EM Digital Voice Command	6611-0028:0265 7165-0028:0224	EST3-ASU/4 Audio Source Unit with 3-Z4xx Zoned Amplifier	7165-1637:0186	4100-9311	7165-0026:0251	FV920-EK	7165-0067:0264	JDVC	7165-0554:0153	Fire VAC IV	7300-1708:0168
	Manual Pull Stations	NBG-12LX	7150-0028:0169	EST SIGA-270	7150-1637:0129	4098-9021	7150-0026:0224	HMS-D	7150-0067:0036	JBG-12L	7165-0554:0149	MS-7	7150-1708:109
		NBG-12LO B(ex)	7150-0028:159	EST MPSP SERIES	7150-1637:0236			HMS-M	7150-0067:0036	JBG-12LO B	7165-0554:0153	MS-7 W/SB-I/O	7150-1708:109
	Smoke Detectors	FPT-951 WHITE FPT-951-IV	7272-0028:0910	SIGA-PD	7272-1637:0231	4098-9714	7272-0026:0218	OP921	7272-0067:0258	2951J	7272-0554:145	ASD-PT12 F	7272-1708:0121
	Smoke Detector Base	B210LP	7272-0028:0206	SIGA-SB4	7300-1637:0120	4098-9792	7300-0026:0217	DB-11	7300-0067:0134	B210LP	7272-0028:0206	B210 LP	7272-1708:0121
	Heat Detectors	FST-951R WHITE FST-951R-IV	7270-0028:0196	SIGA-HRD	7270-1637:0233	4098-9733	7270-0026:0216	HB21	7272-0067:0261	5951J	7270-0554:133	ATD-H12 F	7270-1708:0115
	Heat Detector Base	B210LP	7270-0028:196	SIGA-SB4	7300-1637:0120	4098-9792	7300-0026:0217	DB-11	7300-0067:0134	B210LP	7270-0028:196	B210 LP	7270-1708:0115
	Heat Detectors for High temperature spaces [e.g. attics]	FST-951 WHITE FST-951-IV	7270-0028:0196	EST 2208-PL SERIES	7270-1637:0108	5902 (SysSensor)	7270-1658:0167	DT-135R/DT-200R	7270-0067:0026	5951HJ	7270-0554:133	ATD-H12 F	7270-1708:0115
	Explosion Proof Automatic Heat Detectors [Thermotech]	302-EPM-135	7270-0021:0001	302-EPM-135	7270-0021:0001	302-EPM-135	7270-0021:0001	DT-225EP	7270-0067:0026	3D-3003	7270-0021:0001	302-EPM-135	7300-1708:0131
	Base [Kilark Electric]	JL Threaded Hub	NA	JL Threaded Hub	NA			ADAPT PLATE	7270-0067:0026	JL Threaded Hub	NA	CPU20-50 [APPLETON]	N/A
	Weather Proof Automatic Heat Detectors [Thermotech]	302-ET-135	7270-0021:0001	302-ET-135	7270-0021:0001	302-ET-135	7270-0021:0001	DT-135WP/ DT-200WP	7270-0067:0026	3D-2021E-24	7270-0021:0001	302-ET-135	7300-1708:0131
	Duct Smoke Detectors	FSP-951R and FSP-951R-IV	7272-0028:0206	EST SIGA-DH housing with SIGA-PS Duct smoke detector	3240-1637:0108 / 7272-1637:0126	4088-9755	3240-0026:0241	FDBZ-492	3240-0067:0265	DNR	3242-1653:209	ASD-PL2FR W/ DNR	7272-1708-0121
		751PLAQ	3242-1653:0209	NA	NA	4088-9751	3240-0026:0220	FDBZ-WT	3240-0067:0265	2951J	7272-0554:145	ASD-PL2FW/DNR	7272-1708-0121
	CO Detectors	FSC0-951, FPC-951	5278-0028:0911	EST SIGA2-HCOS	5278-1637:0800	4088-9770	7272-0026:0330	OOHC941	7272-0067:0260	2961COJ	7275-0028:0264	CO1224 SERIES	5278-1658:0219
	Multi-Media Criteria Detector	FCO-951 WHITE FCO-951-IV	7272-0028:0910	EST SIGA-PHCD	7263-1637:0832			OOH941	7272-0067:0260	2951TMJ	7272-0028:0256	MCS-ACCLIMATE12 F	7272-1708:0121
	Projected Beam Detectors	FSOSI-RI	7260-0028:0909	System Sensor Beam 1224S	7260-1658:0168	4088-9019	7260-0026:0377	PB-191	7260-1606:0100	FS8200	7260-0028:228	ABD-2 F	7260-1708:0120
	Projected Beam Detectors Remote Key Stations	RTS451KEY	7300-1653:0212	RTS151KEY	7300-1653:0212			TSM-1X	7300-0067:0501	RTS451KEY		RTS151KEY	7300-1653:0212
	Linear Heat Detector [Protector wire]	PHSC-150-EPR	7270-0554:0101	ProtectoWire PHSC-150-EPR	7270-0554:0101	PHSC-150-EPR	7270-0554:0101	N/A	N/A	PHSC-150-EPR	7270-0554:0101	PHSC-150-EPR	7270-0554:0101
	Monitor Module	FMM-1	7300-0028:0219	EST SIGA-CT1 EST SIGA-CT2	7300-1657:0121	4060-9001	7300-0026:0223	HTRMM	7300-0067:0244	M300MJ	7165-0554:0153	AMM-4F	7300-1703:0102
	Control Module	FCM-1	7300-0028:0219	EST SIGA-CC1	7300-1657:0121	4060-9002	7300-0026:0223	HTRMS	7300-0067:0244	M300CJ	7165-0554:0153	AOM-2SF	7135-1703:0102
	Relay Module	FRM-1	7300-0028:0219	EST SIGA-CR, SDA-CRH	7300-1657:0121	4060-9008	7300-0026:0311	XTRFR	7300-0067:0501	M300RJ	7165-0554:0153	AOM-2RF	7135-1703:0102
		MR-101	7300-1004:0101	MR-101	7300-1004:0101	4060-9010	7300-0026:0311	HTRFR	7300-0067:0244	M300RJ	7300-1004:0101	MR-101	7300-1004:0101
	Strobe Synchronization Module [System Sensor]	MDL3R	7300-1653:0130	NA	NA			DSC-W	7300-0067:0212	DSM-1224	7300-1653:0130	MDL3R	7300-1653:0130
	Power Supply Relay [Air Products PAM-8 Relay Module]	A77-716B	7300-1004:0101	A77-716B	7300-1004:0101			HTRFR	7300-0067:0244	A77-716B	7300-1004:0101	A77-716B	7300-1004:0101
	Isolator Module	ISO-X	7165-0028:0214	EST SIGA-IM	7300-1657:0121	4060-9116	7300-0026:0252	HLIM	7300-0067:0244	M500XJ	7300-0554:152	M500X	7300-1653:0103
	Universal Digital Alarm Communicator Transmitter	UDACT-2	7165-0028:0243	EST 3IM10 DCOM	7165-1657:0136	4100-9311	7165-0026:0251	FCA2016-U1	7165-0067:0264	UDACT-2	7165-0554:0153	411 SERIES	7300-0078:174
	Door Holder/ Releases	FM Series	3660-0028:0210	EST 1500 Series (EDWARD SDM-AL)	3660-1501:0137	DH-Series by RSG	3660-1039:0100	SDH-2A	NA	Fm Series	3660-0028:0210	FM Series	3660-0028:0210
Annunciators and Other Devices													
	Alarm Horns/Strobes [System Sensor]	P2RL(wall)	7135-1653:0503	EST G1RF-WH (wall strobe)	7125-1657:0218	4906-WRF	7320-0026:0373	ZH-MC-W	7125-0067:0248	P2RL(wall)	7135-1653:0503	P2RL(wall)	7135-1653:0503
		P2CRL (ceiling)	7135-1653:0503	EST GC F-WH (ceiling strobe)	7125-1657:0215	4906-9128	7125-0026:0317	ZH-MC-CW	7125-0067:0248	P2CRL (ceiling)	7135-1653:0503	P2CRL (ceiling)	7135-1653:0503
	Alarm Horns [weather Proof] [System Sensor]	HRK with BBS-2 Skirt	7135-1653:0139	EST 757-1A-T, WITH 757A-WB BACK BOX	7135-1657:0188, 7300-1657:0191	AH-24WP-R	7125-0785:0131	AS-HMC-R-WP	7125-0067:0256	HRK with BBS-2 Skirt	7135-1653:0139	HRK with BBS-2 Skirt	7135-1653:0139
	Horns [System Sensor]	HR	7135-1653:0139	EST 757 SERIES	7125-1657:0184	4906-WRF	7125-0026:0372	ZH-W	7125-0067:0248	HR	7135-1653:0139	HR	7135-1653:0139
	Mini Alert Sounders	NA	NA	EST G1RF-HD (horn)	7135-1657:0230			MH-W	7135-0067:0245	NA	NA	N/A	N/A
	Exterior Speakers	SPKR	7320-1653:201	EST GEMSS-WG+ SERIES	7320-1657:0239			SET-177-CW-WP	7125-0067:0256	SPKR	7320-1653:201	SPKR	7320-1653:201
	Voice Evacuation System 8 " Speakers [Wheelock]	SS-70-25	7320-0785:0164	EST GC SERIES	7320-1657:0211	4906-APPLC	7300-0026:0322	S-HG-MC-W	7320-0067:0243	SS-70-25	7320-0785:0164	SS-70-25	7320-0785:0164
	Voice Evacuation System 5" Speakers [Wheelock]	SPRV	7320-1653:0201	EST G+SERIES	7320-1657:0211			NA	NA			SPRV	7320-1653:0201
	Ceiling Speaker/Strobe	SPSCRL	7320-1653:0505	EST GEMSS8 GC SERIES	7320-1657:0211	4906-APPLC	7300-0026:0322	SEH-MC-CW	7320-0067:0275	SPSCRL	7320-1653:0505	SPSCRL	7320-1653:0505
	Wall Mounted Speaker/Strobe	SPSWL	7320-1653:0505	EST GEMSS8 SG+ SERIES	7320-1657:0211	4906-APPLW	7300-0026:0322	SEH-MC-W	7320-0067:0275	SPSWL	7320-1653:0505	SPSRL	7320-1653:0505
	Strobes	SRL (wall)	7135-1653:0504	EST GEMSS SERIES	7125-1657:0218	4906-WRF	7125-0026:0373	ZR-MC-W (Wall)	7125-0067:0252	SRL (wall)	7135-1653:0504	SRL (wall)	7135-1653:0504

FIRE ALARM SYSTEMS - APPROVED SYSTEMS COMPONENTS - ATTACHMENT A
LOS ANGELES UNIFIED SCHOOL DISTRICT FACILITIES SERVICES DIVISION

FIRE ALARM SYSTEMS APPROVED COMPONENTS - ATTACHMENT A													
TYPE	EQUIPMENT	NOTIFIER		EDWARDS SYSTEMS TECHNOLOGY		SIMPLEX - GRINNELL		SIEMENS BUILDING TECHNOLOGIES		JOHNSONS CONTROLS		FCI - GAMEWELL	
		Catalog No.	CSFM No.	Catalog No.	CSFM No.	Catalog No.	CSFM No.	Catalog No.	CSFM No.	Catalog No.	CSFM No.	Catalog No.	CSFM No.
		SCRL (ceiling)	7135-1653:0504	EST3 GENESIS SERIES	7125-1657:0219	4SW0-APPLC	7135-0026:0373	ZR-MC-CW (Cell.)	7125-0067:0252	SCRL (ceiling)	7135-1653:0504	SCRL (ceiling)	7135-1653:0504
	Bells - Indoor [System Sensor]	SSM-24-10	7135-1653:0217	EST 4SW0-10AW[R]	7135-1657:0150	MB-G10-24-R	7135-0785:0113	B10-115-R	7135-0067:0137	SSM-24-10	7135-1653:0217	SSM-24-10	7135-1653:0217
	Bells - Outdoor [with WP Box]	SSM-24-10	7135-1653:0217	EST 4SW0-10AW[R] WITH EST CAT#49 BOX	7135-1657:0150	MB-G10-24-R	7135-0785:0113	MBDC-10	7135-0067:0137	SSM-24-10	7135-1653:0217	SSM-24-10	7135-1653:0217
	Water Flow Supervisory Switches	OSY2	7170-1653:0118	OSY2	7170-1653:0118	OSY2	7170-1653:0118	OSY2	7170-1653:0118	OSY2	7170-1653:0118	OSY2	7170-1653:0118
		PIBV2	7170-1653:0118	PIBV2	7170-1653:0118	PIBV2	7170-1653:0118	PIBV2	7170-1653:0118	PIBV2	7170-1653:0118	PIBV2	7170-1653:0118
	Water Flow Switches - Vane Type [Potter Electric]	VSR-F	7170-0028:0001	VSR-F	7170-0028:0001	VSR-F	7170-0028:0001	VSR-F	7170-0028:0001	VSR-F	7170-0028:0001	VSR-F	7170-0028:0001
	Electromagnetic Door Holders Power Supply [Altronix]	AL400ULM - 3 Amps	7315-1305:0100	AL400ULM - 3 Amps	7315-1305:0100	AL400ULM - 3 Amps	7315-1305:0100	AL400ULM - 3 Amps	7315-1305:0100	AL400ULM - 3 Amps	7315-1305:0100	AL400ULM - 3 Amps	7315-1305:0100
		AL600ULM - 6 Amps	7315-1305:0100	AL600ULM - 6 Amps	7315-1305:0100	AL600ULM - 6 Amps	7315-1305:0100	AL600ULM - 6 Amps	7315-1305:0100	AL600ULM - 6 Amps	7315-1305:0100	AL600ULM - 6 Amps	7315-1305:0100
		AL1024ULM - 10 Amps	7315-1305:0100	AL1024ULM - 10 Amps	7315-1305:0100	AL1024ULM - 10 Amps	7315-1305:0100	AL1024ULM - 10 Amps	7315-1305:0100	AL1024ULM - 10 Amps	7315-1305:0100	AL1024ULM - 10 Amps	7315-1305:0100
	Door Holders Power Supply [Reliable Security Group]	DH Series	3660-1003:0100	DH Series	3660-1003:0100	DH-Series by RSG	3660-1003:0100	DH Series	3660-1003:0100	DH Series	3660-1003:0100	DH Series	3660-1003:0100
	Sprinkler Bell Tamper Switches [System Sensor]	PIBV2	7170-1653:0118	PIBV2	7170-1653:0118	PIBV2	7170-1653:0118	PIBV2	7170-1653:0118	PIBV2	7170-1653:0118	PIBV2	7170-1653:0118
	Sprinkler Bell Tamper Switches [System Sensor]	OSY2	7170-1653:0118	OSY2	7170-1653:0118	OSY2	7170-1653:0118	OSY2	7170-1653:0118	OSY2	7170-1653:0118	OSY2	7170-1653:0118
Cables													
	Indoor Network Applications	West Penn D580		West Penn D890		West Penn D820		West Penn D580		West Penn D580		West Penn D990	
	Indoor SLC Applications	West Penn D560		West Penn D890		West Penn D890		West Penn D560		West Penn D560		West Penn D990	
	Indoor Annunciator Application	West Penn D975		West Penn D890		West Penn D875		West Penn D975		West Penn D975		West Penn D990	
	Outdoor Underground Network Application	West Penn AQ224		West Penn AQ225		West Penn AQ224		West Penn AQ224		West Penn AQ224		West Penn AQ224	
	Outdoor Underground SLC Application	West Penn AQ225		West Penn AQ225		West Penn AQ225		West Penn AQ225		West Penn AQ225		West Penn AQ225	
	Outdoor Underground Annunciator Application	West Penn AQ293		West Penn AQ225		West Penn AQ293		West Penn AQ293		West Penn AQ293		West Penn AQ225	

Notes:

[1] Utilize a power supply that meets current specifications.

[2] The District is standardizing on key operated metal pull stations. Utilize approved Notifier units.

FIRE ALARM SYSTEMS - SEQUENCE OF OPERATIONS - ATTACHMENT B

LOS ANGELES UNIFIED SCHOOL DISTRICT FACILITIES SERVICES DIVISION

FIRE ALARM SYSTEM SEQUENCE OF OPERATIONS															
DEVICE/ACTION	Manual Pull Stations	Area Smoke Detectors	Area Heat Detectors	Beam Detectors	Sprinkler Water Flow	Sprinkler Bell Tamper Switch	Power Failure	Kitchen Fire Suppression	Elevator Machine Room Smoke Detector	Elevator Lobby Smoke Detector	Elevator Machine Room Heat Detector	Hoistway Heat Detector	Fire Pump Controller	Notes
Annunciate alarm at FACP and Remore Annunciator	X	X	X	X	X			X	X	X	X	X		
Annunciate supervisory condition at FACP and Remote Annunciator						X							X	
Annunciate trouble at FACP and Remote Annunciator	X	X	X	X	X	X	X	X	X	X	X	X	X	[1]
Activate Audible/Visual Signal Throughout School (Alarm)	X	X	X	X	X			X	X	X	X	X		
Contact Central Station (UDACT)	X	X	X	X	X	X	X	X	X	X	X	X	X	
Mute Local Public Address System	X	X	X	X	X			X	X	X	X	X		
Disable Passing Signals	X	X	X	X	X			X	X	X	X	X		
Shut down Air Handling Equipment		X	X	X	X				X	X	X	X		[2]
Close Smoke/Fire Dampers		X	X	X	X				X	X	X	X		[3]
Close Smoke and Fire Doors		X	X	X	X			X	X	X	X	X		[4]
Turn on general house lighting	X	X	X	X	X			X	X	X	X	X		[5]
Elevator Power Shunt Trip											X	X		
Elevator Recall									X	X				[6]
Sound Sprinkler Bell					X									

NOTES:

[1] Indicate trouble on wiring fault or device as required.

[2] Shut down only air handler equipment in the building or area where alarm condition occurs.

[3] Close only smoke and fire dampers in the building or area where alarm condition occurs.

[4] Close only smoke and fire doors in the building or area where alarm condition occurs.

[5] In Multi-Purpose Rooms, Auditoriums, and similar areas equipped with lighting controls, the geneal house lighting shall come to full bright in the event of a fire alarm condition.

[6] Recall only the elevators in the building where the alarm condition has occurred

SECTION 28 3149

CARBON MONOXIDE DETECTION AND ALARM SYSTEMS

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes: Toxic gas detection system, including a main control panel, sensors, and audible and visual alarm devices that can be linked to a Controller or a Building Automation System (BAS).

B. The system shall include, but not be limited to, the following:

1. Future expandability.
2. Display of toxic gas concentration.
3. Ability to modify alarm set points.
4. Automatic and manual fan start/stop.
5. Display of alarm status.

C. Related Requirements:

1. Division 01: General Requirements.
2. Division 26: Electrical.

1.02 SUBMITTALS

A. Provide in accordance with Division 01 and Section 23 0500: Common Work Results for HVAC.

B. Materials to be furnished including copies of descriptive data for products.

C. Wiring diagram Shop Drawings.

D. Start-Up Reports.

1.03 WARRANTY

A. Manufacturer shall provide a two year material warranty.

1.04 QUALITY ASSURANCE

A. Perform submittals in accordance with Section 23 0500: Common Work Results for HVAC.

PART 2 – PRODUCTS

2.01 DETECTORS

A. Detectors shall be surface mounted or duct mounted, as indicated in the drawings.

B. Transmitter shall be powered by the control panel power supply rated at 24 Vac. Fully addressable gas transmitter shall be capable of communicating digitally with controller through an RS-485 communication port. Gas transmitters shall be installed in a true daisy chain with an end of the line resistor on the last transmitter. The gas transmitter shall incorporate an electrochemical cell for toxic gas monitoring and catalytic bead sensor for combustible gases. Unit sensing cell shall compensate for variations in relative humidity and temperature to maintain high levels of accuracy.

C. When placed in a network configuration the transmitter shall be capable of transmitting gas concentrations through the controller. For local activation of fans, louvers, or other equipment, an on-board DPDT relay 5 A, 30 Vdc or 250 Vac (resistive load) shall be activated at programmable set points and programmable time delays through the control panel. An LCD display shall provide gas concentration readings.

D. Transmitter shall be capable of operating within relative humidity ranges of 5-95 percent and temperature ranges of -4 degrees F to 104 degrees F (-20 degrees C to 40 degrees C).

E. Unit shall be certified to ANSI/UL 61010-1 label and CAN/CSA-C22.2 No. 61010-1-04. Transmitter shall be manufactured in an ISO 9001 production environment.

F. The transmitter shall have a plug-in capability for a gas cartridge with a smart sensor capable of self-testing.

G. For local activation of audible alarms, the transmitter shall have an on-board device able to generate an audible output of 85 dBA at 10 feet.

H. Detector alarm levels are to be activated and the unit is to be installed in accordance with the following parameters:

TOXIC GASES	1st ALARM SET POINT (TLV-TWA)	2nd ALARM SET POINT (TLV-STEL)	3rd ALARM SET POINT	MOUNTING HEIGHT	COVERAGE RADIUS
Carbon Monoxide (CO)	25 PPM	200 PPM	225 PPM	5 feet above finished floor	50 feet

Nitrogen Dioxide (NO_2)	0.72 PPM	2.0 PPM	9.0 PPM	1 foot from ceiling	50 feet

2.02 CONTROLLER

A. The control panel shall be capable of communicating digitally with the networked transmitters and relay modules through three RS-485 communication buses. Each communication bus shall be capable of accepting a combination of up to 32 addressable transmitters, relay modules, or annunciator panels at a maximum distance of 2,000 feet. The power supply shall be of either 24 Vac or 24 Vdc.

B. The controller shall manage four internal DPDT relays at fully programmable alarm levels (and within programmable time delays) and be capable of activating multiple relay modules of eight relays each. The relay rating shall be no lower than 5 A, 30 Vdc or 250 Vac (resistive load).

C. The controller shall include a self-test function that allows for the activation/deactivation of all the programmed outputs by simulating a continuous five percent increase/decrease value until the maximum/minimum value is reached.

D. The controller shall include a real-time clock that enables operation of the outputs for a specific timeframe.

E. The controller shall also include an energy saving feature that allows for output operation on alarms set at the maximum, minimum or average value of a specific group of transmitters. This feature shall also allow for the activation of outputs upon a certain number of a specific group (¾, ½, ⅓ and ¼) of transmitters reaching their alarm levels. A total of 128 groups can be assigned.

F. The controller shall be capable of communicating with an annunciator panel that can serve as a remote display panel in a secondary control room.

G. The controller shall indicate the exact concentration of gas, the gas detected, and the location of the sensor by sweeping through the network and displaying the detected levels at each point on a graphic LCD display.

EDIT NOTE: DELETE PARAGRAPHS 2.02.H AND 2.02.I BELOW IF NOT APPLICABLE FOR SPECIFIC PROJECT; EDIT ACCORDINGLY.

H. BACnet option: The controller shall enable BACnet communication through its optional BACnet output using BACnet/IP protocol over twisted-pair Ethernet or BACnet MS/TP protocol.

I. Data logging option: An optional data logging capability shall provide long-term data logging to determine trends. The controller must collect data automatically and shall store it on a digital Flash media card.

2.03 ACCESSORIES

A. Strobe and Horn combo unit shall be capable of operating within relative humidity ranges of 0 to 100 percent and temperature ranges of -30 degrees F to 150 degrees F (-35 degrees C to 66 degrees C). Rating of horn shall be no less than 72dB at 10 feet. Intensity of light shall be no less than 40W and shall flash at a frequency of 1 per second. Provide Gentex GEH24-R or GEC3-24WR, Edwards Technology EST 757 Series, Simplex-Grinnell 4906-9127 or GEC3-24WR, or equal.

B. Power Transformer type T100VA, T200VA, or T300VA or Class 2 devices type T100VAC2, T200VAC2 or T300VAC2. Transformer shall have an input voltage of 120 V AC and an output voltage of 24 V AC with a VA range of 50-300. Operating frequency shall be 60 Hz. Unit will provide insulation systems up to 130 degrees C (50-1300 VA). Unit to operate at sound levels of less than 40 dB. Transformers shall be of fused type.

C. Relay Modules shall be powered by the control panel's power output or by power transformer rated at 24 Volts AC or DC. Module shall be capable of communicating digitally with the controller through an RS-485 communication port. Relay module shall have eight relays rated at no lower than 5A, 30 Vdc or 250 Vac (resistive load).

D. Detector Guards: The grid shall be made of a 9-gage steel wire or larger. The guard shall be designed to allow calibration without removing the guards.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Install hazardous gas monitoring equipment including sensors, audible alarms, control panels as shown on Contract Drawings, and as recommended by manufacturer of equipment, and as required by authorities having jurisdiction.

B. Install conduit and wiring from sensors to control panel and to the fan starters/HVAC control panel as recommended by manufacturer of equipment.

3.02 SEQUENCE OF OPERATION

A. If any NO_2 sensor detects 0.72 PPM gas, the exhaust fans operate and motorized dampers open. Low Alarm indicators light for point in alarm. If hazardous gas not cleared after 30 minutes or 2 PPM is reached, High Alarm indicator lights on the main panel and remote strobe and horn activate, and Audible Alarm sounds and operates the exhaust fans.

B. If any of the CO sensors detects 25 PPM gas, all fans operate and damper opens. Low Alarm LED lights for point in alarm. If any sensor detects 200 PPM gas, the Audible Alarm sounds and High Alarm indicator lights on the main panel and remote strobe and horn activate.

3.03 START-UP TESTING

A. Test and calibrate equipment to demonstrate operation of functions described above under sequence of operation by manufactures certified service technician. Submit report of test to OAR.

B. Provide two new testing kits (including gas bottles) to Owner for testing and calibration.

3.04 TRAINING

A. Provide four hours training on programming and overview of system.

B. Provide eight hours of calibration training for all gas detection sensors. Supply all required calibration gases and equipments.

3.05 CLEANUP

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

3.06 PROTECTION

A. Protect the Work of this Section until Substantial Completion.

END OF SECTION

SECTION 31 1000

SITE CLEARING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Removal of vegetation, grass, grass roots, shrubs, tree stumps, trees, upturned stumps, weed growth, tree roots, brush, masonry, concrete, rubbish, debris and other materials.

2. Removal of concrete and bituminous surfaces.

3. Removal of existing fences and gates.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 31 2200 - Grading.

3. Section 31 2313 - Excavation and Fill.

4. Section 31 2316 - Excavation and Fill for Pavement.

5. Section 31 2319 - Excavation and Fill for Structures.

6. Section 31 2323 - Excavation and Fill for Utilities.

7. Section 31 2326 - Base Course.

8. Section 32 3113 - Chain Link Fences and Gates.

9. Section 32 9000 - Planting.

1.02 SUBMITTALS

A. Shop Drawings: Submit site plan indicating extent of site clearing.

1.03 QUALITY ASSURANCE

A. Comply with Standard Specifications for Public Works Construction, current edition, as a minimum requirement.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 TREE AND STUMP REMOVAL

A. Remove trees and stumps indicated or required to be removed. Remove trees, together with bulk of roots, to a minimum depth of 4 feet below required grade, and within a radius of approximately 7 feet beyond perimeter of trunk at grade.

B. Fill and compact excavation from tree and stump removal. Fill in 6 inch layers, each compacted to 90 percent of maximum density in accordance with ASTM D1557.

1. Back filling shall not commence until the excavation is inspected and tested.

3.02 CONCRETE AND BITUMINOUS SURFACING REMOVAL

A. Break up and completely remove existing concrete surfacing, curbs, gutters, walks and bituminous surfacing to indicated limits. Cutting shall be performed to a neat and even line with proper tools or a concrete cutting saw. Minimum depth of cut shall be 1 1/2-inch, unless otherwise indicated. Remove concrete broken beyond the indicated limits to the nearest joint or score line and replace with new concrete to match existing.

3.03 FENCING

A. Existing fences scheduled to remain may be removed to facilitate the Work, provided they are installed to their original condition in accordance with requirements of Section 32 3113 - Chain Link Fences and Gates.

B. Fencing indicated to be removed and not reinstalled shall be completely removed, including footings. Fill and compact excavations.

C. Install chain link fencing indicated to be relocated or reset in accordance with applicable requirements specified under Section 32 3113 - Chain Link Fences and Gates.

3.04 CLEANUP

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 31 2200

GRADING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. General exterior grading, cutting and filling, including grading for building area, paving, planting areas, banks and hillsides.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 31 1000 - Site Clearing.
3. Section 31 2313 - Excavation and Fill.
4. Section 31 2316 - Excavation and Fill for Pavement.
5. Section 31 2319 - Excavation and Fill for Structures.
6. Section 31 2323 - Excavation and Fill for Utilities.
7. Section 31 2326 - Base Course.
8. Section 32 9000 - Planting.

1.02 PROJECT REQUIREMENTS

A. General:

1. Fees: Pay as required by authorities having jurisdiction over the area.
2. Bonds: Post as required by authorities having jurisdiction over the area.
3. Haul Routes and Restrictions: Comply with requirements of authorities having jurisdiction over the area.
4. Before grading, contact Underground Service Alert of Southern California (USASC) for information on public buried utilities and pipelines. Retain the services of an underground utility locator for on-site utilities.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Materials shall conform to requirements specified in this and related sections.

PART 3 - EXECUTION

3.01 PREPARATION

A. Protect and maintain installed stakes until their removal is required for the Work. Provide replacement grade or location stakes lost or disturbed.

B. Install grade stakes and compare to indicated grades. If discrepancies are found between existing grades and grades indicated on Drawings, do not proceed until discrepancies are resolved.

3.02 ROUGH AND FINE GRADING

A. Rough grade area sufficiently high to require cutting by fine grading:

1. Grade area for bituminous surfacing and other paving to the indicated grades, equal to the section of the indicated base and pavement.

2. Slope banks to required finish grades as cut progresses or leave cuts full and finish grade by mechanical equipment to provide grades and soil densities indicated on the Drawings.

3. Rough grade, fill and compact banks beyond indicated finish grades. Finish grade banks and slopes to indicated grades and specified soil densities.

4. Grade Only Areas: In areas not indicated to receive pavement, rough grade to approximate finish grades and then scarify, moisten and roll to obtain required density and indicated finish grades.

5. Tolerances: Finish grades shall be within a tolerance of 0.05 inch per foot above or below grades indicated. Provide an average grade as indicated.

B. Base or Subgrade:

1. After subgrade has been constructed to approximate required grades, scarify to a depth of at least 6 inches:

a. After scarifying, process loosened material to a finely divided condition and adjust moisture content to optimum condition by addition of water, addition and blending of dry suitable material, or by drying of existing material.

b. Subgrade material shall be compacted by tamping, sheepsfoot rollers or pneumatic tire rollers. Required relative compaction shall be [**90**] percent minimum for the top 6 inches below subgrade.

c. Install base course in accordance with Section 31 2326 - Base Course.

2. Tolerance of completed grades of base or subgrade shall not vary more than 0.03 inch per foot from grades indicated. Provide an average grade as indicated.

3.03 SHORING

A. Provide shoring as necessary to properly and safely support earth sides of excavations, and existing curbs, sidewalks, gutter, drives and stairs, against movement and collapse.

B. Design and Calculations: Provide in accordance with requirement of CalOHSA.

C. Remove shoring upon completion of the Work of this section or when no longer needed unless required otherwise by authorities having jurisdiction.

3.04 EXCESS MATERIAL DISPOSAL

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

3.05 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 31 2313

EXCAVATION AND FILL

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Excavating, filling, backfilling, and compacting for Project site pavement, planting areas, buildings, and other structures.

2. Trenches for utility lines such as water, gas, irrigation, storm drain and sewer lines, concrete-encased conduits, manholes, vaults, valve boxes, catch basins, underground tanks, thrust blocks, yard boxes, pull boxes, and other utility appurtenances.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 01 4524 - Environmental Import/Export Materials Testing.
3. Section 31 1000 - Site Clearing.
4. Section 31 2200 - Grading.
5. Section 31 2326 - Base Course.
6. Section 32 0117 - Pavement Repair.
7. Section 32 1313 - Site Concrete Work.
8. Section 32 3113 - Chain Link Fences and Gates.
9. Section 32 9000 - Planting.
10. Section 33 1100 - Site Water Distribution Utilities.
11. Section 33 3000 - Site Sanitary Sewer Utilities.
12. Section 33 4000 - Storm Drainage Utilities.
13. Division 22 - Plumbing.
14. Division 26 - Electrical.

1.02 PROJECT REQUIREMENTS

A. Import and Export of Earth Materials:

1. Fees: Pay as required by authorities having jurisdiction over the area.

2. Bonds: Post as required by authorities having jurisdiction over the area.

3. Haul Routes and Restrictions: Comply with requirements of authorities having jurisdiction over the area.

1.03 SUBMITTALS

A. Shoring calculations as required in Article 3.03 of this Section.

1.04 QUALITY ASSURANCE

A. Comply with the Standard Specifications for Public Works Construction, current edition, except as modified herein.

B. Sampling, testing, and certification of imported and exported soils shall be performed in accordance with Section 01 4524, Environmental Import/Export Materials Testing.

1.05 TESTING

A. OWNER will retain a Geotechnical Engineer as an OWNER Consultant who will provide observations, tests, inspections and approvals identified in the Contract Documents as being responsibility of OWNER.

B. Imported Soils: The Geotechnical Engineer will obtain initial product Sample for testing in accordance Article 3.05 of this Section.

1.06 PROJECT CONDITIONS

A. Information on Drawings or in soil investigation report does not constitute a guarantee of accuracy or uniformity of soil conditions over the Project site.

PART 2 - PRODUCTS

2.01 FILL AND BACKFILL MATERIALS

A. Fill and backfill material shall be a granular material previously removed from excavation or imported fill material, free of clods and stones larger than 3 inches, (2½ inches for utility trenches) foreign materials, vegetable growths, sod, expansive soils, rubbish and debris. Material shall conform to these specified requirements and related sections.

B. Fill material exhibiting a wide variation in consistency and moisture content shall be blended and aerated to stabilize and upgrade the material.

C. Bedding material from trench bottom to one foot above the pipe:

1. Sand, gravel, crushed aggregate or native free-draining granular material providing a sand equivalent of at least 30 or a coefficient of permeability greater than 1.4 inches per hour.

2. Sand complying with the Specifications for cement concrete aggregates.

D. Brick rubble and broken concrete originating from the Project site shall be legally disposed of off the Project site No such material shall be imported from outside the Project site.

E. Permeable Backfill:

1. Provide permeable backfill material behind retaining structures consisting of gravel, crushed gravel, crushed rock, natural sands, manufactured sand, or combinations of these materials conforming to the following gradations:

Sieve Size:	Percentage Passing:
3/4 inch (19mm)	100
3/8 inch (10mm)	80 to 100
No. 100	0 to 8
No. 200	0 to 3

2. Those portions of fill material passing a No. 4 sieve shall provide a sand equivalent of at least 60.

3. Provided backing for weep-holes shall consist of two cubic feet of aggregate in burlap sacks, securely tied. Aggregate shall conform to requirements for No. 3 concrete aggregate as specified in subsection 200-1.4 of the Standard Specifications for Public Works Construction.

4. Permeable Backfill Alternate Materials: Instead of the materials specified for retaining structures backfill, a drainage matting system Miradrain by Mirafi, Inc., American Wick Drain, JDR Enterprises, or equal, may be provided if reviewed and approved by the ARCHITECT.

F. Cement-sand slurry shall be provided with one sack of cement per cubic yard of the mixture.

2.02 BASE MATERIALS

A. Concrete Slabs on Grade: Provide "Crushed Aggregate Base" as specified in Standard Specifications for Public Works Construction, Section 200 - Rock Materials, with 3/4 inch maximum size aggregates. Provide 3 inch thick base, unless noted otherwise.

B. Bituminous Surfacing: Provide as indicated on Drawings and specified in Section 31 2326 Base Course.

PART 3 - EXECUTION

3.01 GENERAL

A. Before initiating intrusive activities, contact Underground Service Alert of Southern California (USA or Dig Alert) to obtain a Dig Alert ticket for location information on buried public and USA member utilities and pipelines at least 48-hours prior to beginning work. A copy of the Dig Alert ticket shall be forwarded to the OWNER. For on-site utilities, retain a state-licensed third party underground utility locating service.

B. Where the Work includes a building extension or addition on an occupied Project site, perform Work in such a manner, and at such times, as not to disrupt performance of existing utility services to existing Project site facilities. Where an interruption is necessary, obtain review from the OAR before proceeding.

C. Remove concrete or bituminous pavement to straight lines by saw cutting.

3.02 PROTECTION

A. Protect and guard excavations against danger to life, limb, and property as required by, but not limited to, OSHA regulations.

B. Protect existing improvements including landscaping against damage. Repair or replace damaged items.

C. Protect existing utility services and distribution systems from damage or displacement.

D. Remove conduits or pipes not in service, exposed during Work, unless a minimum cover of two feet is provided. Remove concrete, clay or other non-metallic pipe over 8 inches in diameter, unless otherwise indicated.

E. Shore, crib, or lag excavations and earthen banks as necessary to prevent cave in, erosion or gullying of sides.

F. Provide excavations free from standing water by pumping, draining, or providing protection against water intrusion. If soil becomes soft, soggy, or saturated, excavate to firm undisturbed earth and fill as required. Slope adjacent grades away from excavations to minimize entry of water.

3.03 SHORING

A. Provide shoring as necessary to properly and safely support earth sides of excavations, and existing curbs, sidewalks, gutter, drives and stairs, against movement and collapse.

B. Design and Calculations: Provide in accordance with requirement of governing Cal-OSHA requirements.

C. Remove shoring upon completion of the Work of this Section or when no longer needed unless required otherwise by authorities having jurisdiction.

3.04 EXCAVATION

A. Unclassified Excavations: Comply with the Standard Specifications for Public Works Construction, Section 300: "Earthwork", except as modified herein.

B. Form sides of footings, pads, grade beams, and slab foundations, unless otherwise indicated. Provide excavations of sufficient size to permit installation and removal of forms and other required Work.

C. Machine-drill excavation for round footings to size and depth indicated. Provide a collar or casing, or other adequate protection, to exclude dirt and debris. Protect excavations with plank covers until concrete is placed.

D. Provide excavation bottoms level and free from loose material. Excavate to indicated or required elevations of undisturbed earth.

E. Barricade trenches, ditches, pits, sumps, and similar Work outside the barricaded working area with chain link fence as specified in Section 01 5000 - Construction Facilities and Temporary Controls, and in accord with Cal-OSHA standards and requirements.

F. Trenches over five feet in depth shall comply with the Construction Safety Orders of the California Division of Industrial Safety.

G. Where indicated or required to excavate in lawn areas, protect adjoining lawn areas outside of the Work area. Replace or install removed sod upon completion of backfill by installing sod level with adjacent lawns. If installation of removed sod fails, furnish sod and install to match existing lawns.

H. For Structures:

1. Calculate excavation quantities based on elevations or depths indicated on Drawings.

2. Provide 2,000 psi concrete for backfill of over-excavated areas to indicated or required elevations.

3. Special preparation of bottom of excavated planes areas: Excavate areas shown on Drawings as bottom of excavated planes (B.E.P.), by excavating and filling to indicated grades and elevations.

I. For Utilities:

1. Excavate trenches to required depth for utility lines, such as pipes, conduits, and tanks, with minimum allowance of 6 inches at the bottom and 6 inches at the sides for bedding or concrete encasement as indicated on Drawings. Grade bottom of trenches to a uniform smooth surface. Remove loose soil from the excavation before placing sand bedding or concrete encasement.

2. Do not install piping lengthwise under concrete walks without review by the ARCHITECT.

3. Do not excavate trenches parallel to footings closer than 18 inches from the face of the footing or below a plane having a downward slope of two horizontal to one vertical, from a line 9 inches above bottom of footings.

a. Unless otherwise indicated on Drawings, depth of excavations outside buildings shall provide for a minimum coverage above top of piping, tank or conduit measured from the lowest adjoining finished grade, as follows:

Steel Pipe	24 inches below finish grade
Copper Water Tube	18 inches below finish grade
Cast-Iron, Pressure Pipe	36 inches below finished grade
Plastic Pipe (other than waste)	30 inches below finished grade
Tanks or other structure	36 inches below finished grade
Soil, sewer and storm drain	minimum 18 inches below finished grade, and as required for proper pitch and traffic load. Install polypropylene sewer pipe with at least 24 inches of coverage.

Irrigation Pipe:	Non-pressure pipe - 12 inches, pressure pipe - 24 inches.

b. Trench width shall provide space for fitting and joining. Excavate for piping bells and fittings, bell and spigot pipe and other fittings.

4. Where portions of existing structures, walks, paving, or other improvements are removed or cut for piping or conduit installation, replace the material with equal quality, finished to match adjoining existing improvements. Repair pavement as specified in Section 32 0117 - Pavement Repair.

5. Provide a minimum clear dimension of 2 inches from sides of wall excavation to outer surfaces of buried pipes or conduits placed in the same trench or outside surfaces of containers and tanks.

3.05 IMPORT/EXPORT OF MATERIALS

A. Unclassified Fill and Compaction: Comply with the Standard Specifications for Public Works Construction, Section 300 - Earthwork, except as modified herein. Install and compact fill in layers not to exceed 6 inches in thickness.

B. Provide fill materials as specified in Part 2- Products. If excavated materials from the Project site are not of required quality or sufficient quantity, import additional materials as necessary.

C. In addition to the requirements of this Section, import and/or exported materials shall comply with the requirements of Section 01 4524, Environmental Import/Export Materials Testing.

D. Imported fill materials shall be sampled by the Geotechnical Engineer, for compliance with the requirements of Part 2 of this Section.

E. The Geotechnical Engineer, will submit the samples to an independent DSA approved testing laboratory for testing.

F. Initial sampling and testing shall be performed before importing material to the Project site. Identify the location of the source site in addition to the address, name of the person and entity responsible for the source site. The Geotechnical Engineer, will obtain both the initial and additional samples from the identified site and submit samples for required testing.

G. The Geotechnical Engineer will perform additional sampling during import operations. If the total quantity of import is determined to be greater than 1000 cubic yards of material, one sample shall be obtained and submitted for testing for each 250 cubic yards of imported material. If the total quantity of import is determined to be less than 1000 yards, one sample shall be obtained and submitted for testing for each 100 cubic yards of imported material.

H. The independent approved testing laboratory will perform the required tests and report results of tests noting if the tested material passed or failed such tests and will furnish copies to the Project Inspector, ARCHITECT, OAR, DSA, CONTRACTOR, and others as required. Report shall state tests were conducted under the responsible charge of a licensed State of California professional engineer and the material was tested in accordance with applicable provisions of the Contract Documents, California

Building Code, and the DSA. Upon completion of the Work of this Section, the independent testing laboratory and Geotechnical Engineer will submit a verified report to the DSA as required by the CBC.

I. Bills of lading or equivalent documentation will be submitted to the Project Inspector on a daily basis.

J. Upon completion of import operations, provide the OAR a certification statement attesting that imported material has been obtained from the identified source site.

3.06 INSTALLATION OF MATERIALS

A. Pavement: Fill or backfill materials shall be installed in horizontal layers of 6 inches, unless otherwise required. Each layer shall be evenly placed and moistened or aerated as necessary. Unless otherwise reviewed by the Geotechnical Engineer, each layer of fill material shall cover the length and width of the area to be filled before the next layer of material is installed. Top surface of each layer shall be installed to an approximate level with a crown or crossfall of at least 1 in 50, but not more than 1 in 20. Provide adequate drainage at all times during installation of the Work of this Section.

B. Structures:

1. After concrete has been placed, forms removed, and concrete Work inspected, backfill excavations with earth to indicated or required grades. Backfill simultaneously on each side of walls or grade beams. Remove rubbish, debris and other waste materials from excavations before placing backfill.

2. Before placing backfill, adequately cure concrete and provide bracing, if required to stabilize structure. Protect waterproofing or damp-proofing against damage during backfilling operations, with required protection board. Remove bracing as backfill operation progresses.

3. Do not furnish or install expansive soils for retaining wall backfill.

4. Rigidly control the amount of water to be installed to provide optimum moisture content for type of fill material furnished. Do not over-saturate or compact by flooding or jetting.

5. Install wall backfill before installing railings and fences on walls.

6. Install weep hole drainage at the backside of walls so the backing completely covers the weep holes, is horizontally centered and extends at least 12 inches above the bottom of the weep opening. Provide an 8-inch square section of 1/4 inch galvanized or aluminum screen, with a minimum wire diameter of 0.03 inch, and install at the backside of each weep hole before installing the backfill material.

7. Where a reviewed drainage matting system is provided instead of permeable backfill for retaining structures, install in accordance with the manufacturer recommendations.

C. Utilities:

1. Do not install backfill until the Work of this Section has been inspected and tested. Do not furnish or install materials excavated from the Project site containing materials not permitted for backfill.

2. Backfill electrical or other excavated utility trenches located outside of barricaded installation areas within 24 hours after inspection by the IOR.

3. Install backfill in layers not exceeding 4 inches in thickness, except cement-sand slurry.

4. If materials excavated from the Project site are not permitted for trench backfill in paved areas, backfill trenches with a cement-sand slurry mix. Install backfill to an elevation of the existing undisturbed grades plus one inch.

3.07 COMPACTING

A. Each layer of fill material shall be compacted by tamping, sheepsfoot rollers, or pneumatic-tired rollers to provide specified relative compaction. At inaccessible locations, provide specified compaction by manually held, operated and directed compaction equipment.

B. Install and compact sand bedding to provide a uniform bearing under the full length of piping and conduits.

C. Unless otherwise indicated, compact each layer of fill material to a relative compaction of at least ninety percent.

D. When fill materials, or a combination of fill materials, are encountered or provided which develop densely packed surfaces as a result of installation or compacting operations, scarify each layer of compacted fill before installing the next succeeding layer.

3.08 INSPECTION AND TESTING

A. The Geotechnical Engineer will inspect and test excavations, sample material quality for testing as set required in Part 2 and observe installation and compaction of fill materials.

B. The Geotechnical Engineer will sample imported fill materials from their designated source and submit samples to the independent approved testing laboratory before delivery to the Project site.

C. Installation of backfill shall be observed by the Geotechnical Engineer.

D. The Geotechnical Engineer will inspect and test excavation Work before the installation of fill and other materials.

E. Compaction: Test compaction in accordance with ASTM D1557, Method C.

F. The Project Inspector will inspect foundation excavations when completed and ready for forms, after forms are in place, and before first placement of concrete.

3.09 PROTECTION

A. Protect the Work of this Section until Substantial Completion.

3.10 CLEANING

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 31 2316

EXCAVATION AND FILL FOR PAVING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Excavating, backfill, and compacting for paved areas.
2. Installation of fill materials.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 01 4524 - Environmental Import/Export Materials Testing.
3. Section 31 1000 - Site Clearing.
4. Section 31 2200 - Grading.
5. Section 31 2323 - Excavation and Fill for Utilities.
6. Section 32 2326 - Base Course.
7. Section 32 0117 - Pavement Repair.
8. Section 32 1216 - Asphalt Paving.
9. Section 32 1313 - Site Concrete Work.

1.02 PROJECT REQUIREMENTS

A. Import and Export of Earth Materials:

1. Fees: Pay as required by authorities having jurisdiction over the area.
2. Bonds: Post as required by authorities having jurisdiction over the area.
3. Haul Routes and Restrictions: Comply with requirements of authorities having jurisdiction over the area.

1.03 QUALITY ASSURANCE

A. Comply with Standard Specifications for Public Works Construction, current edition, except as modified herein.

B. Sampling, testing, and certification of imported and/or exported soils shall be performed in accordance with Section 01 4524 - Environmental Import/Export Materials Testing.

1.04 TESTING

A. OWNER will retain a Geotechnical Engineer as an OWNER Consultant who will provide observations, tests, inspections and approvals identified in the Contract Documents as being responsibility of OWNER.

B. Imported Soils: The Geotechnical Engineer will obtain initial product Sample for testing in accordance Article 3.05 of this Section.

1.05 PROJECT CONDITIONS

A. Information on Drawings or in soils report does not constitute a guarantee of accuracy or uniformity of soil conditions over the Project site.

PART 2 - PRODUCTS

2.01 BASE MATERIALS

A. Concrete Slabs On Grade: Provide "Crushed Aggregate Base "as specified in the Standard Specifications for Public Works Construction, Section 200: "Rock Materials," with ¾ inch maximum size aggregates. Provide 3-inch thick base, unless noted otherwise.

B. Bituminous Surfacing: As indicated on Drawings and specified in Section 31 2326 - Base Course.

2.02 FILL AND BACKFILL MATERIALS

A. Fill and backfill materials shall be previously excavated materials or imported fill material, free of clods and stones larger than 3-inch, foreign materials, vegetable growths, sod, expansive soils, rubbish and debris. Material shall conform to these specified requirements and related sections.

B. Fill material exhibiting a wide variation in consistency and moisture content shall be blended or aerated to stabilize and upgrade the material.

C. Imported Fill Material:

1. Provide suitable materials obtained from Project site excavations for earthwork and fill materials. If excavated materials are not of suitable quality or sufficient quantity, import additional materials as necessary.

2. Imported fill shall be a granular material with sufficient binder to form a firm and stable unyielding subgrade and shall not have more than 60 percent of fines passing 200 mesh sieve. Material shall have a coefficient of expansion of not more than 2 percent from air dry to optimum moisture content and not

more than 6 percent from air dry to saturation. Imported material shall be clean and free of rubbish, debris, and toxic or hazardous contaminants. Adobe or clay soils are not permitted.

D. Brick rubble and broken concrete originating from the Project site shall be legally disposed of off the Project site. No such materials shall be imported from outside the Project site.

E. Permeable Backfill:

1. Provide permeable backfill material behind retaining structures consisting of gravel, crushed gravel, crushed rock, natural sands, manufactured sand, or combinations of these materials conforming to the following gradations:

Sieve Size:	Percentage Passing:
3/4 inch (19mm)	100
3/8 inch (10mm)	80 to 100
No. 100	0 to 8
No. 200	0 to 3

2. Those portions of fill material passing a No. 4 sieve shall provide a sand equivalent of at least 60.

3. Provided backing for weep holes shall consist of two cubic feet of aggregate in burlap sacks, securely tied. Aggregate shall conform to requirements for No. 3 concrete aggregate as specified in subsection 200-1.4 of the Standard Specifications for Public Works Construction.

4. Permeable Backfill Alternate Materials: Instead of the materials specified for retaining structures backfill, a drainage matting system, Miradrain by Mirafi, Inc., or equal, may be provided if reviewed and approved by the ARCHITECT.

PART 3 - EXECUTION

3.01 GENERAL

A. Before initiating intrusive activities, contact Underground Service Alert of Southern California (USA or Dig Alert) to obtain a Dig Alert ticket for location information on buried public and USA member utilities and pipelines at least 48-hours prior to beginning work. A copy of the Dig Alert ticket shall be forwarded to the OWNER. For on-site utilities, retain a state-licensed third party underground utility locating service.

B. Clear the Project site as indicated in Section 31 1000 - Site Clearing.

3.02 PROTECTION

A. Protect and guard excavations against danger to life, limb, and property as required by, but not limited to, Cal-OSHA regulations.

B. Protect adjacent existing improvements including landscaping against damage.

3.03 EXISTING UTILITY LINES

A. Protect existing utility lines from damage or displacement.

B. Remove conduits or pipes not in service, exposed during Work, unless a minimum cover of 2 feet is provided. Remove concrete, clay or other non-metallic pipe over 8 inches in diameter, unless otherwise indicated.

3.04 EXCAVATION

A. Unclassified Excavations: Comply with the Standard Specifications for Public Works Construction, Section 300: "Earthwork," except as modified herein.

3.05 FILL

A. Unclassified Fill and Compaction: Comply with the Standard Specifications for Public Works Construction, Section 300: "Earthwork," except as modified herein.

B. Provide fill materials as specified in Part 2 - Products. If excavated materials from the Project site are not of required quality or sufficient quantity, import additional materials as necessary.

C. In addition to the requirements of this Section, import and/or exported materials shall comply with the requirements of Section 01 4524 - Environmental Import/Export Materials Testing.

D. Imported fill materials will be sampled by the Geotechnical Engineer for compliance with the requirements of Part 2 of this Section.

E. The Geotechnical Engineer will submit samples to a DSA approved independent approved testing laboratory for testing.

F. Initial sampling will be performed by the Geotechnical Engineer before importing material to the Project site. Identify the location of the source site in addition to the address, name of the person and/or entity responsible for the source site. The Geotechnical Engineer will obtain both the initial and additional samples from the identified site and will submit samples to the approved independent testing laboratory for testing.

G. The Geotechnical Engineer will perform additional sampling during import operations. If the total quantity of import is determined to be greater than 1,000 cubic yards of material, one sample shall be obtained and submitted for testing for each 250 cubic yards of imported material. If the total quantity of import is determined to be less than 1,000 yards, one sample shall be obtained and submitted for testing for each 100 cubic yards of imported material.

H. The independent approved testing laboratory will perform the required tests and report results of tests noting if the tested material passed or failed such tests and will furnish copies to the Project Inspector, ARCHITECT, OAR, DSA, CONTRACTOR, and others as required. Report shall state tests were conducted under the responsible charge of a licensed State of California professional engineer and the material was

tested in accordance with applicable provisions of the Contract Documents, CBC, and the DSA. Upon completion of the Work of this Section, the independent testing laboratory and Geotechnical Engineer shall submit a verified report to the DSA as required by CBC.

I. Bills of lading or equivalent documentation will be submitted to the Project Inspector on a daily basis.

J. Upon completion of import operations, provide the OAR a certification statement attesting that imported material has been obtained from the identified source site.

3.06 INSTALLATION OF MATERIALS

A. Fill or backfill materials shall be installed in horizontal layers of 6 inches, unless otherwise required. Each layer shall be evenly placed and moistened or aerated as necessary. Unless otherwise reviewed by the Geotechnical Engineer, each layer of fill material shall cover the length and width of the area to be filled before the next layer of material is installed. Top surface of each layer shall be installed to an approximate level with a crown or crossfall of at least 1 in 50, but no more than 1 in 20. Provide adequate drainage at all times during construction of the Work of this Section.

3.07 COMPACTING

A. Each layer of fill material shall be compacted by tamping, sheepsfoot rollers, or pneumatic-tired rollers to provide specified relative compaction. At inaccessible locations, provide specified compaction by manually held, operated and directed compaction equipment.

B. Unless otherwise indicated, compact each layer of earth fill to a relative compaction of at least 95 percent.

C. When fill materials, or a combination of fill materials, are encountered or provided which develop densely packed surfaces as a result of installation or compacting operations, scarify each compacted layer before installing the next succeeding layer.

3.08 INSPECTION AND TESTING

A. The Geotechnical Engineer will inspect and test excavations, sample material quality as required in Part 2, and observe installation and compaction of fill materials.

B. The Geotechnical Engineer will sample imported fill materials from their designated source before delivery to the Project site.

C. Installation of backfill will be observed by the Geotechnical Engineer.

D. The Geotechnical Engineer will inspect and test excavation Work before the installation of fill and/or other materials.

E. Compaction: Test compaction in accordance with ASTM D1557, Method C.

3.09 PROTECTION

A. Protect the Work of this Section until Substantial Completion.

3.10 CLEANING

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 31 2319

EXCAVATION AND FILL FOR STRUCTURES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Excavating, backfilling, and compacting for buildings and structures.

2. Fill materials.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 01 4524 - Environmental Import/Export Materials Testing.

3. Section 31 1000 - Site Clearing.

4. Section 31 2200 - Grading.

5. Section 31 2616 - Excavation and Fill for Paving.

6. Section 31 2323 - Excavation and Fill for Utilities.

1.02 PROJECT REQUIREMENTS

A. Import and Export of Earth Materials:

1. Fees: Pay as required by authorities having jurisdiction over the area.

2. Bonds: Post as required by authorities having jurisdiction over the area.

3. Haul Routes and Restrictions: Comply with requirements of authorities having jurisdiction over the area.

1.03 SUBMITTALS

A. Imported Soils: A Geotechnical Engineer, retained by the Owner as an Owner Consultant, will obtain initial product Sample for testing in accordance with the terms of Article 3.05 of this Section.

B. Shoring calculations as required in Article 3.03 of this Section.

1.04 QUALITY ASSURANCE

A. Comply with the following as a minimum requirement: Standard Specifications for Public Works Construction, current edition, except as modified herein.

B. Sampling, testing, and certification of imported and/or exported soils shall be performed in accordance with Section 01 4524 - Environmental Import/Export Materials Testing.

1.05 TESTING

A. OWNER will retain a Geotechnical Engineer as an OWNER Consultant who will provide observations, tests, inspections and approvals identified in the Contract Documents as being responsibility of OWNER.

B. Imported Soils: The Geotechnical Engineer will obtain initial product Sample for testing in accordance Article 3.05 of this Section.

1.06 PROJECT CONDITIONS

A. Information on Drawings or in soils report does not constitute a guarantee of accuracy or uniformity of soil conditions over the Project site.

PART 2 - PRODUCTS

2.01 FILL AND BACKFILL MATERIALS

A. Fill and backfill materials shall be a granular material previously removed from excavation, or imported fill material, free of large clods and stones larger than 3 inches, foreign materials, vegetable growths, sod, expansive soils, rubbish and debris. Material shall conform to these specified requirements and related sections.

B. Fill material exhibiting a wide variation in consistency and or moisture content shall be blended and/or aerated to stabilize and upgrade the material.

C. Imported Fill Material:

1. Provide suitable materials obtained from Project site excavations for earthwork and fill materials. If excavated materials are not of suitable quality or sufficient quantity, import additional materials as necessary.

2. Imported fill shall be a granular material with sufficient binder to form a firm and stable unyielding subgrade and shall not have more than 60 percent of fines passing 200 mesh sieve. Material shall have a coefficient of expansion of not more than two percent from air dry to optimum moisture content and not more than six percent from air dry to saturation. Imported material shall be clean and free of rubbish, debris and toxic or hazardous contaminants. Adobe or clay soils are not permitted.

D. Brick rubble and broken concrete originating from the Project site shall be legally disposed of off the Project site No such materials shall be imported from outside the Project site.

E. Permeable Backfill:

1. Provide permeable backfill material behind retaining structures consisting of gravel, crushed gravel, crushed rock, natural sands, manufactured sand, or combinations of these materials conforming to the following gradations:

Sieve Size	Percentage Passing
3/4 inch	100
3/8 inch	80 to 100
No. 100	0 to 8
No. 200	0 to 3

2. Those portions of fill material passing a No. 4 sieve shall provide a sand equivalent of at least 60.

3. Provided backing for weep-holes shall consist of two cubic feet of aggregate in burlap sacks, securely tied. Aggregate shall conform to requirements for No. 3 concrete aggregate as specified in subsection 200-1.4 of the Standard Specifications for Public Works Construction.

4. Permeable Backfill Alternate Materials: Instead of the materials specified for retaining structures backfill, a drainage matting system, Miradrain by Mirafi, Inc., or equal, may be provided if reviewed and approved by the ARCHITECT.

PART 3 - EXECUTION

3.01 GENERAL

A. Before initiating intrusive activities, contact Underground Service Alert of Southern California (USA or Dig Alert) to obtain a Dig Alert ticket for location information on buried public and USA member utilities and pipelines at least 48-hours prior to beginning work. A copy of the Dig Alert ticket shall be forwarded to the OWNER. For on-site utilities, retain a state-licensed third party underground utility locating service.

B. Clear the Project site as indicated in Section 31 1000 - Site Clearing.

3.02 PROTECTION

A. Protect and guard excavations against danger to life, limb, and property as required by, but not limited to, Cal-OSHA regulations.

B. Protect adjacent existing improvements including landscaping against damage.

C. Shore, crib, or lag excavations and earthen banks as necessary to prevent caving-in, erosion or gullying of sides.

D. Divert or de-water excavations until concrete is placed, forms are removed, and backfilling is complete.

3.03 SHORING

A. Provide shoring as necessary to properly and safely support earth sides of excavations, curbs, sidewalks, gutter, drives and stairs, against movement and collapse.

B. Design and Calculations: Provide in accordance with requirement of Cal-OHSA. Remove shoring upon completion of Work, or when no longer needed.

3.04 EXCAVATION

A. Form sides of footings, pads, grade beams, and slab foundations, unless otherwise indicated. Provide excavations of sufficient size to permit installation and removal of forms and other Work as required.

B. Machine-drill excavation for round footings to size and depth indicated. Provide a collar or casing, or other adequate protection, to exclude dirt and debris. Protect excavations with plank covers until concrete is placed.

C. Provide excavation bottoms level and free from loose material. Excavate to indicated or required elevations of undisturbed earth.

D. Provide excavations free from standing water by pumping, draining, or providing protection against water intrusion. If soil becomes soft, soggy, or saturated, excavate to firm undisturbed soil and fill as required. Slope adjacent grades away from excavations to minimize entry of water.

E. Calculate excavation quantities based on elevations or depths indicated on Drawings.

F. Provide 2,000 psi concrete for backfill of over-excavated areas to indicated or required elevations.

G. Special preparation of bottom of excavated planes areas: Excavate areas designated on Drawings as bottom of excavated planes (B.E.P.), by excavating and filling to indicated grades and elevations.

3.05 IMPORT/EXPORT OF MATERIALS

A. Provide fill materials as specified in Part 2- Products. If excavated materials from the Project site are not of required quality or sufficient quantity, import additional materials as necessary.

B. In addition to the requirements of this Section, import and/or exported materials shall comply with the requirements of Section 01 4524 - Environmental Import/Export Materials Testing.

C. Imported fill materials will be sampled by the Geotechnical Engineer for compliance with the requirements of Part 2 of this Section.

D. The geotechnical engineer will submit all samples to a DSA approved independent testing laboratory for testing.

E. Initial sampling will be performed by the Geotechnical Engineer before importing material to the Project site. Identify the location of the source site in addition to the address, name of the person and/or entity responsible for the source site. The Geotechnical Engineer will obtain both the initial sample and additional samples from the identified site and will submit samples to the approved independent testing laboratory for testing.

F. The Geotechnical Engineer will perform additional sampling during import operations. If the total quantity of import is determined to be greater than 1,000 cubic yards of material, one sample shall be obtained and submitted for testing for each 250 cubic yards of imported material. If the total quantity of import is determined to be less than 1,000 yards, one sample shall be obtained and submitted for testing for each 100 cubic yards of imported material.

G. The independent approved testing laboratory will perform the required tests and report results of tests noting if the tested material passed or failed such tests and will furnish copies to the Project Inspector, ARCHITECT, OAR, DSA, CONTRACTOR, and others as required. Report shall state tests were conducted under the responsible charge of a licensed State of California professional engineer and the material was tested in accordance with applicable provisions of the Contract Documents, CBC and the DSA. Upon completion of the Work of this Section, the independent testing laboratory and Geotechnical Engineer will submit a verified report to the DSA as required by CBC.

H. Bills of lading or equivalent documentation will be submitted to the Project Inspector on a daily basis.

I. Upon completion of import operations, provide the OAR a certification statement attesting that all imported material has been obtained from the identified source site.

3.06 BACKFILLING

A. After concrete has been placed, forms removed and concrete Work inspected, backfill excavations to indicated or required grades. Backfill simultaneously on each side of walls or grade beams. Remove rubbish, debris, and other waste materials from excavations before placing backfill.

B. Before installing backfill, adequately cure concrete and provide bracing to stabilize structures. Protect waterproofing or dampproofing against damage during backfilling operations with required protection board. Remove bracing as backfill operation progresses.

C. Do not furnish or install expansive soils for below grade building walls.

D. Install each layer of material in a not to exceed thickness of 6 inches, unless otherwise required.

E. Rigidly control the amount of water to be installed to provide optimum moisture content for type of fill material furnished. Do not over-saturate or compact by flooding or jetting.

F. Install wall backfill before installing railings and fences on walls.

G. Impervious backfill materials shall be installed in layers along with and by the same methods specified for structure backfill. Impervious backfill materials shall be at the approximate grade and elevation and where exposed to erosion, shall be covered with at least a 12-inch layer of fill material as reviewed by the Geotechnical Engineer.

H. Install weep hole drainage at the backside of walls so the backing completely covers the weep holes, is horizontally centered and extends at least 12 inches above the bottom of the weep opening. Provide an 8-inch square section of 1/4 inch galvanized or aluminum screen, with a minimum wire diameter of 0.03 inch, and install at the backside of each weep hole before installing the backfill material.

I. Where a reviewed drainage matting system is provided instead of permeable backfill for retaining structures, install in accordance with the manufacturer recommendations.

3.07 COMPACTING

A. Compact each layer of fill material by tamping, sheepsfoot rollers or pneumatic-tired rollers, to such extent as to provide specified relative compaction. At inaccessible locations, compact to specified requirements with hand-held, operated and directed compaction equipment.

A. Unless otherwise indicated, compact each layer of fill material to a relative compaction of at least 95 percent.

B. Do not compact by flooding or jetting.

C. When fill materials, or a combination of fill materials, are encountered or provided which develop densely packed surfaces as a result of installation or compacting operations, scarify each layer of compacted fill before installing the next succeeding layer.

3.08 INSPECTION AND TESTING

A. The Geotechnical Engineer will inspect and test excavations, sample material quality as required in Part 2, and observe installation and compaction of fill materials.

B. The Geotechnical Engineer will sample imported fill materials from their designated source before delivery to the Project site.

C. Installation of backfill shall be observed by the Geotechnical Engineer.

D. The Geotechnical Engineer will inspect and test excavation Work before the installation of fill and/or other materials.

E. Compaction: Test compaction in accordance with ASTM D1557, Method C.

F. The Project Inspector will inspect foundation excavations when completed and ready for forms, after forms are in place and before first placement of concrete.

3.09 PROTECTION

A. Protect the Work of this Section until Substantial Completion.

3.10 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 31 2323

EXCAVATION AND FILL FOR UTILITIES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Excavating, backfilling, and compacting utility trenches such as water, gas, irrigation, storm drain, sewer lines, concrete-encased conduits, and manholes, vaults, valve boxes, catch basins, underground tanks, thrust blocks, yard boxes, pull boxes and other utility appurtenances.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 01 4524 - Environmental Import/Export Materials Testing.

3. Section 31 1000 - Site Clearing.

4. Section 31 2200 - Grading.

5. Section 31 2316 - Excavation and Fill for Paving.

6. Section 31 2319 - Excavation and Fill for Structures.

7. Section 32 0117 - Pavement Repair.

8. Section 32 1313 - Site Concrete Work.

11. Section 33 1100 - Site Water Distribution Utilities.

12. Section 33 3000 - Site Sanitary Sewer Utilities.

13. Section 33 4000 - Storm Drainage Utilities.

14. Division 22 - Plumbing.

15. Division 26 - Electrical.

1.02 PROJECT REQUIREMENTS

A. Import and Export of Earth Materials:

1. Fees: Pay as required by authorities having jurisdiction over the area.

2. Bonds: Post as required by authorities having jurisdiction over the area.

3. Haul Routes and Restrictions: Comply with requirements of authorities having jurisdiction over the area.

1.03 QUALITY ASSURANCE

A. Comply with the following as a minimum requirement: Standard Specifications for Public Works construction, current edition except as modified herein.

B. Sampling, testing, and certification of imported and/or exported soils shall be performed in accordance with Section 01 4524 - Environmental Import/Export Materials Testing.

1.04 TESTING

A. OWNER will retain a Geotechnical Engineer as an OWNER Consultant who will provide observations, tests, inspections and approvals identified in the Contract Documents as being responsibility of OWNER.

B. Imported Soils: The Geotechnical Engineer will obtain initial product Sample for testing in accordance Article 3.02 of this Section.

1.05 PROJECT CONDITIONS

A. Information on Drawings or in soils report does not constitute a guarantee of accuracy or uniformity of soil conditions over the Project site.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Bedding material from trench bottom to one foot above the pipe:

1. Sand, gravel, crushed aggregate or native free-draining granular material providing a sand equivalent of at least 30 or a coefficient of permeability greater than 1.4 inches per hour.

2. Sand complying with the Specifications for cement concrete aggregates.

B. Backfill Materials:

1. Excavated trench material to be installed for backfilling shall be clean, free of large clods, and stones larger than 2 ½-inch in any dimension.

2. Cement-sand slurry shall be provided with one sack of cement per cubic yard of the mixture.

3. Imported Fill Material: Imported fill material shall be a granular material with sufficient binder to form a firm and stable unyielding subgrade and shall not have more than 60 percent of fines passing a 200 mesh sieve. Material shall provide a coefficient of expansion of not more than two

percent from air dry to optimum moisture content and not more than six percent from air dry to saturation. Imported materials shall be clean and free of rubbish, debris, and toxic or hazardous contaminants. Adobe or clay soils are not permitted.

PART 3 - EXECUTION

3.01 GENERAL

A. Before initiating intrusive activities, contact Underground Service Alert of Southern California (USA or Dig Alert) to obtain a Dig Alert ticket for location information on buried public and USA member utilities and pipelines at least 48-hours prior to beginning work. A copy of the Dig Alert ticket shall be forwarded to the OWNER. For on-site utilities, retain a state-licensed third party underground utility locating service.

B. Barricade trenches, ditches, pits, sumps, and similar Work outside the barricaded working area with chain link fence as specified in Section 01 5000, Construction Facilities and Temporary Controls, and in accordance with Cal-OSHA standards and requirements.

C. Saw-cut concrete or bituminous paving for trench installation.

D. Trenches over 5 feet in depth shall conform to the Cal-OSHA.

E. Where indicated and required to excavate in lawn areas, protect adjoining lawn areas outside of the Work area. Replace or install removed sod upon completion of backfill by installing sod level with adjacent lawns. If installation of removed sod fails, furnish sod and install to match existing lawns.

F. Backfill over excavations to the required elevations with earth, gravel, sand, or concrete and compact as required. Provide excavations free from standing water by pumping, draining, or providing protection against water intrusion. Slope adjacent grades away from excavations to minimize entry of water.

G. Do not install piping lengthwise under concrete walks without review by the ARCHITECT.

H. Do not excavate trenches parallel to footings closer than 18 inches from the face of the footing or below a plane having a downward slope of two horizontal to one vertical, from a line 9 inches above bottom of footings.

1. Unless otherwise indicated on Drawings, depth of excavations outside the buildings shall allow for a minimum coverage above top of pipe, tank, or conduit measured from the lowest adjoining finished grade, as follows:

Steel Pipe	24 inches below finished grade
Copper Water Tube	18 inches below finished grade
Cast-Iron Pressure Pipe	36 inches below finished grade
Plastic Pipe (other than waste)	30 inches below finished grade

Tanks or other structures	36 inches below finished grade
Soil, Sewer & Storm Drain	minimum 18 inches below finished grade, and as required for proper pitch and traffic load. (Install polypropylene sewer pipe with at least 24 inches coverage)
Irrigation Pipe:	nonpressure pipe 12 inches, pressure pipe 24 inches

2. Trench width shall provide ample space for fitting and joining. Excavate for piping bells and fittings, bell and spigot pipe and other fittings.

I. Unless indicated otherwise, excavate trenches to the required depths for utilities, such as pipes, conduit and tanks, with minimum allowances of 6 inches at the bottom and 6 inches at the sides for bedding of unprotected piping or as required for concrete encasement of conduits as indicated on Drawings. Grade bottom of trenches to a uniform smooth surface. Remove loose soil from the excavation before installing sand bedding or concrete encasement.

J. Provide excavations free from standing water by pumping, draining, or providing protection against water intrusion. If soil becomes soft, soggy, or saturated, excavate to firm undisturbed soil and fill as required. Slope adjacent grades away from excavations to minimize entry of water.

K. Provide a minimum clear dimension of 2 inches from sides of wall excavation to outer surfaces of buried pipes or conduits installed in the same trench or outside surfaces of containers and tanks.

L. Do not install backfill until required inspections and testing is completed.

M. Backfill electrical or other excavated utility trenches located outside of barricaded installation areas within 24 hours after inspection by the Project Inspector.

N. Install backfill materials in layers not exceeding 4 inches in thickness and compact to 95 percent of the maximum density.

O. If materials excavated from the Project site are not permitted for trench backfill in paved areas, backfill trenches with a cement-sand slurry mix. Install backfill to an elevation of the existing undisturbed grade plus one inch.

P. Install and compact sand bedding to provide a uniform full length bearing under piping and conduits.

Q. Where portions of existing structures, walks, paving, or other improvements are removed or cut for piping or conduit installation, replace the material with equal quality, finished to match adjoining existing improvements. Repair pavement as specified in Section 32 0117, Pavement Repair.

3.02 IMPORT/EXPORT OF MATERIALS

A. Provide fill materials as specified in Part 2, Products. If excavated materials from the Project site are not of required quality or sufficient quantity, import additional materials as necessary.

B. In addition to the requirements of this Section, import and exported materials shall comply with the requirements of Section 01 4524, Environmental Import/Export Material Testing.

C. Imported fill materials will be sampled by the Geotechnical Engineer for compliance with the requirements of Part 2 of this Section.

D. The Geotechnical Engineer will perform the tests by utilizing an independent approved testing laboratory.

E. Initial sampling will be performed by the Geotechnical Engineer before importing material to the Project site. Identify the location of the source site in addition to the address, name of the person and/or entity responsible for the source site. The Geotechnical Engineer will obtain both the initial sample and additional samples from the identified site and shall submit all samples to the approved independent testing laboratory.

F. The Geotechnical Engineer will perform additional sampling during import operations. If the total quantity of import is determined to be greater than 1,000 cubic yards of material, one sample shall be obtained and submitted for testing for each 250 cubic yards of imported material. If the total quantity of import is determined to be less than 1,000 yards, one sample shall be obtained and submitted for testing for each 100 cubic yards of imported material.

G. The independent approved testing laboratory will perform the required tests and report results of all tests noting if the tested material passed or failed such tests and will furnish copies to the Project Inspector, ARCHITECT, OAR, DSA, CONTRACTOR, and others as required. Report shall state tests were conducted under the responsible charge of a licensed State of California professional engineer and the material was tested in accordance with applicable provisions of the Contract Documents, CBC and the DSA. Upon completion of the Work of this Section, the independent testing laboratory and Geotechnical Engineer will submit a verified report to the DSA as required by CBC.

H. Bills of lading or equivalent documentation will be submitted to the Project Inspector on a daily basis.

I. Upon completion of import operations, provide the OAR a certification statement attesting that imported material has been obtained from the identified source site.

3.03 INSPECTION AND TESTING

A. The Geotechnical Engineer will inspect and test excavations, sample material quality as required in Part 2, observe installation and compaction of fill materials.

B. Compaction test shall be performed in accordance with ASTM D1557, method "C."

3.04 PROTECTION

A. Protect the Work of this Section until Substantial Completion.

3.05 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 31 2326

BASE COURSE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Installation of base material.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 01 4524 – Environmental Import / Export Material Testing.

2. Section 31 1000 - Site Clearing.

3. Section 31 2200 - Grading.

4. Section 31 2313 - Excavation and Fill.

5. Section 31 2316 - Excavation and Fill for Paving.

6. Section 32 0117 - Pavement Repair.

7. Section 32 1216 - Asphalt Paving.

8. Section 32 1313 - Site Concrete Work.

1.02 SUBMITTALS

A. Crushed aggregate base (CAB) shall consist of native rock without naturally occurring asbestos or recycled materials. The CONTRACTOR shall submit written documentation, which identifies the source, volume, and proposed transport date of the material for review and approval by OWNER'S Office of Environmental Health and Safety (OEHS) prior to importing the material. A statement on company letterhead from the CAB source, stamped by either a California Professional Geologist or Engineer, which states that the subject materials are native rock, do not contain any recycled materials and that the source quarry does not mine ultramafic materials, a source of natural occurring asbestos shall be included in the submittal to OEHS. The CONTRACTOR may request variance from analytical testing required by Section 01 4524 for CAB. To be considered for a variance, the CONTRACTOR shall submit a documentation package for OEHS approval, which includes all of the aforementioned information at least 48 hours in advance of planned import.

1. Frequently used suppliers for LAUSD projects include:

a. Hansen Aggregates.

b. Vulcan Materials, Reliance Company.

c. Vulcan Materials Durbin.

C. Product Data: Submit material source, technical information and test data for base materials. Gradation and quality certifications shall be dated within 30 days of the submittal.

D. Sample: Submit sample of proposed base course material.

1.03 QUALITY ASSURANCE

A. Comply with the following as a minimum requirement: Standard Specifications for Public Works Construction, current edition.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Crushed Aggregate Base (CAB) materials shall conform to the requirements of the Standard Specifications for Public Works Construction: Section 200 - Rock Materials.

B. Crushed Miscellaneous Base (CMB) or materials generated on site shall not be used as a base course material.

2.02 MATERIAL APPROVAL

A. Base material shall be inspected by the Project Inspector for gradation and material content prior to installation. The OWNER may choose to have additional tests performed by a geotechnical engineer, retained by the OWNER, before installation.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install base course material in layers not exceeding 4 inches in thickness, unless required otherwise. Grade and compact to indicated levels or grades, cut and fill, water and roll until the surface is hard and true to line, grade and required section. Provide a relative compaction of at least 95 percent, unless otherwise required.

B. Grade base course to elevations indicated on Drawings, ready to receive surfacing, in accordance with Section 31 2200 - Grading.

3.02 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.03 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 32 0117

ASPHALT PAVEMENT REPAIR

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Bituminous Surfacing Repair: Areas removed for utility trenches, heaved by tree roots, cracked areas, protruding areas where pavement meets hard surfaces, depressed areas, holes and areas around new structures, and raveled bituminous pavement.

2. Areas heaved by tree roots, cracked areas, holes and trenches, and areas around new structures.

B. Related Sections:

1. Division 01 - General Requirements.

2. Section 31 2200 - Grading.

3. Section 31 2313 - Excavation and Fill.

4. Section 31 2316 - Excavation and Fill for Paving.

5. Section 31 2319 - Excavation and Fill for Structures.

6. Section 31 2323 - Excavation and Fill for Utilities.

7. Section 31 2326 - Base Course.

8. Section 32 1216 - Asphalt Paving.

9. Section 32 1313 - Site Concrete Work.

10. Section 32 1236 - Seal for Bituminous Surfacing.

1.02 SUBMITTALS

A. Shop Drawings: Submit Shop Drawings indicating areas to be repaired.

B. Product Data: Submit manufacturer’s technical data for materials and products.

1.03 QUALITY ASSURANCE

A. Comply with Standard Specifications for Public Works Construction, current edition.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Base course materials: Section 31 2326 - Base Course.

B. Asphalt paving materials: Section 32 1216 - Asphalt Paving.

C. Seal materials: Section 32 1236 - Seal for Bituminous Surfacing.

D. Headers: Section 32 1216 - Asphalt Paving.

2.02 BITUMINOUS MATERIALS

A. Provide materials and products of the class, grade or type indicated, conforming to relevant provisions of Section 203 - Bituminous Materials of the latest Standard Specifications for Public Works Construction.

PART 3 - EXECUTION

3.01 PAVEMENT REMOVAL

A. Remove bituminous and concrete pavement in accordance with applicable provisions of Section 300 - Earthwork of the Standard Specifications for Public Works Construction.

B. Pavement Heaved By Roots: Remove pavement to limits of distortion and expose roots. Trim roots to provide at least 12-inch clearance to pavement. Coordinate with OWNER’s Tree Trimming Department for recommendations and approval prior to trimming roots.

C. Remove protruding bituminous surfaces flush with the surrounding grade using a suitable tool or equipment so that adjacent finishes are not blackened.

D. Remove raveled and depressed bituminous pavement to limits indicated or required.

E. Saw cut existing improvements, trim holes and trenches in bituminous and concrete pavement to permit mechanical hand tampers to compact the fill.

F. Remove broken concrete by saw cutting. If the required cut line is within 30 inches of a score or joint line or edge, cut and remove to the score, joint line, or edge.

3.02 EXCAVATING, BACKFILLING AND COMPACTING

A. Conform to requirements in Section 31 2313 - Excavation and Fill; Section 31 2316 - Excavation and Fill for Paving; Section 31 2319 - Excavation and Fill for Structures; or Section 31 2323 - Excavation and Fill for Utilities, as required.

B. Where subgrade or base is deemed to be unstable or otherwise unsuitable, excavate such materials to firm earth, and replace with a required material. Install and compact fill materials in accordance with the requirements of Section 31 2316 Excavation and Fill for Paving.

3.03 HEADERS

A. Install headers along edge of bituminous surfacing abutting turf, earth, or planting area, unless indicated otherwise.

B. Install headers so the bottom surface has continuous bearing on solid grade. Where excavation for headers is undercut, thoroughly tamp soil under the header. Compact backfill on both sides of header to the density of the adjacent undisturbed grade.

C. Fasten headers in place with redwood or Douglas fir stakes of length necessary to extend into solid earth a minimum of 12 inches. Stakes shall be of sound material, neatly pointed, driven vertically, and securely nailed to headers. Space stakes, not to exceed 4 feet on centers with top of stakes set one inch below top of header. Provide a minimum of two 12d galvanized common nails through each stake.

D. Remove existing headers where new surfacing is installed adjacent to existing surfacing.

E. Install temporary headers at transverse joints of paving where continuous paving operations are not maintained.

F. Provide additional stakes and devices as required to fasten headers.

3.04 BASE COURSE

A. Unless otherwise indicated, base course shall be crushed aggregate base, fine grade, 3 inches thick or equal to thickness of the existing base, whichever is greater.

B. Fill grade and compact as specified in Section 31 2200 - Grading.

3.05 RESURFACING

A. Utility Trenches: Remove loose dirt and backfill with cement-sand slurry allowing for surfacing one inch thicker than existing. Resurface flush with existing adjoining pavement installing the same type of materials and section provided in existing improvements.

B. Other Areas: Other surface improvements damaged or removed shall be cut to a neat even line and excavated one inch below the bottom of the existing pavement. Resurface by following the original grades and installing the same type of materials provided in existing improvements.

C. Where bituminous surfacing abuts concrete, masonry, walks or paving, tamp joint smooth, if necessary, as described above to obtain a uniformly even joint, true to line and grade. Tamp and smooth materials before asphalt cools.

3.06 REPAIRING AND RESEALING EXISTING SURFACES

A. Preparation of Surfaces: Prior to filling cracks, clean existing bituminous surfacing of loose and foreign materials and coat with a film of asphalt emulsion.

B. Repair of Existing Surfacing:

1. Fill cracks 1/2 inch wide and less with RS-1 emulsion and washed plaster sand or other OEHS approved crack filler material. Cracks larger than ½ inch wide shall be filled with Type F/Sheet Mix Asphalt Concrete as specified. Cracks shall be filled to the level of adjacent surfacing.

2. Where low areas, holes, or depressions occur in existing surfacing, refer to Section 32 1216; Asphalt Paving, Article 3.02. Use Type E/School Mix and feather edge joint flush to the level of adjacent surfacing.

C. Testing: Flood test entire area in presence of the Project Inspector. Inspect area after waiting one hour. Entire area tested shall be free of standing water or puddles in excess of 0.01 foot. Practical field measurement: 0.01 foot = two quarters stacked.

D. Surface Seal: After surface has been repaired and tested, install seal coat over entire area indicated. Surface seal shall be as specified in Section 32 1236 - Seal for Bituminous Surfacing.

3.07 CLEANING

A. Remove all stains on the Project site and adjacent properties caused by or attributed to the Work of this section.

B. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

3.08 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 32 0190

OPERATION AND MAINTENANCE OF PLANTING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Work Specified in this Section: Furnish all labor, material, equipment, and services required to maintain the landscape in an attractive condition as specified herein for a period of 90 calendar days.

B. Related Work Specified in Other Sections:

1. Section 32 8413 - Potable Water Irrigation.

2. Section 32 8416 - Irrigation Controls.

3. Section 32 9000 - Planting

C. Definition: The word Architect as used herein shall refer to the Landscape Architect or the Owner's authorized representative.

1.02 QUALITY ASSURANCE

A. The Contractor's representatives and employees shall be experienced in landscape maintenance.

1.03 90 CALENDAR DAY MAINTENANCE PERIOD

A. The Contractor shall continuously maintain all areas involved in this Contract during the progress of work. Maintenance period shall not start until all elements of construction, planting, and irrigation for the entire project are in accordance with Plans and specifications.

1. A prime requirement is that all lawn and groundcover areas shall have been planted and that all lawn areas shall show an even, healthy stand of grass seedlings or sod, either of which shall have been mowed twice. Maintenance period will not be shortened when this criteria is met, but may be lengthened if not met.

2. The Contractor’s maintenance period will be extended if the provisions required within the Plans and specifications are not fulfilled. Project may not be segmented into maintenance phases.

3. The Contractor shall request a Pre-Maintenance inspection by the Owner and Architect at the completion of the installation process.

4. The Maintenance Period shall begin upon successful completion of the Pre-Maintenance walk-through punch list and acceptance of the landscape installation by the Owner.

5. If such criteria are met to the satisfaction of the Owner, a field notification will be issued to the Contractor to establish the effective beginning date of the maintenance period.

B. The Maintenance Period continues for 90 calendar days until final acceptance of the work by the Owner. Improper maintenance or poor condition of planting at the termination of the scheduled maintenance period may cause postponement of the final completion date of the Contract.

C. Any day when the Contractor fails to adequately maintain planting, replace unsuitable plants or do weed control or other work, as determined necessary by the Owner, will not be credited as one of the maintenance period working days.

1.04 ALTERNATE BID DESCRIPTIONS

A. Guarantee: All plant material installed under the contract shall be guaranteed for a period of one year. Plants found to be dead or in poor condition due to faulty materials or workmanship, as determined solely by the Architect, shall be replaced by the Contractor at his expense.

1. Replacement: Materials found to be dead, missing, or in poor condition during the Maintenance period shall be replaced immediately.

2. The Architect shall be the sole judge as to the condition of material.

3. The Contractor shall replace material rejected during the Guarantee period within fifteen (15) days of written notification by the Owner.

1.05 OBSERVATION VISIT

A. The Contractor shall request progress visits from the Architect at least 48 hours in advance of anticipated visits. Normal observation visits are as follows:

1. Immediately prior to the commencement of the work in this section.

2. Completion of first 90 days of maintenance.

3. Final acceptance.

B. Prior to the date of the final observation visit, the Contractor shall acquire from the Architect-approved reproducible Plans and record (from the job record set) all changes made during construction, label these Plans "Record Drawings", and deliver to the Architect for review and approval.

C. Prior to the date of final inspection, the Contractor shall deliver to the Architect a written "Landscape and Irrigation Guarantee" as required herein.

PART 2 - PRODUCTS

2.01 MATERIALS

A. All materials used shall either conform to landscape specifications in other sections or shall otherwise be acceptable to the Owner.

B. The Owner shall be given a monthly record of all herbicides, insecticides, and disease control chemicals used. Failure to provide such a record will continue maintenance period until compliance occurs.

C. Work Specified in this Section: Furnish all labor, material, equipment, and services required to maintain the landscape in an attractive condition as specified herein for a period of 90 calendar days.

D. Related Work Specified in Other Sections:

1. Section 32 8400 - Planting Irrigation

2. Section 32 9000 - Planting

E. Definition: The word Architect as used herein shall refer to the Landscape Architect or the Owner's authorized representative.

F. Definition: An alternate is an amount proposed by the Contractor to be added to or deducted from Base Bid amount if Owner decides to accept a corresponding change, either in scope of work or in products, materials, equipment, systems, or installation methods described in Contract Documents.

G. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate the alternate into the Work. No other adjustments are made to the Contract Sum.

H. Schedule: A "List of Alternates" is included in Appendix A, “Owners Specifications.” Each alternate is defined by abbreviated language, recognizing that Drawings and Specification Sections document the requirements.

1. Coordination of related work is required to ensure that work affected by each selected alternate is completed and properly interfaced with work of

alternates and the overall construction schedule.

2. Include, as part of each alternate, those miscellaneous devices, appurtenances and similar items incidental to or required for a complete installation whether or not specifically mentioned as part of the alternate.

2.02 QUALITY ASSURANCE

A. Modify or adjust affected adjacent Work as necessary to completely and fully integrate that Work into the Project.

B. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation, whether or not mentioned as part of the alternate.

C. Alternates will be reviewed and accepted or rejected at Owner's option.

D. Execute accepted alternates under the same conditions as other Work of this Contract.

E. Specification Sections referenced in an alternate bid descriptions contain requirements for materials necessary to achieve the Work described under each alternate.

2.03 SELECTION AND AWARD OF ALTERNATES

A. Indicate variation to bid price for alternates described below, and list in Bid Form and Bid Breakdown Sheet or any supplements to them that request a "difference" in Bid Price by adding to or deducting from the base bid price.

B. Bid will be evaluated on base bid price. After determination of preferred bidder, consideration will be given to alternates and Bid Price adjustments.

PART 3 - EXECUTION

3.01 MAINTENANCE

A. Maintenance shall be performed according to the following standards:

1. All areas shall be weeded and cultivated at intervals of not more than ten (10) days.

2. Watering, mowing, rolling, edging, trimming, fertilization, spraying, and pest and rodent control, as may be required, shall be included in the maintenance period.

3. Street gutters if applicable shall be cleaned as part of the maintenance program.

4. The Contractor shall be responsible for maintaining adequate protection of the area.

   a. Damaged areas shall be repaired at the Contractor's expense.

5. Between the 15th day and the 20th day of the maintenance period, the Contractor shall reseed and re-sod all spots or areas within the lawn where normal turf growth is not evident.

B. The Contractor shall be responsible for reporting to the Owner conditions beyond his control that prevent or have negative impact on the work required herein.

3.02 TREE AND SHRUB CARE

A. Watering

1. Apply enough irrigation water so that moisture penetrates throughout root zone and only as frequently as necessary to maintain healthy growth.

   a. Do not maintain soils in a constantly wet condition.

   b. Contractor shall be responsible for familiarizing himself with the particular water requirements for the various plantings and shall be responsible for setting and maintaining the automatic controller to optimum minimum levels.

   c. Damage to the plantings caused by over-watering or under-watering shall be the responsibility of the Contractor to replace at no cost to Owner.

2. Maintain a water basin around newly planted plants so that water can be applied to moisturize throughout the root zone. At the end of the maintenance period these basins shall be flattened out to match surrounding grades.

3. If hand-watering, use a fan spray nozzle to break the water force.

4. Comply with manufacturer's written instructions for installing access doors and frames.

B. Tree Pruning

1. Nursery grown trees will not normally require pruning for the first year. Prune trees only if directed by Architect or Owner, and only for these

purposes:

a. selection and development of permanent scaffold branches that have a vertical spacing of from 18" to 48" and radial orientation so as not to cross each other,

b. elimination of diseased or damaged growth,

c. elimination of narrow V-shaped branch forks that lack strength,

d. reduction of toppling and wind damage by thinning out crowns,

e. maintenance of growth within space limitations,

f. maintenance of natural appearance,

g. Balancing of crown-to-root ratio.

2. Under no circumstances will stripping of lower branches ("rising up") of young trees be permitted.

a. Lower branches shall be retained in a “tipped-back" or pinched condition with as much foliage as possible to promote caliper trunk growth (tapered trunk).

b. Lower branches can be cut flush with trunk only after the tree is able to stand erect without staking or other support.

3. Evergreen trees shall be thinned out and shaped when necessary to prevent wind and storm damage. The primary pruning of deciduous trees shall be done during the dormant season. Damaged trees or those that constitute health or safety hazards shall be pruned at any time of the year as required.

C. Shrub Pruning

1. The objectives of shrub pruning are the same as for trees. Shrubs shall not be clipped into balled or boxed forms unless such is required by the design.

2. All pruning cuts shall be made to lateral branches or buds or flush with the trunk. "Stubbing" will not be permitted.

D. Staking and Guying: Stakes and guys shall remain in place until final acceptance and are to be continuously inspected and adjusted to prevent girdling of trunks or branches and to prevent rubbing that causes bark wounds and to allow trees to sway freely. Stakes and guys are to be removed when trees become sufficiently

well rooted or after one year. When stakes or guys are removed, tree heads may be thinned to reduce wind load.

E. Weed Control: Keep all areas, including basins and areas between plants, free of weeds.

1. Use recommended legally approved herbicides only when mechanical removal methods are not feasible.

2. Avoid frequent soil cultivation next to trees or shrubs that destroys shallow roots.

3. Use mulches to help prevent weed seed germination.

F. Pest and Disease Control: Maintain control of insect and rodent infestations. The preferred method of control shall be biological control, or with non-toxic, biodegradable, organic materials. If stronger materials are needed, only materials that are recommended by a licensed Pest Control Advisor and are EPA approved and regulated shall be used. Only registered and licenseHPest Control Operators shall apply insecticide or chemical applications. Notify Owner a minimum of five (5) working days before chemical applications.

G. Fertilization

1. Fertilize all planting areas at 30-day intervals, approved for use by LAUSD, with fertilizer and at rate as recommended by Soils Report.

a. Avoid applying fertilizer to root balls and bases of main stems

b. Spread fertilizer evenly around plants to drip line.

c. Distribute fertilizer evenly over turf or groundcover areas to avoid patchy coloration.

H. Replacement of Plants: Replace dead, dying, and missing plants with plants of a size, condition, and variety acceptable to Architect or Owner at Contractor's expense.

3.03 GROUND COVER CARE

A. Weed Control: Control weeds preferably with mechanical methods, and also with preemergent herbicides and selective systemic herbicides. Hoe weeds as little as possible since this may result in plant damage. Foot traffic in planted areas shall be minimized, and soil compaction shall be loosened immediately.

B. Watering: Water enough so that moisture penetrates throughout root zone and

only as frequently as necessary to maintain healthy growth.

1. Do not maintain soils in a constantly wet condition.

2. Contractor shall familiarize himself with the particular water requirements for the planting and shall be responsible for setting and maintaining the automatic controller to optimum minimum levels.

3. Damage to the planting caused by over-watering or under-watering shall be the responsibility of the Contractor to replace.

C. Trash: Remove trash weekly. Remove debris, clippings or branches produced by maintenance activities within 8 hours.

D. Edging and Trimming: Edge ground cover to keep in bounds and trim top growth as necessary to achieve an overall even appearance.

E. Replacement: Replace dead and missing plants at Contractor's expense.

3.04 LAWN AND TURF CARE

A. Mowing and Edging:

1. Mowing of turf will commence when the grass has reached a recommended height for the specified species. Mowing will be at least twice a week after the first cut. Turf must be well-established and free of bare spots and weeds to the satisfaction of the Architect prior to final acceptance.

2. Edges shall be trimmed at least weekly or as needed for neat appearance.

3. Grass clippings if visible in piles regardless of size shall be removed from the premises.

B. Watering: Lawns shall be watered at such frequency as weather conditions require to replenish soil moisture below root zone and maintain healthy growth.

C. Fertilizing:

1. Fertilize all on-grade lawn areas as follows or as recommended by soils report:

a. At the end of the first 30 calendar days and at 30 to 90 calendar day intervals thereafter - 5 lbs. per 1,000 square feet of maintenance fertilizer.

b. After application, irrigate thoroughly.

D. Weed Control: Remove broad leaf weeds manually or control with selective herbicides. Turf areas shall be kept weed-free.

E. Renovating:

1. If required, remove thatch by verticutting, preferably in the fall but otherwise in the spring. At this time, fertilize with maintenance fertilizer and over-seed if needed.

2. Aerify compacted areas to improve water penetration whenever needed.

3.05 IRRIGATION SYSTEM

A. System Inspection: Contractor shall continuously check all systems for proper operation. Lateral lines shall be flushed out after removing the last sprinkler head or two at each of the lateral. All heads are to be continuously adjusted as necessary for proper coverage and to eliminate over-spray on buildings or paving. Contractors regular maintenance personnel shall test, observe, and adjust each sprinkler system no less than once per month.

B. Controllers: Set and program automatic controllers for seasonal water requirements and minimum optimum water use. Give Owner's representative a key to controllers and instructions on how to turn off system in case of emergency.

C. Repairs: Repair all damage to irrigation system at Contractor's expense. Repairs shall be made within one watering period.

END OF SECTION

SECTION 32 01 90.33

TREE PROTECTION AND TRIMMING

1. GENERAL

2. RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

3. SUMMARY

A. This section includes the protection and trimming of existing trees that interfere with, or are affected by, execution of the Work, whether temporary or permanent construction.

B. Related Sections include the following: *(Only use these, or modifications thereof, if relevant to project).*

1. Division 31 Section “Earthwork” for excavation, filling, and grading.
2. Division 31 Section “Erosion and Sediment Control Systems” for erosion control materials
3. Division 31 Section “Site Clearing” for topsoil stripping and stockpiling
4. Division 31 Section “Finish Grading” for finish grade requirements

4. DEFINITIONS

A. Protected Tree: Any tree that a Certified Arborist, has designated to be remain in place because of its protected status, type, age, or other professional criteria.

B. Diameter at Breast Height (DBH): A standard method of measuring the size of a tree. This measurement is taken, in inches, at 4.5 feet above the ground.

C. Root Zone: The ground area surrounding each tree containing its root system, defined by a radius equal to the trunk diameter at breast height (DBH) in inches multiplied by 1.5 feet per inch. For example, a 10 inch DBH tree would have a root zone extending 15 feet from the trunk in all directions.

D. Protected Root Zone (PRZ): The part of the Root Zone of a Protected Tree which must be protected from construction damage. The Protected Root Zone for other existing plants will be indicated on the Tree Disposition Plan.

E. Tree Disposition Plan: A plan that identifies tree locations and disposition of trees: Protected to Remain in Place, Remove, Salvage.

F. Compaction: Increased soil density. This results in death of existing roots and/or greater difficulty for new roots to develop. Damage may be caused by many agents, including the use of heavy equipment, concentrated foot traffic, and storage of heavy materials under or around trees.

G. Damage: Shall include any of the prohibited practices listed below and as determined solely by the Owner.

H. Prohibited Practices: Shall include, but are not limited to:

1. Breaking of branches, scraping of bark, or unauthorized cutting.
2. Nailing or bolting into trees or using trees as temporary support in any way (including cabling around any part of the tree).
3. Unauthorized filling, excavating, trenching, or use of augers within Protected Root Zones.
4. Compaction of or driving over Protected Root Zones.
5. Storage of any materials or vehicles within Protected Root Zones.
6. Dumping of construction waste or materials within Protected Root Zones.
7. Disposal of liquid waste or contaminants in an area which may impact protected trees or their Protected Root Zones.
8. Unauthorized removal or relocation of Protected Trees or trees to remain in place.
9. Removal of tree protection barricades or construction fencing prior to completion of project.
10. Any other practices listed on the Tree Disposition Plan.

5. SUBMITTALS

A. Product Data: For each type of product indicated.

6. QUALITY ASSURANCE

A. Preconstruction Conference: Inspector may call a preconstruction conference to review project requirements, including tree protection and trimming, prior to start of construction.

B. Before tree protection and trimming operations begin, Contractor will meet with Owner’s representatives to review tree protection and trimming procedures and

responsibilities.

C. On-going Site Inspection

1. The Arborist will monitor the construction site throughout the construction process. Violations and damages will be handled according to construction department guidelines and specifications stated in the contract or Tree Disposition Plan.
2. The Arborist will notify the construction inspector of any breach of the contract or Tree Disposition Plan. At this time the contractor will stop and/or correct whatever practice led to the breach.
3. If a breach of contract occurs the Arborist shall perform the damage assessment.
4. The Contractor shall immediately contact the Owner's representative should protected trees be compromised in violation of agreed upon specifications. Failure to communicate promptly could result in damages of up to 100% of the appraised value.

2. PRODUCTS

2.1 MATERIALS

Fence: plastic mesh construction fence, orange color, 4 foot high; 1-3/4 in. x 3-1/2 in. x 5 ft. green steel fence t-post; plastic zip ties, and other accessories for a complete fence system. If deemed necessary, the District may require the installation of chain link fence and metal posts for tree protection.

A. Organic Mulch: Shredded hardwood bark, free of deleterious materials.

3. EXECUTION

3.1 PREPARATION

A. Temporary Fencing: Install 4-foot high, non-moveable, temporary, fencing around Protected Root Zones where indicated on plans to protect remaining trees and vegetation from construction damage, Owner's representative may inspect fence locations to determine if fence is installed as noted on plans. Contractor to move, add or remove fencing if not as per plans. Maintain temporary fence and remove when construction is complete.

B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Keep Protected Root Zones free of ponding, eroding, or excessive wetting caused by dewatering

operations.

C. Mulch Protected Root Zones where indicated on plans to minimize compaction.

1. Apply 3-inch average thickness of organic mulch. Do not place mulch within 6 inches of tree trunks.

D. Do not store construction materials, debris, or excavated material inside Protected Root Zones. Do not permit vehicles or persistent foot traffic within Protected Root Zones; prevent soil compaction over root systems.

E. Maintain fence enclosed Protected Root Zones in pre-construction condition and free of weeds and trash.

F. Do not allow fires within protected root zones.

3.2 EXCAVATION

A. Install shoring or other protective support systems to minimize sloping or benching of excavations adjacent to Protected Root Zones.

B. Do not excavate within Protected Root Zones, unless otherwise indicated.

C. Where utility trenches are required within Protected Root Zones the Owner should be consulted. Tunneling under or around roots by drilling, auger boring, pipe jacking, or digging by hand may be required. Use an air spade, if feasible.

1. Root Pruning: Cut roots with sharp pruning instruments; do not break or chop.

3.3 REGRADING

A. Grade Changes: Where new finish grade is indicated below or above existing grade around trees, slope grade beyond Protected Root Zones. Maintain existing grades within Protected Root Zones.

3.4 TREE PRUNING

A. All tree pruning, unless indicated otherwise, will be performed by Landscape Contractor under the direction of the Arborist and/or Landscape Architect.

3.5 TREE DAMAGE, REPAIR, AND REPLACEMENT

A. Immediately notify Owner of trees damaged by construction operations.

B. Repairs and replacements will be performed by contractor at no additional cost to the District.

3.6 DISPOSAL OF WASTE MATERIALS

A. Burning is not permitted.

B. Disposal: Remove debris and waste materials and legally dispose of off Project site.

END OF SECTION

SECTION 32 1216

ASPHALT PAVING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Paving for playground, parking areas, areas between buildings, synthetic track surfacing adjacent to planting and turf areas as indicated.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 31 2200 - Grading.

3. Section 32 0117 - Pavement Repair.

4. Section 31 2326 - Base Course.

5. Section 32 1236 - Seal for Bituminous Surfacing.

6. Section 32 1313 - Site Concrete Work.

1.02 SUBMITTALS

A. Shop Drawings: Submit site plan indicating extent of paving and accessories.

B. Product Data: Manufacturer’s technical data for materials and products.

1.03 QUALITY ASSURANCE

A. Comply with the following as a minimum requirement: Standard Specifications for Public Works Construction.

1.04 PROJECT CONDITIONS

A. Information on Drawings or in soils report does not constitute a guarantee of accuracy or uniformity of soil conditions over the Project site.

B A copy of the soils report is available for examination in the office of the Architect during regular office hours of the Architect.

PART 2 - PRODUCTS

2.01 BITUMINOUS MATERIALS

A. Provide materials of the class, grade, or type indicated on the Drawings, conforming to relevant provisions of Section 203 - Bituminous Materials of the Standard Specifications for Public Works Construction.

2.02 HEADERS

A. Concrete: Per specification Section 32 1313 - Site Concrete Work.

B. Wood:

1. Redwood, Construction Heart Grade, size 2 by 6, unless otherwise indicated.

2. Stakes: 2 by 4 redwood or 2 by 3 Douglas fir, Construction Grade.

3. Nails: Common, galvanized, 12d minimum.

PART 3 - EXECUTION

3.01 HEADERS

A. Install headers along edge of bituminous surfacing abutting turf, earth, or planting area, unless indicated otherwise.

B. Install headers so the bottom surface has continuous bearing on solid grade. Where excavation for headers is undercut, thoroughly tamp soil under the header. Compact backfill on both sides of header to the density of adjacent undisturbed earth.

C. Where wood headers are indicated on drawing, fasten headers in place with redwood or Douglas fir stakes of length necessary to extend into solid grade a minimum of 12 inches. Stakes shall be of sound material, neatly pointed, driven vertically, and securely nailed to headers. Space stakes, not to exceed 4 feet on center with top of stakes set one inch below top of header. Provide a minimum of two 12d galvanized common nails through each stake.

D. Remove existing headers where new surfacing is installed adjacent to existing surfacing.

E. Install temporary headers at transverse joints of paving where continuous paving operations are not maintained.

F. Provide additional stakes and anchorage as required to fasten headers in place.

3.02 CONSTRUCTION OF ASPHALT CONCRETE PAVEMENT

A. Thickness of Surfacing: Unless otherwise indicated on Drawings or specified, install bituminous surfacing to a compacted thickness of 2 inches.

B. Provide surfacing material over base course as specified in Section 31 2326 - Base Course.

C. Surfaces of walls, concrete, masonry, or existing bituminous surfacing indicated to be in direct contact with installed bituminous surfacing shall be cleaned, dried and uniformly coated with an asphaltic emulsion film.

D. Thicken edges of bituminous surfacing that do not abut walls, concrete, or masonry, and edges joining existing bituminous surfaces. Remove headers at existing bituminous surfacing where new bituminous surfacing is to be installed. Thicken edges an additional 2 inches and taper to the indicated or specified thickness 6 inches back from such edges.

E. At stairways, adjust thickness of paving such that the first tread is equal in height to all other treads.

F. Provide adequate protection for concrete, planting areas, and other finish Work adjacent to areas indicated to receive bituminous surfacing.

G. Placing:

1. Do not install bituminous surfacing when atmospheric temperature is below 40 degrees F; or when fog or other unsuitable weather conditions are present. Temperature of mixture at time of installation shall not be lower than 260 degrees F in warm weather or higher than 320 degrees F in cold weather.

2. Where 2-inch or 3-inch thick surfacing is indicated or specified, install surfacing in one course. Where surfacing is indicated or specified 4 inches or more in thickness, except for thickened edges, install bituminous surfacing in courses of approximately equal thickness, each course not exceeding 2 ½ inches in thickness.

H. Stakes or Screeds: Provide grade or screed stakes spaced not more than 15 feet apart in flow lines with grades of less than one percent. Continuous screeds may be provided instead of stakes.

I. Spreading: Install bituminous surfacing in a manner to cause least possible handling of mixture. In open areas and wherever practicable, install by mechanical means with a self-propelled mechanical spreader. In confined or restricted areas, install mixture with hot shovels and rakes, and smooth with lutes.

J. Joints: Provide vertical joints between successive runs. Install joints true to line, grade, and cross section. Lapped joints are not permitted.

K. Rolling:

1. Finish roll with a self-propelled tandem roller weighing at least 8 tons. Break down roll with a self-propelled roller weighing between 1 ½ tons and 8 tons.

2. Roll in a manner that preserves flow lines and the established finished grades. Break down roll in areas adjacent to flow lines parallel to flow lines. Break down roll after bituminous surfacing is installed without shoving or cracking of

mixture under roller. Continue finish rolling until surfacing is unyielding, true to grade, and meets requirements for specified smoothness. Areas inaccessible to finish roller may be finish rolled with breakdown roller or tamped with hot tamping irons and smoothed with hot smoothing irons or hand roller.

3. Where bituminous surfacing abuts concrete, masonry, walks or paving, tamp joint smooth, if necessary, as described above to obtain a uniformly even joint, true to line and grade. Tamp and smooth to properly compact.

4. Compacted bituminous surfacing shall be provided with a bulk specific gravity of at least 2.31 when tested in accordance with ASTM D1188.

3.03 TOLERANCE

A. Smoothness: Surface of bituminous surfacing after rolling, shall be even, smooth and uniform in texture with no voids or rock pockets, free of roller marks or other irregularities, and not varying by more than 0.03 foot, except at local depressions or raised areas as indicated, when a 10-foot straightedge is placed on surface.

B. Grade: Finished grade shall not vary more than 0.02 foot above or below required grade. Variations within prescribed tolerance shall be compensating so that average grade and cross-section are provided.

C. Premium paving tolerances and requirements for synthetic track:

1. General: Test in-place asphalt concrete courses for compliance with requirements or thickness and surface smoothness. Repair or remove and replace unacceptable paving as directed by Owner's representative.

2. Thickness: Tolerances for thickness shall be ¼ inch, plus or minus.

3. Planarity: The asphalt substrate shall not vary from the planned cross slope by more than plus or minus 0.1 percent. The finished asphalt shall not vary, plus or minus, under a 10 feet straight edge greater than 1/8 inch. Flood test the surface with the use of a water truck. If, after 30 minutes on a 70 degree F day, "bird baths" are evident at a depth more than 1/8 inch repair using the best method of correction.

4. Corrective Measures: Determine if the planarity, cross slopes, and general specifications have been met. If all of the conditions have been met notify the Owner in writing of the acceptance of the asphalt paving. [This notification must include the acceptance of the paving by the track surfacing contractor.]

5. No slurry or fog seals are to be applied to areas of asphalt paving that are to receive synthetic track surfacing.

3.04 TESTING

A. After first coat of surface seal has been installed and after a 24 hour period, the flood test shall be completed of the bituminous surfacing in presence of the Project Inspector. Repair areas of standing water or puddles and flood test locally; install surface seal and retest as necessary.

3.05 SURFACE SEALING

A. After bituminous surfacing has passed flood test, clear and allow to dry and provide one more coat of surface seal as specified in Section 32 1236 - Seal for Bituminous Surfacing.

B. Where indicated, provide multiple coats of surface seal to existing bituminous surfacing.

C. Where new bituminous surfacing joins existing bituminous surfacing, overlap surface seal a minimum of 12 inches onto existing bituminous surfacing.

3.06 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.07 CLEANUP

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 32 1236

SEAL FOR BITUMINOUS SURFACING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Surface sealer over bituminous surfacing.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 32 0117 - Pavement Repair.
3. Section 32 1216 - Asphalt Paving.
4. Section 32 1723 - Pavement Marking.

1.02 SUBMITTALS

A. Product Data: Submit manufacturer's product information and application procedures for bituminous surfacing.

1.03 QUALITY ASSURANCE

A. Comply with the Standard Specifications For Public Works Construction, current edition.

B. Agitate bulk materials during transport.

1.04 MAINTENANCE

A. Extra Materials: Provide 10 gallons in unopened containers.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Provide one of the following surface seals:

	Product Name	Manufacturer
1.	Guard-Top	CALMAT / Industrial Asphalt

2.	Over Kote	Diversified Asphalt Product
3.	Park Top	Western Colloid Products
4.	Sure Seal	Asphalt Coating Engineering
5.	Super Drive Top.	SAF– T Seal. Inc.
6.	Equal.	

PART 3 - EXECUTION

3.01 SURFACE PREPARATION

A. Thoroughly wash surfaces with water to remove dirt, debris, excessive oil and grease, or other foreign matter.

3.02 APPLICATION

A. Install seal coat in strict accordance with manufacturer's written directions and recommendations.

B. Install two coats of surface seal to new bituminous surfacing. First coat shall be installed before flood testing. Clean surface and allow to dry before installing second coat. Second coat shall be installed after bituminous surfacing has passed flood test.

C. Where new bituminous surfacing is installed adjacent to existing bituminous surfacing, overlap surface seal a minimum of 12 inches onto existing bituminous surfacing.

D. Where existing bituminous surfacing is indicated to be patched and sealed, install two coats of surface seal after patching. Refer to Section 32 1216 - Asphalt Paving.

3.03 PROTECTION OF SURFACES

A. Protect sealed and unsealed surfaces from damage and traffic during performance of the Work of this section and until surface seal has thoroughly set and cured. Do not permit traffic of any kind for at least 24 hours after completion of installation.

B. Protect the Work of this section until Substantial Completion.

3.04 TESTING

A. OWNER reserves the right to obtain samples, perform tests to ensure compliance with the Specifications, and to review weight slips and invoices of materials delivered to the Project site.

B. After first coat of surface seal has been installed and after a 24-hour period, flood test entire area in presence of the Project Inspector. Inspect area after waiting one hour. Entire area tested shall be free of standing water or puddles in excess of 0.01 foot.

Practical field measurement: 0.01 foot = two quarters stacked. Repair areas of standing water or puddles and flood test locally; install surface seal and retest as necessary.

3.05 CLEAN UP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 32 1313

SITE CONCRETE WORK

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: On-site concrete work:

1. Portland cement concrete pavement, driveways, curbs, gutters and mowing strips.
2. Ramps and stairs on grade.
3. Footings for fence posts, bollards, flagpoles, shade structures, light standards and athletic and playground equipment.
4. Pipe encasements, thrust blocks, and equipment pads.
5. Retaining walls, planter walls and concrete benches.
6. Skateboard deterrents.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 03 1000 – Concrete Forming and Accessories.
3. Section 03 2000 - Concrete Reinforcement.
4. Section 03 3000 – Cast-in-Place Concrete.
5. Section - 05 5100 Metal Stairs.
6. Section 07 9200 – Joint Sealants.
7. Section 10 7516 – Flagpoles.
8. Section 11 6813 – Playfield Equipment Structures – Primary Centers and Elementary Schools.
9. Section 11 6816 – Playfield Equipment Structures – Middle and High Schools.
10. Division 23 - HVAC.
11. Division 26 - Electrical.
12. Section 31 2200 – Grading.

13. Section 31 2316 - Excavation and Fill for Pavement.

14. Section 31 2319 – Excavation and Fill for Structures.

15. Section 31 2326 - Base Course.

16. Section 32 1216 - Asphalt Paving.

17. Section 32 1723 – Pavement Markings.

18. Section 32 1816 – Playground Protective Surfacing.

19. Section 32 3113 - Chain Link Fences and Gates.

20. Section 33 1100 - Site Water Distribution Utilities.

21. Section 33 3000 - Site Sanitary Sewer Utilities.

22. Section 33 4000 - Storm Drainage Utilities.

1.02 REFERENCES

A. Structural work, such as retaining walls, planter walls, cast-in-place benches, equipment pads, and footings for playground equipment, fences, walls, shade structures and flagpoles shall conform to the following Sections:

1. Section 03 1000 Concrete Forming.

2. Section 03 2000 Concrete Reinforcing.

3. Section 03 3000 Cast-in-Place Concrete.

B. Flatwork, such as walkways, driveways, ramps and steps on grade, swales, curbs, mow strips and utility related concrete, conform to:

1. Standard Specifications for Public Works Construction, The “Greenbook”, except reclaimed aggregates and processed miscellaneous base are not allowed.

C. Imported or exported earthwork shall conform to Section 01 4524 Environmental Import / Export Materials Testing.

D. National Ready Mixed Concrete Association (NRMCA):

1. Checklist for the Concrete Pre-Construction Conference.

1.03 QUALITY ASSURANCE

A. Source Limitations for Exposed Concrete: Obtain each color, size, type, and variety of concrete material and concrete mixture from single manufacturer with resources to provide concrete of consistent quality in appearance and physical properties. Secure

material required for the duration of the project as needed to ensure consistent quality in appearance.

B. Pre-Installation Conference:

1. CONTRACTOR shall coordinate and conduct pre-installation conference in conformance to Section 01 3119 Project Meetings.

2. CONTRACTOR shall use the NRMCA “Checklist for the Concrete Pre-Construction Conference” as the meeting agenda.

C. Mockup:

1. Build 8 feet by 8 feet mockups of full-thickness sections of concrete paving using processes and techniques intended for use on permanent work, including curing procedures.

2. Build mockups to demonstrate typical joints; surface finishes and standard of workmanship.

3. Obtain ARCHITECT’s approval of mockup before proceeding with work of this Section.

4. Mockup shall remain through completion of the work for use as a quality standard for finished work.

5. Remove mockup when directed by the OAR.

D. Field applied primers, paintings, sealers, sealants, caulking, leveling and patching compounds, crack/joint repair compounds adhesives and similar products shall be approved by the OWNER’s Office of Environmental Health and Safety (OEHS).

1.04 SUBMITTALS

A. Structural Work: Conform to the applicable requirements of Sections 03 1000 Concrete Forming, 03 2000 Concrete Reinforcing and 03 3000 Cast-in-Place Concrete.

B. Flatwork: Submit mix design in conformance to the Greenbook.

C. Shop Drawings: Submit drawings indicating the locations of concrete joints, including construction joints, expansion joints, isolation joints, and contraction joints.

D. Submit concrete Sample of each specified color.

1.05 DELIVERY, STORAGE AND HANDLING

A. Store cement and aggregate materials so to prevent their deterioration or intrusion by foreign matter. Deteriorated or contaminated materials shall not be furnished.

B. Packaged materials shall bear the manufacturers and brand name label and shall be stored in their original unbroken package in a weather tight place until ready for use in the work.

C. Avoid exposure of reinforcing steel bars, wire, and wire fabric to dirt, moisture or conditions harmful to reinforcing.

D. Reinforcing steel bars, wire, and wire fabric shall be stored on the Project site to permit easy access for examination and identification of each shipment. Material of each shipment shall be separated by size and shape.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Structural Work: Conform to the applicable requirements of the following Sections, except as otherwise specified:

1. Section 03 1000 Concrete Forming.

2. Section 03 2000 Concrete Reinforcing.

3. Section 03 3000 Cast-in-Place Concrete.

4. Section 07 9200 Joint Sealants.

B. Flatwork: Conform to the applicable requirements of the Greenbook, Section 201, except as follows:

1. Water/cement ration for concrete flatwork shall be 0.50 maximum.

2. Base course shall conform to Section 32 3226 Base Course.

3. Reclaimed concrete material shall not be used.

2.02 SKATEBOARD DETERRENTS

A. Manufacturer: Barrett Robinson Inc. or equal.

B. Fabricated from 6061-T6 aluminum, clear anodized.

1. Fixed Radius:

a. FR.05: For 1/2" radiused edges. Dimensions: 3.75" top x 1.0" face x 2.0" wide.

2. Two-part epoxy adhesive shall be approved by the OWNER’s Office of Environmental Health and Safety (OEHS).

3. Fastening pins as recommended by skateboard deterrent manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that gradients and elevations of base are correct. Maintain subgrade clean and in a smooth, compacted condition until the concrete is placed.

B. Maintain subgrade in a smooth, compacted condition in conformity with the required section and established grade until the concrete is placed. Earth surface shall be kept moist by frequent sprinkling up to the time of placing concrete.

3.02 CONSTRUCTION OF FORMS

A. Flatwork Forming: Set forms to the indicated alignment, grade and dimensions. Hold forms rigidly in place by a minimum of 4 stakes per form placed at intervals not to exceed two feet. Use additional stakes and braces at corners, deep sections, and radius bends, as required. Use clamps, spreaders, and braces where required to ensure rigidity in the forms.

B. Wall Formwork: Forms shall be constructed to conform to final concrete shape, lines and dimensions of members required by Drawings and Specifications. Forms shall be sufficiently tight to prevent leakage of concrete and properly braced or tied together to maintain position and shape.

3.03 STEEL REINFORCEMENT INSTALLATION

A. Fabricate bars of the indicated sizes and bend and form to required shapes and lengths by methods not injurious to materials. Do not heat reinforcement for bending. Bend bars No. 6 size and larger in the shop only. Bars with unscheduled kinks or bends are not permitted.

B. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

C. Install welded-wire reinforcement in lengths as long as practicable. Lap adjoining pieces, and lace splices with wire.

D. Clean reinforcement of loose rust and mill scale, earth, or bond-reducing materials.

3.04 PREPARATION FOR CONCRETE PLACEMENT

A. Surfaces to receive concrete shall be free of debris, standing water, and any other deleterious substances before start of concrete placing.

B. Do not place concrete until forms, reinforcement, pipe, conduits, outlet boxes, anchors, sleeves, bolts, and other embedded materials are securely fastened in place. Maintain a minimum of two inches clearance between said items and any part of the concrete reinforcement.

C. Adjust pull boxes, meter boxes, valve covers and manholes to proposed finish grade prior to placement of concrete. Anchor bolts shall be accurately set and maintained in position by templates while being embedded in concrete.

D. Clean thoroughly the surfaces of metalwork to be in contact with concrete, remove dirt, grease, loose scale and rust, grout, mortar, and other foreign substances before the concrete is placed.

E. Moisten subbase to provide a uniform dampened condition at time concrete is placed.

3.05 CONCRETE PLACEMENT

A. Place, compact, screed, float and trowel concrete as indicated in Section 03 3000 Cast-in-Place Concrete.

B. Finish: After straightedging, when most of the water sheen has disappeared and just before the concrete hardens, finish the surface with a wood or magnesium float or darby to a smooth and uniformly fine granular or sandy texture free of waves, irregularities, or tool marks. Produce a scored surface by brooming with a fiber-bristle brush in a direction transverse to that of the traffic, followed by edging.

1. Provide medium broom finish on surfaces up to six percent slope by striating surface 1/32 to 3/64 inch deep with a soft bristle broom across concrete surface to provide a uniform fine line texture.

2. Provide heavy broom finish on surfaces over six percent by striating surface 1/16 inch to 1/8 inch deep with a stiff-bristled broom.

3.06 JOINTS

A. Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated. Align curb, gutter, and sidewalk joints.

B. Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour.

1. Continue steel reinforcement across construction joints unless otherwise indicated on the Drawings.

2. Provide tie bars at sides of paving strips where indicated on the Drawings

3. Butt Joints: Use bonding agent or epoxy-bonding adhesive at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

4. Keyed Joints: Provide preformed keyway-section forms or bulkhead forms with keys unless otherwise indicated. Embed keys at least 1-1/2 inches into concrete.

5. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated on the Drawings.

D. Expansion Joints:

1. Provide premolded joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together. Extend expansion joint fillers full-width and depth of joint, and 1/4" below finished surface where joint filler is indicated. If no joint sealer is indicated place top of premolded joint filler flush with top of concrete or curb.

2. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

E. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints to a depth equal to at least one-fourth of the concrete thickness, as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 1/4-inch radius. Repeat grooving of contraction joints after applying surface finishes. Remove grooving-tool marks on concrete surfaces.

2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.

3. Doweled Contraction Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.

F. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Remove edging-tool marks on concrete surfaces.

G. Where concrete is to be cast against old concrete, (greater than 60 days of age), the surface of the old concrete shall be thoroughly cleaned and roughened by sand-blasting, exposing the aggregate. The hardened surface shall be cleaned of latent foreign material and washed clean, prior to the application of an epoxy bonding agent.

3.07 STAIRS AND RAMPS

A. Install support post sleeves into the perimeter concrete curbing during the installation process of the curbing. Sleeves shall be three-inch diameter, schedule 40 PVC with a cap solvent welded to the bottom of the sleeve. Drill a half-inch weep hole on the

bottom of the cap. Sleeve and cap shall be Nibco products or approved equal. Sleeves shall be embedded into concrete a minimum of nine inches and spaced at a maximum of four feet, or as indicated on the Drawings. Fill sleeve with non-shrink grout Quickcrete #1585-01 when setting posts. Provide control joints into the concrete on both sides for each post.

B. Finish step nosings with a safety step edger/groover with a 1/2 inch radius and four grooves spaced equally 3/4 inch on center and a bit depth between 1/4 to 3/8 inch. Paint with contrasting color.

3.08 CURB AND GUTTER CONCRETE PLACEMENT AND FINISHING

A. Formed Curb and Gutter: Place concrete to the required section in a single lift. Consolidate concrete using approved mechanical vibrators. Finish curve shaped gutters with a standard curb mule or concrete slipformed curb paving equipment.

B. Concrete Finishing: Float and finish exposed surfaces with a smooth wood float until true to grade and section and uniform in texture. Brush floated surfaces with a fine-hair brush using longitudinal strokes. Round the edges of the gutter and top of the curb with an edging tool to a radius of 1/2 inch. Immediately after removing the front curb form, rub the face of the curb with a wood or concrete rubbing block and water until blemishes, form marks, and tool marks have been removed. Brush the front curb surface, while still wet, in the same manner as the gutter and curb top. Finish the top surface of gutter to grade with a wood float.

C. Surface and Thickness Tolerances: Finished surfaces shall not vary more than 1/4 inch from the testing edge of a 10-foot straightedge. Permissible deficiency in section thickness will be up to 1/4 inch.

3.09 CLEAN UP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project Site.

3.10 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 32 1316

INTEGRALLY COLORED CONCRETE

STAMPED CONCRETE PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to Work of this Section.

B. Section Includes:
   1. Integrally colored exterior concrete pavements.
   2. Stamping/Imprinting.
   3. Curing of integrally colored and imprinted concrete.

C. Related Sections:
   1. Section 07 9200 “Joint Sealants” for colored sealant installed in paving joints.
   2. Section 32 1313 “Site Concrete” for basic concrete paving requirements.

1.2 REFERENCES

A. American Concrete Institute (ACI):
   1. ACI 301 "Specification for Structural Concrete for Buildings."
   2. ACI 302 IR "Recommended Practice for Concrete Floor and Slab Construction."
   3. ACI 303.1 "Standard Specification for Cast-In-Place Architectural Concrete."
   4. ACI 304 "Recommended Practice for Measuring, Mixing, Transporting and Placing of Concrete."
   5. ACI 305R "Recommended Practice for Hot Weather Concreting."
   6. ACI 306R "Recommended Practice for Cold Weather Concreting."

B. American Society for Testing and Materials (ASTM):
   1. ASTM C309 "Liquid Membrane-Forming Compounds for Curing Concrete."
   2. ASTM C494 "Standard Specification for Chemical Admixtures for Concrete."
   3. ASTM C979 "Standard Specification for Pigments for Integrally Colored Concrete."

C. American Association of State Highway and Transportation Officials (AASHTO):
   1. AASHTO M194 "Chemical Admixtures."

D. 2022 CBC 11B-403

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's complete technical data sheets for the following:
   1. SikaColor 100-P Colored admixture, or Equal.
   2. Powder antiquing release agent.
   3. Imprinting/Texturing tools.
   4. Curing compound.

B. Design Mixes: For each type of integrally colored concrete.

C. Samples for Initial Selection: The contractor shall submit to the Landscape Architect one sample each 6-inch x 6-inch in size, for each concrete color, finish, and pattern specified as part of the project. The contractor shall submit the concrete samples to the Landscape Architect for approval.

D. Qualification Data: For firms indicated in "Quality Assurance" Article, including list of completed projects.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer with 10-years' experience in production of specified products.

B. Installer Qualifications: An installer with 5 years' experience with work of similar scope and quality required by this Project and acceptable to, or certified by, stamped concrete paving manufacturer.

C. Comply with the requirements of ACI 301.

D. Obtain each specified material from same source and maintain high degree of consistency in workmanship throughout Project.

E. Notification of manufacturer's authorized representative shall be given at least 1-week before start of Work.

F. Integrally Colored/Stamped Concrete Mockups:
   1. Provide under provisions of Division 1 Section "Quality Control."
   2. Provide 4 feet by 4 feet mockups in wood-framed boxes for each type of stamp and finishes as indicated on the contract drawings..
   3. For accurate color, the quantity of concrete mixed to produce the sample should not be less than 3 cubic yards (or not less than 1/3 the capacity of the mixing drum on the ready-mix truck) and should always be in full cubic yard increments. Excess material

shall be discarded according to local regulations.

4. Construct mockup using processes and techniques intended for use on permanent work, including curing procedures. Include samples of control, construction, and expansion joints in sample panels. Mockup shall be produced by the individual workers who will perform the work for the Project.
5. Retain samples of cement, sands, aggregates and color additives used in mockups for comparison with materials used in remaining work.
6. Accepted mockup provides visual standard for work of Section.
7. Mockups shall remain through completion of the work for use as a quality standard for finished work.
8. Remove mockup when directed.

1.5 DELIVERY, STORAGE AND HANDLING

A. Colored Admixture: Comply with manufacturer's instructions. Deliver colored admixtures in original, unopened packaging. Store in dry conditions.

1.6 PROJECT CONDITIONS

A. Integrally Colored Concrete Environmental Requirements:
   1. Schedule placement to minimize exposure to wind and hot sun before curing materials are applied.
   2. Avoid placing concrete if rain, snow, or frost is forecast within 24-hours. Protect fresh concrete from moisture and freezing.
   3. Comply with professional practices described in ACI 305R and ACI 306R.

B. Schedule delivery of concrete to provide consistent mix times from batching until discharge. Mix times shall meet manufacturer’s written recommendations.

1.7 PRE-CONSTRUCTION CONFERENCE

A. One week prior to placement of integrally colored concrete, a meeting shall be held to discuss the Project and application methods.

B. It is suggested that the Architect, General Contractor, Construction Manager, Subcontractor, Ready-Mix Concrete Representative, and a Manufacturer's Representative be present.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURER

A. Basis of Design: Sika Corporation (Scofield brand), or Equal.

2.2 MATERIALS

A. Colored Admixture for Integrally Colored Concrete: Davis Colors concentrated pigments specially processed for mixing into concrete.
    1. Admixture shall be a colored, water-reducing, admixture containing no calcium chloride with coloring agents that are lime proof and UV resistant.
    2. Colored admixture shall conform to the requirements of ACI 303.1, ASTM C979, ASTM C494, and AASHTO M194.

B. Stamping/Imprinting Tools , Matcrete Decorative Concrete Products.

C. Powder Antiquing Release Agent: Matcrete Dustone, Matcrete Decorative Concrete Products.
    1. Powder antiquing release agent shall be recommended by pattern tool manufacturer and compatible with integral color additives.

D. Liquid Release Agent: Matcrete Liquid Release Agent, Matcrete Decorative Concrete Products.
    1. Liquid Release Agent shall be recommended by pattern tool manufacturer and compatible with integral color additives

E. Curing Compound for Integrally Colored Concrete: Curing compound shall comply with ASTM C309 and be of same manufacturer as colored admixture, for use with integrally colored concrete.
    1. Exterior Integrally Colored Concrete: Davis Colors Color Seal II, Davis Colors. Use to cure exterior flatwork that will be allowed to cure naturally with only occasional maintenance.

F. Curing and Sealing Compound: Matcrete ‘Aqua Seal’, Matcrete Decorative Concrete Products. Curing and sealing compound shall comply with ASTM C309.

G. SUBSTITUTIONS: The use of products other than those specified will be considered providing that the Contractor requests its use in writing within 14-days prior to bid date. This request shall be accompanied by the following:
    1. A certificate of compliance from the material manufacturer stating that proposed products meet or exceed requirements of this Section, including standards ACI 303.1, ASTM C979, ASTM C494 and AASHTO M194.
    2. Documented proof that proposed materials have a 10-year proven record of

performance for staining concrete substrates, confirmed by at least 5 local projects that Architect can examine.

2.3 COLORS AND PATTERNS

A. Concrete Colors:
   1. Cement: Color shall be gray.
   2. Sand: Color shall match Architect's sample.
   3. Aggregate: Concrete producer's standard aggregate complying with specifications.
   4. Colored Admixture: As selected by Architect from Davis Colors Color Chart.
   5. Stamp/Imprinting Pattern: As indicated on contract drawings.
   6. Powder Antiquing Release Agent: As selected by Architect from manufacturer's standard colors.

2.4 CONCRETE MIX DESIGN

A. Minimum Cement Content: 5-1/2 sacks per cubic yard of concrete.

B. Slump of concrete shall be consistent throughout Project at 4-inches or less. At no time shall slump exceed 5-inches. If super plasticizers are allowed, slump shall not exceed 8-inches.

C. Do not add calcium chloride to mix as it causes mottling and surface discoloration.

D. Supplemental admixtures shall not be used unless approved by manufacturer.

E. Do not add water to the mix in the field.

F. Add colored admixture to the mix according to manufacturer’s written instructions in premeasured bags, not by weight of cement content.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install concrete according to requirements of Section 321313 “Site Concrete”

B. Do not add water to the mix in the field.

C. Surfaces shall be finished uniformly with the following finish:
   1. Stamped/Imprinted: Apply pattern according to tool manufacturer's instructions. Touch-up pattern and finish edges with hand tools as necessary.

3.2 CURING

A. Integrally Colored Concrete: Apply curing and sealing compound for integrally colored concrete according to manufacturer's instructions using manufacturer's recommended application techniques. Apply curing and sealing compound at consistent time for each pour to maintain close color consistency.

B. Curing compound shall be same color as the colored concrete and supplied by same manufacturer of the colored admixture.

C. Precautions should be taken in hot weather to prevent plastic cracking resulting from excessively rapid drying at surface as described in CIP 5 *Plastic Shrinkage Cracking* published by the National Ready Mixed Concrete Association.

D. Do not cover concrete with plastic sheeting.

E. Apply concrete sealer compound per manufacturer’s recommendations. Final gloss finish shall be selected by Architect from based on mockup appearance.

3.3 TOLERANCES

A. Minor variations in appearance of colored concrete, which are similar to natural variations in color and appearance of uncolored concrete, are acceptable.

3.4 APPLICATORS

A. For a list of qualified contractors, contact your local Scofield representative.

END OF SECTION

SECTION 32 1415

PERVIOUS PAVERS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Pervious paving, including geotextile membrane, subbase, base, and bedding layer.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Section 01 4523 - Testing and Inspection.

3. Section 01 4524 – Environmental Import/Export Material Testing.

4. Section 31 2316 - Excavation and Fill For Paving.

5. Section 32 1313 - Site Concrete Work.

1.02 REFERENCES

A. American Society for Testing and Materials International (ASTM):

1. ASTM C131 – Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact.

2. ASTM C136 – Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

3. ASTM C140 – Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.

4. ASTM D448 – Standard Classification for Sizes of Aggregate for Road and Bridge Construction.

5. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft lbf/ft3 (2,700 kN m/m3)).

6. ASTM D1883 – Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.

7. ASTM D3786 – Standard Test Method for Bursting Strength of Textile Fabrics – Diaphragm Bursting Strength Tester Method.

8. ASTM D4355 – Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon Arc Type Apparatus.

9. ASTM D4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity.

10. ASTM D4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.

B. American Association of State Highway and Transportation Officials (AASHTO):

1. AASHTO M 288 - Geotextile Specification for Highway Applications.

C. Interlocking Concrete pavement Institute (ICPI):

1. Permeable Interlocking Concrete Paving Manual.

1.03 SUBMITTALS

A. Product Data: Provide catalog sheets and product specifications of paver unit, including dimensions and special shapes, and geotextile fabric.

B. Samples:

1. Submit samples of each paver type, illustrating style, size, color range and surface texture of units being provided.

2. Submit samples of geotextile fabric, 12-inch by 12-inch.

3. Submit 1 lb. samples of subbase, base and bedding materials.

C. Manufacturer's Installation Instructions: Indicate substrate requirements, and installation methods.

D. Manufacturer’s Maintenance Instructions: Written instructions for recommended maintenance.

E. Certificates: Submit certification or test reports indicating conformance to the standards indicated:

1. Laboratory test report certifying compliance of the concrete pavers to ASTM C936.

2. Manufacturer’s certification of concrete pavers by ICPI as having met applicable ASTM standards.

3. Sieve analysis of aggregates for subbase, base and bedding materials per ASTM C136.

F. Base Course Materials: Comply with requirements of Section 01 4524, Environmental Import/Export Material Testing.

G. Installer Qualifications:

1. Copy of Subcontractor's current certificate from the Interlocking Concrete Pavement Institute Concrete Paver Installer Certification program.

2. Job references from projects of a similar size and complexity. Provide Owner/Client/General Contractor names, address, phone, fax, and email address.

1.04 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installer shall successfully have completed concrete paver installation similar in design, material, and extent indicated on this project.

2. Installer job foremen shall hold a current certificate from the Interlocking Concrete Pavement Institute Concrete Paver Installer Certification program.

B. Mock-ups:

1. Install a 10-foot by 10-foot paver area to determine surcharge of the bedding layer, joint sizes, lines, laying pattern(s), color(s) and texture of the job. This area will be used as the standard by which the work will be judged.

2. Test mock-up with water to assure permeability of paving system.

3. Subject to acceptance by Owner, mock-up may be retained as part of finished work. If mock-up is not retained, remove and properly dispose of mock-up.

1.05 DELIVERY, STORAGE AND HANDLING

A. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers packaging with identification labels intact.

B. Handle pavers on pallets or flat bed barrows. Free discharge from conveyor units or transportation in mortar trays is not permitted.

C. Storage and Protection: Store materials protected such that they are kept free from mud, dirt, and other foreign materials.

1.06 SITE CONDITIONS

A. Do not install pervious paving pavers system until all hard surfaces adjacent to the pervious paving area have been completed, including concrete work.

B. Inspect surface of area prior to the installation of the pervious paving pavers system for low or uneven spots. Correct as required.

C. Do not install pervious paving pavers system in standing water.

D. Protect pervious paving area during installation against damage from other construction traffic when work is in progress.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A.

B. Hydropavers Inc.

G. Equal products by ICPI member manufacturer.

2.02 MATERIALS

A. Pervious pavers shall conform to the following:

1. Shape and sizes shall be in accordance with details as noted on Drawings.

2. Colors: Selected from manufacturer's full range.

3. Pavers shall provide an average minimum compressive strength of 9,690 psi with no individual unit less than 7,200 psi.

4. Pavers shall be recycled ceramic tiles with a bentonite clay binder kiln baked at 1,200 degrees C.

5. Resistance to Freezing and Thawing, in conformance to ASTM C936.

6. Minimum infiltration rate: 1.0 inches/minute.

7. Pervious pavers minimum water retention: 0.15 US Gallons per square foot.

B. Edge Restraint: Concrete curb per Section 32 1313 - Site Concrete Work.

C. Geotextile Fabric: Needle-punched nonwoven geotextile fabric composed of polypropylene or polyester fibers and formed into a stable network. Resistant to biological degradation, chemicals, alkalis and acids naturally found in soils. Elongation shall be greater than 50 percent, and shall meet requirements of AASHTO M 288, Class 3.

1. Geotextile fabric shall meet the following requirements:

   a. Grab Tensile Strength: Not less than 120 pounds per ASTM D4632.

   b. Mullen Burst Strength: Not less than 225 psi per ASTM D3786.

   c. Flow Rate: Not less than 95 gal/min/ft^2 per ASTM D4491.

   d. Elongation: Not less than 50% per ASTM D4632.

   e. UV Resistance after 500 hours: Not less than 70% per ASTM D4355.

   f. Heat-set or heat-calendered fabrics are not allowed.

2. Products:

   a. TenCate Geosynthetics Americas, Mirafi 140N.

   b. US Fabrics, Inc., 120NW.

   c. Propex Fabrics, Inc., Geotex 451.

   d. Equal.

D. Crushed Stone Filler, Bedding, Base and Subbase:

1 Crushed stone with 90 percent fractured faces, LA Abrasion less than 40 per ASTM C131, minimum CBR (California Bearing Ratio) of 80 percent per ASTM D1883. Round river or pea gravel shall not be used.

2. Stone materials shall be washed with less than 1 percent passing the No. 200 sieve.

3. Joint/opening filler, and subbase: In conformance to ASTM D448 gradation:

Table 1
ASTM No. 8 Grading Requirements Bedding

Sieve Size	Percent Passing
1/2 inch	100
3/8 inch	85 to 100
No. 4	10 to 30
No. 8	0 to 10
No. 16	0 to 5

Table 2
ASTM No. 57 Base Grading Requirements

Sieve Size	Percent Passing
1 1/2 inch	100
1 inch	95 to 100

1/2 inch	25 to 60
No. 4	0 to 10
No. 8	0 to 5

Table 3
Grading Requirement for ASTM No. 2 Subbase

Sieve Size	Percent Passing
3 inch	100
2 1/2 inch	90 to 100
2 inch	35 to 70
1 1/2 inch	0 to 15
3/4 inch	0 to 5

PART 3 - EXECUTION

3.01 SUBGRADE PREPARATION

A. Owner will retain a geotechnical engineer, as an Owner Consultant for testing, sampling and observing the work of this section.

B. Fill and compact subgrade per Section 31 2316 - Excavation and Fill For Paving to at least 90 percent per ASTM D1557. Compacted subgrade will be tested to percolation per ASTM D3385; percolation rate should be not less than 0.5 inch/hour.

3.02 EXAMINATION

A. Verify that subgrade preparation, compacted density and elevations conform to specified requirements.

B. Verify location, type, and elevations of edge restraints, utility structures, and drainage inlets have been placed in accordance to drawings and specifications.

C. Do not proceed with installation of aggregate layers and pervious pavers until base conditions have been corrected.

D. Discard units with cracked faces, chipped surfaces, or other defects.

3.03 INSTALLATION

A. General:

1. Any excess thickness of soil applied over the excavated soil subgrade to trap sediment from adjacent construction activities shall be removed before application of the geotextile and subbase materials.

2. Keep area where pavement is to be constructed free from sediment during entire job. Geotextile fabric, subbase, base and bedding materials contaminated with sediment shall be removed and replaced with clean materials.

3. Do not damage drainpipes, overflow pipes, observation wells, or any inlets and other drainage appurtenances during installation. Report any damage immediately to the project engineer.

B. Geotextile Fabric: Lay geotextile fabric smooth and free of tension, stress, folds, and wrinkles. Overlap ends of rolls or panels a minimum of 24 inches in the direction of drainage. Extend at least 4 feet beyond pavement ends to prevent any runoff or sediment from entering subbase. Cut excess geotextile fabric to gravel edge when area is fully stabilized.

C. Open-graded subbase and base:

1. Moisten, spread and compact the No. 2 subbase in 4 to 6 inches lifts, without wrinkling or folding the geotextile fabric. Place subbase to protect geotextile fabric from wrinkling under equipment tires and tracks.

2. For each lift, make at least two passes in the vibratory mode then at least two in the static mode with a minimum vibratory roller until there is no visible movement of the No. 2 stone. Do not crush aggregate with the roller.

3. The surface tolerance of the compacted No. 2 subbase shall be plus or minus 2 1/2 inches over a 10-foot straightedge.

4. Moisten, spread and compact No. 57 base in a 4 inches lift over the compacted No. 2 subbase with a minimum 10 t (10 T) vibratory roller until there is no visible movement of the No. 57 stone. Do not crush aggregate with the roller.

5. The surface tolerance the compacted No. 57 base should not deviate more than plus or minus1 inch over a 10-foot straightedge.

D. Bedding layer

1. Moisten, spread and screed the No. 8 stone bedding material to a thickness between 3/4 to 1 ¼-inch, and no more than 2-inch.

2. Fill voids left by removed screed rails with No. 8 stone.

3. The surface tolerance of the screeded No. 8 bedding layer shall be plus or minus 3/8 inches over a 10-foot straightedge.

4. Do not subject screeded bedding material to any pedestrian or vehicular traffic before paving unit installation begins.

E. Pervious pavers and joint fill material

1. Lay the pavers in the pattern(s) shown on the drawings. Maintain straight pattern lines. No gap between pavers.

2. Fill gaps at the edges of the paved area with cut units. Cut pavers subject to tire traffic shall be no smaller than 1/3 of a whole unit.

3. Cut pavers and place along the edges with a diamond blade masonry saw.

4. Fill the joints with fine brick or masonry sand and sweep the fine dry sand into the joints until they are full.

5. Remove excess sand on the surface by sweeping pavers clean.

6. Compact and seat the pavers into the bedding material with at least two passes with the plate compactor with a soft protective pad.

7. Do not compact within 6 feet of the unrestrained edges of the paving units.

8. Apply additional sand to the openings and joints, filling them completely. Remove excess sand by sweeping.

9. Pavers within 6 feet of the laying face must be left fully compacted at the completion of each day.

10. The final surface tolerance of compacted pavers shall not deviate more than plus or minus 3/8 inch under a 10-foot long straightedge.

11. The surface elevation of pavers shall be 1/8 to 1/4 inches above adjacent drainage inlets, concrete collars or channels.

3.04

3.05 CLEANING

A. At completion of paver Work, clean surfaces which will be exposed in finish Work with specified cleaner, or with clean water and stiff fiber brushes.

B. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

3.06 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 32 1723

PAVEMENT MARKINGS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Parking stripes, markings and accessibility symbols.
2. Exterior athletic court markings.
3. Playground markings.
4. Fire lane “No Parking.”
5. Curb marking and red curbs.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 32 1236 - Seal for Bituminous Surfacing.

1.02 SUBMITTALS

A. Shop Drawings: Submit Shop Drawings, indicating location, extent, color and texture of markings.

B. Material Samples: Submit color Samples.

1.03 PROJECT CONDITIONS

A. Do not install markings when adverse weather conditions are forecasted.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Paint: Water emulsion-based traffic paint must be approved by OEHS (LAUSD’s Office of Environmental Health and Safety)

1. Dunn Edwards: Vin-L-Stripe.
2. Pervo Paint Company: Acrylic Traffic Paint.

3. Sherwin Williams: Setfast Acrylic Traffic Paint.

4. Vista Paint Corporation: Traffic Paint.

5. Equal.

PART 3 - EXECUTION

3.01 PAVEMENT MARKINGS

A. Application of Paint:

1. Prior to application of paint, allow the pavement to properly cure. Clean and prepare in accordance with paint manufacturer's written recommendations.

2. Provide mechanical equipment to apply paint in a uniform, straight or curved pattern, without gaps, holidays, runs, or other defects.

3. Do not permit traffic until paint has completely cured.

4. Apply two coats in thickness recommended by manufacturer.

5. Playground Markings: Submit Samples to Architect for review. Limited color palettes may be submitted.

B. Marking Width and Color: Unless indicated otherwise, marking width and color are as follows:

Location	Width	Color
Parking stall lines	4 inches	White
Traffic markings		
Striping:	4 inches	Yellow
General	4 inches	Yellow
Accessible Parking	4 inches	Blue
International Symbol of Accessibility (ISA)	2 inches	White on blue background
Athletic Court Lines:	2 inches	*White
Letters and numbers:		As indicated

*Where two sets of lines overlap, one set shall be white and the other set shall be yellow.

3.02 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.03 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 32 1726

DETECTABLE WARNING SURFACING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Precast concrete detectable warning tile pavers installed on mortar bed over concrete slab.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 31 2200 – Grading.
3. Section 31 2316 - Excavation and Fill for Pavement.
4. Section 31 2326 - Base Course.
5. Section 32 1216 - Asphalt Paving.
6. Section 32 1313 – Site Concrete.

1.02 REFERENCES

A. ASTM International (ASTM):

1. ASTM A1046- Standard Specification for Steel Sheet, Zinc-Aluminum-Magnesium Alloy-Coated by the Hot-Dip Process.
2. ASTM C33 - Standard Specification for Concrete Aggregates.
3. ASTM C67 – Standard Methods of Sampling and Testing Brick and Structural Clay Tile.
4. ASTM C140 - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
5. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar.
6. ASTM C150 - Standard Specification for Portland Cement.
7. ASTM C920 – Standard Specifications for Elastomeric Joint Sealants.
8. ASTM C936 - Standard Specification for Solid Concrete Interlocking Paving Units.

B. The Masonry Society (TMS); American Concrete Institute (ACI), and American Society of Civil Engineers (ASCE):

1. TMS 602 / ACI 530.1 / ASCE 6 - Specifications for Masonry Structures.

C. Tile Council of North America (TCNA):

1. TCNA Handbook for Ceramic, Glass, and Stone Tile Installation.

a. TCNA F101 - Mortar Installation.

b. TCNA EJ171 - Movement Joints.

D. American National Institute Standards (ANSI):

1. ANSI A118.4 - Specifications for Modified Dry-Set Cement Mortar.

2. ANSI A118.7 – Specifications for High Performance Cement Grouts for Tile Installation.

1.03 REGULATORY REQUIREMENTS

A. Detectable warning surfacing shall conform to:

1. Title 28 Code of Federal Regulations, Part 36, Subpart D: 2010 ADA Standards for Accessible Design, 2010 Standards for Public Accommodations and Commercial Facilities: Title III.

2. CBC Section 11B-705, Detectable Warnings and Detectable Directional Texture.

B. Installed detectable warning pavers shall provide consistent side to side and end to end spacing that complies with the regulatory requirements.

1.04 PROJECT CONDITIONS

A. Weather Limitations for Mortar and Grout:

1. Cold Weather Requirements: The cold weather construction provisions of TMS 602 / ACI 530.1 / ASCE 6 shall be implemented when the ambient temperature falls below 40F^{o}.

2. Hot Weather Requirements: The hot weather construction provisions of TMS 602 / ACI 530.1 / ASCE 6 shall be implemented when the ambient temperature exceeds 100^{o} F or 90^{o} F with a wind velocity greater than 8 mph.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Products covered under this Section shall be produced by a single manufacturer, unless otherwise specified, with a minimum of five years proven production experience.

B. Installer Qualifications: Installer shall have a minimum of three years proven construction experience with the work specified in this Section.

C. Pre-Installation Conference: CONTRACTOR shall coordinate and conduct pre-installation conference in conformance to Section 01 3119 Project Meetings.

D. Field applied primers, paintings, sealers, adhesives and cleaners shall be approved by the OWNER's Office of Environmental Health and Safety (OEHS).

1.06 SUBMITTALS

A. Product Data: Manufacturer's data sheets on each product to be used, including installation instructions maintenance recommendations.

B. Shop Drawings: Submit layout drawings showing pattern of detectable warning pavers and provide details at curbs and adjacent construction. Indicate pavers requiring cutting.

C. Material Test Reports: Submit current test reports from an independent testing laboratory indicating that materials used comply with the specification requirements and the proposed products meet the properties specified.

D. Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns. Color will be selected by ARCHITECT.

1.07 DELIVERY, STORAGE AND HANDLING

A. Protect detectable warning pavers during shipment, storage and construction against damage. Store a minimum of 4 inches off the ground on pallets in a dry location and cover with polyethylene to protect from contact with materials which would cause staining or discoloration.

1.08 WARRANTY

A. Detectable Warning Pavers shall remain free from defects for a period of five years.

B. CONTRACTOR shall warrant that his work will remain free from defects of labor and materials used in conjunction with his work for three years.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Hanover Architectural Products.

B. StepStone, Inc.

C. Tile Tech Pavers Inc.

D. Wausau Tile Co.

E. Equal.

2.02 MATERIALS

A. Detectable Warning Paver Materials:

1. Portland Cement: In conformance with ASTM C150.

2. Aggregates: In conformance with ASTM C33, cleaned and properly graded to size. Aggregates shall be a blend from 200 mesh to 5/8 inch.

3. Coloring: Pigments used shall be inorganic, resistant to alkalinity and used per manufacturer’s recommendations.

4. Color Blending: Factory-blend pre-cast paver that has a natural color range so products taken from one batch will have the same range as products from a separate batch.

5. Cleaner: Liquid neutral chemical cleaner with pH factor between 7 and 8, of formulation recommended by sealer manufacturer and approved by OWNER’s OEHS.

6. Sealer: Colorless, slip and stain resistant penetrating or acrylic sealer with pH factor between 7 and 10 that does not affect color or physical properties of precast paver surface. Sealer shall be approved by OWNER’s OEHS.

B. Setting Bed, Mortar and Miscellaneous Materials:

1. Setting Bed:

a. Portland Cement: In conformance to ASTM C150.

b. Aggregate: Sand in conformance to ASTM C144. Sand shall be clean, graded and pass a 16 mesh screen.

c. Reinforcing Mesh: In conformance to ASTM A1046. 2 inches X 2 inches 16/16.

2. Mortar: In conformance to ANSI A118.4.

3. Grout: In conformance to ANSI 118.7. Grout colors: selected by the ARCHITECT from the manufacturer's complete color range.

4. Water: Potable and free from deleterious substances.

5. Mortar and Grout Mixes: Comply with referenced standards and with manufacturers' written instructions for mix proportions, mixing equipment, mixer speeds, mixing containers, mixing times, and other procedures needed to produce setting-bed and joint materials of uniform quality and with optimal performance characteristics. Discard mortars and grout if they have reached their

initial set before being used.

6. Primer: As recommended by the mortar material manufacturer and approved by OWNERS's OEHS.

7. Sealant and backing materials: In conformance to ASTM C920, Type T, joints subject to pedestrian and vehicular traffic and approved by OWNERS's OEHS.

2.03 DETECTABLE WARNING PAVER FABRICATION

A. Detectable Warning Pavers: Factory precast concrete pavers with raised truncated domes conforming to CBC Section 11B-705.

1. Dome Size: Base diameter of 0.90 inch minimum and 0.92 inch maximum, a top diameter of 0.45 inch minimum and 0.47 inch maximum and a height of 0.20 inch.

2. Dome Spacing: Truncated domes in a detectable warning surface shall have a center-to-center spacing of 2.3 inches minimum and 2.4 inches maximum, and a base-to-base spacing of 0.65 inch minimum, measured between the most adjacent domes on a square rigid.

3. Color: In conformance to CBC section 11B-705.1.1.3.

4. Contrast: Detectable warning materials shall provide a 70 percent minimum visual contrast with adjacent walking surfaces.

5. Resiliency: Detectable warning surfaces shall differ from adjoining surfaces in resiliency or sound-on-cane contact.

B. Physical Properties:

1. Size: Nominal 12 inches x12 inches.

2. Thickness: Nominal 2 inches.

3. Sizing Dimensions: Shall not differ by more than 1/16 inch from width, height, length or thickness. Unit shall conform to a true plane and not differ by more than 1/16 inch in either concave and/or convex warpage.

4. Compressive Strength: Shall not be less than 8,000 psi per ASTM C140.

5. Water Absorption: Shall not be greater than 6% per ASTM C936 or ASTM C140.

6. Freeze/Thaw: Durability of the paver shall meet the freeze/thaw tests per Section 8 of ASTM C67 and shall have no breakage and not greater than 1 % loss in dry weight of any individual unit when subject to 50 cycles of freeze/ thaw.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine concrete base and verify no sealers, curing compounds or other coatings have been be applied. If present remove in accordance to paver manufacturer.

B. Concrete base shall have a fine broom finish or wood float finish. If not provided scarify mechanically as recommended by paver manufacturer.

C. Remove debris and loose particles and sweep concrete surfaces.

1.02 SETTING BED

A. Installation of mortar bed shall conform to TCA F101.

B. Install red wood float strips so that a straight edge can reach the maximum edges of the intended mortar bed. Verify top of float strips are at the correct elevation to allow a flush installation of the detectable warning pavers with the adjacent surfaces.

C. Moisten concrete base and float strips.

D. Apply a thin, continuous coat of pure Portland cement slurry on the concrete surface or dust a thin layer of dry Portland cement on the concrete and wet it. Broom to completely coat the concrete surface with a thin and uniform coating.

E. Place welded wire fabric on chairs or spacers or small mounds of mortar to hold the reinforcement at the center of the setting bed. Welded wire fabric shall overlap a minimum of one mesh.

F. Mix and apply mortar setting bed material in accordance with the manufacturer's instructions to a thickness of 1-1/4 inches. Trowel mortar between the float strips compacting the mortar as much as possible.

G. Using the float strips as the guide cut off the excess mortar placing the excess further down the area to be floated.

H. While the mortar bed is still plastic or has not cured remove the float strips and fill the grooves with fresh mortar.

1.03 PAVER INSTALLATION

A. Do not use unit pavers with chips, cracks, voids, discolorations, or other defects that might be visible or cause staining in finished work.

B. Cut unit pavers with motor-driven masonry saw equipment to provide clean, sharp, unchipped edges. Cut units to provide pattern indicated and to fit adjoining work neatly. Use full units without cutting where possible. Hammer cutting is not acceptable.

C. Lay pavers in pattern on mortar bed as indicated on the Drawings.

D. Apply mortar using the flat side of the trowel first. Move notched side of trowel in a parallel pattern allowing for air to escape. Apply bod coat over the entire setting surface including grout joints. “Back-butter” pavers with 1/8 inch thick mortar for full mortar to mortar contact.

E. Position paver on mortar bond coat using a slight back and forth motion. “Squeeze up” mortar minimum 1/8 inch in grout joints along tile edges and corners eliminating air voids.

F. Level pavers using a straight edge or taught string.

G. Placement Tolerances:

1. Maximum of 1/16 inch height variation between adjacent pavers.

2. Individual pavers shall not vary more than 1/16 inch from level across width of the paver.

3. Paved areas shall not vary more than 1/4 inch from level in a distance of ten feet measured at any location and in any direction.

4. The surface elevation of pavers shall be 1/8 ich to 1/4 inch above adjacent drainage inlets.

3.04 EXPANSION AND CONTROL JOINTS

A. Locate expansion and control joints as indicated on the Drawings and where pavers are in contact with dissimilar materials such as curbs, concrete pavement and walls.

B. Joints shall be uniform, straight of **[1/8 inch]** wide.

C. Install in accordance with TCA Detail EJ171,

D. Carry joint completely through the assembly to surface.

E. Keep joints clear of mortar setting materials and grout.

F. Apply backer materials and sealant in joints following manufacturer’s instructions.

3.05 GROUTING

A. Follow grout manufacturer’s instructions.

B. Dampen grout joints prior to grout insertion.

C. Install grout using a grout bag or a tuck pointer. Tool the joint with a round tool (“spoon”) or brick jointer.

D. Allow excess grout to set up briefly until it can be swept off using a stiff brush or broom.

E. For final cleaning use cheesecloth, clean damp sponge or when necessary, steel wool. Do not use any acidic cleaners to remove excess grout or grout haze.

F. Remove, scrub and wash clean mortar stains and all other types of soiling from exposed paver surfaces.

G. Apply sealer in accordance with manufacturer's directions.

3.06 CLEAN UP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project Site.

3.07 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 32 1816

PLAYGROUND PROTECTIVE SURFACING

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes: Resilient playground protective tile surfacing system.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 11 6813 - Playground Equipment and Structures.
3. Section 31 2326 - Base Course.
4. Section 32 1313 - Site Concrete Work.
5. Section 32 0113 - Rolled Slurry Seal.
6. Section 32 1216 - Asphalt Paving.
7. Section 33 4000 - Storm Drainage Utilities.

1.02 REFERENCES

A. Reference to standard technical specifications of a society, institute, association, or governmental authority is a reference to the respective organization's standard technical specifications, which are in effect on the date of bid submission.

B. ASTM International (ASTM) - The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by basic designation only.

1. ASTM A123 – Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
2. ASTM C136 – Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
3. ASTM D2859 – Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials.
4. ASTM F355 - Standard Test Method for Impact Attenuation of Playing Surface Systems, Other Protective Sports Systems, and Materials Used for Athletics, Recreation and Play.
5. ASTM F1292 – Standard Specification for Impact Attenuation of Surfacing Materials within the Use Zone of Playground Equipment.

6. ASTM F1487 – Standard Consumer Safety Performance Specification for Playground Equipment for Public Use.

7. ASTM F1951 - Standard Specification for Determination of Accessibility of Surface Systems under and Around Playground Equipment.

1.03 DEFINITIONS

A. Critical Height: Standard measure of shock attenuation. According to CPSC (Consumer Safety Product Commission) No. 325, critical height is defined as "the fall height below which a life-threatening head injury would not be expected to occur."

B. Fall Height: According to ASTM F1487, fall height is defined as "the vertical distance between a designated play surface and the protective surfacing beneath it." The fall height of playground equipment shall not exceed the critical height of the protective surfacing beneath it.

C. Use Zone: As defined by ASTM F1487 and this Section.

D. Certified Playground Safety Inspector (CPSI): A Certified Playground Safety Inspector shall possess a current and valid Certified Playground Safety Inspector certificate as recognized by the National Recreation and Parks Association (NRPA).

1.04 SUBMITTALS

A. Shop and Coordination Drawings: Submit layout plans and elevations drawn to scale for the coordination of playground equipment with playground protective surfacing system. Indicate playground equipment locations, use zones, fall heights, extent of protective surfacing, depths of material, and critical heights, sub-base materials, hardware, penetrations, perimeter edge details, drainage, and surrounding hardscaping, handrail, and guardrails fencing where applicable.

B. Color Samples: Submit manufacturer's color charts or 4-inch squares of units (samples) indicating the full range of colors available.

C. Product Data: Submit manufacturer's descriptive data and installation instructions.

D. Manufacturer's Project References: Submit list of at least five installations where products similar to those specified are installed and have been in successful service for a minimum period of three years. List shall include owner, address of installation, service or maintenance organization, date of installation, contact person, and phone number of the contact person.

E. Certificate of Compliance: Submit manufacturer's certificate of compliance indicating materials comply with specified requirements of this Section.

F. Certified Statement: Submit certified statement indicating that safety tile meets the requirements of ASTM F1292.

G. Certificate of Insurance: Submit in accordance to Article 1.09 Warranty below.

H. Maintenance Instructions: Submit maintenance, repair and cleaning instructions.

I. Installer Certification: Manufacturer shall submit certified statement indicating the following:

1. Installer is trained, approved and/or certified for the installation of the manufacturer's specified playground protective surfacing.

2. Installer has at least five year experience installing manufacturer's playground protective surfacing of similar type to that specified.

1.05 PERFORMANCE REQUIREMENTS

A. Safety: Safety surfacing shall meet or exceed the performance requirements of CPSC and ASTM F1292, that a surface yield both, a peak deceleration of no more than 200g, and a Head Injury Criteria (HIC) value of no more than 1,000g. ASTM F1487 specifies designated play surfaces as any elevated surface for standing, walking, sitting, or climbing, or a flat surface larger than 2.0 inches (51mm) wide and 2.0 inches (51mm) long having less than 30° angle from horizontal. The installer is responsible for obtaining a determination from the playground protective surfacing manufacturer of the required product depth to meet the performance requirements for play equipment.

B. Accessibility: Playground Protective Surfacing intended to serve as accessible paths of travel for persons with disabilities shall be firm, stable and slip resistant and shall meet the requirements of the 2010 Americans with Disabilities Act Standards for Accessible Design (2010 ADAS), ASTM F1487, ASTM F1292, and ASTM F1951.

1.06 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer: Continuously engaged in manufacturing playground protective surfacing of similar type to that specified, with a minimum of five years successful experience.

2. Installer: Shall be approved by manufacturer and shall have a minimum of five years successful experience installing playground protective surfacing of similar type to that specified.

B. Regulatory Requirements:

1. Accessibility: 2010 ADAS and CBC Chapter 11B.

2. U.S. Consumer Product Safety Commission (CPSC) - Handbook for Public Playground Safety, latest edition, U.S. Consumer Product Safety Commission, Bethesda, MD 20814 Telephone (301) 504-7923.

C. Certifications: Submit certified statement indicating that protective surfacing meets the requirements of ASTM F1292 for the installed play equipment. The impact attenuating qualities of the protective surfacing system shall not be diminished in the surface areas covering hardware and footings. Testing of products shall include tests conducted over hardware and concrete. The statement shall be dated after the Effective Date of the Contract, shall state CONTRACTOR name and address, and

shall name the Project and location. The statement shall also provide the name, address, and telephone number of the testing agency, type of instrument used, instrument model and serial number, instrument recall date, the date of the test, and the test results.

D. Fall heights shall be determined by the highest designated play surface, to the protective surfacing system below. Fall heights shall also be determined by the highest part of a climber intended for foot support and/or the highest part of upper body equipment, with the exception of support posts. Impact attenuation testing shall be performed at the highest of these values.

E. Source Limitations: Provide secondary materials including adhesives, anchoring materials, filler/sealant materials, and repair materials of type and from source recommended by manufacturer and approved by the OWNER's Office of Environmental Health and Safety (OEHS).

F. Coordination: Coordinate installation of playground protective surfacing with installation of playground equipment, including but not limited to, use zones and fall heights as specified in the CPSC and ASTM F1487.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver manufactured materials in original package with seals unbroken and bearing manufacturer's labels.

B. Store manufactured materials in a clean, dry location, protected from the weather and deterioration, and complying with manufacturer's written instructions for minimum and maximum temperature requirements for storage.

C. Store units on flat surfaces.

1.08 PROJECT CONDITIONS

A. Environmental Limitations: Do not install playground protective surfacing over wet or excessively damp substrates if prohibited by manufacturer's written instructions.

B. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit playground tile system to be installed according to manufacturer's written instructions.

C. Adhesives: Install adhesives only when temperatures of surfaces to be adhered to and ambient air temperatures are within range permitted by manufacturer's written instructions. Adhesives shall only be installed under dry conditions.

D. Do not install products over concrete slabs until slabs have cured and are sufficiently dry and surfaces are within acceptable pH range to bond with adhesive, as recommended by surfacing manufacturer.

E. Playground Safety Tiles:

1. Install Playground protective surfacing system only when ambient air temperatures during installation and for time period after installation are within range permitted by manufacturer's recommended procedures.
2. Restrict access to work area during tile surfacing installation and for time period after installation as recommended by manufacturer.
3. Install a minimum 6-foot tall privacy fence with weighted or embedded posts at a minimum of ten feet away from area and around perimeter to prevent entry by school students and staff. Gates into area shall be locked when jobsite is unoccupied and materials and associated equipment shall be kept inside of fence when left onsite.
4. Protect playground protective surfacing and accessory materials from damage and exposure to adverse weather conditions.

1.09 WARRANTY

A. Product and General Liability: Manufacturer of Playground Protective Surfacing System shall provide OWNER Certificate of Insurance, covering both product and general liability, of not less than $1,000,000. The issuing underwriter shall be AA rated.

B. Materials and Fabrication:

1. Manufacturer shall provide OWNER written warranty that guarantees playground protective surfacing system for not less than ten (10) years against defective materials and fabrication.
    a. Warranty shall include provisions that include, but is not limited to, cracking, shedding and/or abnormal markings.
    b. Manufacturer shall provide a five (5) year warranty against color fading.
2. Installer shall provide OWNER a written warranty that guarantees the installation of the playground protective surfacing system for not less than ten (10) years against defective products, faulty installation, adhesive and/or fastener failure, seam and/or perimeter edging separation, slope issues exceeding 1:48 (2.08%) and/or uneven surfaces.
3. Warranty repairs shall be conducted without cost to OWNER. Prorated warranties are not acceptable.

C. Performance: Warranty shall guaranty that the playground protective surfacing system will retain its original impact attenuation rating for a period of not less than ten (10) years and meet performance requirements of ASTM F1292. Impact attenuation rating shall be tested per ASTM F1292 after manufacturer replaces tiles or makes repairs.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Manufacturer's product shall be approved for use by OWNER's Office of Environmental Health and Safety.

1. SofSurfaces.
2. TotTurf.
3. Equal.

2.02 MATERIALS

A. Tiles:

1. Resilient, weather-resistant, ultraviolet stable, interlocking, playground protective surfacing made of rubber or PVC.
2. Total post-consumer recycled content shall be a minimum of 90 percent total.
3. Designed and manufactured in such way that the user using the protective surfacing systems is only exposed to surfacing composed of virgin material.
4. Flammability Test, ASTM D2859: Pass.
5. Slip resistant, both wet and dry, in conformance to 2010 ADAS.
6. Designed to prevent the build-up of debris between system components.
7. Listed as an approved product on the OWNER's OEHS website.

B. Accessories: Made of same material as protective surfacing.

1. Corners: Prefabricated outside and inside corners.
2. Ramps: Prefabricated accessible ramps.
3. Edges: Prefabricated bull nose or chamfered edges for use at playground equipment intersections and perimeter of protective surfacing.
4. Beauty Rings: Prefabricated finish edging around penetrations in protective surfacing.

C. Geotextile Fabric: UV stabilized, Terram Product grade 1500, Linq 200, or equal.

D. Adhesive: Manufacturer recommended and compatible with protective surfacing system. Shall also be an approved product listed on the OWNER's OEHS website.

E. Hardware: Corrosion resistant metal and/or composite clips, anchors and fasteners.

F. Concrete: Per Section 32 1313 - Site Concrete Work.

G. Asphalt: Per Section 32 0113 - Rolled Slurry Seal and Section 32 1216 - Asphalt Paving.

H. Metal Products: Per Section 05 5100 - Metal Stairs.

I. Compacted Base: Per Section 31 2326 - Base Course.

J. Chain Link Fence: Per Section 32 3113 – Chain Link Fencing and Gates.

K. Drainage: Section 33 4000 - Storm Drainage Utilities.

2.03 AGGREGATE BASE ROCK

A. Aggregate base rock shall be 3/4 inch minus sharp crushed rock conforming to following grading requirement:

SIEVE SIZE:	PERCENT PASSING:
1 inch	100 percent
3/4 inch	90 – 100 percent
3/8 inch	55-75 percent
1/4 inch or #10	40-60 percent

B. Where a tolerance range is set forth in above grading requirements, midpoint of tolerance range is target value and product shall conform as closely as realistically possible to this target value. The purpose of tolerance range is only to permit occasional minor variations from target value that are, for practical reasons, unavoidable.

C. Thickness: The minimum thickness of aggregate base rock shall be 4-inch or as required by manufacturer.

D. Compaction: Compaction shall be a minimum 95 percent or as recommended in soils report.

2.04 SAND

A. Sand particles shall be rounded naturally or by mechanical means; and sand shall be washed, free of dust, clay, dirt, hazardous substances, or foreign objects; and sieved in accordance with ASTM C136 with an average yield of following definition:

SIEVE SIZE:	PERCENT PASSING:
#4	99 to 100 percent
#8	81 to 95 percent
#16	53 to 75 percent
#30	35 to 56 percent
#50	20 to 25 percent
#100	5 to 9 percent
#200	less than 2 percent

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions for compliance with requirements for sub-grade substrate conditions and drainage, for compliance with playground protective surfacing manufacturer’s requirements and requirements herein, and other installation conditions affecting performance.

B. Hard-Surface Substrates: Verify that substrates are satisfactory for playground protective surfacing installation and that substrate surfaces are dry, cured, and uniformly sloped to drain within recommended tolerances according to playground protective surfacing manufacturer's written requirements for cross-section profile.

C.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. General: Prepare, fill, patch, clean, remove high spots and ridges, and remove incompatible coatings from substrates to receive surfacing products according to playground protective surfacing manufacturer's written recommendations. Verify that substrates are sound and free from high spots, ridges, holes and depressions.

B.

3.03 INSTALLATION

A. General:

1. Comply with playground protective surfacing manufacturer's written recommendations.

2. Installation of protective surfacing system must comply with zone requirements of the latest edition of the "Consumer Product Safety Commission – Handbook for Public Playground Safety – Publication No. 325, ASTM F1487 and this Section.

3. The entire area shall be cleaned and made free from foreign and/or loose materials that would cause the protective surfacing to lay in an uneven fashion and expose surfacing. The area to be surfaced shall be void of depressions and/or protrusions edges or leave depressions. Depressions shall be filled with "LevelCrete" or equal type product prior to installation of the playground protective surfacing systems.

4. The playground protective surfacing system shall be installed only after the playground equipment and subsurface have been installed and have passed inspection by a third party or OWNER Certified Playground Safety Inspector, and the OWNER has obtained the completed inspection report stating compliance with ASTM and CPSC.

5. The playground protective surfacing shall cover hardware, footings and/or foundations with the full required thickness. With the exception of the perimeter sloped edging, the playground protective surfacing shall maintain its required thickness throughout. Tapered perimeter edges shall be outside of the Use Zone.

6. Repair work performed to existing protective surfacing shall use the same material components, unless specified otherwise by the manufacturer of the

existing surfacing. The playground protective surfacing shall only be installed in straight sections. Radius and/or circles are not acceptable.

7. Cut tiles to fit around components penetrating the playground protective surfacing shall be securely glued together at the incision. Incisions shall be located on the backside/underside of equipment.

8. Beauty rings shall be used at components that vertically penetrate the interlocking tiles. Beauty rings shall be completely glued down to the protective surfacing. Gap between beauty rings and equipment penetrations shall not exceed 1/8".

9. Border trim sections shall be completely glued down to the protective surfacing and concrete borders. When protective surfacing and/or border trim sections converge with playground equipment components, these sections shall be securely fastened to prevent efforts to displace the system.

10. When playground protective surfacing includes tapered edges, tapered edges shall be designed to fully adhere to subsurface with a combination of adhesive and fasteners. Adhesive shall be continuous. Spacing of fasteners shall not exceed six inches.

11. ADA accessible ramps to the playground surfacing shall have a minimum width of 60 inches and a maximum slope of 1:12. Cross slope shall not exceed 1:48. Curb ramp flares shall not exceed a slope of 1:10.

12. The maximum slope of tapered border edges shall be 1:3. Sloped border edges shall not exceed twenty-four inches horizontally, or five inches vertically.

13. The maximum cross-slope for the playground protective surfacing shall not exceed 1:48.

14. Playground protective surfacing shall be installed with a continuous reinforced concrete border around the perimeter of the playground. Concrete borders shall have a maximum slope of one percent. Concrete borders shall be installed a minimum of one inch higher than the surrounding hardscaping's highest adjacent elevation. Existing hardscaping shall be cut back to allow for replacement hardscaping to slope up to concrete border. Slope for the surrounding hardscaping adjacent to the concrete border shall not exceed current ADA requirements. Outside edge of existing hardscaping shall be saw cut as to provide a straight, true line. Due to the raised perimeter concrete border, both above grade and flush with grade protective surfacing systems shall require drainage. Place appropriate forming on the inside and the outside of the curbing as needed. Forming material and installation shall be of sufficient strength to retain wet concrete so as to provide straight surfaces.

    a.

15. Playground protective surfacing tile seams shall align with one another, and tiles shall be level with adjacent tiles and concrete curbing. Abnormal humps or low sections in tiles shall be corrected by CONTRACTOR.

16. Concrete curbing shall be provided with an expansion/contraction joints every 30 linear feet, 3 feet from corners and at ends of curves for both above grade and flush with grade protective surfacing systems. Use 1/2 inch pre-formed bituminous filler, with two 5/8 inch #18 smooth dowels centered in concrete curb. Use expansion caps in conjunction with dowels with 3/4 inch of empty space at end of cap for expansion/contraction. Exposed concrete curbing shall be finished with 1/4” radius edges.

17. Provide drainage for Above Grade and Flush with Grade systems installing a minimum of one drywell for every one thousand square feet of protective surfacing. Drywell shall consist of 12 inch diameter PVC, schedule 40, 5 feet deep filled with gravel. Locate drywell at lowest section of the protective surfacing. Perforate lower half with 3/8" diameter holes at 6" on center each way and wrap with filter fabric Marafi 14ON or equal.

B.

C. Flush with Grade Installation Procedure: Playground protective surfacing shall be installed with a 12-inch wide by 10-inch deep with three #4 rebars (with keyway) or 6-inch wide by 10-inch deep with two #4 rebars (without keyway) concrete curb around the entire perimeter to act as an attachment point. The type of protective surfacing being used will determine which concrete curbing will need to be utilized.

D. Provide a base for the playground protective surfacing consisting of a 95 percent compaction of crushed base material. This compaction is to be achieved by the following procedure:

1. Apply a 2-inch layer of Base Material and compact with a soil compactor.

2. Apply a 1/8 inch layer of Portland cement over entire area and thoroughly wet down.

3. Repeat above steps to obtain desired thickness of material.

4. Finished base material shall be smooth, flat and uniform.

E.

3.04 SITE TESTS

A. Upon completion of installation, CONTTRACTOR shall have surface system tested by an independent testing laboratory in accordance with ASTM F355 and provide certification that installed surfacing meets requirements of ASTM F1292.

3.05 CLEANING

A. Prevent pedestrian use of system for at least 48 hours after installation. Riding and/or driving on the protective surfacing system is strictly prohibited. Protect playground surface system until Substantial Completion.

B. During installation of adhesive applied products, immediately remove visible adhesive from surfaces as work progresses. Provide cleaner recommended by playground surface system manufacturer and approved by the OWNER's OEHS.

C. Clean playground surface systems as recommended in writing by playground surface system manufacturer. Provide cleaning materials and procedures recommended in writing by system manufacturer and approved by the OWNER's OEHS.

END OF SECTION

SECTION 32 1828
DECOMPOSED GRANITE SURFACING
FOR OUTDOOR LEARNING ENVIRONMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:

1. Stabilized Decomposed granite over crushed aggregate base.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 31 2200 - Grading.
3. Section 31 2326 - Base Course.
4. Section 32 1313 - Site Concrete Work.

1.02 PROJECT REQUIREMENTS

A. Unless otherwise indicated on the Drawings, Decomposed Granite area sub-grade soils shall be graded 8 inches below final finish grades indicated on the Drawings. A 4-inch layer of compacted crushed aggregate base shall be installed to the required finish grades. A 4-inch layer of compacted decomposed granite shall then be installed to the required finish grades.

1.03 REGULATORY REQUIREMENTS

A. Hauling Routes and Restrictions: Comply with requirements of governing authorities having jurisdiction over the Work.

B. Fees: Pay fees and post bonds for import or export of earth and rock materials as required by authorities having jurisdiction over the Work.

1.04 SUBMITTALS

A. Submit in accordance with Section 01 3300 - Submittal Procedures.

B. Submit a five-pound sample and sieve analysis per ASTM C136 for decomposed granite.

C. Submit two 6-inch by 6-inch by 2-inch thick compacted, dry and cured samples to OWNER for record.

1.05 QUALITY ASSURANCE

A. Comply with the Standard Specifications for Public Works Construction, current edition, except as modified herein.

B. Provide evidence of successful experience by the installer in the Work of this section.

1.06 DELIVERY, STORAGE AND HANDLING

A. Do not install decomposed granite during rainy conditions.

PART 2 - PRODUCTS

2.01 CRUSHED AGGREGATE BASE

A. Base materials shall comply with Section 31 2326 - Base Course.

2.02 DECOMPOSED GRANITE

A. Decomposed granite shall be 3/8” minus pre-blended with binder, available from West Coast Sand and Gravel, Gail Materials, or equal.

B. Organic Binder: Provide Organic Lock binder pre-blended with decomposed granite at supply plant by Gail Materials, or approved equal.

2.03 POST-INSTALLATION STABILIZATION

A. Post-Installation Stabilizer: Provide G3 – Pathway Stabilizer or equal; an extra strength liquid polymer stabilizer as additional stabilization to minimize the effect of erosion.

PART 3 - EXECUTION

3.01 PREPARATION OF SUBGRADE

A. The sub-grade shall be graded to an elevation 8 inches lower than the finish grades indicated on the Drawings. After the pathways are graded to the required elevations, they shall be compacted and/or rolled as required by Section 31 2200 - Grading. Sub-grade shall then be dragged or floated to provide a uniform surface, free from any irregularities.

3.02 INSTALLATION OF CRUSHED AGREGATE BASE

A. A 4-inch layer of crushed aggregate base material shall be installed in accordance with Section 31 2326 - Base Course. Grade to indicated levels or grades and roll until the surface is true to line and required section.

3.03 INSTALLATION OF DECOMPOSED GRANITE

A. A finish layer of decomposed granite shall be spread over the entire surface to finish grades. The entire surface shall then be moistened to provide full depth moisture penetration. While the decomposed granite is still thoroughly moist, roll the material with suitable compaction equipment to provide at least 95 percent relative compaction. Surface shall be filled as required and again rolled to produce a 4-inch-thick uniform plane with proper drainage and slopes. Compaction with a rammer jumping jack or vibratory roller is not permitted.

B. Decomposed granite shall be installed at a maximum of 2-inch compacted lift at a time. A 4-inch-thick decomposed granite surface required two lifts to complete the installation.

3.04. PRE-BLENDED ORGANIC LOCK AGGREGATE SURFACING

A. For typical pathways install Organic Lock™ Aggregate Paving or equal to a compacted depth of 4 inches. For areas of vehicular use or equal install Organic Lock™ Aggregate Paving to a compacted depth of 6 inches.

B. Prewetted Organic Lock Aggregate Paving shall be installed in two lifts for 4-inch-thick pedestrian use. For areas of vehicular use of compacted depths of 6 inches or greater shall be installed at 3-inch compacted lifts. Estimated compacted max density is +/- 129 lbs./cu. ft. The moisture percentage in the prewetted Organic Lock Aggregate Paving will be determined by Gail Materials (or approved soils laboratory) and will depend on selected aggregate.

C. Depending on weather conditions, the time required to allow the material to set-up before it can be compacted varies. Allow for 48 hours unless approved. The top layer shall be firm and not sticky. Compaction can begin when you can walk on the material without significantly sinking in and material does not feel muddy. If material sticks to the roller during compaction, allow the material to further dry. Do not allow the material to completely dry out.

D. Make 4-6 passes using a 1-10 ton double or single static drum roller, or equivalent. Do not use a vibratory compactor or vibratory setting on the compactor. The CONTRACTOR shall select the proper size roller for the appropriate application subject to approval of the Project Inspector.

E. After final compaction, the surface shall be true to elevation and shall not vary by more than (1/4”) tested with a straight edge at any location on the surfaces. Surfaces shall be installed with a cross slope of minimum 1% to maximum 1.8% as shown on the civil drawings at per ADA standards for accessibility.

F. Compaction testing shall not be conducted until the Organic Lock Aggregate Paving has been allowed to thoroughly dry and cure.

3.04 INSTALLATION OF POST-INSTALLATION STABILIZER

A. Stabilizer Application: Apply stabilizer to graded material at a rate of 20ft²/gallon using a standard watering can with shower head or a pressurized hand-held or backpack sprayer. For larger applications, electric, high-capacity sprayers may be used. Allow 45-90 minutes for stabilizer to fully absorb into the aggregate. Cool, overcast weather and/or shading can increase absorption time. If after 90 minutes the surface is still saturated or appears muddy, wait an additional 15-30 minutes to allow stabilizer to fully absorb before compaction. Proper compaction may not be achieved if material is too saturated and can create aesthetic blemishes. Do not allow stabilizer liquid to completely dry before compacting, as this will adversely affect the overall structural and cross-linking strength.

B. Compact Surface: After stabilizer is fully absorbed into material, compact surface layer

to 95% or greater compaction using a vibratory plate compactor (typically 3-4 longitudinal passes). Use a hand tamper in areas that cannot be reached by the plate compactor. If the surface looks smeared or sticks to the bottom of the compactor, wait an additional 20-30 minutes before attempting to compact. If cosmetic repairs are required, use a hand tamp and/or common masonry trowel to make adjustments as needed.

C. Apply Topcoat: Apply first topcoat 12-24 hours after the first application or once the surface has completely dried at a rate of 30ft²/gallon. Apply second topcoat 12-24 hours after the first topcoat application at a rate of 40ft²/gallon. Surface is completely dry and ready to use when it is hard to the touch. Allow another 24-72 hours to fully cure.

D. Installation Condition:

1. Installation and curing phases require an ambient and surface temperature range of 55°-90° F. Shaded, low sunlight, or colder areas will lengthen cure times. Conversely, direct sun, warmer areas will shorten cure times. Avoid temperature at or below freezing temperatures or above 100° F.

2. Do not install stabilizer 72 hours before or after rainfall. In excessively wet conditions, allow surface materials and project are to dry. Always crown or slope finished grade to allow for sufficient drainage, runoff, and ground water levels. Wet conditions will affect the surface material rigidity. Do not use weed fabric as an underlayment.

3.05 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.06 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 32 3113

CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Chain link fences, gates and fabrications as indicated.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 03 2000 - Concrete Reinforcing.
3. Section 03 3000 - Cast-in-Place Concrete.
4. Section 05 0513 - Hot-Dip Galvanizing.
5. Section 08 7100 – Door Hardware.
6. Section 11 6813 – Playfield Equipment Primary Centers and Elementary Schools.
7. Section 11 6816 - Playfield Equipment Middle and High Schools.Section 31 1000 – Site Clearing.
8. Section 31 2200 - Grading.
9. Section 31 2316 - Excavation and Fill for Paving.
10. Section 32 0117 - Pavement Repair.
11. Division 26 – Electrical.
12. Section 28 1343 – Access Control Identification Management System.

1.02 SUBMITTALS

A. Shop Drawings: Submit dimensioned plans and details indicating extent of fences, locations of gates, and details of attachment and footings. Indicate means and methods for surface preparation and finishing.

B. Certifications: Manufacturers material certifications in compliance with the ASTM standards referenced in this Section.

1.03 REFERENCES

A. ASTM International:

1. ASTM A36 – Standard Specification for Carbon Structural Steel.

2. ASTM A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

3. ASTM A123 - Standard Specification for Zinc (Hot-Dipped Galvanized) Coatings on Iron and Steel Products.

4. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

5. ASTM A392: Standard Specification for Zinc-Coated Steel Chain Link Fence Fabric.

6. ASTM A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

7. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

8. ASTM A780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.

9. ASTM A824 – Standard Specification for Metallic-Coated Steel Marcelled Tension Wire for Use with Chain Link Fence.

10. ASTM C1107 – Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).

11. ASTM F552 - Standard Terminology Relating to Chain Link Fencing.

12. ASTM F567: Standard Practice for Installation of Chain Link Fence.

13. ASTM F626 - Standard Specification for Fence Fittings.

14. ASTM F668 - Standard Specification for Polyvinyl Chloride (PVC), Polyolefin and Other Polymer-Coated Steel Chain Link Fence Fabric.

15. ASTM F900 - Standard Specification for Industrial and Commercial Swing Gates.

16. ASTM F934 - Standard Specification for Standard Colors for Polymer-Coated Chain Link Fence Materials.

17. ASTN F1043 - Standard Specification for Strength and Protective Coatings on Steel Industrial Fence Framework.

18. ASTM F1083: Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures.

19. ASTM F1184: Standard Specification for Industrial and Commercial Horizontal Slide Gates.

20. ASTM F1664 – Standard Specification for Poly Vinyl Chloride (PVC) and Other Conforming Organic Polymer-Coated Steel Tension Wire Used with Chain-Link Fence.

21. ASTM F2200 - Standard Specification for Automated Vehicular Gate Construction.

B. Underwriters Laboratories (UL):

1. UL 325 - UL Standard for Safety Door, Drapery, Gate, Louver, and Window Operators and Systems.

C. American Welding Society (AWS):

1. AWS D1.1 Structural Welding Code - Steel.

2. AWS D-19.0 Welding Zinc Coated Steel.

1.04 QUALITY ASSURANCE

A. Manufacturer: Company specialized in manufacturing chain link fence products with at least five years of experience.

B. Fence Installer: Company with demonstrated successful experience installing similar projects and products in accordance with ASTM F567 and with at least five year experience.

PART 2 – PRODUCTS

2.01 CHAIN LINK FABRIC

A. Chain Link Fabric: Hot dipped galvanized before (GBW) or after weaving (GAW) in conformance with ASTM A392, Class 1 zinc coating, 1.2 ounces minimum per square foot and with top and bottom edges knuckled (K&K).

A. Chain Link Fabric: Hot dipped galvanized before (GBW) or after weaving (GAW) in conformance with ASTM A392, Class 2 zinc coating, 2.0 ounces minimum per square foot and with top and bottom edges knuckled (K&K).

B. Polymer Coated Chain Link Fabric: Galvanized fabric material as specified on above paragraph, with polymer coating conforming to ASTM F668, Class 2b, fused and adhered. Color shall be in comformance with ASTM F934.

C. Chain Link Fabric Requirements:

1. Fabric for perimeter fencing and interior fencing shall be 9 gage woven wire with 2 inch mesh, unless otherwise specified.

2. For perimeter fences 16 feet high, the upper 8 feet of fabric shall be 11 gage.

3. Fences 12 feet high or less shall be furnished with single width fabric.

4. Fabric for fencing on top of handball court and batting cages shall be 9 gage wire minimum with one inch mesh.

5. Fabric for fencing of tennis courts shall be full height, single width, 9 gage by 1-3/4 inches mesh chain link fabric.

6. Installed fence fabric shall be free from barbs, icicles, or other projections. Fence fabric with such defects will be deemed defective Work.

2.02 STEEL FENCE FRAMEWORK

A. Round Steel Pipe and Rail: Schedule 40, hot dip galvanized, welded steel pipe conforming to ASTM F1083 or ASTM F1043 Group IA Heavy Industrial Fence, with a minimum yield strength of 30,000 psi. Minimum 1.8 Oz/ft^2 hot dipped zinc coating average for interior and exterior.

B. Miscellaneous Metals: For fabrication of gate miscellaneous components use black finish steel with hot-dip galvanizing after fabrication conforming to ASTM A123 or ASTM A153, see Section 05 0513 Hot-Dip Galvanizing:

1. Structural Steel Shapes: ASTM A36.

2. Steel Pipe: ASTM A53 Type E or S, Grade B, Schedule 40, unless otherwise noted.

3. Square and Rectangular Shapes: HSS ASTM A500 Grade B or C.

4. Perforated Steel Sheet: Galvanized steel conforming with ASTM A653; G60 minimum.

C. Polymer Coated Framework: PVC coating fused and adhered to the exterior zinc coating of the post or rail. PVC coating shall have a minimum thickness of 10 mils per ASTM F1043. Color shall be per ASTM F934 and shall match fabric.

D. Schedule of Posts, Rails, Bracings and Footings: Unless indicated otherwise on the drawings, shall be of sizes indicated on the following schedule.

Item	Height	Nominal Pipe Size (inches)	Outside Diameter (inches)	Weight (pounds per foot)	Footings	
					Diameter (inches)	Depth (inches)
Top Rail, Brace Rails and Transom Rails	Up to 10’-0”	1-1/4	1.660	2.27	N/A	N/A
	10’-1” to 16’-0”	1-1/2	1.900	2.72	N/A	N/A
Line Posts	Up to 6’-0”	2	2.375	3.65	12	24
	6’-1” to 8’-0”	2	2.375	3.65	12	36
	8’-1” to 10’-0”	2-1/2	2.875	5.80	12	36
	10’-0” to 16’-0”	3	3.5	7.58	14	60
	14’-0” to 16’-0”	3-1/2	4.000	9.12	14	60
Terminal, Corner, Angle & Pull Posts	Up to 8’-0”	2-1/2	2.875	5.79	12	36
	8’-0” to 10’-0”	2-1/2	2.875	5.79	14	42
	10’-1” to 16’-0”	3	3.5	7.58	14	60
Pedestrian Gate Posts	Up to 8’-0”	2-1/2	2.875	5.79	14	36
Gate Frames	Up to 8’-0”	1-1/2	1.900	2.72	N/A	N/A
Driveway Double-Leaf Swing Gate Posts: Opening						
Up to17'-3-1/2"	Up to 8’-0”	3 1/2	4	9.11	16	42
17'-4" to 20'-3-1/2"	Up to 8’-0”	3-1/2	4	9.11	16	42

2.03 FITTINGS

A. Fittings shall be malleable iron conforming with ASTM F626.

B. Terminal Post Caps, Line Post Loop Top, Rail and Brace Ends, Boulevard Clamps, Rail Sleeves: Designed to fit snugly; minimum zinc coating of 1.2 Oz/ft^2..Post caps shall be manufactured with a curved top. Top rails and brace rails with holes to receive 3/8 inch bolts for securing to rail end bands.

C. Expansion Sleeve Couplings for Top Rails: Steel, 6 inches long, designed to fit tightly on inside of rail, fitted with raised center.

D. Tension Bands and Bands for Securing Rail Ends: Mild steel flats in fence and gates, at least 11 gage by one inch; minimum zinc coating of 1.2 Oz/ft^2. Bolts for use with tension bands and rail end bands shall be galvanized machined 3/8 inch by 1 1/2-inch.

Hardware parts shall fit tightly when assembled, cutting and welding hardware bands is unacceptable.

E. Tension Bars: Mild steel flats at least 3/16 inch by 3/4 inch, two inches less than the fabric height; minimum zinc coating of 1.2 Oz/ft^2.

F. Polymer Coated Fittings: In conformance with ASTM F626. Polymer coating minimum thickness 0.006 inch, fused and adhered.

2.04 TENSION WIRE

A. 7 gage marcelled steel wire conforming to ASTM A824, Type II Class 4 zinc coated, 1.2 ounces minimum per square foot of uncoated wire surface. Wavy type wire is not acceptable.

B. Polymer Coated Steel Tension Wire: 7 gauge (0.177 in.) wire complying with ASTM F1664, Class 2b, fused and adhered. Wire gauge specified is the core wiregauge.

C. Tie Wire and Hog Rings: Shall conform with ASTM F626, and shall be 9 gage and galvanized with a minimum zinc coating of 1.2 Oz/ft^2.

D. Polymer Coated: Galvanized tension wire shall be as specified on above paragraph, with polymer coating conforming to ASTM F1664. Color shall match fabric and shall be in compliance with ASTM F934.

E. Turnbuckles for installation with Tension Wires: Eye and hook type, drop forged steel, right and left hand threads, at least 3/8 inch screw diameter with at least 4 1/2-inches of take-up, minimum zinc coating of Oz/ft^2.

F. Truss Rod Assembly: In compliance with ASTM F626, 3/8 in. diameter steel truss rod with a pressed steel tightener, minimum zinc coating of 1.2 Oz/ft^2, assembly capable of withstanding a tension of 2,000 lbs.

2.05 PAINT FOR GALVANIZING REPAIR

A. Coatings for Refurbishing Galvanizing: Organic zinc-rich paint conforming to ASTM A780 or Carbomastic 15 by Carboline, or equal. Paints and coatings used on the site shall be approved by OWNER's Office of Environmental Health and Safety (OEHS).

2.06 GATES

A. General:

1. Gate framework shall be fabricated of tubular steel of sizes indicated on the drawings and conforming to ASTM F1083, Group IA, with a minimum yield strength of 30,000 psi. Joints at corners shall be miter cut and continuously welded to sides.

2. Install fence fabric to side members with tension bars and tension bands as specified, spaced not more than 14 inches apart. Tension bars shall extend full height of gate. Install fence fabric to top and bottom members and to brace rail with wire ties as specified for top rails, spaced not more than 12 inches apart. Chain link fabric shall match adjacent fence system.

3. Latches and Hinges: Weld gate latches and strikes to gate posts and frames. Weld OWNER provided hinges to posts. Weld three hinges on each post for swing gates more than 16 feet wide. Welding shall be performed before gate frames are galvanized, or welds shall be finished as specified below.

4. Grind welds flush and smooth. Hot-dip galvanize fabricated parts after welding, or be protected by zinc-rich paint in conformance to ASTM A780.

5. Electrically operated gates shall be manufactured and installed in accordance with the safety requirements of ASTM F2200 and UL325.

B. Swing Gates: Galvanized steel welded fabrication in conformance with ASTM F900, fabric size and gage shall match fence. Positive locking gate latch shall be fabricated of 5/16 inch thick by 1 3/4 inch pressed steel galvanized after fabrication. OWNER will provide one inch weldable hinges only.

C. Roll Gates: Galvanized steel welded fabrication in conformance with ASTM F900, fabric size and gage shall match fence. Positive locking gate latch shall be fabricated of 5/16 inch thick by 1 ¾ inch pressed steel galvanized after fabrication.

D. Polymer coated gate frames and gateposts shall match the coating type and color specified for the fence framework. Moveable parts such as hinges, latches and drop rods shall be field coated using a liquid polymer touch up.

2.07 PRIVACY FENCE SLATS

A. Flat tubular shape with bottom lock track fabricated of PVC material with UV inhibitors.

B. Privacy Percentage Factor: **[75%] [95%]**.

2.08 CONCRETE AND GROUT

A. Comply with requirements of Sections 03 2000, Conrete Reinforcing and 03 3000, Cast-in-Place Concrete. Provide normal-weight, air-entrained concrete with a minimum 28-day compressive strength of 3,000 psi, 4-inch slump, and one inch maximum size aggregate.

B. Nonshrink, Nonmetallic Grout: Factory-packaged, non-staining, noncorrosive, nongaseous grout complying with ASTM C1107. Provide grout specifically

recommended by manufacturer for interior and exterior applications “Rapid set Cement”.

2.09 FABRICATION

A. Items to be shop fabricated shall be preassembled to greatest extent possible. Use connections that maintain structural value of joined pieces. Mark units for reassembly and installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove sharp and rough areas on exposed surfaces. Form exposed work with accurate angles and surfaces and straight edges. Form exposed connections with hairline joints, flush and smooth.

C. Weld connections unless otherwise indicated. Weld corners and seams continuously and in accordance with requirements of AWS D1.1 Structural Welding Code. Weld galvanized members in accordance with AWS D19.0 Welding Zinc Coated Steel. Welds shall be inspected. Grind exposed welds smooth and flush to match and blend with adjoining surfaces.

D. Galvanize fabrications in accordance with ASTM A123 and ASTM A153.

PART 3 - EXECUTION

3.01 EARTHWORK

A. Refer to the following Sections for earthwork related work:

1. Section 31 2200 - Grading.

2. Section 31 2316 - Excavation and Fill for Paving.

3. Section 32 0117 - Pavement Repair.

3.02 FRAMEWORK INSTALLATION

A. Install fences as indicated on Drawings.

B. Space fence posts at equal intervals between terminal, angle, corner, and gate posts, and not more than 10 feet apart measured from center to center of posts. In curved fence sections having a radius of 50 feet or less, space posts not more than 5 feet - 6 inches apart. Install posts so that top of eye of post caps are level with top of fabric.

C. Install angle or corner posts at each change in direction of 15 degrees or more, at change of 5 percent or more in grade of fencing, and at the beginning and end of curved fence sections.

D. Install posts in accordance with ASTM F567. Install terminal posts at ends of runs of fencing. Install gateposts on both sides of driveway and pedestrian gates. For double-

leaf gates, net opening between gate posts shall be gate size as indicated on Drawings, plus 3 1/2-inches; for single leaf gates, net opening shall be gate size plus 2 1/2-inches.

E. Embed posts into footing 6 inches less than the depth of the footing unless noted otherwise on drawings.

F. Where a fence is to be installed on a curb, construct footings with top of footing level with the lower finish grade. Align posts, set plumb and true before placing footings. Remove splattered concrete from exposed pipe surfaces while concrete is still soft. In bituminous surfaced areas, install seal coat on top of concrete footings.

G. Install fences with top rail. Top rail shall pass through eye tops and be secured to the terminal post by a brace band and rail end. Splice rail using top rail sleeves minimum 6 in. (152 mm) long.

H. Install fences over 10 feet in height, in addition to top rail, with a full length horizontal mid-rail set at mid-height of fence and rigidly secured to posts with rail end fittings and bands.

I. In fences higher than 10 feet, install brace rails at angles, corners, and terminals at 1/4 and 3/4 of fence height. Provide one horizontal brace rail in panels adjacent to terminal, angle, corner, and gateposts, install at mid-height of fence and rigidly secured to posts with rail end fittings and bands. Provide horizontal brace rails, as specified, in panels of curved sections having a radius of 50 feet or less. Brace rails are not required in fencing 4 feet or less in height.

J. Provide a transom rail and fabric at top of pedestrian gate openings. Install transom rail 6 feet 8 inches above high point of grade at gate opening. Ends of transom rails shall be pinned or riveted to rail end fittings with 1/4 inch mild steel rivets. Pin or rivet shall go through rail and peen. Welding on rail ends is not permitted. Where door closers are installed weld lower transom rail directly to terminal post, rail ends shall not be used.

K. Install bottom tension wire a minimum of 3 inches from grade for fencing and secure to fence posts with ties. Provide a turnbuckle for each 150 feet of wire or fractional part thereof. Turnbuckles are not required in runs of 15 feet or less. Install ends of tension wires to posts in a manner to prevent slipping or loss of tension. Wrap should start from fence side of post. Turn end of wire around post tightly twisted at least three times around wire. At turnbuckles, wire through eye and tightly twist end at least three times around wire. Cut tail of bottom wire flush.

3.03 CHAIN LINK FABRIC INSTALLATION

A. Install fence fabric on outward facing side of posts, except for tennis courts. Install fence fabric with top edge projecting above top rail of fence.

B. Install bottom of fence fabric to clear finish grades, except on bituminous surface install 3/4 inch above such surface. Locally shape and trench ground surfaces where necessary to provide uniform top and bottom alignment of fence.

C. Tightly stretch fabric and at terminal, pull corner, angle, and gateposts, secure with tension bars extending full height of fence. Secure tension bars to posts with bolted tension bands spaced not more than 14 inches apart.

D. Bands and Ties: Install bands and ties in accordance with following schedule:

15 bands on 16 feet fence	16 ties on 16 feet fence
11 bands on 12 feet fence	12 ties on 12 feet fence
7 bands on 8 feet fence	7 ties on 8 feet fence
6 bands on 6 feet fence	6 ties on 6 feet fence
4 bands on 4 feet fence	4 ties on 4 feet fence

E. Fasten fabric to line posts with wire ties spaced not more than 16 inches apart. Where 6 gage aluminum ties are furnished, hook the tie at both ends. Installation of hooked ties with links is not permitted.

F. Fasten fabric to top rails, mid-rails, brace rails, with wire ties spaced not more than 18 inches apart. Bend back ends of tie wires so as not to be a hazard. At bottom tension wire, install hog rings spaced not more than 18 inches apart. Where 2 fabrics are furnished, lap the fabrics one mesh at mid-rail and tie both fabrics with 9 gage wire or 6 gage aluminum ties to midrails.

3.04 WELD GRINDING

A. Grind field welds smooth, clean off flux and spatter, damaged galvanizing removed, burrs and projections ground off, properly prepared, then heavily coated with galvanizing repair coating. Install coating in accordance with written recommendations of manufacturer.

3.05 FIELD AND COURT FENCING

A. Tennis Courts: Perimeter fences for tennis courts shall not be less than 12 feet in height. Instead of providing bottom tension wire, provide with horizontal bottom rail. Install fabric on courtside of posts.

B. Handball Courts: Posts, rails, chain link fabric and accessories required for a complete installation shall be as specified, except that chain link fabric shall be 9 gage wire minimum by 1 inch mesh.

C. Baseball and Softball Fields: Chain link fabric for the field fence and backstop shall be installed on the field side. Chain link fabric for batting cages shall be installed on the inner side of the cage. Chain link fabric for the batting cages and backstop hood shall be installed over the framework structure. Weld main framing members to posts as indicated on the drawings.

D. For prefabricated baseball and softball backstops refer to:

1. Section 11 6813 – Playfield Equipment Primary Centers and Elementary Schools.

2. Section 11 6816 - Playfield Equipment Middle and High Schools.

3.06 INSTALLATION ON TOP OF CONCRETE WALLS

A. Posts for fences on top of new concrete or concrete masonry walls shall be installed in 24 gage galvanized iron inserts one inch larger than the outside post diameter. Wall thickness for such installation shall be 8 inches minimum. Depth of embedment of post shall not be less than 15 inches for fence height not exceeding 4 feet. Install post plumb, true, and fill joint space with non-shrink grout, finished flush with top of wall. Remove excess grout and clean posts.

B. Fencing on Gravity Walls: Post of fence not exceeding 8 feet high shall have a minimum of 15 inches embedment in gravity walls with a top width of 10 inches minimum and side of 1H: 4V. Where the height of gravity wall from top to bottom, within 5 feet from each side of a post, is less than 22 inches, provide concrete fence post footings and embed posts in accordance with the schedule of posts and footings as set forth in this section.

C. Do not install footings on existing walls without the review of the ARCHITECT.

3.07 HORIZONTAL APPLICATIONS

A. Spacing of lid joist framing members shall not exceed four feet on center. Joists shall be welded on both ends to supporting chain link framing structure or mechanically fastened to adjacent buildings, as indicated on the drawings.

3.08 ALTERATIONS TO EXISTING FENCING

A. Resetting Fences:

1. Existing fences shall be reset where finish pavement is raised or lowered more than 6 inches from existing grade. Remove and reinstall entire fence assembly as specified in this Section.

a. Where the finish grade is raised 6 inches or less, cut and re-knuckle the existing fence fabric. Adjust tension wire and tie to fabric. Bottom of fence fabric shall be installed 3/4” above finish grade.

b. Where the finish pavement is lowered 6 inches or less, demolish the fence footing flush with the finish grade and adjust the fabric and its attachments. Bottom of fence fabric shall be installed ¾ inches above finish grade.

2. Where existing fencing posts are indicated to be removed, reset or relocated, remove posts including their concrete footings

    a. Fill footing cavity with sand, compact and cap surface matching existing adjacent material.

    b. Construct new concrete footings, as specified, in their designated location and set posts as indicated above in Framework Installation Article.

3. Bent posts, rails and accessories shall be replaced with new parts as specified to complete reinstallation. New materials shall closely match design of existing installation. Cut bent portion of posts and weld new sections of equal diameter and thickness. Install splice to inside of all welded section prior to welding. Previously repaired or welded posts shall be replaced.

4. Top rail is required in reinstalled fencing which does not have top rail in its existing condition. Install as specified for new installations.

5. Fabric Removal: Do not remove more than what can be replaced during one day unless a barricade, providing equal security, will be installed in its place. If freestanding temporary fence is used, it shall be clamped and wrap tied.

6. Remove and dispose of off-site concrete debris, chain link, hardware and accessories. Use new hardware and accessories.

7. Gates:

    a. Remove non-welded type existing hinges and replace with OWNER provided weldable hinges. On existing welded hinges remove bolts and replace with new. Remove existing latches and replace with new.

    b. Weld gate latches and hinges to posts as indicated for new fencing.

B. Painting: Disassemble existing fence and all attachment hardware (bands, pipe, and wire) prior to preparation of posts for painting. Replace attachment hardware with new.

1. Preparation: Prepare exposed steel posts, rails and accessories thoroughly cleaned of rust, oil and foreign materials. Painted galvanized metal shall be stripped to bare metal before applying prime coat.

2. Priming: Spot prime areas from which the original surface coating had been removed with a metal primer to match adjoining surfaces. Subsequently, install a prime coat to the entire surface to be painted.

3. First Coat: Install first coat as recommended by the paint manufacturer. Furnish a color that is 10 percent to 15 percent lighter or darker than the finish coat.

4. Second or Finish Coat: Install finish coat after the first coat has cured.

5. Install paint in accordance with manufacturer's written recommendations.

6. Protect adjacent structures, walls, concrete or asphalt from paint.

3.09 INSTALLATION OF GATES

A. Provide gates of the sizes indicated on Drawings. Allow clearance on gates of 1-1/2 inches at bottom and one inch at top. Construct gates installed in sloping areas to conform to the grade. Provide an opening in each gate for access to locking device or padlock. Knuckle ends of fabric cut for opening to eliminate hazards.

B. Sliding Gates and Swing Gates: Fabricate and install as indicated on Drawings. Wheel housing shall be designed to fit tightly to roll track and prevent gate from rolling over objects. Unsupported cantilever type roll gates are not acceptable. Install gate stops in accordance with the drawings. Both top and track stops are required.

3.10 COMPLETION

A. Completed fencing shall form continuous units between points indicated with required parts, accessories, and fittings provided and installed. Clean exposed metal surfaces of cement, grout and other foreign substances.

B. Fill in holes left by removal of existing fence footings, except in areas where grading Work is indicated or specified, to existing grade with clean earth thoroughly compacted to at least same density as adjoining soil.

3.11 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.12 CLEANUP

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 32 8413

POTABLE WATER IRRIGATION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Potable water irrigation system.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 01 4524 - Environmental Import/Export Materials Testing.
3. Division 22 - Plumbing.
4. Division 26 - Electrical.
5. Section 31 2313 - Excavation and Fill.
6. Section 31 2323 - Excavation and Fill (Utilities).
7. Section 32 8416 - Irrigation Controls.
8. Section 32 8426 - Reclaimed Water Irrigation.
9. Section 32 9000 - Planting.

1.02 SUBMITTALS

A. Materials List: Provide manufacturer’s name and description of items to be furnished.

B. Product Data: Provide catalog cuts, technical data, and manufacturer’s specifications.

C. Shop Drawings: Provide Shop Drawings indicating proposed system layout, locations of controllers, valves, backflow devices, flow sensors, master valves, quick couplers, heads and point of connections. Include details for sleeves, yard boxes, backflow devices, and controller installations.

D. Provide proof of purchase for energy saving devices to the OWNER. OWNER will receive rebates as part of energy savings program.

E. Record Documents:

1. Before Contract Completion, provide project record documents as follows:

a. Indicate the location of each numbered sprinkler controlled valves and quick coupling valves with legible dimensions from two permanent points of reference such as building corners or sidewalks.

2. Closeout Submittals-As Built:

a. Submit three copies of as-built including complete list of materials, manufacturer's name, and product installation literatures.

b. Record drawings: Submit dimensioned drawings and details, before Contract Completion.

c. Record Drawings shall contain the following:

1) As-Built shall be computer generated (AutoCad).

2) Print shall show the locations of the numbered remote control valves, manual control valves, locations and size of supply and lateral lines, location and type of sprinkler heads, quick coupling valves, gate valves, backflow devices, point of connections, controllers and other related equipment.

3) Dimensions shall be legible from two permanent points of reference such as buildings and sidewalks.

4) Shall be 24-inch by 36-inch minimum size.

d. Proof of Backflow Registration:

1) CONTRACTOR to provide proof of registration with the jurisdictional authority.

2) Backflow test results shall be acceptable to the jurisdictional authority.

3. Operation and Maintenance Manuals:

a. Provide complete operating and maintenance instruction manuals for equipment.

b. This service shall be performed by a certified water auditor and paid by the CONTRACTOR. This report shall identify designed controller setting for water discharge and actual installed discharged tested. The audit report shall also include the status of items indicated in paragraph 1.07.C based on final inspection and testing.

1.03 REFERENCES

A. ASTM International (ASTM):

1. ASTM A53 – Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

2. ASTM B88 – Standard Specification for Seamless Copper Water Tube.

3. ASTM D1784 - Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.

4. ASTM D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.

5. ASTM D2467 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.

B. American Society of Mechanical Engineers International (ASME):

1. B36.10M - Welded and Seamless Wrought Steel Pipe.

C. Federal Specifications:

1. FS WW-P-460 - Pipe Fittings; Brass or Bronze (Threaded) Classes 125 and 250 Pound.

1.04 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Comply with local, municipal and state laws, rules, and regulations governing or relating to this Work. Wiring shall conform to National Electrical Code.

2. Conform to California Code of Regulations, Title 23, Division 2, Chapter 2.7, Model Water Efficient Landscape Ordinance.

B. Manufacturer Instructions: The manufacturer's instructions and detailed drawings shall be followed where the manufacturers of products and/or materials furnish installation details not indicated in the Drawings and Specifications.

C. Qualifications: Work shall be performed by skilled workers with a minimum of five years experience in work of similar scope and complexity.

1.05 PRODUCT HANDLING

A. Do not damage materials during handling, loading, unloading, and storage of pipe and fittings. Store materials under cover, protect from direct sunlight. Transport materials in a manner to avoid undue stress on piping and other materials.

B. Do not install damaged materials or products into the Work.

1.06 PROJECT CONDITIONS

A. Before excavation, contact DigAlert for information on buried utilities and pipelines.

1.07 TESTING AND INSPECTION

A. Notify the Project Inspector 24 hours in advance of the pressure side piping inspection.

1. Pressure Side Piping: After welded joints have cured for at least 24 hours, lines flushed and outlets are capped, the system shall be tested under normal street water pressure for a minimum of 4 hours. Joints shall remain exposed for inspection during the pressure test. Center loading of piping with small loads of sand backfill to prevent arching or slipping under pressure is permitted.

2. Correct defective Work and repeat tests until the entire system is tested watertight.

B. Submit a request for a final inspection 48 hours in advance. Perform a coverage test to determine if the coverage of water to turf and planting areas is complete and adequate meeting Title 23 Model Water Efficient Landscape Ordinance.

C. Final Inspection: The following items shall be considered part of the final inspection:

1. Specified products and materials.

2. Irrigation coverage test, providing 100% head to head coverage.

3. Soils compacted in trenches and around sprinkler heads, level with existing grades.

4. Controller and cabinet installation.

5. Sprinkler control valves and boxes.

6. Backflow devices, pressure regulators, pumps.

7. Automatic sensors.

8. Final site review shall include operating each system in its entirety in the presence of the Landscape ARCHITECT or Project Inspector.

9. Provide any required adjustments and correct defective Work as required.

1.08 MAINTENANCE

A. Extra Materials, Tools and Accessories:

1. Spare Sprinkler Heads: Furnish twelve spare sprinkler heads, with inserts for each type, size and series installed.

2. Keys and Wrenches:

a. Keys: Furnish two tagged pin tumbler type keys.

b. Wrenches: Furnish two sets for each type of sprinkler head or nozzle.

c. Coupler: Furnish a minimum of one quick coupler key (quill) and an additional key for every three quick-coupler valves installed.

B. Training:

1. Before substantial completion provide at least 4 hours of training, by an authorized representative of the controller manufacturer, for each type of irrigation controller installed.

2. Instruct designated OWNER personnel on operation and programming of the irrigation controller and hand held controller, demonstrating program features.

3. Review “As-Built” plans with OWNER’s personnel and explain the following features: master valve, flow sensor, rain sensors, pump, backflow devices and locations of critical valves.

4. Provide an attendance sheet to the OWNER listing personnel trained.

1.09 WARRANTY

A. Provide a five year manufacturer’s warranty for controller units.

B. Provide a one year warranty for materials, fabrication, and installation, including restoration of planted or paved areas due to settlement of trenches.

PART 2 - PRODUCTS

2.01 IRRIGATION SYSTEM

A. Systems shall be automatic with electrically operated control valves.

B. Provide 100 percent head to head triangulated coverage or other required 100 percent configuration.

C. Point of connection (POC) for irrigation systems:

1. Provide a single POC on a designated irrigation meter, with flow monitoring, unless otherwise indicated on the Drawings.

D. No PVC piping of any kind will be permitted for above grade pressure lines.

E. Drip irrigation is not permitted.

F. Full meter protection is required for irrigation systems by installing reduced pressure principle backflow prevention devices.

G. Install isolation valves in order to avoid a total system shutdown for maintenance and repairs. Include valves to isolate loop system and major branch lines.

H. Irrigation System shall incorporate the following requirements:

1. The flow velocity shall not exceed five feet per second for pressure/lateral lines based on industry standard friction pressure loss values.

2. Pressure line pipe size shall be sufficient to support a minimum of two control valves operating at the same time, one valve opening while another is closing.

3. Gallons per minute demand and sprinkler head coverage shall follow the manufacturer’s requirements.

4. Remote valves shall be sized no smaller than the piping it serves unless piping is increased in size to reduce friction loss. Remote valves shall then be sized no less than one pipe size smaller than the piping it serves.

5. Minimum pipe size shall be 3/4 inch.

2.02 MATERIALS

A. Provide only new materials, of brands and types noted on Drawings and in the Specifications.

B. Plastic Pipe and Fittings:

1. Pipe shall be Schedule 40, extruded from 100 percent Virgin PVC 1120 compounds meeting the requirements of Cell Classification 12454 as defined in ASTM D1784.

a. Plastic pipe shall be continuously and permanently marked with the following information: Manufacturer's name, nominal pipe size, Schedule or Class, SDR (Standard Dimension Ratio, or pressure rating in psi) National Sanitation Foundation (NSF).

2. Plastic fittings: Schedule 40 molded from PVC Type I Compound, conforming to the requirements of specification ASTM D2466.

a. Plastic Nipples: PVC schedule 80 conforming to ASTM D2467.

b. PVC Male Threaded Nipples: Schedule 80 only.

3. PVC primer and solvent for chemical weld of pipe and fittings shall be as recommended by pipe manufacturer. Containers for solvent and primer shall be clearly marked with manufacturer's

data. Solvent and primer shall not be more than one year old. Blue or red hot glue is not permitted.

a. IPS Weld On P-70 primer.

b. IPS Weld On 2711 (gray) cement.

C. Pipe and Fittings:

1. Steel Pipe and Steel Fittings: (where occurs at existing schools only): Pipe and fittings shall be ASA Schedule 40 ASTM A53 galvanized mild steel screwed pipe and beaded galvanized malleable iron screwed fittings, including couplings. Thread on pipe and fittings shall be taper type. Above grade fittings shall comply with ASME B36.10M and ASTM. A53.

a. Unions 2 inch and smaller shall be ground joint pattern.

b. Unions larger than 2 inch shall be flanged unions.

c. Steel pipe or fittings shall not be installed below grade.

d. Connection between steel pipe and copper pipe or tube shall be provided with a 6 inch brass nipple.

2. Connection between any female threaded fitting and plastic pipe shall be bridged with a Schedule 80 PVC nipple.

3. Brass Pipe: Seamless, 85 percent red brass, iron pipe sized, threaded.

4. Brass Fittings: Brass fittings shall be 250psi rated, threaded FS WW-P-460.

5. Copper pipe, fittings, ASTM B88:

a. Pipe: Type K rigid.

b. Fittings: Wrought copper, solder joint type.

D. Valves: (PVC Valves are not permitted):

1. Gate valves on pipe 2 1/2-inch and larger shall be AWWA Specification, Class "D" standard flanged, or a combination of outlets as required, iron body, brass trimmed, non-rising stem.

a. Nibco F-619-RWS-SON, or equal.

2. Gate valves 2 inch or smaller shall be bronze, non-rising stem, threaded:

    a. Nibco T113, Milwaukee 105, or Hammond 1B 645.

3. Quick coupler valves shall be brass, 1 inch, with lock top and resilient cap.

    a. Hunter HQ33D-RC, Rainbird 44LRC, Champion QCV-100VL, or equal.

    b. Quills shall be the same manufacturer as quick coupler valve, cast bronze, machine shank, stainless steel or bronze lugs.

4. Coupler keys (quills) shall be from the same manufacturer as quick coupler valve; cast bronze with stainless steel or bronze lugs.

5. Pressure Relief Valves shall be set at a 150 psi. Bronze body with internal brass parts, stainless steel springs, and 3/4 inch IPS, angle type, with purge lever:

    a. Wilkins P220, Watts 31, or equal.

6. Check Valves:

    a. Swing Type: Check Valves shall be 200 lbs. WOG: bronze screwed with replaceable neoprene disc. Shall have a straight through pattern with closing member set on angle. Of size and type indicated on the Drawings. Disc shall close tight to prevent low head drainage:

        1) Watts Series WCV-2, Nibco T-413, or equal.

    b. Pop-up Type: Check valves shall be PVC body, neoprene disc, stainless steel spring and integral components, straight through pattern, screwed. Valve to be adjustable in field from5 feet to 40 feet head to prevent low head drainage. Size and type indicated on Drawings.

7. Electric remote control valves shall be 24 volt normally closed solenoid actuated valve, capable of operating on 14 gage UF wire; either bronze or brass, globe or angle pattern, and diaphragm actuated:

    a. Hunter IBV Series, Superior 950, Rainbird GB Series, or equal.

8. Manual sprinkler control valves are not allowed.

9. Master Control Valves:

   a. Shall be a normally open solenoid actuated valve. Valve shall have a NPT inlet and outlet, and shall be capable of working pressures up to 150 psi. Superior 3300, Rainbird, Hunter, or equal.

   b. Shall meet requirements for Automatic Valves, except for those indicated on article “a” above.

   c. Shall be installed with separate power and common wires.

E. Sprinkler Heads:

1. In lawn areas, provide 6-inch plastic pop-up sprinkler heads with built in check and adjustable nozzles with diameter of coverage as indicated on drawings.

   a. Hunter PROS-06-PRS30-CV-F Toro 570Z-4P-PRX-COM, Rainbird 1804-SAM-PRS, or equal.

2. In planters and shrub areas, provide 12 inch plastic pop-up sprinkler heads with built in check and adjustable nozzles with diameter of coverage as indicated on drawings:

   a. Hunter PROS-12-PRS30-CV-F Toro 570Z-6P-PRX-COM, Rainbird 1806-SAM-PRS, or equal.

3. Tree area sprinklers shall be pressure compensating flood bubbles surrounded by a perforated sleeve and gravel:

   a. Hunter RZWS-18-CV Rainbird 1400 Series, or equal.

4. Install on triple swing assemblies: King Bros. Industries, TSA-0500-SS, Hunter SJ-505, or equal, through SJ 712 or swing joints assembled with PVC schedule 80 nipples and Marlex 90 degree “L”.

F. Back Flow Protection Device:

1. To operate on a reduced pressure principle furnished with a full port shut off valve up stream and down stream of the backflow device. Provide and install enclosure to house backflow device.

2. Wye strainers at back flow device shall be 125 pounds class customer brass with 40 mesh Monel screen.

3. Provide and install permanent enclosure to house backflow device

4. On Backflow Devices 2” and smaller. Enclosures shall be stainless steel “Strong Box- SMOOTH TOUCH” manufactured by V. I. T. Products. Inc or Equal.

5. On Backflow Devices larger than 2” enclosure shall be vandal and weather resistant made of marine grade aluminum alloy or stainless steel. The enclosure shall have a mounting lip on one end and a locking mechanism on the other end. The locking mechanism shall be of the full release type which allows for complete removal of the enclosure.

    a. “Strong Box manufactured by V. I. T. Products. Inc, Cross Brothers Enclosures or Equal.

G. Tracer Wires: A No. 14, Green, Type TW plastic-coated copper tracer wire shall be installed with non-metallic irrigation main lines.

H. Control Wires to Control Valves: Control wires to electrically operated solenoid valves shall be direct burial type UF#14 AWG copper, 3/64 inch thick PVC coating. UL approved for Class 2 wiring for 24 volts, 60 cycle AC, use UL recognized waterproof connectors to connect control wires to solenoids.

1. Use UL recognized waterproof connectors to connect control wires to solenoids.

    a. Spears Drysplice DS400 or Equal.

I. Valve Boxes:

1. Rectangular valve boxes shall be green plastic 12-inch wide, 18 inch long, and 12-inch deep (outside dimensions) or larger as may be required to provide specified clearances.

    a. NDS #314BCB or Equal.

2. Round valve boxes shall be green, 7-inch diameter by 10-inch high with locking cover.

    a. NDS #312BCB or Equal.

3. Covers on valve boxes shall be vandal resistant, locking, and marked "Water". Tops of boxes shall be set flush with finished turf grade or 2-inch above grade in shrubbery or groundcover areas.

a. The cover shall be identified with 3-inch high stenciled letters “RCV (with Station No.) GV for Gate Valve, or QC for Quick Coupler.

b. Dura Boxes are not allowed.

PART 3 - EXECUTION

3.01 CONNECTIONS TO SUPPLY

A. Source of water supply shall be as indicated on the Drawings.

B. Connection to piping shall be provided with proper fittings:

1. When connecting to point of connection (POC) above grade pipes shall be copper with required fittings unless otherwise indicated.

2. POC from above to below grade transition shall be copper pipe to a depth of 18 inches from top of pipe.

3. No steel pipe or fitting shall be installed below grade.

4. When connecting plastic pipe to copper below grade, provide a schedule 80 PVC nipple.

5. Exposed copper or brass material above grade shall be painted green in color.

6. Connect steel and copper pipe or tube with a 6-inch brass nipple.

3.02 PIPE INSTALLATION

A. Excavate trenches deep enough to provide earth coverage of 12 inches for non-pressure lines and 24 inches for pressure lines, from finished grades to top of pipe. Bottom of trenches shall be free of rocks, clods and other sharp-edged objects. Below grade piping shall be installed on a firm sand bed for its entire length.

B. Plastic pipe and fittings shall be solvent welded. PVC pipe ends shall be cut ninety (90) degrees and cleaned of cutting burrs prior to cementing. Use approved reaming tool. Pipe ends shall be wiped clean with a rag and lightly wetted with PVC primer. Cement shall be applied with a light coat on the inside of the fitting and a heavier coat on the outside of the pipe. Pipe shall be inserted into the fitting and given a quarter turn to seat the cement. Excess cement shall be wiped from the outside of the pipe. The pipe will be tested as indicated in paragraph 1.07.

C. Cure welded joints at least 15 minutes before moving or handling, and at least 24 hours before applying pressure to system, unless otherwise recommended by joint solvent manufacturer.

D. Irrigation piping installed under a driveway or sidewalk shall be sleeved. The sleeves shall be two pipe sizes larger than the pressure piping.

E. Piping through cement and asphalt pavement shall be K type copper with ¼ inch of foam wrap or other required material around the pipe to allow for expansion.

F. Holes cored through walls shall be two pipe sizes larger to allow for foam wrap around pipe.

G. PVC pipes shall not be installed above grade unless reviewed by the ARCHITECT.

H. Lettering shall be face up on below grade PVC piping. Pipe serving tree areas shall be located not more than 30 inch from center of tree area.

3.03 IRRIGATION HEAD INSTALLATION

A. Install sprinkler heads with 100 percent triangulated head to head coverage or other required 100 percent head to head coverage method where indicated.

B. To insure proper coverage spray heads and rotary heads shall be installed on separate control valves.

C. Install heads and or change heads, nozzles, or orifices as may be required to provide coverage.

D. Branch lines, swing joints or sprinkler risers shall not be sized smaller than the sprinkler heads inlet they serve.

E. Rotary Heads:

1. Prior to installing heads, thoroughly flush main and lateral lines with full line pressure. Repeat whenever system is opened up for repairs or replacements. Start flushing operation at highest point of delivery and proceed to lowest.

2. Risers to rotary heads shall be installed plumb and secured in position with thoroughly compacted sand.

3. In new turf fields, rotary heads shall be temporarily set 3 inch minimum above grade and then lowered into permanent position as required.

4. Rotary heads in turf areas shall be provided with rubber tops.

5. Part circle rotor heads shall be adjusted to minimize spray water onto adjacent track or paving surfaces.

6. Adjust spray nozzles to minimize overspray and so entire system will be evenly balanced as required.

7. Install rotary heads on factory assembled triple-swing joints or triple-swing joints assembled with PVC Schedule 80 nipples and Marlex 90 degree elbows.

8. Unless overspray or run off flows into the landscaping then overhead irrigation is not permitted within 24 inches of non-permeable surfaces.

F. Pop-up Head Installation:

1. Pop-up head shall be installed flush with finished grade and 24 inch from edge of walks, and 9 inches from buildings to parking areas.

2. Install pop-up heads on factory assembled triple-swing joints or triple-swing joints assembled with PVC Schedule 80 nipples and Marlex 90 degree elbows.

3.04 VALVE BOX INSTALLATION

A. Automatic control valves shall be enclosed in valve boxes of HDPE or polyolefin fibrous material, with locking lids.

B. Valve boxes shall be of sufficient size to provide no less than 1-1/2 inch of clearance on all sides of equipment installed within. The bottom section shall be slotted so as to extend below the pipe. Extensions shall be added as required to meet grade requirements.

C. Valve boxes installed in concrete or asphalt shall be set one inch below pipe and extensions shall be added as required to meet grade requirements. A homogeneous finished material shall surround valve boxes 4 inches below finished grade and match existing grade conditions.

D. Valve boxes shall be installed level to finish grade except in ground cover areas which shall extend 2 inches above finish grade.

E. Bottom of valve boxes shall be set level on 4 full size corner bricks on 2 inches of gravel bed.

F. Pea gravel shall be filled up to the bottom of the manual and remote valve and at least 4 inches of gravel inside of the valve box.

3.05 QUICK COUPLER VALVES AND ASSEMBLIES

A. Quick couplers shall be one inch brass with one or two piece bodies and locking brass tops with rubber cover.

1. For typical Baseball infield application behind Pitcher's mound, use quick coupler installed in 8-inch round, bolted, yard box.

2. For football fields, install quick coupler up against cement curb surrounding the football field, and as indicated on the drawings.

3. For athletic fields, install at the perimeter of the field, and as indicated on the drawings.

4. In other applications, install next to walkways.

5. Top of quick coupler assembly shall be installed within 2 inches from bottom of cover.

6. Quick Coupler supply piping shall originate from a Point of Connection upstream of the Master Valve.

3.06 HOSE BIBS

A. Hose bibs are prohibited.

B. Where hose bib connections are needed provide a quick coupler valve.

3.07 VALVES

A. Isolation and Shut Off Valves:

1. Pressure piping system shall be furnished with valves at points indicated on Drawings or specified.

2. Valves shall be installed with neat appearance and groupings, so parts are easily accessible. Valves near walks, curbs etcetera, to be set-in 12 inches and parallel to the adjacent surface. Remote control valves shall be installed in ground cover or shrub areas wherever possible.

3. Valves shall be full size of line in which they are installed unless otherwise indicated.

B. Remote Control Valves:

1. Remote control valves shall be low wattage (24 volts,) and shall be capable of operating properly on no larger than #14 gage UF wire.

2. Remote control valves shall be adjustable to control flow of water through valve adjustments and shall be accessible through valve boxes installed above each valve. Valves shall be highest quality of manufacturer.

3. Remote control valves shall be installed and adjusted so that sprinkler heads operate at pressure recommended by head manufacturer. Remote control valves shall be adjusted so that sprinkler heads to planting areas from each individual valve system applies a uniform distribution of water.

4. Remote control valves on any line shall be installed 3-inch minimum, 8-inch maximum below finish grade to top of flow control stem.

5. Remote control valves shall be installed with schedule 80 PVC nipples on each side of the valve.

6. Valves for lawn and shrub areas shall be installed within the perimeter of the area it serves. The location shall be accessible within 12 inches from curb or sidewalk and installed in a location to avoid wetting the person operating the valve manually.

7. Remote control valves for athletic fields shall be installed in one of the following specified locations:

a. Control valves shall be installed in groups of three or more. They shall be installed on the perimeter of the athletic field in valve boxes.

b. Control valves above ground shall be grouped together and installed on the perimeter outside of the athletic field, on a copper manifold and enclosed in a secure fenced enclosure.

3.08 CONTROLLER, CLOCK AND ENCLOSURE

A. Refer to Section 32 8416.

3.09 BACKFLOW DEVICE ASSEMBLY

A. Backflow devices shall be located where indicated on Drawings and in accordance with Los Angeles City and County Codes. Locate in an inconspicuous location close to buildings, walls, or fences.

B. Assembly shall be furnished with valves, test cocks, and other appurtenances as required by the Los Angeles County Health Department Cross Connection and Water Pollution Control Section.

C. Install thrust blocks and pipe support as required to support backflow assembly.

D. Install backflow device in locked stainless steel or marine grade aluminum enclosure.

E. Installations of backflow prevention devices shall be tested and certified by a certified L.A. County Backflow Prevention Device Tester before Substantial Completion. Test shall be performed in the presence of the Project Inspector. Test reports shall be turned over to the Project Inspector and sent to the jurisdictional authority.

F. Backflow devices shall be Pressure Reducing Valves (PRV) and shall be the same size of main line where installed.

3.10 CONTROL WIRE

A. Mainline control wires shall be taped together at five foot intervals with black electrical tape, then laid parallel to pressure line with 18 inches minimum cover to finish grade.

B. Control wiring located under paved areas shall be encased in Schedule 40 PVC pipe and shall extend a minimum of 12 inches beyond pavement.

C. Wires shall be color coded, white for common ground wire, red or black for valve control wires.

D. Wire splicing shall only be performed in controller cabinet and at remote control valve boxes. Splices shall be made with a mechanical connector equal to Spears Dry Splice Wire Connectors and encased in epoxy resin to provide a permanent watertight connection.

E. Stubbed out control wires shall terminate in concrete yard boxes.

F. Wire passing under future or existing paving or structures shall be encased in Schedule 40 PVC pipe extending at least 12 inches beyond edges of the paving or structure.

3.11 COVERAGE TEST

A. When sprinkler system has been completed, perform a coverage test to determine if coverage of water to turf and planting areas is complete and adequate.

B. Make adjustments, add heads, change heads, nozzles or orifices as may be required to provide complete coverage and provide layout indicated on Drawings.

3.12 PRESSURE TEST

A. After welded joints have cured at least 24 hours and before sprinkler heads are installed, flush out lines and cap outlets. Test system under normal street water pressure, in presence of the Project Inspector.

B. Joints shall remain exposed for examination during pressure test. Center load pipe with small amount of sand to prevent arching or slipping under pressure. Use normal street water pressure for test. Maintain pressure on plastic pipe for not less than four hours.

C. Replace or repair system, including joints that fail during pressure test. Repeat pressure testing until entire system passes the test period without leaks.

3.14 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.15 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site. Hard surfaces shall be washed clean. Daily clean up shall be required on areas used for circulation, parking, or other use.

END OF SECTION

SECTION 32 8416

IRRIGATION CONTROLS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Weather based irrigation controllers.
2. Flow sensors.
3. Master valves.
4. Enclosures.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Division 22 - Plumbing.
3. Division 26 - Electrical.
4. Section 32 8413 - Potable Water Irrigation.
5. Section 32 8416 - Irrigation Controls.
6. Section 32 8426 - Reclaimed Water Irrigation.
7. Section 32 9000 - Planting.

1.02 PROJECT REQUIREMENTS

A. Provide an EvapoTranspiration (ET) weather based irrigation controller with capabilities to receive data from weather stations and sensing devices or servers to automatically adjust or terminate programmed watering schedules.

B. The controller must be capable of utilizing two way communications with server for remote programming and continuous control and monitoring of the central irrigation system from OWNER’s designated location.

1.03 SUBMITTALS

A. Product Data: Provide catalog cuts, technical data, and manufacturer’s specifications for each product provided.

B. Provide proof of purchase to the OWNER. OWNER will receive rebates as part of energy savings program.

C. Operation and Maintenance Manuals:

1. Provide complete operating and maintenance instruction manuals for each weather based irrigation controller provided.

2. Provide complete programming instructions for each weather based controller.

3. Provide documentation showing compliance with the California Code of Regulations, Title 23, Division 2, Chapter 2.7, Model Water Efficient Landscape Ordinance.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with local, municipal and state laws, rules, and regulations governing or relating to this Work. Wiring shall conform to National Electrical.

B. Conform to California Code of Regulations, Title 23 Division 2, Chapter 2.7, Model Water Efficient Landscape Ordinance.

1.05 PRODUCT HANDLING

A. Do not damage materials during handling, loading, unloading, and storage. Transport materials in a manner to avoid undue stress on products.

B. Packaging of weather based controller shall be sufficient to eliminate damage to the controller upon shipping.

1.06 TRAINING

A. Provide a minimum 4 hours of on-site installation training per site from each ET irrigation controller manufacturer. Training shall explain facets necessary to set up a centrally managed irrigation system. Training is to include drawings and handouts for trainee reference. Training shall be provided by an authorized representative of the controller manufacturer.

B. Provide a minimum 2 hours of on-site operation training per site from each ET irrigation controller manufacturer. Training shall demonstrate all irrigation control and hand held remote control programming features. Training shall be provided by an authorized representative of the controller manufacturer.

C. Provide 8 hours of central management system training from each weather based irrigation control manufacturer. Training, for designated OWNER personnel shall include generating reports from the Central Management Control Area to satisfy the Model Water Efficient Landscape Ordinance,

requirements as well as operating and programming irrigation controllers using a remote personal computer. Training shall be provided by an authorized representative of the controller manufacturer.

D. Provide an attendance sheet to the OWNER listing personnel trained. The attendance sheet shall list the date and time and type of training and shall have signatures and contact information of all attendees including the instructor.

1.07 WARRANTY

A. Provide a five year manufacturer's warranty for controller units commencing from time of installation.

PART 2 – PRODUCTS

2.01 CENTRAL IRRIGATION CONTROLLERS

A. General:

1. Controllers shall be UL approved.

2. Controllers shall operate on 110 volts, single phase current, shall be completely automatic, and shall function with clock. Controllers output shall be at least 2 Amps and minimum 24 volts.

3. Controllers shall fully perform without soil moisture sensors, or mandatory telephone wires, repeaters or CAT5/Ethernet wiring.

4. Controllers shall have a Master Valve output circuit.

5. Controllers shall be capable of operating normally open or normally closed master valves.

6. After installation all ET weather based irrigation controllers shall be capable of being monitored and programmed from a single central location away from individual school sites.

7. Controllers shall have a built in flow metering circuit.

8. Controllers shall be capable of receiving EvapoTranspiration (ET) data to automatically adjust or terminate existing programmed watering schedules.

9. Weather based controllers shall be provided with appropriate antenna for wireless transceiver.

10. Weather based controllers with more than six stations shall be furnished with at least 3 extra stations for future use.

11. Weather based controllers shall be capable of fully operating without the need of excavating to conceal wiring infrastructure.

12. Controllers shall be capable of watering using (ET) Data without the need of a central monitoring station.

    a. Hunter – A2C-1200-SS w/WSS-SEN,

B. Communications Capabilities:

1. System shall be capable of wireless 2-way communications.

C. Programming Capabilities:

1. Controllers shall be capable of allowing programming changes to be performed at the controller and from a central irrigation management center away from individual school campuses.

2. Each controller shall be capable of being automatically updated with daily ET weather data.

3. System shall be capable of providing ET data from more than one source.

4. Controllers shall be able to pause or suspend irrigation automatically in real time.

5. Controllers shall be able to automatically read flow sensing equipment without adding on flow meter circuits.

6. Flow metering circuit shall provide high flow shutoff protection to individual remote control valves or circuits.

7. Controllers shall be capable of programming appropriate pipe size for accurate water consumption reports.

8. System shall be able to fully function using a hand held remote transmitter without additional set up requirements.

9. Controllers shall be password protected.

10. Controller management system shall not impose a security, infrastructure or product support impact on OWNER’s ITD department.

11. Controllers shall be capable of producing water savings efficiency data reports required by state agencies.

D. Antenna:

1. Provide appropriate antenna type to allow complete operation of system.

2. After installation, antenna must communicate with server to produce two way communications in order to manage the central irrigation system on site and from a central irrigation management center designated by OWNER.

E. Weather Based ET Data:

1. Provide with each controller on site weather/rain sensor for ET Data with no subscription.

2.02 FLOW SENSORS

A. Spinning impeller type, brass or PVC tee as required and sized to accurately read irrigation system designed flow maximum and minimum.

1. Flomec – QS200-20 Data Industrial Model IR Series or equal.

2.03 MASTER VALVES

A. Normally open, solid brass (ASTM B584, B271, B505), self-cleaning, automatic electric globe valve with manual flow control stem. Valve shall operate with pressures to 200 psi and shall be slow closing with one-piece molded diaphragm incorporated with an integral O-ring seal reinforced with 600 pound test fabric and be guaranteed for 15 years. Equip with an internal self-flushing filter and self-cleaning metering rod for dirty water. Plunger and solenoid coil shall be electroless nickel plated for corrosion protection. 24 VAC 3-way solenoid coil shall be guaranteed for the life of the valve.

1. Superior Controls Model 3300 Series, or equal.

2.04 ENCLOSURES

A. Controllers shall be provided with a lockable weather resistant housing enclosure for protection of control panel and wireless transceiver.

B. Wall Mounted Enclosures:

1. Shall be constructed with 18 gage stainless steel.

2. Shall include a 110 Volt GFI power outlet inside enclosure.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Installations shall include at least one flow sensor and master valve.

B. Installation of irrigation controllers, flow sensors, master valves, antennas, cabinets, and enclosures will be the CONTRACTOR's responsibility unless otherwise specified.

3.02 MANUFACTURERS' FIELD SERVICES

A. Provide technical support to assure communication capabilities between controllers and sensing devices and between controllers and servers are within acceptable range for operation of the system.

3.03 MANUFACTURERS' TECHNICAL SERVICES

A. ET irrigation control manufacturers shall provide phone in technical support to OWNER's of their irrigation controllers.

END OF SECTION

SECTION 32 9000

PLANTING

PART 1 – GENERAL

1.01 SUMMARY

A. Provide labor, material, equipment, and appliances necessary to provide trees, plants, and ground cover as indicated on Drawings, specified, and as required for a complete installation.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 01_2513 - Product Procedures for Substitutions and/or Equal.
3. Section 01 4524 - Environmental Import/Export Material Testing.
4. Section 31 2200 - Grading.
5. Section 32 0190 - Operation & Maintenance of Planting.
6. Section 32 1313 - Site Concrete Work.
7. Section 32 8413 - Potable Water Irrigation.
8. Section 32 9113 - Lawns & Grasses.
9. Section 32 1827 - Decomposed Granite.

1.02 SUBMITTALS

A. Comply with provisions of Section 01 3300.

B. Submit complete lists of landscape materials and equipment to be used, including manufacturers name and address, specific trade names, catalog numbers complete with illustrations and descriptive literature and clearly mark or underline proposed items list sources of landscape topsoil.

C. Shop Drawings: Required for any landscape structure.

D. Material List: Plant materials list.

E. Certification: In addition to other required certification, furnish a certificate with each delivery of bulk material, including topsoil, planter mix soil, bark mulch, stating its

source, quantity, type of material furnished and that such item or material conforms to requirements of this section.

F. Sample: Submit mulch and topsoil Sample and soil amendments with analysis.

G. Fertilizer analysis: Provide labels of each fertilizer used and quantities used at each application recommended in Soil Analysis Report.

H. Soil Test: After completing soil rough grading, have soil tested for fertility and agricultural suitability. Soil shall be tested from minimum of (3-4) locations per acre of planted area. Provide a sampling map for approval of the OWNER and ARCHITECT prior to field sampling. Agronomy soil testing will show the specific sampling locations, and individual testing will be done for each sampling location. Test results will be provided for the specific sampling locations. Mixed, composite samples of multiple sampling locations is unacceptable. A copy of soil test results shall be submitted to OWNER and ARCHITECT before landscape work begins. Agronomy soil testing report will include any amendments that would be needed to mitigate any soil deficiencies. Pay for cost of soil test.

1.03 QUALITY ASSURANCE

A. Workers: Furnish skilled workers thoroughly trained and experienced in required crafts and familiar with specified requirements for proper performance of Work of this section.

B. Codes and Regulations: Materials, fabrication, and installation in this section shall comply with applicable State Codes and Regulations. Deliver permits and testing certifications to Project Inspector.

C. Quality and Size: Comply with current edition of “Horticultural Standards” for number one nursery stock as adopted by “American Association of Nurserymen”.

D. Plants:

1. True to name, with name of plants in accordance with standards of practice of “American Association of Nurserymen.”

2. Botanical names take precedence over common names.

1.04 GENERAL REQUIREMENTS

A. Project Inspector will verify that irrigation systems are operating before starting Work of this section.

B. Inspection: Notify ARCHITECT at least 72 hours in advance to schedule following inspections:

1. Plant material at time of delivery to Project site.

2. Final location of plants prior to preparation of planting pits.

3. Trees of 24-inch box size and larger at their source before delivery to Project site.

4. Finish grades prior to sodding or seeding areas.

5. Field placement of landscape site features (site furnishings, play equipment. Boulders)

6. Substantial Completion inspection and punch list at completion of landscape installation.

7. Final Substantial Completion inspection prior to start of Maintenance Period.

C. Existing Utilities and Existing Plant Materials:

1. Protect existing utilities and existing plant materials from damage.

a. Perform modifications only as permitted by ARCHITECT, in accordance with applicable provisions noted or specified on Drawings, or in other sections of these Specifications.

2. Replace damaged plant material with like type and size material. ARCHITECT shall determine cost of irreplaceable plant material according to “square inch” method as described by Council of Tree and Landscape Appraisers’ “Manual for Plant Appraisers” handbook, Current Edition, and “Guide for Establishing Values of Trees and Other Plants”.

D. Verification of Dimensions and Quantities:

1. Verify scaled dimensions and quantities before starting landscaping Work.

2. Promptly notify ARCHITECT of any discrepancies between Drawings, Specifications or actual Project site conditions.

E. Tree Tagging: ARCHITECT may tag 24-inch box and larger trees at nursery. Request tree tagging from ARCHITECT by providing 3 days advance notice. In lieu of personally tagging trees at nurseries, the ARCHITECT reserves the right to ask for photos of trees tagged at the nursery.

F. Pest Management Method and Products:

1. CONTRACTOR shall ensure that plants provided are clean, healthy, free of physical damage, and show no symptoms of abiotic injury. Plants must also be free of diseases, arthropod pests, and any other type of plant pests. Before

applying pesticides to plants on OWNER'S property, the following criteria must be met:

a. Individuals who apply pesticides on behalf of CONTRACTOR's company must have a Qualified Applicator License in appropriate category of pest control issued by California Department of Pesticide Regulation and registered to conduct pest control for hire as a business by Los Angeles County Agricultural Commissioner's Office.

b. Products used must be listed on LAUSD's OEHS approved product list.

c. Length of time from date of use of a pesticide product until beneficial occupancy by OWNER may not be less than five half-lives of products used.

d. Contact OWNER's Pest Management Department at (213) 743-1102 prior to any pesticide application to verify items above.

e. Complete written records of pesticide applications made by a contractor and or their representative on OWNER property, must be provided to OWNER's Pest Management Department within 10 days of applications.

1.05 SUBSTITUTIONS FOR PLANTS NOT AVAILABLE

A. Submit requests for substitutions of plant species, or size to the OAR, for approval, prior to purchasing the proposed substitution. Request for substitution shall be accompanied with a list of nurseries contacted in the search for the required plant and a record of other attempts to locate the required material. Requests shall also include sources of plants found that may be of a smaller or larger size, or a different shape or habit than specified, or plants of the same genus and species but different cultivar origin, or which may otherwise not meet the requirements of the specifications, but which may be available for substitution. Comply with Specifications Section 01_2513 Product procedures for Substitutions and/or Equal.

1.06 DELIVERY, STORAGE AND HANDLING

A. Provide temporary site storage plan as stated herein.

B. Bulk material: Coordinate delivery and storage with OAR and confine materials to neat piles in areas acceptable to OAR. Protect soil and soil stockpiles from wind, rain and washing that can erode soil or separate fines and coarse material, and contamination by chemicals, dust and debris that may be detrimental to plants or soil drainage. Cover stockpiles with plastic sheeting or fabric at the end of each workday.

C. Packaged Materials: Deliver chemicals, fertilizer, and soil conditioner to the Site in original unopened containers showing weight, manufacturer's guaranteed chemical analysis, trademark and conformance with state law, and name of manufacturer. Biological additives shall be protected from extreme cold and heat. All products shall be freshly manufactured and dated for the year in which the products are to be used. Protect materials from deterioration during delivery, and while stored at the Site.

D. Plant Delivery: Exercise care in transporting, handling, loading, and unloading plant material. Cover all plant materials during transport to protect from wind, sun, heat damage, and drying out. Plant materials damaged in any way from transit or unloading shall be removed immediately from the Site and replaced.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Topsoil: Designated as imported topsoil as specified herein. Soil test will determine suitability of topsoil before installation. Transport topsoil from source to its final position unless stockpiling is specified. Test in compliance with Section 01 4524.

1. Imported Soil:

a. Shall be from a source outside Project site and in compliance with this section.

b. ARCHITECT may make such inspections and perform such tests as deemed necessary to determine material meets all requirements.

c. At least 30 days before scheduled installation, submit proposed source of topsoil and a sample to ARCHITECT. Submit a written request for review, accompanied by a written report stating that proposed source complies with these specifications by a testing laboratory registered by State of California for agricultural soil evaluation.

d. Comply with recommendations of soils testing laboratory and provide any soil amendments necessary to achieve proper nutrient levels to support healthy plant growth.

e. Imported topsoil shall be of a uniform composition and structure, fertile and friable sandy loam soil, and be free of roots, decay, subsoil, clods and stones larger than ¼ inch in greatest dimension, pockets of coarse sand, noxious weeds, sticks, brush and other litter and not be infested with nematodes or other undesirable insects and plant disease organisms. Imported topsoil shall meet following additional requirements:

1) Gradation Limits: Sand – 50 to 80 percent, clay – 20 percent maximum, and silt – 30 percent maximum. Sand, clay and silt gradation limits shall be as defined in ASTM D422.

2) Agricultural Suitability and Fertility: Topsoil shall be fertile and friable garden soil suitable for sustaining and promoting growth of specified plants.

3) Electrical conductivity less than 2.0 milliohms/centimeter or DS/m.

4) Boron content maximum of 1.0 part per million.

B. Fertilizers and Conditioning Materials: Comply with applicable requirements of State of California Agricultural Code:

1. General:

a. Fertilizing materials shall be packaged, first grade, commercial quality products identified as to source, type of material, weight and manufacturer's guaranteed analysis.

b. Fertilizing material shall not contain toxic ingredients and fillers in quantities harmful to animal, human or plant life.

c. Submit a certificate of compliance stating material substantially meets Specifications in accordance with provisions of Article 1.03B.

2. Materials:

a. Bone Meal: Commercial raw bone mean shall be finely ground, steamed dry material with a minimum analysis of 2.5 percent nitrogen and 22 percent phosphoric acid.

b. Gypsum: Hydrated calcium sulfate produce containing 23 percent calcium and 18 percent sulfur with a guarantee analysis of 84 percent calcium sulfate.

c. Soil Sulfur: Guarantee analysis of 99 percent sulfur.

d. Superphosphates: First grade finely ground phosphate rock used for agricultural purpose, containing minimum 18 percent phosphoric acid by volume.

e. Commercial Fertilizer: Pellets or granular product having a chemical analysis of 14-14-14, with a minimum of 68 percent of nitrogen from slow-release nitrogen unless otherwise specified in Soil Analysis Report: it should be a free-flowing material delivered in unopened

bags, do not install material which becomes caked or otherwise damaged.

f. Nitrogen Fortified Wood Product: Derived from redwood, fir or cedar sawdust or from bark of fir or pine treated with a non-toxic agent to quickly absorb water and comply with following requirements:

1) Gradation:

SIEVE SIZE	PERCENT PASSING
1/4-inch	95 percent minimum
#8	80 percent minimum
#35	30 percent minimum

Nitrogen Content:

NITROGEN CONTENT	PERCENT DRY WEIGHT
Redwood	0.4 to 0.6 percent
Fir	0.56 to 0.84 percent
Cedar	0.56 to 0.84 percent
Fir Bark	0.8 to 1.2 percent
Pine Bark	0.8 to 1.2 percent

2) Salinity: Maximum saturation extract conductivity 2.5 milliohms/centimeter at 25 degrees Celsius.

3) Absorption: When one teaspoon of water is applied to 4 cubic inches of air-dried products, material shall be become completely damp in a period of less than 2 minutes. Kellogg KRA, Sequoia Redwood/Cedar Blend or White Fir, Long Beach Soil Preparation, Bandini #101 Redwood Soil Builder of nitrogenized wood amendment.

g. Organic Fertilizer: Treated, relatively dry friable organic compost derived from sewage sludge processed for agricultural use; containing at least 1 percent nitrogen by dry weight, 2 percent phosphoric acid and comply substantially with gradation noted in sub-section 2.1, B6. Milorganic, Kellogg's Nitrohumus, or equal.

C. Prepared Backfill mix:

1. To be based upon recommendations from soils test performed by a certified laboratory.

2. Mix (for bidding purposes):

   a. Seventy percent by volume clean excavated topsoil/import soil.

   b. Thirty percent by volume nitrogen stabilizer wood residual.

   c. One pound per cubic yard gypsum.

   d. Two pounds fertilizer per cubic yard (14-14-14 with a minimum 68 percent of nitrogen from slow-release nitrogen. Additional secondary and micronutrients preferred).

3. Mix (acid plants)

   a. Thirty percent by volume clean excavated soil/imported soil.

   b. Seventy percent by volume nitrogen stabilized wood residual.

   c. Two pounds per cubic yard. soil sulfur.

   d. Two pounds fertilizer per cubic yard (14-14-14 with a minimum 68 percent of nitrogen from slow-release nitrogen. Additional secondary and micronutrients preferred).

D. Plants

1. Tagging Plant Material

   a. Attach legible labels to each individual plant or container containing one or more plants. Provide the necessary detailed information as to horticultural name, size, or other data required to identify as conforming to specifications on the label.

   b. Refer to American Standards for Nursery Stock regarding labeling of plant material.

   c. When the label is attached to a container containing more than one plant, mark quantity as well as other required information on the label. The OAR will reject plant material with illegible or missing tags.

2. Inspection of Plant Material

   a. Allow the OAR or ARCHITECT the opportunity to inspect plant material at nursery or off-Site holding area prior to arrival on Site.

   b. All plant materials will be inspected by OAR or the ARCHITECT after arrival on Site.

c. Notify the OAR at least 72 hours prior to the proposed arrival of plant materials onsite and submit an itemized list of plants in each delivery.

d. Arrange for adequate labor and equipment onsite at the time of plant material inspection and unload, open, and handle plant material during inspection.

e. Immediately remove plants from the Site that do not meet the requirements specified herein or do not match approved representative photographs.

f. CONTRACTOR shall bear all cost related to plant corrections.

2. Plants stored in standing water will be rejected and shall be removed from the Site.

E. Temporary Storage:

a. Plant all materials within 24 hours of being delivered. If planting is delayed more than 24 hours after delivery, set plants on the ground and protect by covering root ball with soil, wet burlap, or other material acceptable to the OAR. Protect all plant material from freezing, sun, drying winds, and mechanical damage.

b. Irrigate plants as needed until planted.

c. Plants stored under temporary conditions, whether accepted by the OAR or not, are the sole responsibility of the CONTRACTOR.

d. Plants temporarily stored are subject to inspection and approval prior to planting. Immediately remove rejected plant material from the Site.

e. Do not heel in plants for more than 1 week.

f. Do not store fertilizer, lime, or other chemicals (herbicides, pesticides, or other deleterious material) within 50 feet any planting material.

g. Protect packaged materials from deterioration during storage.

h. Do not remove container-grown stock from containers until planting time.

F. Plant Material:

1. Trees: Trees shall conform to type and size noted on Drawings. Unless approved otherwise, trees shall be a minimum of 24" box size. For tree height and caliper dimensions, if specified, measure height from root crown to last division of terminal leader and measure diameter 1 ft. above root crown for caliper. For palm tree trunk height dimension, measure height of palm trees

from ground line to base of growing bud. Palms shall stand reasonably erect without support.

2. Shrubs: Specified type and size selected from high quality well shaped nursery stock.

3. Flatted Plants: Grown and remain in flat until transplanted at Project site. Soil and spacing of plants in flat shall insure minimum disturbance of root system at time of transplanting. Maximum plants per flat to be 64 to 100 plants, or as indicated in Drawings.

4. Grass: See Specification Section 32 9113 for Lawns and Grasses.

G. General Materials:

1. Pipe: Galvanized steel, standard weight (schedule 40) complying with ASTM A120.

2. Nails, fasteners, etc.: Galvanized and commercial quality materials.

3. Fabricated metal items: Steel conforming to ASTM A36.

4. Concrete items: Standard 2000 psi concrete.

H. Concrete headers: 6-inch by 8-inch size, complete with pre-molded expansion joint material 30 ft. apart, and control joints at 10 ft. apart, or as indicated on Drawings. Control joints to be tooled or saw cut to a minimum depth of 1/2".

I. Composite Headers: Headers and stakes shall be composite material sizes as indicated on Drawings. Screws shall be plated deck screws. Stakes shall be 1 inch by 2-inch by 12-inch in length and headers shall be furnished in 2-inch by 6-inch by 20-foot in length and shall be of uniform width and thickness.

J. Tree Stakes: Steel stakes shall be the R2 Stake System (also known as the Reddy Stake System) manufactured by J. R. Partners or equal. Provide two R2 Stakes per tree. Use 7 feet R2 Stake for 15 gallon size trees and smaller and the 9 feet R2 Stake for 24-inch box size trees or smaller. Use the Mega Stake for 36 inches and 48 inches box size trees. If trees are surrounded by steel grates, utilize the Grate Stake for 24-inch box size trees and smaller and the Mega Grate Stake for 36-inch box size trees or smaller.

K. Tree Ties:

1. Wire Type: No. 10 gage BMG galvanized soft steel wire covered with garden hose.

2. Cinch Tie: Flexible vinyl with adjustable interlocking capability.

L. Tree-Root Control Barrier: Shall be fabricated from a high density and high impact plastic such as polyvinyl chloride, ABS or polyethylene, and have a minimum thickness of 0.08 inch. Plastic shall be furnished with ½ inch to ¾ inch high raised vertical ribs on inner surface spaced at least 6 inches but not more than 8 inches apart. Install a plastic root control barrier with each new tree planted within a tree well. Deep Root Corp., or equal.

M. Pest Management Methods and Products: Refer to paragraph 1.04.F for details pertaining to CONTRACTOR applying pesticides.

N. Jute matting shall be of a uniform open plain weave, single jute yarn, not varying in thickness by more than one half its normal diameter. Jute matting shall be furnished in rolled strips as follows: Length, approximately 50 to 75 yards, width, 45 inches to 50 inches. Ludlow Soil Saver No. 48, or equal.

PART 3 – EXECUTION

3.01 EXISTING SURFACE CONDITIONS

A. Examine areas and conditions under which Work of this Section will be performed. Correct detrimental conditions before commencing Work of this section.

3.02 GRADING AND SOIL PREPARATION

A. Initial Rough Grading: Specified in Division 31.

B. Earthwork and Topsoil Placement: Shall include excavation and backfilling for irrigation system and preparation for spreading, densification, cultivation, and raking of topsoil, including fertilization and conditioning.

C. Preliminary Grading: Scarify existing soil to a depth of 6 inches before backfilling with topsoil. During preliminary grading operation, remove stones over 3/4 inch.

D. In Previously Paved Areas: Remove top 6 inches of existing soil and legally dispose of off Project site. Replace with approved imported topsoil to indicated finish grade.

E. Topsoil Preparation and Conditioning:

1. Type and Thickness: Topsoil shall have a minimum depth of 6 inches above subgrade or as indicated on Drawings, whichever is greater.

2. Before installing topsoil, subgrade shall be cleared of weeds, rock ¾ inch and larger and other extraneous materials from designated planting areas to a depth of 6 inches. The tools acceptable for this cleaning process are a Rock Picker by Harley Enterprise, Track Screener by Cherrington, Screen USA Inc. or other tools or machines designed for the purpose. The finished planting bed

preparation is subject to the approval of the OAR. OAR shall coordinate with the OWNER's M&O Landscape staff for a site visit and approval prior to plant/lawn installation.

3. Do not process topsoil when it is so wet or dry as to cause excessive compaction or forming of hard clods or dust.

4. Existing soil can be used as topsoil only if it meets the requirements of Article 2.01.A of this section.

F. Fertilizing and Conditioning: Provide planting areas to finish grades, including mounds, before installation of specified fertilizer or soil conditioning materials.

1. Mechanically install following amount of fertilizer or soil conditioning materials at a uniform rate per 1,000 square feet of planting area:

a. Three cubic yards of nitrogen fortified wood compost.

b. Two cubic yards of organic fertilizer.

c. One hundred pounds. of gypsum.

d. Thirty pounds of commercial fertilizer.

2. Quantities of required materials for planting areas shall be at Project site. Furnish Project Inspector with delivery tickets before installation to verify source, kind, and quantities delivered.

3. After installation of fertilizer and soil conditioning materials, uniformly cultivate materials into upper 6 inches of soil with suitable equipment operated in at least two directions at approximate at right angles. Process soil until friable.

G. Finish Grading:

1. Provide a finish grade, smooth, uniform, and free of abrupt grade changes and depressions to insure proper surface drainage.

2. Finish grades adjacent to paving curbs or headers shall be 1 inch lower in sod areas and 2 inches lower in shrub or ground cover areas.

3. Irrigate soil after installation of fertilizer and soil conditioning materials. Allow soil to settle. Provide a stable surface. After soil has dried out to a workable condition, re-grade, rake, and smooth to required grades and contours. Finished surfaces to be left clean and suitable for planting.

4. Areas to be planted shall be graded and floated to provide complete surface drainage; water holding depressions and pockets shall be eliminated.

Undulations and unsightly variations in grade which will not permit the use of normal mowing equipment without scalping or missing shall be removed so that proper use of mowing equipment can be performed.

5. Areas to be planted shall also be finished graded to meet any walks, paths or other adjoining surfaces so that, after compaction, no water pockets or ridges remain.

6. Areas where sod will interface with other modes of planting at catch basins and paved areas shall be finish shaped so as to counter sink the sod one inch such that once sod is placed, it shall be at grade with adjacent planting bed.

H. Contour mounds: Construct with imported topsoil and specified soil amendments. Install and shape mounds to minimize settlement or erosion and to provide adequate footing for placement of boulders. Referenced dimensions of mound contours refer to height above finish grade.

I. Trenching: After completion of soil conditioning or finish grading operations, backfill upper portion of trench so specified topsoil thickness in trench is restored.

J. Weeding: Once site has been cleared, grubbed and rough graded, landscape areas shall be maintained free of vegetation growth until start of irrigation and planting phase of work.

3.03 HEADER INSTALLATION

A. Install at locations and grades shown on Drawings before planting.

3.04 PLANTING

A. General: Planting materials shall be inspected before planting, including those tagged at nursery.

1. Perform planting with material, equipment and according to procedures favorable to optimum growth of plant. Do not plant during windy conditions.

2. Commence planting operations immediately following completion of irrigation system.

B. Layout and Plant Locations:

1. Plant locations indicated on Drawings are approximate.

2. Provide a layout of plants in nursery containers and landscape elements in planting areas and obtain review of ARCHITECT before actual planting operations.

3. Locate first row of plantings in areas designated for on center spacing at one-half the designated spacing from edge of area.

4. Plants may be re-spotted before planting as directed by ARCHITECT.

C. Specimen Planting: Plantings in boxes 24 inches or larger shall be installed before installation of lateral irrigation lines. Re-route irrigation lines in conflict with specimen locations to clear root ball.

D. Tree and Shrub Installation:

1. Excavate planting holes approximately square with vertical sides shall be twice the width of plant container or root ball; larger if necessary to permit handling and installation without damage to root ball system. Bottom of plant container or root ball shall be placed on existing undisturbed soil.

2. Do not install plantings having a broken or cracked root ball.

3. Containers should be opened and removed in such a manner not to damage root system.

4. Remove balled plant wrappings after plant is positioned in hole.

5. Scarify native soil at bottom half of holes to a depth of 6 inches.

6. Backfill bottom half of hole with specified backfill mix minus fertilizers. Settle with water.

7. After water settling bottom half of hole, set planting approximately in center of hole and adjust root flush to finish grade.

8. Backfill balance of hole with specified backfill mix and fertilizer and water settle.

9. Prune or remove any broken or damaged limbs.

10. Form a circular watering basin slightly larger than hole; 4-inch high for trees and 2-inch high for shrubs. Shape bottom of basin to be slightly lower than finish grade.

11. Restore area around plantings to finish grade.

12. After installation, plantings shall be plumb with root crown at its natural depth with respect to finish grade.

13. New trees in grass areas to be installed with tree trunk protector (Arborguard or equal).

E. Backfill Planting Mix: Consists of 70 percent specified topsoil, and 30 percent nitrogen fortified sawdust mulch plus the amendments indicated in soil analysis report.

F. Raised Planter Mix: Backfill mix for raised planters and tree pits in raised planters shall be of following materials.

1. Planter Mix by B.D. White Topsoil Co., Culver City, LAUSD Mix by AE Schmidt Co, Planter Mix by Gale Materials or equal.

2. Weights shall be 45 pounds per cubic foot.

3. Raised planters shall be backfilled with finish grade at 2 inches below the planter top.

4. Required system for draining planters shall be in place prior to placing backfill.

G. Ground Cover Planting:

1. Complete soil preparation and fine grading before installation of ground cover plantings.

2. Install ground cover in moist soil, spaced as indicated on Drawings.

3. Install each plant with its proportionate amount of flat soil to minimize root disturbance.

4. The degree of soil moisture in flat shall be such that soil does not crumble when removing planting.

5. Following installation of ground cover, restore finish grade to insure proper surface draining.

H. Transplanting of Existing Plant Material: In accordance with current horticulture practices.

1. Box or root system as necessary to maintain plant materials in a healthy, growing condition.

2. Equivalent size and kind of plantings may be provided instead of transplanting an existing planting.

I. Sod:

1. Complete fine grading and specified soil preparation before lawn installation.

2. Apply starter fertilizer per supplier’s recommendations.

3. Sod or Roll Sod: type, thickness, and areas of installation shall be in accordance with Drawings and Specifications.

4. Remove roll sod netting prior to installation.

5. Thickness of sod or roll sod shall be recommended thickness below finish grade. Complete soil conditioning and fine grading before installation. Do not operate heavy equipment over completed sub-grade. Sub-grade shall be moist when sod is installed. Install sod with closely fitted joints and stagger ends of strips. Plug opening with sod or topsoil.

6. Lightly irrigate within two hours after installing sod and before rolling. Roll seams and joints until sod is well bonded to sub-grade.

7. Water area thoroughly to penetrate sub-grade at least 8 inches. Repeat watering as necessary to keep sod moist until rooted in sub-grade. Protect sod areas against foot traffic until sod is well established. Replace damaged areas with new sod.

8. Sod installation shall be complete at least 12 weeks prior to the opening of school.

9. Sand leveling shall occur post sod installation. Topically apply USGA sand growing medium to fill low spots and proof roll the sod for a uniform surface. Finish grade shall not deviate more than 1/8” in 10’-0”. Lawn mower wheels shall not pump or yield atop the surface after installation. A maximum of ¼” of sand can be applied.

J. Repair of existing or newly installed sod area:

1. Rake, drag, float and roll seed bed as often as necessary to produce a true, uniform, and smooth seed bed. Remove debris, stones, etcetera.

2. Prior to any lawn installation, obtain approval on fine grading of bed for sod areas.

3. Water seed bed thoroughly until a moisture penetration of 8 inches is achieved.

4. Seed mixture shall be sown at following rates:

   a. Common Bermuda: 4 pounds per 1000 square feet or as recommended by manufacturer.

5. Seeding by hand, “Cyclone” type seeder, or pushed seeder shall be done in two passes at right angles to each other using 50 percent of specified rate for each pass. After seeding, apply a top dressing of wood residuals at rate of ¾ cubic yards per 1,000 square feet.

6. Large sod areas shall be seeded by using “Brillion” type seeder. Areas inaccessible to seeder shall be handed seeded and seed raked lightly into top ¼ inch of seed bed.

7. Irrigate immediately after completion and irrigation as frequently as necessary to assure complete germination of seed without creating run-off.

8. Areas that do not germinate satisfactorily shall be reseeded at proper intervals until an overall acceptable stand of grass is produced. Good turf coverage will be required before final acceptance of work.

9. Protect new sod from damage by erosion, trespass or any source. Safeguards and temporary fencing shall be erected where necessary, and precautions taken to prevent excessive runoff.

K. Fertilizing: At 30 day intervals after sod or ground cover installation, install an all purpose 15-15-15 commercial fertilizer at rate of 10 pounds per 1,000 square feet of installed area. Thoroughly water area after applying fertilizer. Fertilizer applications shall be performed under observation of Project Inspector.

3.05 CLEAN-UP

A. During installation, keep the site free of trash, pavements reasonably clean and work area in an orderly condition at the end of each day. Remove trash and debris in containers from the site no less than once a week.

B. Immediately clean up any spilled or tracked soil, fuel, oil, trash or debris deposited by the CONTRACTOR from all surfaces within the project or on public right of ways and neighboring property.

C. Once installation is complete, wash all soil from pavements and other structures. Ensure that mulch is confined to planting beds and that all tags and flagging tape are removed from the site.

D. Make all repairs to grades, ruts, and damage due to the work at the site.

E. Remove and dispose of all excess planting soil, subsoil, mulch, plants, packaging, and other material brought to the site by the CONTRACTOR.

3.06 PROTECTION DURING CONSTRUCTION

A. The CONTRACTOR shall protect planting and related work and other site work from damage due to planting operations, operations by other Contractors or trespassers. Maintain protection during installation until Substantial Completion Acceptance. Treat, repair or replace damaged work immediately.

B. Damage done by the CONTRACTOR, or any of their sub-contractors to existing or installed plants, or any other parts of the work or existing features to remain, including roots, trunk or branches of large existing trees, soil, paving, utilities,

lighting, irrigation, other finished work and surfaces including those on adjacent property, shall be cleaned, repaired or replaced by the CONTRACTOR at no expense to the OWNER. The OAR shall determine when such cleaning, replacement or repair is satisfactory.

C. Do not store materials or equipment, permit burning, or operate or park equipment under the branches or on the root ones of existing plants to remain. CONTRACTOR must report and repair, per the Specifications, any damage to plants and structures to the OAR.

D. Damage to existing trees shall be assessed by a certified arborist.

3.07 INSPECTIONS

A. Inspections by the Landscape Architect shall occur at various milestones throughout the Contract. Notify the OAR 72 hours prior to request inspection dates.

B. The following inspections will occur:

a. When plant material arrives on site, prior to planting.

b. When plant material is laid out in accordance with Contract Drawings and prior to planting.

c. When work is ready for review for Landscape Substantial Completion.

d. After punch list items are completed and are ready for Final Acceptance after Landscape Substantial Completion.

e. At the conclusion of the Warranty Period.

C. The Landscape Architect will provide inspection field reports.

3.08 OBSERVATION OF THE WORK

A. The ARCHITECT and OAR may observe the work at any time. They may remove samples of materials for conformity to specifications. Rejected materials shall be immediately removed from the site and replaced at the CONTRACTOR 's expense. The cost of testing materials not meeting specifications shall be paid by the CONTRACTOR.

B. The OAR shall be informed of the progress of the work so the work may be observed at the following key times in the construction process. The OAR shall be afforded sufficient time to schedule visits to the site. Failure of the OAR to make field observations shall not relieve the CONTRACTOR from meeting all the requirements of this specification.

1. Completion of the plant layout staking: Review of the plant layout.

2. Plant quality: Review of plant quality at the time of delivery and prior to installation. Review tree quality prior to unloading where possible, but in all cases prior to planting.

3. Completion of the planting: Review the completed planting.

3.09 MAINTENANCE DURING PROJECT INSTALLATION

A. After installation of the irrigation system, and during installation of plant materials and grass, provide maintenance for all plantings and grass to keep the plants in a healthy state and the planting areas and lawns clean and neat.

B. Required: Maintain areas on a continuous basis as they are completed during progress of Work. Maintenance shall include continuous operations of watering, mowing grass, weeding, trimming, rodent control, reseeding, planting replacement irrespective of cause or any other operations necessary to assure normal plant growth.

C. Keep planting areas and grass lawns free of debris and weeds. Clean and cultivate at intervals not to exceed 7 days.

D. General requirements:

1. All work shall be undertaken by trained planting crews under the supervision of a foreman with a minimum of 5 years' experience supervising commercial plant maintenance crews.

2. All fertilizer applications shall be made by licensed applicators within the State of California for the type of fertilizer to be used. All work shall comply with all applicable local, state, and federal requirements and be approved by the OWNER following the Integrated Pest Management Plan (IPM).

E. Provide the following ongoing maintenance tasks:

1. Watering; Provide all water required to keep soil within and around the plant root balls, and at lawns, at optimum moisture content for plant growth.

2. Monitor soil moisture to provide sufficient water. Check grass soil moisture and root ball moisture with a soil moisture meter on a regular basis and record moisture readings. Do not over water.

3. Plant pest control: Maintain disease, insects and other pests at manageable levels. Manageable levels shall be defined as damage to plants that may be noticeable to a professional but not to the average person. Use least invasive methods to control plant disease and insect outbreaks. The OAR must approve in advance the use of all chemical pesticide applications.

4. Plant replacement: Replace all plants that are defective as defined in the warranty provisions, as soon as the plant decline is obvious and in suitable weather and season for planting as outlined in above sections. Plants that become defective during the installation or maintenance period shall be covered and replaced under the warranty provisions.

5. Perform first mowing of grass areas when grass is 2 1/2 inches high and repeat as often as is necessary to maintain sod at a height of 2 inches. In no case shall sod be cut lower then 1 1/2 inches in height unless otherwise directed.

6. See spec Section 32 0190 - Maintenance & Operations of Planting.

3.10 PESTICIDE APPLICATION

A. Comply with requirements outlined in paragraph 1.04.F.

3.11 PROTECTION

A. Unless noted otherwise, protect Work of this section until Substantial Completion.

3.12 CLEANUP

A. Remove rubbish, debris and waste materials and legally dispose of off Project site.

END OF SECTION

SECTION 32 9113

LAWNS AND GRASSES

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes the furnishing and installation of materials for lawns and grasses. Products shall be as follows or as directed by the OWNER. Installation procedures shall be in accordance with the product manufacturer's recommendations. Demolition and removal of materials shall be as required to support the work.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 01_2513 - Product Procedures for Substitutions and/or Equal.
3. Section 01 4524 - Environmental Import/Export Material Testing.
4. Section 31 2200 - Grading.
5. Section 32 0190 - Operation & Maintenance of Planting.
6. Section 32 1313 - Site Concrete Work.
7. Section 32 8413 - Potable Water Irrigation.
8. Section 32 9000 – Planting.

C. Section Includes:

1. Sodding.
2. Turf Renovation.
3. Erosion-control material.

D. Definitions:

1. Duff Layer: The surface layer of native topsoil that is composed of mostly decayed leaves, twigs, and detritus.
2. Finish Grade: Elevation of finished surface of planting soil.
3. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
4. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
5. Pests: Living organisms that occur where they are not desired or that cause

damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

6. Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

7. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or top surface of a fill or backfill before planting soil is placed.

8. Subsoil: All soil beneath the topsoil layer of the soil profile and typified by the lack of organic matter and soil organisms.

9. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil, but in disturbed areas such as urban environments, the surface soil can be subsoil.

1.02 SUBMITTALS

A. Comply with provisions of Section 01 3300.

B. Product data: For each type of product indicated.

C. Certification of each seed mixture for turfgrass sod as directed.

D. Product Certificates: For soil amendments and fertilizers, from manufacturer.

E. Sod: Furnish certificate by grower for type, and trueness to name of grass variety or strain. Where or seed issued, provide quality to be delivered.

1.03 QUALITY ASSURANCE

A. Installer’s Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.

B. Soil Analysis: For each unamended soil type, furnish soil analysis and a written report by a qualified soil-testing laboratory.

1. The soil-testing laboratory shall oversee soil sampling.

2. Report suitability of tested soil for turf growth.

a. State recommendations for nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory planting soil suitable for healthy, viable plants.

b. Report presence of problem salts, minerals, or heavy metals; if present, provide additional recommendations for corrective action.

1.04 DELIVERY, STORAGE AND HANDLING

A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws, as applicable.

B. Sod: Deliver sod in time for planting within 24 hours of harvesting. Protect sod from breakage and drying.

C. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.

2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.

3. Accompany each delivery of bulk fertilizers, lime, and soil amendments with appropriate certificates.

1.05 MAINTENANCE SERVICE

A. See Specification Section 32 0190 for lawns & grasses Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Begin maintenance immediately after each area is planted and continue until acceptable turf is established.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Turfgrass Sod:

1. Turfgrass Sod: Number 1 Quality/Premium, including limitations on thatch, weeds, diseases, nematodes, and insects. Furnish viable sod of uniform density, color, and texture, strongly rooted, and capable of vigorous growth and development when planted.

2. Turfgrass species (warm-season grass): Hybrid Bermudagrass (Cynodon dactylon).

3. Turf Grass species (cool season grass): Tall Fescue (Festuca arundinacea), Improved varieties, as specified on plans.

B. Elementary School/Primary Center:

1. General Sod Areas are to be sod or roll sod: Tall Fescues.

2. Multi Purpose field:

a. Sod or Roll Sod: Hybrid Bermuda.

C. Inorganic Soil Amendments:

1. Lime: ASTM C602, agricultural liming material containing a minimum of 80 percent calcium carbonate equivalent and as follows:

a. Class T, with a minimum of 99 percent passing through No. 8 (2.36-mm) sieve and a minimum of 75 percent passing through No. 60 (0.25-mm) sieve, or Class O, with a minimum of 95 percent passing through No. 8 (2.36-mm) sieve and a minimum of 55 percent passing through No. 60 (0.25-mm) sieve.

b. Provide lime in form of ground dolomitic limestone.

2. Sulfur: Granular, biodegradable, containing a minimum of 90 percent sulfur, and with a minimum of 99 percent passing through No. 6 (3.35-mm) sieve and a maximum of 10 percent passing through No. 40 (0.425-mm) sieve

3. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.

4. Aluminum Sulfate: Commercial grade, unadulterated.

5. Perlite: Horticultural perlite, soil amendment grade.

6. Agricultural Gypsum: Minimum 90 percent calcium sulfate, finely ground with 90 percent passing through No. 50 (0.30-mm) sieve.

7. Sand: Clean, washed, natural or manufactured, and free of toxic materials.

D. Organic Soil Amendments:

1. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1-inch (25-mm) or 3/4-inch (19-mm) or 1/2-inch (12.5-mm), as directed, sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:

a. Organic Matter Content: 50 to 60 percent of dry weight.

2. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture and free of chips, stones, sticks, soil, or toxic materials.

a. In lieu of decomposed wood derivatives, mix partially decomposed wood derivatives with ammonium nitrate at a minimum rate of 0.15 lb/cu. ft. (2.4 kg/cu. m) of loose sawdust or ground bark, or with ammonium sulfate at a minimum rate of 0.25 lb/cu. ft. (4 kg/cu. m) of loose sawdust or ground bark.

3. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.

E. Fertilizers:

1. Bonemeal: Commercial, raw or steamed, finely ground; a minimum of 1 percent nitrogen and 10 percent phosphoric acid.

2. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.

3. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:

   a. Composition: 1 lb/1000 sq. ft. of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.

   b. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

4. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:

   a. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.

   Or:

   b. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

F. Planting Soils:

1. Planting Soil: ASTM D5268 topsoil, with pH range of 5.5 to 7 Imported topsoil or manufactured topsoil from off-site source. Verify suitability of soil to produce viable planting soil. Clean soil of roots, plants, sod, stones, clods, clay lumps, pockets of coarse sand, concrete slurry, concrete layers or chunks, cement, plaster, building debris, and other extraneous materials harmful to plant growth. Mix soil with the following soil amendments and fertilizers in the following quantities to produce planting soil:

   a. Ratio of Loose Compost to Topsoil by Volume: 1:3.

   b. Ratio of Loose Wood Derivatives to Topsoil by Volume: as directed by the OWNER.

   c. Weight of Iron Sulfate per 1000 Sq. Ft.: as directed by the OWNER.

   d. Weight of Agricultural Gypsum per 1000 Sq. Ft.: as directed by the OWNER.

   e. Volume of Sand per 1000 Sq. Ft.: as directed by the OWNER.

   f. Weight of Bonemeal per 1000 Sq. Ft.: as directed by the OWNER.

   g. Weight of Superphosphate per 1000 Sq. Ft.: as directed by the OWNER.

   h. Weight of Commercial Fertilizer per 1000 Sq. Ft.: as directed by the OWNER.

i. Weight of Slow-Release Fertilizer per 1000 Sq. Ft.: as directed by the OWNER.

G. Mulches:

1. Compost Mulch: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1-inch (25-mm) sieve; soluble salt content of 2 to 5 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:

a. Organic Matter Content: 50 to 60 percent of dry weight.

H. Erosion Control Materials:

1. Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches long.

2. Erosion-Control Fiber Mesh: Biodegradable burlap or spun-coir mesh, a minimum of 0.92 lb/sq. yd., with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 6 inches long.

3. Erosion-Control Mats: Cellular, non-biodegradable slope-stabilization mats designed to isolate and contain small areas of soil over steeply sloped surface, 4-inch nominal mat thickness. Include manufacturer's recommended anchorage system for slope conditions.

PART 3 – EXECUTION

3.01 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations. Protect grade stakes set by others until directed to remove them.

B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil- bearing water runoff or airborne dust to adjacent properties and walkways.

3.02 TURF AREA PREPARATION

A. Limit turf subgrade preparation to areas to be planted.

B. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 6 inches. Remove stones larger than ¾" inch in any dimension, and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off OWNER's property.

1. Apply superphosphate fertilizer directly to subgrade before loosening.

2. Thoroughly blend planting soil off-site before spreading or spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil.

a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.

b. Mix lime with dry soil before mixing fertilizer.

3. Spread planting soil to a depth of 6 inches, but not less than required to meet finish grades after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet

a. Spread approximately 1/2 the thickness of planting soil over loosened subgrade. Mix thoroughly into top 4 inches of subgrade. Spread remainder of planting soil.

b. Reduce elevation of planting soil to allow for soil thickness of sod.

C. Unchanged Subgrades: If turf is to be planted in areas unaltered or undisturbed by excavating, grading, or surface-soil stripping operations, prepare surface soil as follows:

1. Remove existing grass, vegetation, and turf. Do not mix into surface soil.

2. Loosen surface soil to a depth of at least 6 inches. Apply soil amendments and fertilizers according to planting soil mix proportions and mix thoroughly into top 6 inches of soil. Till soil to a homogeneous mixture of fine texture.

a. Apply superphosphate fertilizer directly to surface soil before loosening.

3. Remove stones larger than 3/4 inch in any dimension and sticks, roots, trash, and other extraneous matter.

Legally dispose of waste material, including grass, vegetation, and turf, off OWNER's property.

D. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit finish grading to areas that can be planted in the immediate future.

E. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

F. Before planting, obtain the OWNER's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.03 PREPARATION FOR EROSION-CONTROL MATERIALS

A. For erosion-control mats, install planting soil in two lifts, with second lift equal to thickness of erosion-control mats. Install erosion-control mat and fasten as recommended by material manufacturer.

B. Fill cells of erosion-control mat with planting soil and compact before planting.

C. For erosion-control blanket or mesh, install from top of slope, working downward, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer.

D. Moisten prepared area before planting if surface is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

3.04 SODDING

A. Lay sod within 24 hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy.

B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to subgrade or sod during installation. Tamp and roll lightly to ensure contact with subgrade, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.

1. Lay sod across angle of slopes exceeding 1:3.

2. Anchor sod on slopes exceeding 1:6 with wood pegs or steel staples spaced as recommended by sod manufacturer but not less than 2 anchors per sod strip to prevent slippage.

C. Sod or Roll Sod: type, thickness, and areas of installation shall be in accordance with Drawings and Specifications.

D. Remove roll sod netting prior to installation.

E. Lightly irrigate within two hours after installing sod and before rolling. Roll seams and joints until sod is well bonded to sub-grade.

F. Water area thoroughly to penetrate sub-grade at least 8 inches. Repeat watering as necessary to keep sod moist until rooted in sub-grade. Protect sod areas against foot traffic until sod is well established. Replace damaged areas with new sod.

G. Sand leveling shall occur post sod installation. Topically apply USGA sand growing medium to fill low spots and proof roll the sod for a uniform surface. Finish grade shall not deviate more than 1/8” in 10’-0”. Lawn mower wheels shall not pump or yield atop the surface after installation. A maximum of 1/4” of sand can be applied.

3.05 TURF RENOVATION

A. Renovate existing turf damaged by CONTRACTOR's operations, such as storage of materials or equipment and movement of vehicles, or due to lack of maintenance during construction activities.

1. Reestablish turf where settlement or washouts occur or where minor regrading is required.

2. Install new planting soil as required.

3. Rake, drag, float and roll seed bed as often as necessary to produce a true, uniform, and smooth seed bed. Remove debris, stones, etcetera.

B. Remove sod and vegetation from diseased or unsatisfactory turf areas; do not bury in soil.

C. Remove topsoil containing foreign materials such as oil drippings, fuel spills, stones, gravel, and other construction materials resulting from CONTRACTOR 's operation and replace with new planting soil.

D. Mow, dethatch, core aerate, and rake existing turf.

E. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.

F. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off OWNER's property.

G. Till stripped, bare, and compacted areas thoroughly to a soil depth of 6 inches.

H. Apply soil amendments and initial fertilizers required for establishing new turf and mix thoroughly into top 6 inches of existing soil. Install new planting soil to fill low spots and meet finish grades.

I. Apply seed and protect with mulch as required for new turf.

J. Water seed bed thoroughly until a moisture penetration of 8 inches is achieved.

K. Seed mixture shall be sown at following rates:

1. Common Bermuda: 4 pounds per 1000 square feet or as recommended by manufacturer.

L. Seeding by hand, “Cyclone” type seeder, or pushed seeder shall be done in two passes at right angles to each other using 50 percent of specified rate for each pass. After seeding, apply a top dressing of wood residuals at rate of 3/4 cubic yards per 1,000 square feet.

M. Large sod areas shall be seeded by using “Brillion” type seeder. Areas inaccessible to seeder shall be handed seeded and seed raked lightly into top 1/4 inch of seed bed.

N. Irrigate immediately after completion and irrigation as frequently as necessary to assure complete germination of seed without creating run-off.

O. Areas that do not germinate satisfactorily shall be reseeded at proper intervals until an overall acceptable stand of grass is produced. Good turf coverage will be required before final acceptance of work.

P. Protect new sod from damage by erosion, trespass or any source. Safeguards and temporary fencing shall be erected where necessary, and precautions taken to prevent excessive runoff.

3.06 TURF MAINTENANCE

A. See Specification Section 32 0190- Operation and Maintenance of Planting for Turf and Lawn Care.

B. General: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and re-mulch to produce a

uniformly smooth turf. Provide materials and installation the same as those used in the original installation.

1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
3. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.

3.07 SATISFACTORY TURF

A. Turf installations shall meet the following criteria as determined by ARCHITECT:

1. Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even- colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities

B. Use specified materials to reestablish turf that does not comply with requirements and continue maintenance until turf is satisfactory.

3.08 CLEANUP AND PROTECTION

A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

B. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.

C. Remove nondegradable erosion-control measures after grass establishment period.

END OF SECTION

SECTION 33 1100

SITE WATER DISTRIBUTION UTILITIES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Site water distribution systems located outside the building perimeter, extending to an existing water line or meter.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Division 22 – Plumbing.

3. Section 31 2313 - Excavation and Fill.

4. Section 31 2323 - Excavation and Fill for Utilities.

5. Section 32 0117 - Pavement Repair.

6. Section 32 1313 - Site Concrete Work.

7. Section 33 3000 - Site Sanitary Sewer Utilities.

1.02 SUBMITTALS

A. Shop Drawings: Submit site plan indicating locations of lines, valves, and related appurtenances.

B. Product Data: Manufacturer’s catalog data for materials. Include technical data for accessories, gaskets, joints and couplings.

C. Certificates: Certificates attesting that tests set forth in referenced publications have been performed, and the performance requirements have been satisfied.

1.03 QUALITY ASSURANCE

A. Comply with the following as a minimum requirement:

1. American National Standards Institute (ANSI):

a. ANSI H23.1 - Seamless Copper Water Tube.

2. NSF International (NSF):

a. ANSI/NSF 61 Drinking Water System Components – Health Effects.

b. ANSI/NSF 372 Drinking Water System Components – Lead Content.

3. American Society of Mechanical Engineers (ASME):

a. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings.

b. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings.

c. ASME B16.26 - Cast Copper Alloy Fitting for Flared Copper Tubes.

d. ASME B16.51 - Copper and Copper Alloy Press-Connect Pressure Fittings.

4. American Society for Testing and Material (ASTM) International:

a. ASTM A36 – Standard Specification for Carbon Structural Steel.

b. ASTM A240 – Standard Specification for chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.

c. ASTM A312 – Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes.

d. ASTM A536 - Standard Specification for Ductile Iron Castings.

e. ASTM B61 - Standard Specification for Steam or Valve Bronze Castings.

f. ASTM B62 - Standard Specification for Composition Bronze or Ounce Metal Castings.

g. ASTM B75 - Standard Specification for Seamless Copper Tube.

h. ASTM B88 - Standard Specification for Seamless Copper Water Tube.

i. ASTM B152 – Standard Specification for Copper Sheet, Strip, Plate, and Rolled Bar.

j. ASTM 17 – Standard Specifications for Copper Alloy Sand Castings for General Applications.

k. ASTM D1784 – Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.

l. ASTM D2683 - Standard Specification for Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing.

m. ASTM D3035 - Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter.

n. ASTM D3139 - Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.

o. ASTM D3261 - Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.

p. ASTM D3350 - Standard Specification for Polyethylene Plastics and Fittings Materials.

q. ASTM F2620 - Standard Practice for Heat Fusion Joining of Polyethylene Pipe and Fittings.

r. ASTM F2206 - Standard Specification for Fabricated Fittings of Butt-Fused Polyethylene (PE).

s. ASTM F477 - Standard Specification for Elastomeric Seals for Joining Plastic Pipe.

t. ASTM F714 - Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Outside Diameter.

5. American Water Works Association (AWWA):

a. AWWA C104/A21.4 - Cement-Mortar Lining For Ductile-Iron Pipe and Fittings.

b. AWWA C110/A21.10 - Ductile-Iron and Gray-Iron Fittings

c. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

d. AWWA C115/A21.15 - Standard for Flanged Ductile-Iron Pipe with Threaded Flanges.

e. AWWA C153/A21.53 – American National Standard for Ductile-Iron Compact Fittings for Water Service

f. AWWA C207 – Steel Pipe Flanges for Waterworks Service Sizes 4 In. Through 144 In.

g. AWWA C500 - Metal Seated Gate Valves for Water Supply Service.

h. AWWA C503 - Wet- Barrel Fire Hydrants.

i. AWWA C508 - Swing-Check Valves for Waterworks Service, 2 inches through 24 inches (50-mm through 600-mm) NPS.

j. AWWA C510-89 - Standard for Double Check Valve Backflow-Prevention Assembly.

k. AWWA C511 - Reduced-Pressure Principal Backflow-Prevention Assembly.

l. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances.

m. AWWA C800 - Underground Service Line valves and Fittings.

n. AWWA C900 – Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings 4 In. Through 12 In., for Water Transmission and Distribution.

o. AWWA C901 – Polyethylene (PE) Pressure Pipe and Tubing, 3/4 In. Through 3 In., for Water Service.

p. AWWA M23 - PVC Pipe - Design and Installation.

q. AWWA M55 - PE Pipe - Design and Installation.

6. Manufacturers Standardization Society (MSS) of the Valve and Fittings Industry:

a. MSS SP-80 - Bronze Gate, Globe, Angle and Check Valves.

7. Uni-Bell PVC Pipe Association (UBPPA):

a. UBPPA UNI-PUB-09 - Installation Guide for Gasketed-Joint PVC Pressure Pipe (C900).

8. Underwriters Laboratories Inc. (UL):

a. UL 246 – Standard for Hydrants for Fire-Protection Service.

b. UL 262 – Standard for Gate Valves for Fire-Protection Service.

c. UL 312 – Standard for Check Valves for Fire-Protection Service.

9. National Pollutant Discharge Eliminations System (NPDES):

a. Comply with storm water requirements of general permit for storm water discharges when flushing pipe systems including storm drains and maintaining logs.

10. Plastic Pipe Institute (PPI):

a. TN-38 – Bolt Torque for Polyethylene Flanged Joints.

b. TR-4 – Technical Report requirements of Hydrostatic Design Basis (HDB), Hydrostatic Design Stress (HDS), Strength Design Basis (SDB), Pressure

Design Basis (PDB) and Minimum Required Strength (MRS) Ratings for Thermoplastic Piping Materials or Pipes.

c. TR-33 – Technical Report for Generic Butt Fusion Joining Procedure for Field Joining of Polyethylene Pipe.

B. Provide valves from the same manufacturer.

C. Manufacturer of plumbing products must be third-party certified to ANSI/NSF Standard 61, Section 9 certification, and ANSI/NSF 372 to demonstrate compliance with the federal requirements for lead contribution to drinking water, the Safe Drinking Water Act SDWA, and the California Health and Safety Code Section 116875. No pipe, pipe fitting, or any other fitting or fixture intended to convey or dispose water for human consumption for drinking or cooking is allowed in the domestic plumbing system, if they do not meet the low lead definition of Health and Safety Code 116875. Weighted average lead content of the wetted surface area of pipes, fittings and fixtures may not exceed 0.25 percent.

D. Qualifications of Manufacturer: Products used in the Work of this Section shall be produced by manufacturers regularly engaged in manufacture of similar items and with a history of successful production as reviewed by the ARCHITECT.

1.04 PRODUCT HANDLING

A. Store items above ground on platforms, skids, or other required supports.

B. Protect materials from direct sunlight.

C. Protect coating and linings on piping, fittings, and accessories from damage. Repair and/or replace damaged coatings or linings.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Pipes, Fittings, and Joints:

P-1: Underground water service pipe sizes up to 3-inch shall be Copper water tubing, Type K hard, ANSI H23.1, ASTM B88, IAPMO IS. Manufacturer: Mueller, Cerro Brass, Cambridge-Lee, Halstead, or equal.

An approved protective wrap shall be used to completely isolate and protect underground copper tubing and extend past the surface a minimum 12-inch. The excess wrapping shall be trimmed down and taped to copper tubing with 10 mill PVC pipe tape at grade level of concrete or asphalt.

PF-1a: Copper Press-Connect pressure fittings, comply with ASME B16.51 with Ethylene Propylene Diene Monomer, EPDM O-Ring Seal in each end. Fittings with the sizes of 2-1/2” and larger shall have cross-section Grab Rings and separation rings.

Manufacturer: Viega, Mueller Industries, Apollo, or equal.

PF-1b: Wrought Copper - solder type ASME B 16.22.

Manufacturer: Mueller Brass, Nibco, Lee Brass, or equal.

PF-1c: Grooved end type– ASTM B75 or ASTM B152 and ASME B16.22 Wrought Copper, bronze sand casting per ASTM B584 copper alloy CDA 836 per ASME B16.18. Couplings shall be CTS style 606 supplied with angle pattern bolt pads for rigidity, coated with copper coated alkyd enamel. Gaskets shall be pre-lubricated Flush seal type.

Manufacturer: Victaulic, or equal.

B. Gates Valves for PVC:

1. Non-rising stem type with resilient wedge gates or iron body bronze wedge gates and mechanical joint ends conform to AWWA C500.

2. Non-rising stem type with mechanical joints ends shall conform to AWWA C509.

3. Valves designed for a working pressure of 175 PSI shall be inside-screw type with operating nut, and resilient wedge type gate. Valve shall be provided with mechanical joints as required for the pipe to which it is intended to connect.

4. Valves with UL listing of 262 shall conform to AWWA C500. Valves shall open by counter-clockwise rotation of valve stem.

5. Stuffing boxes shall be provided with O-ring stem seals and shall be bolted and constructed to permit easy removal of parts for repair.

6. Sleeve type mechanical couplings may be provided instead of mechanical and push on joint ends.

7. Valve ends and gaskets for connection to sleeve type mechanical couplings shall conform to specified requirements for the joint or coupling.

C. Gate Valves in Valve Pits:

1. Outside screw and yoke rising stem type valves with resilient wedge gates and flanged ends shall conform to AWWA C500.

2. Outside screw and yoke rising stem type valves with flanged ends shall conform to AWWA C509.

3. Outside screw and yoke type Valves with double disc gates or split-wedge type gate and flanged ended ends shall be designed for 175 psi and conform to UL 262.

4. Provide valves with hand wheels that open by counterclockwise rotation of the valve stem.

5. Stuffing boxes shall be provided with O-ring stem seals and shall be bolted and constructed to permit easy removal of parts for repair.

D. Check Valves for PVC:

1. Valves shall be swing-check type conforming to AWWA C508 or UL 312.

2. Valves shall be provided with cast iron or steel body and cover, flanged ends and clear port opening.

3. Valves shall be designed for a working pressure of 175 PSI.

E. Valve Boxes: 14 ¾-inch by 20-inch by 12-inch cast concrete with cast iron, traffic grade cover marked “WATER” (for use over water valves).

1. Brooks 36-H MB with No. 36-T cast iron cover EISEL 363.5, or equal.

F. Pipe markers shall be a concrete plaque inscribed with the word “WATER.”

G. Water Service Line Materials:

1. Water Service Line Piping Material: Refer to article 2.01.A within this section.

2. Water Service Line Appurtenances:

a. Corporation stops shall be ground key type; manufactured of bronze conforming to ASTM B61 or ASTM B62; and suitable for the working pressure of the system. Ends shall be suitable for solder-joint or flared tube compression type joint connection. Threaded ends for inlet and outlet of corporation stops shall conform to AWWA C800; coupling nut for connection to flared copper tubing and shall conform to ASME B16.26.

b. Goosenecks shall be type K copper tubing. Joint ends for goosenecks shall be as required for connecting to corporation stop and service line. Where multiple gooseneck connections are required for individual service, connect goosenecks to service line through brass or bronze branch connection; the total clear area of branches shall be at least equal to clear area of service line. Length of goosenecks shall be as indicated or required.

c. Curb or service stops shall be ground key, round way, inverted key type; bronze, conforming to ASTM B61 or ASTM B62; and rated at 150 psi. Ends shall be as required for connection to service piping. Arrow shall be cast into body of curb or service stop indicating direction of flow.

d. Gate valves 2.5-inch and larger shall be MSS SP-80, Class 150, solid wedge, or resilient wedge gate, and non-rising stem. Valves shall be provided with flanged end connections. Provide hand wheel operators if easily accessible. Provide operating nut if inside a vault, pit or valve box.

e. Gate valves in valve pits 2-inch, and smaller shall be MSS SP-80, Class 150, bronze, solid wedge, inside screw, rising stem. Valves shall be provided with flanged end connections or threaded end connections with union on one side of valve and hand wheel operator.

f. Valve boxes shall be provided at each gate valve installed underground. Valve boxes shall be a size suitable for valve on which it is installed.

PART 3 - EXECUTION

3.01 EXCAVATION, BACKFILLING AND COMPACTING

A. Conform to requirements in Section 31 2323 - Excavation and Fill for Utilities or Section 31 2313 - Excavation and Fill.

3.02 PIPE INSTALLATION

A. Project site water lines shall terminate approximately 5 feet from buildings, unless otherwise indicated on Drawings. Temporarily cap or plug terminals for future connection to building.

3.03 CLEARANCES OF WATER LINE

A. Building or Structures: Two feet.

B. Parallel to Sewer Line:

1. Water line 4-inch or less in diameter shall not be installed in a common trench with the building sanitary drain unless the bottom of the water line is at least 12 inches above the top of the building sanitary drain or where the water line is installed on a solid shelf excavated on one side of the common trench with a minimum clear horizontal distance of 12 inches from the building sanitary drain.

2. Water lines 6-inch and larger in diameter shall be separated from the Project site sanitary sewer, receiving more than one building sanitary drain or acid pipeline, in accordance with the requirement of the State of California, Human and Welfare Agency, Department of Health Services.

C. Crossing Sewer Line:

1. A water line shall be separated from sanitary sewer in accordance with the requirements of the State of California Administrative Code, Title 22, Section 64630(e)(2).

2. Install water line a minimum of 12 inches clear, above or below a sanitary sewer.

3. A water line 6-inch or greater in diameter, crossing under a Project site sanitary sewer line, shall be installed with joints located at least 10 feet away from each side of the sanitary sewer line.

4. A water line 6-inch or greater in diameter, crossing over a Project site sanitary sewer line, shall be installed with joints located at least 4 feet away from each side of a purple pipe or sanitary sewer line.

D. Install water lines no closer than 10 feet horizontally clear from the edge of sewage leach fields, seepage pits, and septic tanks.

3.04 PIPE INSTALLATION AND JOINING

A. Install all piping and fitting systems according to the manufacturer requirement.

B. Remove fins and burrs from pipe and fittings.

C. Clean piping, fitting, valves, and accessories before installing. Maintain items in a clean condition.

D. Provide proper facilities for lowering sections of pipe into trenches. Do not drop into piping, fittings, or other materials into trenches. Accurately cut pipe and install without springing or forcing. Replace any piping or fitting that does not provide sufficient space for proper installation of joining material.

E. Blocking or wedging between bells and spigots is not permitted. Install bell and spigot pipe with bell end pointing in the direction of flow.

F. Install piping to the lines and grades indicated or required. Low points and dips are not permitted. Support piping at proper elevation and grade with secure and uniform supports. Wood support blocking is not permitted. Where sand cement slurry will not be furnished for backfill, install piping so that full length of each section of pipe and each fitting will solidly rest on pipe bedding. Excavate recesses to accommodate bells, joints, and couplings. Provide anchors and supports where indicated or required for installation. Provide proper allowances and devices for expansion and contraction of piping and systems.

G. Maintain trenches free of standing water until pipe joints have been installed.

H. At the end of each day close open ends of pipe with temporary caps of the same material as the pipe.

I. Do not install piping when trench or weather conditions prevent proper installation.

3.05 INSTALLATION OF TRACER WIRE AND PIPE MARKERS

A. Tracer Wire: Install continuous length of tracer wire for full length of each run of nonmetallic pipe. Fasten wire to top of pipe in such a manner that it will not be displaced during construction operations. Wire shall be fastened to pipe at not greater than 20-foot intervals. Wire shall terminate above finished grade with a 12-inch lead taped around each riser. Provide a tracer wire to grade under a permanent marker where straight-line transitions of metallic to non-metallic pipe are installed.

B. Underground Pipe Markers: Provide markers at grade where non-metallic pipe is installed and for each horizontal change in direction.

3.06 CONNECTIONS TO EXISTING WATER LINES

A. After Project Inspector has inspected installation, perform connections to servicing water lines. Schedule service shutdown for connecting new system at a time causing minimum disruption.

3.07 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

A. For complete requirement and procedure refer to section 22 1000, article 3.12.

3.08 ELECTROLYSIS PREVENTION

A. A minimum 6-inch long brass nipple shall be installed at locations specified or as required. Flanges shall be provided with a complete insulating component consisting of; gasket bolt sleeves and bolt washers. Dielectric insulators shall be installed at locations indicated or as required. Dielectric fittings are prohibited.

B. Where steel or cast iron below grade connects to copper or brass piping above grade, the transition from steel or cast iron pipe to copper or brass pipe shall be installed in an above grade accessible location.

C. Underground connections between dissimilar metals shall be in accessible yard boxes.

D. Above ground dielectric connections shall be exposed.

3.09 ABANDONING WATER LINES AND STRUCTURES

A. Water lines and appurtenances to be abandoned in place shall be cut and removed from areas where new Work is being installed.

B. Cap or plug abandoned existing drain lines below grade in a yard box and according to CBC.

3.10 TESTS AND INSPECTIONS

A. Provide labor, equipment, materials, test equipment and incidentals required for performing required field tests.

B. Tests shall not be performed for five days after concrete thrust blocks have been installed.

C. Testing Procedure: Water service lines shall be tested in accordance with applicable specified standard.

1. Test water service lines in accordance with applicable requirements of AWWA C600. No leakage is permitted.

2. Pressure testing: Before pressure test, fill portion of piping being tested with water for a minimum of 24 hours. Provide hydrostatic pressure of at least 50 psi greater than the maximum working pressure of tested system, but no less than 200 psi hydrostatic test pressure for system piping of 2-inch in diameter and larger. Provide and maintain hydrostatic test pressure for at least two hours

to ensure no leakage of any portion of piping or appurtenances under pressure test.

3.11 CLEANING

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

3.12 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 33 3000

SITE SANITARY SEWER UTILITIES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Building Sanitary Sewer Lateral.

2. Closed-circuit television inspection of sewer laterals.

B. Related Requirements:

1. Division 01 - General Requirements.

2. Division 22 – Plumbing.

3. Division 23 - Mechanical.

4. Section 31 2313 - Excavation and Fill.

5. Section 31 2323 - Excavation and Fill for Utilities.

6. Section 32 0117 - Pavement Repair.

7. Section 32 1313 - Site Concrete Work.

1.02 SUBMITTALS

A. Shop Drawings: Submit site plan denoting locations of lines, valves, and appurtenances.

B. Product Data: Manufacturer’s catalog data for materials. Include technical data for accessories, gaskets, joints and couplings.

C. Certificates: Certificates attesting that tests set forth in referenced publication have been performed and the results required by design have been met.

D. Closeout Submittal: Submit three DVD’s of Closed-circuit television inspections performed. Include the following information:

1. Electronic Media Recordings: Visual and audio record of the entire length of pipe. For existing laterals identify problem areas, such as roots, cracks, fractures, broken pipe, and other unusual conditions found.

2. Digital Photographs of the pipe condition, connections, points of interest and defects found. Indicate distance of defects to a point of reference such as face of building or mainline.

3. Inspection Log: Provide written report including:

   a. Date and time of inspection.

   b. Name of School, Project, CONTRACTOR, and operator name.

   c. Location, material and size of pipe.

   d. Description of defects found.

1.03 QUALITY ASSURANCE

A. Comply with the following as a minimum requirement:

1. Standard Specifications for Public Works construction, current edition.

2. California Plumbing Code, CPC, current edition.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Pipeline: Building or Project Site Sanitary Sewer and Vent: Minimum 5 feet away from building boundaries. For piping within 5 feet from building boundaries, and interior piping refer to Division 22 plumbing sections.

1. Cast iron soil pipe: Hubless, service weight, ASTM A888, CISPI 301, conforming to CISPI 310 and installed in accordance to IAPMO IS 6. Manufacturer: American Foundry, Tyler, or AB&I, or equal.

   a. Cast iron soil coupling: Hubless, heavy-duty with neoprene gaskets, stainless steel corrugated shields, and 4 bands of stainless-steel clamps. IAPMO, ASTM C564 and CISPI 310. Manufacturer: American Foundry, Mission Rubber Company, Tyler, or equal.

2. PVC (Poly Vinyl Chloride) Schedule 40 DWV Pipe, Conforming to ASTM D2665, ASTM F794, and ASTM F1866. Installer of PVC Schedule 40 DWV piping system shall carry ASTM D2855 and ASME B31.3 qualification. Installer shall provide proof of these qualifications to IOR prior to commencing work. Manufacturer: Charlotte pipe and foundry, Spears Manufacturing Company, Harvel Plastics Inc., or equal.

a. PVC primer and solvent for chemical weld of pipe and fittings shall be as recommended by pipe manufacturer. Containers for solvent and primer shall be clearly marked with manufacturer's data. Solvent and primer shall not be more than one year old. The safety placards must be visible. Blue or red hot glue shall not be used.

1) Primer: Weld-On P-70 by IPS, Conforming to ASTM F656.

2) Cement: Weld-On 711 (gray) by IPS, Conforming to ASTM D2564.

3. Vitrified clay extra strength piping with plain ends. Comply with ASTM C700. Install with mechanical compression couplings. Joints shall comply with ASTM C425. Installation shall be in accordance with ASTM C12.

Manufacturer: Mission Clay Products, or equal.

4. Acid waste and vent pipeline from building to Sampling Box: Refer to Division 22 for corrosive waste and vent piping.

B. Cleanout Assemblies: Cleanout plug shall be line size.

1. In covered concrete-paved floors: Iron body with UPC recognized plug, top, and adjustable sleeve, cut-off ferrule, polished brass/nickel/bronze, and secured Scoriated cover:

a. Square:

J.R.SMITH	ZURN	JOSAM	OR EQUAL
4053	Z1400-SZ	57008-Z-1-SQ	

b. Round:

J.R.SMITH	ZURN	WADE	JOSAM	OR EQUAL
4033	Z1400-BZ	W-6000	57008-Z-1	

2. Outside covered concrete-paved floors: Secured cover, extra heavy-duty, adjustable sleeve, cut-off ferrule, UPC recognized brass type plug, scoriated tractor type cover:

J.R.SMITH	ZURN	OR EQUAL
4233	Z1402-HD	

3. In yard boxes: Raised threaded head brass plug and Cast Iron Body Cleanout.

J.R.SMITH	ZURN	WADE	JOSAM	OR EQUAL
		8590A		

C. Yard Boxes: 14 1/2-inch by 19 3/4-inch by 12-inch, cast concrete, with cast-iron hinged locking traffic cover with the word "SEWER," embossed on the cover in one inch high upper case lettering.

BROOKS No. 36-HFL Assembly with cast iron hinged locking cover	OR EQUAL

D. Concrete, Mortar and Related Materials: Conform to Section 32 1313 - Site Concrete Work, unless noted otherwise.

E. Metal Covers, Frames and Accessories:

1. Conform to Section 206 – Miscellaneous Metal Items of the Standard Specifications for Public Works Construction.

2. Metal Covers and Frames: Vandal-resistant design and construction.

3. Hot-dip galvanize steel parts after fabrication and prior to assembly in accordance with Section 210 – Paint and Protective Coating of the Standard Specifications for Public Works Construction.

F. Bedding Materials: Conform to the requirements of Section 31 2313 - Excavation and Fill or Section 31 2323 - Excavation and Fill for Utilities, as required.

PART 3 – EXECUTION

3.01 SANITARY SEWER INSTALLATION

A. Install sanitary sewers in a uniform alignment and slope to the point of connection as indicated. Before trench excavation, verify size, material, depth, and location of the point of connection. Minimum depth of below grade sewer lines shall be 24 inches to centerline of pipe

B. Pipe slope shall not be less than ¼ inch per foot or 2 percent unless pipe inverts are indicated. Where invert elevations are indicated, install pipe at a uniform slope between inverts.

C. Join pipes and fittings as recommended by the manufacturer.

D. PVC schedule 40 DWV pipe and fittings shall be solvent welded. PVC pipe ends shall be cut ninety (90) degrees and Beveled from 10°-15° with a proper beveling tool, cleaned and cleared of cutting burrs prior to cementing. Use approved reaming tool. Pipe ends shall be wiped clean and free of dirt, moisture, oil, and other foreign material with a rag. Primer shall be applied until the surface of the pipe and fitting is softened. Cement shall be applied with a light coat on the inside of the fitting and two heavier coats on the outside of the pipe. Pipe shall be inserted into the fitting and given a quarter turn while inserting if possible to help seat the cement while both the inside socket surface and outside surface of pipe are wet with solvent cement. Hold

joint in place and undisturbed for 1 minute after assembly. Excess cement shall be wiped from the outside of the pipe.

3.02 CLEARANCE OF SANITARY SEWERS

A. Buildings or Structures: Two feet.

B. Parallel to Water Line:

1. Building sanitary drain, is not permitted to be installed in a common trench with a potable water line unless the bottom of the water line is at least 12 inches above the top of the sanitary sewer.

2. In addition, the potable water line shall be installed on a solid shelf excavated on one side of the common trench with a minimum clear horizontal distance of 12 inches from the sanitary sewer or building sanitary drain.

3. Project site sanitary sewer, receiving more than one building sanitary drain or acid pipeline, shall be separated from a potable water line in accordance with the requirements of the California Health, and Human Services Agency: Department of Public Health.

C. Crossing Water Line:

1. Building sanitary drain shall be installed a minimum of 12 inches below the potable water line.

2. Project site sanitary sewer shall be separated from the potable water main in accordance with the requirements of the State of California Administrative Code, Title 22, Section 64630(e)(2).

3.03 MANHOLES

A. Provide manholes in accordance with the Standard Plans for Public Works Construction, unless otherwise indicated.

B. Adjust manholes in accordance with the sub-section 302-5.8 Manholes (and other structures) of the Standard Specifications for Public Works Construction.

3.04 CLEANOUTS

A. Provide cleanout at the upper terminal for each sanitary pipeline, at intervals not exceeding 100 feet in straight run and any fraction thereof and for each aggregate horizontal change in direction exceeding 135 degrees.

B. Install required cleanouts before back filling of horizontal pipelines.

C. In unpaved and asphalt-paved areas, install cleanouts in yard boxes 2 inches below the yard box cover.

D. In concrete-paved areas, extend cleanouts flush with finish grade.

E. In traffic areas, install countersunk cleanout plugs where raised heads protrude.

3.05 ABANDONED SEWERS AND STRUCTURES

A. Plug or cap every abandoned sanitary sewer within 5 feet of the property line in a code required manner.

B. Demolish abandoned sanitary structures such as cesspool, septic tank, sewage pit, and manholes to a minimum depth of 5 feet below the finish grade, including removal of sewage. Disconnect any piping. After inspection, completely fill with earth, sand, gravel, cement-sand slurry, or other required material.

3.06 TESTING

A. After installation, test each sanitary drain and/or sewer and each section between successive manholes for either infiltration or exfiltration. Test shall be conducted in accordance with Section 306 - Underground Conduit Construction of the Standard Specifications for Public Works Construction.

B. Where excessive ground water is encountered test the pipeline for infiltration.

C. When infiltration or exfiltration exceeds allowable amounts as set forth in the Section 306 formula, perform repairs or replacements as necessary to comply with the required limits.

3.07 CLOSED-CIRCUIT TELEVISION INSPECTION

A. Coordinate with OAR time and date of inspection. Project Inspector shall be present during the CCTV inspection.

B. Clean laterals by hydraulic jet.

C. Perform internal closed-circuit television inspection of lateral from the building to the public mainline. Record sewer in its entirety with no breaks or interruptions. Move camera at a speed no grater than 30 feet per minute, stopping for a minimum of ten seconds to record pipe connections, defects, and points of interest.

D. Maintain technical quality, sharp focus and distortion free picture. Pan, tilt, and rotate as necessary to best view and evaluate connections, defects and points of interest.

E. Closed-circuit Television Equipment: As a minimum equipment shall include:

1. Television camera specially designed for pipe inspections, and operative in 100 percent humidity conditions.

2. Camera and television monitor capable of producing minimum 470H-line resolution color video picture.

3. Camera capable to inspect laterals as small as three inches up to 70 feet from sewer mainline.

4. Camera lighting shall be suitable to allow clear picture of inner wall at least ten feet in front.

F. Defective Work:

1. New Laterals: Defective Work found shall be repaired at CONTRACTOR's expense. Perform a new closed-circuit television inspection at no cost to OWNER.

2. Existing Laterals:

a. If roots, sludge, or sediment material or other defect not related to the Work of this project impedes inspection, withdraw camera, restart inspection from opposite end and notify OAR of defects found.

b. If obstruction or stoppage was caused by Work related to this project, remove obstruction at no cost to OWNER. Perform a new closed-circuit television inspection at CONTRACTOR's expense.

3.08 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.09 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 33 4000

STORM DRAINAGE UTILITIES

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes storm drainage piping; sub-surface drains; metal covers, grates and frames; catch basins; box culverts; manholes, and BMPs.

1. Best Management Practices (BMPs):

a. Catch Basin Inserts.

2. Closed-circuit television inspection of storm drain lines.

1.02 RELATED REQUIREMENTS

A. Division 01 - General Requirements.

B. Section 22 1000 - Plumbing.

C. Section 31 2313 - Excavation and Fill.

D. Section 31 2323 - Excavation and Fill for Utilities.

E. Section 32 0117 - Pavement Repair.

F. Section 32 1313 - Site Concrete Work.

1.03 DEFINITIONS

A. AASHTO: American Association of State Highway and Transportation Officials.

B. ASME: American Society of Mechanical Engineers.

C. ASTM: American Society for Testing and Materials.

D. BMP: Stormwater Best Management Practice.

E. CBC: California Building Code.

F. CCTV: Closed-Circuit Television.

G. DET: Detention BMP.

H. DWV: Drain, Waste, and Vent.

I. FILT: Filter BMP.

J. GS: Gravity Separator.

K. HDPE: High Density Polyethylene.

L. IAPMO: International Association of Plumbing and Mechanical Officials.

M. IOR: Inspector of Record.

N. NPS: Nominal Pipe Size.

O. OAR: OWNER's Authorized Representative.

P. PE: Polyethylene.

Q. Post Construction BMP: Devices installed by the CONTRACTOR for storm water management to be left on site after construction completion.

R. PP: Polypropylene.

S. PVC: Poly Vinyl Chloride.

T. RET: Retention.

U. SDR: Standard Dimensions Ratio.

V. VEG: Vegetative.

W. OWNER: Los Angeles Unified School District.

X. SWPPP: Storm Water Pollution Prevention Plan.

1.04 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO):

1. ASHTO M 252: Geotextile Specification for Highway Applications.

2. AASHTO M 294: Standard Specification for Corrugated Polyethylene Pipe, 300- to 1500-mm (12- to 60-in.) Diameter.

3. AASHTO M 330: Standard Specification for Polypropylene Pipe, 300- to 1500-mm (12- to 60-in.) Diameter.

B. American Society for Testing and Materials International (ASTM):

1. ASTM A888: Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.

2. ASTM C14: Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe.

3. ASTM C443: Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.

4. ASTM C564: Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.

5. ASTM C76: Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.

6. ASTM C857: Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures.

7. ASTM C858: Standard Specification for Underground Precast Concrete Utility Structures.

8. ASTM C891: Standard Practice for Installation of Underground Precast Concrete Utility Structures.

9. ASTM D2564: Standard Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping Systems.

10. ASTM D2665: Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings.

11. ASTM D2855: Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets.

12. ASTM D3034: Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

13. ASTM D3212: Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.

14. ASTM D448: Standard Classification for Sizes of Aggregate for Road and Bridge Construction.

15. ASTM F1866: Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Schedule 40 Drainage and DWV Fabricated Fittings.

16. ASTM F2306: Standard Specification for 12 to 60 in. [300 to 1500 mm] Annular Corrugated Profile-Wall Polyethylene (PE) Pipe and Fittings for Gravity-Flow Storm Sewer and Subsurface Drainage Applications.

17. ASTM F2418: Standard Specification for Polypropylene Corrugated Wall Stormwater Collection Chambers.

18. ASTM F2764: Standard Specification for 6 to 60 in. [150 to 1500 mm] Polypropylene (PP) Corrugated Double and Triple Wall Pipe and Fittings for Non-Pressure Sanitary Sewer Applications.

19. ASTM F2787: Standard Practice for Structural Design of Thermoplastic Corrugated Wall Stormwater Collection Chambers.

20. ASTM F2881: Standard Specification for 12 to 60 in. [300 to 1500 mm] Polypropylene (PP) Dual Wall Pipe and Fittings for Non-Pressure Storm Sewer Applications.

21. ASTM F2922: Standard Specification for Polyethylene Corrugated Wall Stormwater Collection Chambers.

22. ASTM F477: Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

23. ASTM F656: Standard Specification for Primers for Use in Solvent Cement Joints of Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings.

24. ASTM F794: Standard Specification for Poly (Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter.

C. Cast Iron Soil Pipe Institute (CISPI):

1. CISPI 301: Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.

2. CISPI 310: Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.

D. The International Association of Plumbing and Mechanical Officials (IAPMO):

1. IAPMO IS 6: Hubless Cast Iron Sanitary and Rainwater Systems - Installation Standards.

E. Standard Specifications for Public Works Constructions (Greenbook):

1. Section 202: Masonry Materials.

2. Section 206: Miscellaneous Metal Items.

3. Section 207: Pipe.

4. Section 208: Pipe Joint Types and Materials.

5. Section 210: Paint and Protective Coatings.

6. Section 306: Underground Conduit Construction.

1.05 SUBMITTALS

A. Shop Drawings: Submit site plan denoting locations of lines, valves, and appurtenances.

B. Product Data: Manufacturer's catalog data for all required materials. Include technical data for accessories, information concerning gaskets, joints and couplings.

C. Certificates: Certificates attesting that tests set forth in referenced publication have been performed and the results required by design have been met.

D. Closeout Documents: At Substantial Completion submit to the OAR two CD's and one hard copy of the documents indicated in paragraphs 1 through 5 below:

1. Maintenance Log: Provide Microsoft Excel Spreadsheet including the following information:

   a. Maintenance log and upkeep records of the installed Post Construction BMPs. Include the following headers as a minimum: "Date of Service", "Location of BMP", "Type of Maintenance or Service", "Notes", "Next Scheduled Preventive Maintenance Due", and "Inspector Signature".

   b. Maintenance Requirements: Include the following headers as a minimum: "BMP Description", "Location of BMP and Map Grid Location" and "Type of Maintenance or Service Needed", i.e.; weekly, monthly, quarterly, etcetera. "Stock No.", "Manufacturer Contact Information", along with "Frequency" namely: weekly, monthly, quarterly, etcetera and "Special Instructions".

2. Maintenance Manuals: Provide Maintenance Manual for storm drainage BMP components installed along with requirements, replacement or maintenance schedule and plans with the location of each BMP component. This manual shall include product information cut sheet, shop drawings, vendor information for each component and warranty.

3. Record drawings: 'As-Builts' site plan(s) showing Post Construction BMP. Provide a copy of marked record set with red pencil identifying any variations from design documents.

4. Training Documentation:

   a. OWNER attendees sign off training sheet.

   b. Two DVD's of materials covered in the training and components installed.

5. Post-Construction BMP Maintenance Plan: Submit complete Plan per Attachment "A", edit per As-Built conditions and provide missing information.

6. Records of Closed-Circuit Television Inspection: At Substantial Completion submit to the OAR three DVD's of Closed-circuit television inspections performed. Include the following information:

   a. Electronic Media Recordings: Visual and audio record of the entire length of pipe. For existing laterals identify problem areas, such as roots, cracks, fractures, broken pipe, and other unusual conditions found.

b. Digital Photographs of the pipe condition, connections, points of interest and defects found. Indicate distance of defects to a point of reference such as face of building or mainline. Provide the Digital Photographs after fixing the defective pipes.

c. Inspection Log: Provide written report including:

1) Date and time of inspection.

2) Name of School, Project, CONTRACTOR, and operator name.

3) Location, material and size of pipe.

4) Description of defects found and attempts to fix them.

1.06 QUALITY ASSURANCE

A. Comply with the following as a minimum requirement: Standard Specifications for Public Works Construction, current edition.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Do not store plastic products, pipes, and fittings in direct sunlight.

B. Protect pipe, pipe fittings, and seals from dirt and damage.

C. Handle all products according to manufacturer's written rigging instructions.

1.08 TRAINING OF OWNER PERSONNEL

A. At Substantial Completion and when the storm drainage system is fully operational, knowledgeable representatives from the CONTRACTOR and manufacturer(s) of the components specified and installed at the site shall provide up to 8 hours of training. Date, time and location for the training shall be coordinated through the project OAR. Have OWNER attendees sign off training sheet and provide a copy to the OAR.

B. Training period shall cover but not be limited to the following:

1. Explain the operation of storm drainage system and its design intent.

2. Explain the maintenance requirements of every component of the system.

3. Provide recommendations of practices to minimize or eliminate negative impact on the system.

4. Provide maintenance schedule as recommended by the manufacturers for every component and review it with OWNER’s Maintenance and Operations staff.

5. Conduct a site walk, identify every component of the system and demonstrate its operation.

6. Training shall be conducted with the use of Maintenance log and Maintenance manual.

1.09 SURPLUS MATERIALS

A. Provide enough additional materials for each component of BMP that requires replacement or service during the first year.

1.10 ATTACHMENTS

A. NONE

PART 2 – MATERIALS AND PRODUCTS

2.01 PIPING MATERIALS

A. General: Minimum 5 feet away from building boundaries. For piping within 5 feet from building boundaries, and interior piping refer to Division 22 plumbing sections. Provide piping system in conformance with Section 207 - Pipe and Section 208 - Pipe Joint Types and Materials of the Standard Specifications for Public Works Construction. All Soil-tight pipes shall be provided with joints that are function of opening size, channel length, and backfill particle size. A backfill material containing a high percentage of fine-graded soils requires investigation for the specific type of joint to be used to guard against soil infiltration, including the requirement for fabric-wrapped joints.

B. Nonreinforced Concrete Pipe (CP): ASTM C14, with bell-and-spigot ends and gasketed joints with ASTM C443 rubber gaskets.

C. Reinforced Concrete Pipe (RCP): ASTM C76, with bell-and-spigot ends and gasketed joints with ASTM C443 rubber gaskets.

1. Approved manufacturers: Thompson Pipe Group, or equal.

D. Cast Iron Soil Pipe (CIP):

1. Hubless, service weight, ASTM A888, CISPI 301, conforming to CISPI 310 and installed in accordance to IAPMO IS 6.

2. Cast iron soil coupling: Hubless, heavy-duty with neoprene gaskets, stainless steel corrugated shields, and 4 bands of stainless-steel clamps. IAPMO, ASTM C564 and CISPI 310.

3. Approved manufacturers: American Foundry, Mission Rubber Company, Tyler, or equal.

E. Corrugated, Dual Wall, High Density Polyethylene Drainage Pipe (HDPE):

1. Corrugated PE Drainage Pipe and Fittings NPS 4 to NPS 10: AASHTO M 252, Type S (double-wall) with smooth waterway for coupling joints.

2. Corrugated PE Pipe and Fittings NPS 12 to NPS 60: AASHTO M 294 or ASTM F2306, Type S (double-wall) with smooth waterway for coupling joints.

3. Approved manufacturer: ADS, Hancor, JM Eagle, or equal.

F. Corrugated, Dual or Triple Wall, Polypropylene Pipe (PP):

1. Corrugated PP Drainage Pipe and Fittings NPS 12 to NPS 60: ASTM F2764, ASTM F2881, or AASHTO M 330, Type S (double-wall) or Type D (triple-wall), for respective diameters. Provide coupling joints with smooth waterway.

2. Approved manufacturers: ADS, Prinsco, or equal.

G. PVC (Poly Vinyl Chloride) Schedule 40 DWV Pipe:

1. Conform to ASTM D2665, ASTM F794, and ASTM F1866.

2. Installer of PVC Schedule 40 DWV piping system shall carry ASTM D2855 and ASME B31.3 qualification. Installer shall provide proof of these qualifications to IOR prior to commencing work.

3. Containers for solvent and primer shall be clearly marked with manufacturer's data. Solvent and primer shall not be more than one year old. The safety placards must be visible.

4. Blue or red-hot glue shall not be used.

5. Approved manufacturers and products:

a. Pipe: Charlotte pipe and foundry, Harvel Plastics Inc., JM Eagle, Spears Manufacturing Company, or equal.

b. Primer: Weld-On P-70 by IPS, Conforming to ASTM F656.

c. Cement: Weld-On 711 (gray) by IPS, Conforming to ASTM D2564.

H. PVC (Poly Vinyl Chloride) SDR-35 Pipe, 6” through 15”:

1. Conform to ASTM D3034.

2. Gasketed Joints: Elastomeric gasket joints conforming to ASTM D3212.

3. Gaskets: Chloroprene conforming to ASTM F477.

4. Approved manufacturers: Charlotte pipe and foundry, Harvel Plastics Inc., JM Eagle, Spears Manufacturing Company, or equal.

2.02 BEDDING MATERIAL FOR PIPE

A. General: Conform to the requirements of Section 31 2313 - Excavation and Fill or Section 31 2323 - Excavation and Fill for Utilities, as required.

B. Approved manufacturers and products:

1. Propex Fabrics, Inc.: Geotex 451.

2. TenCate Geosynthetics Americas: Mirafi 140N.

3. US Fabrics, Inc.: 120NW.

4. Equal products.

2.03 PERFORATED SUBSURFACE DRAIN PIPE

A. Perforations shall be symmetrically located within a maximum arc of 160 degrees. Perforations shall provide a total open area of at least 0.3 square inches per linear foot of pipe, with a minimum of one perforation per linear foot, except for joint areas. Perforation shall be either holes or slots. Hole diameters of ¼-inch minimum to ½-inch maximum. Width of slots of 1/8-inch minimum to 5/16-inch maximum with slot length not exceeding 5 inches.

B. Aggregate Around Perforated Pipe shall be 6 inches of gravel containing no particles finer than a 1/2-inch to 3/4-inch sieve opening size.

2.04 STORMWATER TREATMENT SYSTEMS /BMPS

A. GS-2: Catch Basin Inserts, approved manufacturers and products:

1. AbTech Industries: UUF DI-DO.

2. ADS-FlexStorm: FlexStorm Pure or Catch-it.

3. Aquashield Inc.: Aqua-Guardian.

4. Ecosense International: EcoSense International’s Catch Basin Insert.

5. EnviroPod Inc.: LittaTrap.

6. Oldcastle Precast Inc.: FLoGard, or GISB.

7. UltraTech International Inc.: Ultra-Drain Guard.

8. Equal products.

2.05 MANHOLES

A. Provide round reinforced concrete manhole with an H-20 traffic rated hatch & solid cover of minimum 30-inch in diameter with holes of maximum ½-inch in diameter.

2.06 MISCELLANEOUS MATERIALS

A. Metal Covers, Grates, Frames and Accessories:

1. Conform to Section 206 - Miscellaneous Metal Items of the Standard Specifications for Public Works Construction.

2. Hot-dip galvanize steel parts after fabrication in accordance with Section 210 - Paint and Protective Coatings of the Standard Specifications for Public Works Construction.

3. Grates and Frames:

   a. Vandal-proof design and construction.

   b. ADA compliant, in conformance to CBC 11B-302.3.

   c. Rated for vehicular traffic on areas intended for use by motor vehicles.

   d. Hot-dip galvanized.

B. Concrete, Mortar and Related Materials: Conform to Section 32 1313 - Site Concrete Work.

C. Manhole Brick Mortar, Grout, and Plaster: Conform to Standard Specifications for Public Works Construction, Section 202 - Masonry Materials.

D. Underground Concrete Structures: Shall be precast and rated for H-20 traffic loading and applicable soil loads. The materials and structural design of the devices shall be per ASTM C857 and ASTM C858.

2.07 NAMEPLATES

A. NONE

PART 3 – EXECUTION

3.01 GENERAL INSTALLATION REQUIREMENTS

A. CONTRACTOR shall arrange for a preconstruction meeting with the manufacturer’s representative to review the basic principles for proper installation of Underground BMP type products prior to any installation.

B. Underground Concrete modules shall be installed in accordance with manufacturer’s instructions and the current ASTM C891 procedures.

3.02 EXCAVATION, BACKFILLING AND COMPACTING

A. Conform to the requirements of Section 31 2313 - Excavation and Fill or Section 31 2323 - Excavation and Fill for Utilities, as required.

3.03 INSTALLATION OF PIPE

A. Conform to Section 306 - Underground Conduit Construction of the Standard Specifications for Public Works Construction.

B. Non-ferrous drainpipe installed with less than 12 inches of cover to finish grade shall be provided with a 4-inch thick concrete pipe encasement.

3.04 DRAINAGE APPURTENANCES

A. Catch basins, junction chambers, manholes, box culverts, outlet chambers and other drainage structures: Construct as indicated on Drawings and as specified in Section 32 1313 - Site Concrete Work, and in compliance with the Standard Specifications for Public Works Construction, Section 303 - Concrete and Masonry Construction.

B. Ensure that Post Construction BMP have a visible identifying manufacturer tag with product identification, manufacturer contact information, date of last service and date of next service due.

C. Provide storm drain stencil per City or County requirements as applicable.

3.05 STORMWATER TREATMENT SYSTEMS/BMPs

A. Catch Basin Inserts.

3.06 ABANDONED DRAINAGE LINES AND STRUCTURES

A. Cap or plug existing drain lines that are cut and abandoned and remove existing drainage structures that are abandoned.

3.07 CLOSED-CIRCUIT TELEVISION INSPECTION

A. Coordinate with OAR time and date of inspection. Project Inspector shall be present during the CCTV inspection.

B. Clean laterals by hydraulic jet.

C. Perform internal closed-circuit television inspection of lateral from the building to the public mainline. Record drain line in its entirety with no breaks or interruptions. Move camera at a speed no greater than 30 feet per minute, stopping for a minimum of ten seconds to record pipe connections, defects, and points of interest.

D. Maintain technical quality, sharp focus and distortion free picture. Pan, tilt, and rotate as necessary to best view and evaluate connections, defects and points of interest.

E. Minimum Requirements for Closed-circuit Television Equipment:

1. Television camera specially designed for pipe inspections, and operative in 100 percent humidity conditions.

2. Camera and television monitor capable of producing minimum 470H-line resolution color video picture.

3. Camera capable to inspect lines as small as three inches up to 70 feet from storm drain mainline.

4. Camera lighting shall be suitable to allow clear picture of inner wall at least ten feet in front.

F. Defective Work:

1. New Lines: Defective Work found shall be repaired at CONTRACTOR's expense. Perform a new closed-circuit television inspection at no cost to OWNER.

2. Existing Laterals:

a. If roots, sludge, or sediment material or other defect not related to the Work of this project impedes inspection, withdraw camera, restart inspection from opposite end and notify OAR of defects found.

b. If obstruction or stoppage was caused by Work related to this project, remove obstruction at no cost to OWNER. Perform a new closed-circuit television inspection at CONTRACTOR's expense.

3.08 CLEANUP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

B. Maintain Post Construction BMP after installation and keep a maintenance log to be turned over to OAR at Substantial Completion.

3.09 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION