TETER, LLP
ARCHITECTS ENGINEERS CONNECTED

PROJECT MANUAL

CONTRACTUAL – LEGAL REQUIREMENTS
TECHNICAL SPECIFICATIONS

FOR

YOSEMITE COMMUNITY COLLEGE DISTRICT
– MODESTO JUNIOR COLLEGE EAST CAMPUS

FOOTBALL FIELD PRESS BOX AND ELEVATOR

Project No.: 21-12111
District Bid No.: 26-1957
DSA File No.: 50–C1
DSA Appl. No.: 02-123619

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SEALS PAGE



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IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-123619 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 07/15/26

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YOSEMITE COMMUNITY COLLEGE DISTRICT

SERVING

MODESTO JUNIOR COLLEGE - COLUMBIA COLLEGE

INVITATION TO BID

MODESTO JUNIOR COLLEGE

EAST CAMPUS

FOOTBALL FIELD
MODULAR PRESS BOX & ELEVATOR

BID#: 26-1957

NO BIDS WILL BE RECEIVED AFTER 4:00PM ON OCTOBER 21, 2026

WHERE TO SUBMIT YOUR BID:

YCCD PLANETBIDS PORTAL: WWW.YOSEMITE.EDU/PURCHASING/BID_INFORMATION.HTML

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SIGNATURE PAGE

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NOTICE TO CONTRACTORS

Notice is hereby given that the governing board ("Board") of the Yosemite Community College District ("District") will receive bids for the following project:

BID #: 26-1957: MODESTO JUNIOR COLLEGE- EAST CAMPUS: FOOTBALL FIELD (MODULAR) PRESS BOX & ELEVATOR

Bids will be received no later than **4:00PM** on **October 21, 2026** via PlanetBids. All bids shall be submitted electronically through the PlanetBids Vendor portal to be accepted. Incomplete, late, inaccurate, or untrue responses or information provided therein by a bidder shall be grounds for the District to reject such submissions for non-responsiveness. Bids shall be valid for a period of 90 calendar days from the Due Date.

Bids must be electronically submitted on the forms prepared by the District and included in the contract documents located on PlanetBids Vendor portal.

Contractors and subcontractors are encouraged to register with the District as a California Uniform Construction Cost Accounting Commission ("CUPCCAA") approved contractor and encouraged to prequalify for this project and other CUPCCAA projects by completing the form available at: PlanetBids.

The engineer's estimate is $4,800,000.00 (Bid to exclude Press Box, Covered Filming Platforms, Metal Stairs and Support Structure, Guardrails and Handrails)

The project scope of work includes the associated work for the replacement of the existing press box, bleachers and installation of a (pre-fabricated) elevator at the East Campus football field. Demolition, site work improvements including on-site work and designated work within the public right away, new site utilities including but not limited to, connection to the new press box, elevator and elevator room and fire alarm system.

To bid on this Project, the Bidder is required to possess at a minimum the following State of California Contractor License and Certification: A California Class "B", contractor's license is required to Bid this contract. The Bidder's license(s) must remain active and in good standing throughout the term of the Contract.

A bid bond by an admitted California surety insurer on the form provided by the District in the amount of ten percent (10%) of the total bid price, shall accompany the Bid Form and Proposal, as a guarantee that the Bidder will, within seven (7) days after the date of the Notice of Award, enter into a contract with the District for the performance of the services as stipulated in the bid.

The successful Bidder shall be required to furnish a 100% Performance Bond and a 100% Payment Bond if it is awarded the contract for the Work. The successful Bidder may substitute securities for any monies withheld by the District to ensure performance under the Contract, in accordance with the provisions of section 22300 of the Public Contract Code.

The Contractor and all Subcontractors under the Contractor shall pay all workers on all work performed pursuant to this Contract not less than the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work as determined by the Director of the Department of Industrial Relations, State of California, for the type of work performed and the locality in which the work is to be performed within the boundaries of the District, pursuant to sections 1770 et seq. of the California Labor Code. Prevailing wage rates are also available from the District or on the Internet at: <http://www.dir.ca.gov>. If this Project is funded in whole or in part with State bond funds, the District and/or its designee will be operating a labor compliance program on this Project pursuant to Labor Code section 1771.7.

On March 4, 2022, Governor Gavin Newsom issued Executive Order N-6-22 (EO) regarding sanctions in response to Russia's actions in Ukraine. The EO is located at: https://www.gov.ca.gov/wp-content/uploads/2022/03/3.4.22-Russia-Ukraine-Executive-Order.pdf . As a contractor with the Yosemite Community College District, compliance with this EO is required. This includes, but is not limited to, the federal executive orders identified in the EO, as well as the sanctions identified on the US Department of Treasury web site: https://home.treasury.gov/policy-issues/financial-sanctions/sanctions-programs-and-country-information/ukraine-russia-related-sanctions Failure to comply may result in termination of the contract, as applicable.

This Project is subject to labor compliance monitoring and enforcement by the Department of Industrial Relations pursuant to Labor Code section 1771.4 and subject to the requirements of Title 8 of the California Code of Regulations. The Contractor and all Subcontractors under the Contractor shall furnish electronic certified payroll records directly to the Labor Commissioner weekly or within (10) days of any request by the District or the Labor Commissioner. The successful bidder shall comply with all requirements of Division 2, Part 7, Chapter 1, of the Labor Code.

Pursuant to SB 854, no contractor or subcontractor may be listed on a bid for a public works project (submitted on or after March 1, 2015) unless registered with the Department of Industrial Relations (DIR) and no contractor or subcontractor may be awarded a contract for a public works project (awarded on or before April 1, 2015) unless registered with the DIR per California Labor Code section 1725.5.

A **MANDATORY** pre-bid conference and site visit will be held on **September 30, 2026 at 9:00 AM** at the Modesto Junior College, East Campus located at 435 College Ave., Modesto, CA 95350. All participants are required to sign in. All participants shall meet at the East Campus at Parking Lot 108, closest to the Southwest football field gate. (see campus map in the Project Manual, Appendix). The pre-bid conference is expected to take approximately one hour.

Contract Documents are available for review and distribution on PlanetBids. Bidders are solely responsible for on-time electronic submission of their bid through PlanetBids. It is the bidder's sole responsibility to contact Yosemite Community College District's online bid management provider, PlanetBids at 818-992-1771, to resolve any technical issues related to electronic bidding, including (but not limited to) registering as a vendor, updating passwords, updating profiles, uploading/downloading documents, submitting an electronic Proposal, and for the stability of their internet service, prior to bid due date and time. To obtain further bid information call the Purchasing Department at (209) 575-6521. For project specific information, contact TETER Architects and Engineers at (559) 437-0887, or email: jamie.hickman@teterae.com with a courtesy copy michelle.sierra@teterae.com.

The District will only consider bids that have been transmitted successfully and have been issued an ebid confirmation number (VBID) with a timestamp from the bid management system. Transmission of bids by any other means will not be accepted.

Failure of Bidder to submit an electronic bid shall be the bidder's sole risk and no relief will be granted. Bidders experiencing technical difficulties shall contact PlanetBids at (818) 992-1771 for technical difficulties or help with the bid submission process.

Bids must be complete and responsive to all portions of the Contract Documents. Bids must be submitted on the District's Bid Forms. Any addenda will be posted on PlanetBids ("Website"). Bidders must check the Website on a daily basis through the Due Date for any applicable addenda or updates. The District does not assume any liability or responsibility based on any defective or incomplete copying, excerpting, scanning, faxing, downloading, or printing of the Bid Documents. Information on PlanetBids may change without notice to prospective bidders. The Contract Documents shall supersede any information posted or transmitted by PlanetBids.

Trevor Stewart,
Vice Chancellor of Administrative Services

Advertisement: 9/16/2026

DOCUMENT 00 21 13

INSTRUCTIONS TO BIDDERS

Contractors shall follow the instructions in this document, and shall submit all documents, forms, and information required for consideration of a Bid. Bids must be submitted to the District via PlanetBids Vendor portal, on the Bid Forms provided which are a part of the Bid Package for the Project. No other forms of bid will be accepted. All bid items and statements shall be accurately and thoroughly completed.

Yosemite Community College District ("District") will evaluate information submitted by the apparent low Bidder and, if incomplete or unsatisfactory to District, Bidder's bid may be rejected at the sole discretion of District.

1. Bids are requested for a general construction contract, or work described in general, for the following project ("Project"):

   BID #: 26-1957: MODESTO JUNIOR COLLEGE- EAST CAMPUS: FOOTBALL FIELD (MODULAR) PRESS BOX & ELEVATOR

2. District will receive Bids from Bidders as stipulated in the Notice to Bidders.

3. The bid must conform and be responsive to all Project Documents and shall be submitted electronically via the Yosemite Community College Districts PlanetBids Vendor Portal, and the complete bid, together with any and all additional materials as required, shall be electronically submitted to the District per the Notice to Bidders prior to the bid deadline (Public Contract Code Section 20651). It is the bidder's sole responsibility to ensure that their bid is received prior to the bid deadline. In accordance with Government Code Section 53068, any bid received after the scheduled closing time for receipt of bids shall be refused. Bid tabulations will be available after the bid closing within the PlanetBids portal. If prequalification of bidders is required by the District pursuant to Public Contract Code Section 20651.5, only those bids received from prequalified bidders shall be accepted.

4. Bidders must supply all information required by each Bid Document. Bids must be full and complete. District reserves the right in its sole discretion to reject any Bid as non-responsive as a result of any error or omission in the Bid. Bidders must complete and submit all of the following documents with the Bid Form and Proposal:

   a. Bid Bond on the District's form or other security
   b. Designated Subcontractors List
   c. Non-collusion Affidavit
   d. Verification of Contractor And Subcontractors' DIR Registration
   e. Iran Contracting Act Certification, if Contract Value is $1,000,000 or more.
   f. Buy American Certificate, if contract amount is over $250,000.

5. Bidders must submit with their Bids a bid bond by an admitted surety insurer of not less than ten percent (10%) of amount of base Bid, plus all additive alternates. Required form of corporate surety, Bid Bond, is provided by District and must be used and fully completed by Bidders choosing to provide a Bid Bond as security. The Surety on Bidders' Bid Bond must be an insurer admitted in the State of California and authorized to issue surety bonds in the State of California. Bids submitted without necessary bid security will be deemed non-responsive and will not be considered.

6. If Bidder to whom Contract is awarded shall for **SEVEN (7)** days after the date of the Notice of Award, fail or neglect to enter into Contract and submit required bonds, insurance certificates, and all other required documents, District may deposit Bid Bond, cash, cashier's check, or certified check for collection, and proceeds thereof may be retained by District as liquidated damages for failure of Bidder to enter into Contract, in the sole discretion of District. It is agreed that calculation of damages District may suffer as a result of Bidder's failure to enter into the Contract would be extremely difficult and

impractical to determine and that the amount of the Bidder's required bid security shall be the agreed and conclusively presumed amount of damages.

7. Bidders must submit with the Bid the Designated Subcontractors List for those subcontractors who will perform any portion of Work, including labor, rendering of service, or specially fabricating and installing a portion of the Work or improvement according to detailed drawings contained in the plans and specifications, in excess of one half of one percent (0.5%) of total Bid. All of the listed subcontractors are required to be registered as a public works contractor with the Department of Industrial Relations. The subcontractor's registration must remain active throughout the term of the Contract. Failure to submit this list when required by law shall result in Bid being deemed non-responsive and the Bid will not be considered.

    a. An inadvertent error in listing the California contractor license number on the Designated Subcontractors List shall not be grounds for filing a bid protest or grounds for considering the bid nonresponsive if the correct contractor's license number is submitted to the District within 24 hours after the bid opening and the corrected number corresponds with the submitted name and location for that subcontractor.

    b. An inadvertent error listing an unregistered subcontractor shall not be grounds for filing a bid protest or grounds for considering the bid nonresponsive provided that any of the following apply:

        1. The subcontractor is registered prior to the bid opening.

        2. The subcontractor is registered and has paid the penalty registration fee within 24 hours after the bid opening.

        3. The subcontractor is replaced by another registered subcontractor.

8. District will transmit to all prospective Bidders of record such Addenda as District in its discretion considers necessary in response to questions arising at the Site Visit. Oral statements shall not be relied upon and will not be binding or legally effective. Addenda issued by the District as a result of the Site Visit, if any shall constitute the sole and exclusive record and statement of the results of the Site Visit.

9. Bidders shall submit the Non-collusion Affidavit with their Bids. Bids submitted without the Non-collusion Affidavit shall be deemed non-responsive and will not be considered.

10. Bidders shall not modify the Bid Form and Proposal or qualify their Bids. Bidders shall not submit to the District a scanned, re-typed, word-processed, or otherwise recreated version of the Bid Form and Proposal or other District-provided document.

11. If the Project is funded at least in part with State bond funds, the District and/or its designee will be operating a labor compliance program on this Project pursuant to Labor Code section 1771.7.

12. The Bidder and all Subcontractors under the Contractor shall pay all workers on all work performed pursuant to this Contract not less than the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work as determined by the Director of the Department of Industrial Relations, State of California, for the type of work performed and the locality in which the work is to be performed within the boundaries of the District, pursuant to sections 1770 et seq. of the California Labor Code.

13. Submission of Bid signifies careful examination of Contract Documents and complete understanding of the nature, extent, and location of Work to be performed. Bidders must complete the tasks listed below as a condition to bidding, and submission of Bid shall constitute the Bidder's express representation to District that Bidder has fully completed the following:

a. Bidder has visited the Site and has examined thoroughly and understood the nature and extent of the Contract Documents, Work, Site, locality, actual conditions, as-built conditions, and all local conditions and federal, state and local laws, and regulations that in any manner may affect cost, progress, performance, or furnishing of Work or that relate to any aspect of the means, methods, techniques, sequences, or procedures of construction to be employed by Bidder and safety precautions and programs incident thereto;

b. Bidder has conducted or obtained and has understood all examinations, investigations, explorations, tests, reports, and studies that pertain to the subsurface conditions, as-built conditions, underground facilities, and all other physical conditions at or contiguous to the Site or otherwise that may affect the cost, progress, performance, or furnishing of Work, as Bidder considers necessary for the performance or furnishing of Work at the Contract Sum, within the Contract Time, and in accordance with the other terms and conditions of Contract Documents, including specifically the provisions of the General Conditions; and no additional examinations, investigations, explorations, tests, reports, studies, or similar information or data are or will be required by Bidder for such purposes;

c. Bidder has correlated its knowledge and the results of all such observations, examinations, investigations, explorations, tests, reports, and studies with the terms and conditions of the Contract Documents;

d. Bidder has given the District prompt written notice of all conflicts, errors, ambiguities, or discrepancies that it has discovered in or among the Contract Documents and the actual conditions, and the written resolution thereof by the District is acceptable to Bidder;

e. Bidder has made a complete disclosure in writing to the District of all facts bearing upon any possible interest, direct or indirect, that Bidder believes any representative of the District or other officer or employee of the District presently has or will have in this Contract or in the performance thereof or in any portion of the profits thereof;

f. Bidder must, prior to bidding, perform the work, investigations, research, and analysis required by this document and that Bidder represented in its Bid Form and Proposal, and the Agreement that it performed prior to bidding. Contractor under this Contract is charged with all information and knowledge that a reasonable bidder would ascertain from having performed this required work, investigation, research, and analysis. Bid prices must include entire cost of all work "incidental" to completion of the Work.

g. Conditions Shown on the Contract Documents: Information as to underground conditions, as-built conditions, or other conditions or obstructions, indicated in the Contract Documents, e.g., on Drawings or in Specifications, has been obtained with reasonable care, and has been recorded in good faith. However, District only warrants, and Contractor may only rely, on the accuracy of limited types of information.

   (1) As to above-ground conditions or as-built conditions shown or indicated in the Contract Documents, there is no warranty, express or implied, or any representation express or implied, that such information is correctly shown or indicated. This information is verifiable by independent investigation and Contractor is required to make such verification as a condition to bidding. In submitting its Bid, Contractor shall rely on the results of its own independent investigation. In submitting its Bid, Contractor shall not rely on District-supplied information regarding above-ground conditions or as-built conditions.

h. Conditions Shown in Reports and Drawings Supplied for Informational Purposes: Reference is made to the document entitled Geotechnical Data, and the document entitled Existing Conditions, for identification of:

(1) Subsurface Conditions: Those reports of explorations and tests of subsurface conditions at or contiguous to the Site that have been utilized by Architect in preparing the Contract Documents; and

(2) Physical Conditions: Those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that has been utilized by Architect in preparing the Contract Documents.

14. Bidders may examine any available "as-built" drawings of previous work by giving District reasonable advance notice. District will not be responsible for accuracy of "as-built" drawings. The document entitled Existing Conditions applies to all supplied "as-built" drawings.

15. Copies of the general prevailing rates of per diem wages for each craft, classification, or type of worker needed to execute the Contract, as determined by Director of the State of California Department of Industrial Relations, are on file at the District's principal office. Prevailing wage rates are also available from the District or on the internet at (http://www. dir.ca.gov)

16. All questions about the meaning or intent of the Contract Documents are to be directed in writing to the District. Interpretations or clarifications considered necessary by the District in response to such questions will be issued in writing by Addenda faxed, mailed, or delivered to all parties recorded by the District as having received the Contract Documents. Questions received less than **SEVEN (7)** days prior to the date for opening Bids may not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

17. Addenda may also be issued to modify other parts of the Contract Documents as deemed advisable by the District.

18. Each Bidder must acknowledge each Addendum in its Bid Form and Proposal by number or its Bid shall be considered non-responsive. Each addendum shall be part of the Contract Documents. A complete listing of Addenda may be secured from the District.

19. Bids shall be based on products and systems specified in Contract Documents or listed by name in Addenda. The District is not responsible and/or liable in any way for a Contractor's damages and/or claims related, in any way, to that Contractor's basing its bid on any requested substitution that the District has not approved. Contractors and materials suppliers who submit requests for substitutions prior to the award of the Contract must do so in writing and in compliance with Public Contract Code section 3400. All requests must comply with the following:

a. District must receive any request for substitution a minimum of **TEN (10)** days prior to bid opening.

b. Requests for substitutions shall contain sufficient information to assess acceptability of product or system and impact on Project. Insufficient information shall be grounds for rejection of substitution.

c. Approved substitutions shall be listed in Addenda. District reserves the right not to act upon submittals of substitutions until after bid opening.

d. Substitutions may be requested after Contract has been awarded only if indicated in and in accordance with requirements specified in the Special Conditions and the Specifications.

20. The Bid Results will be available to the public via PlanetBids portal following the Bid Opening Date.

21. This Contract may include alternates. Alternates are defined as alternate products, materials, equipment, systems, methods, or major elements of the construction that may, at the District's option and under terms established in the Contract and pursuant to section 20103.8 of the Public Contract Code, be selected for the Work. The District shall award the Contract, if it awards it at all, to the lowest responsive responsible bidder based on the criteria as indicated in this section.

22. Time for Completion: District may issue a Notice to Proceed within **THREE (3)** months from the date of the Contractor's Notice of Award. Once Contractor has received the Notice to Proceed, Contractor shall complete the Work within the period of time indicated in the Contract Documents.

    a. In the event that the District desires to postpone issuing the Notice to Proceed beyond this 3-month period, it is expressly understood that with reasonable notice to the Contractor, the District may postpone issuing the Notice to Proceed. It is further expressly understood by Contractor that Contractor shall not be entitled to any claim of additional compensation as a result of the postponement of the issuance of the Notice to Proceed.

    b. If the Contractor believes that a postponement of issuance of the Notice to Proceed will cause a hardship to Contractor, Contractor may terminate the Contract after the lapse of three (3) months after the Contractor's termination due to a postponement shall be by written notice to District within **TEN (10)** days after receipt by Contractor of District's notice of postponement. It is further understood by Contractor that in the event that Contractor terminates the Contract as a result of postponement by the District, the District shall only be obligated to pay Contractor for the Work that Contractor had performed at the time of notification of postponement. Should Contractor terminate the Contract as a result of a notice of postponement, District shall have the authority to award the Contract to the next lowest responsive responsible bidder.

23. The Bidder to whom Contract is awarded shall execute and submit the following documents by 5:00 p.m. of the **SEVENTH (7th)** day following the date of the Contractor's Notice of Award. Failure to properly and timely submit these documents entitles District to reject the bid as non-responsive.

    a. Agreement: To be executed by successful Bidder. Submit three (3) copies, each bearing an original signature.

    b. Performance Bond (100%): On the form provided in the Contract Documents and fully executed as indicated on the form. Submit two copies.

    c. Payment Bond (100%) (Contractor's Labor and Material Bond): On the form provided in the Contract Documents and fully executed as indicated on the form. Submit two copies.

    d. Insurance Certificates and Endorsements as required.

    e. Workers' Compensation Certification.

    f. Prevailing Wage and Related Labor Requirements Certification.

    g. Drug-Free Workplace Certification.

    h. Imported Materials Certification. (if relevant to Scope of Project)

24. Any bid protest must be in writing and received by the District at the Purchasing Department office, 2201 Blue Gum Avenue, Modesto, CA 95382, before 5:00 p.m. no later than **three (3) working days** following bid opening (the "Bid Protest Deadline") and must comply with the following requirements:

a. Only a Bidder who has actually submitted a bid, and who could be awarded the Contract if the bid protest is upheld, is eligible to submit a bid protest. Subcontractors are not eligible to submit bid protests. A Bidder may not rely on the bid protest submitted by another Bidder.

b. A bid protest must contain a complete statement of any and all bases for the protest and all supporting documentation. Materials submitted after the bid protest deadline will not be considered.

c. The protest must refer to the specific portions of all documents that form the basis for the protest.

(1) Without limitation to other bases for protest, an inadvertent error in listing the California contractor license number on the Designated Subcontractors List shall not be grounds for filing a bid protest or grounds for considering the bid nonresponsive if the correct contractor's license number is submitted to the District within 24 hours after the bid opening and the corrected number corresponds with the submitted name and location for that subcontractor.

(2) Without limitation to other bases for protest, an inadvertent error listing an unregistered subcontractor shall not be grounds for filing a bid protest or grounds for considering the bid nonresponsive provided that any of the following apply:

(i) The subcontractor is registered prior to the bid opening.

(ii) The subcontractor is registered and has paid the penalty registration fee within 24 hours after the bid opening.

(iii) The subcontractor is replaced by another registered subcontractor pursuant to Public Contract Code section 4107.

d. The protest must include the name, address and telephone number of the person representing the protesting party.

e. The party filing the protest must concurrently transmit a copy of the protest and any attached documentation to all other parties with a direct financial interest that may be adversely affected by the outcome of the protest. Such parties shall include all other bidders or proposers who appear to have a reasonable prospect of receiving an award depending upon the outcome of the protest.

f. The procedure and time limits set forth in this paragraph are mandatory and are each bidder's sole and exclusive remedy in the event of bid protest. Failure to comply with these procedures shall constitute a waiver of any right to further pursue the bid protest, including filing a Government Code Claim or legal proceedings.

25. District reserves the right to reject any or all bids. The District reserves the right to reject any or all nonconforming, non-responsive, unbalanced, or conditional bids and to reject the bid of any bidder if the bid is not responsive or the bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by District. In the event of a rejection of a bid, the District may make an award to the next lowest responsible bidder or re-bid the Project, as it may determine in its discretion. District also reserves the right to waive inconsequential deviations not involving price, time, or material changes in the Work. For purposes of this paragraph, an "unbalanced bid" is one having nominal prices for some work items and/or enhanced prices for other work items.

26. Discrepancies between written words and figures, or words and numerals, will be resolved in favor of the figures or numerals.

27. Prior to the award of Contract, District reserves the right to consider the responsibility of the Bidder. District may conduct investigations as District deems necessary to assist in the evaluation of any bid and to establish the responsibility, including, without limitation, qualifications and financial ability of Bidders, proposed subcontractors, suppliers, and other persons and organizations to perform and furnish the Work in accordance with the Contract Documents to District's satisfaction within the prescribed time. A bidder must cooperate with any investigation by providing relevant information requested by the District and, if not cooperative, the bidder may be rejected as non-responsive.

28. The District shall award the Contract, if it awards it at all, to the lowest responsive responsible bidder based on:

    a. The base bid amount only.

DOCUMENT 00 31 00

EXISTING CONDITIONS

1. Summary

This document describes existing conditions at or near the Project, and use of information available regarding existing conditions. This document is **not** part of the Contract Documents. See General Conditions for definition(s) of terms used herein.

2. Reports and Information on Existing Conditions

a. Documents providing a general description of the Site and conditions of the Work may have been collected by Yosemite Community College District ("District"), its architects, contractors, and tenants. These documents may include previous contracts, contract specifications, tenant improvement contracts, as-built drawings, utility drawings, and information regarding underground facilities.

b. Information regarding existing conditions may be inspected at District offices, and copies may be obtained at cost of reproduction and handling upon Bidder's agreement to pay for such copies. These reports, documents, and other information are **not** part of the Contract Documents.

c. Information regarding existing conditions may also be included in the Project Manual but shall **not** be considered part of the Contract Documents.

d. The reports and other data or information regarding existing conditions and underground facilities at or contiguous to the Project are the following:

i. APPENDIX No. 2: Geotechnical Investigation Report, Krazan [Oct. 20, 2022]
ii. APPENDIX No. 3: Geotechnical Investigation Report Krazan, Updated, [Apr. 24, 2026]
iii. APPENDIX No. 4: Hazardous Material Survey [May 05, 2026]

3. Use of Information

a. Information regarding existing conditions was obtained only for use of District and its architects, contractors, and tenants for planning and design and is **not** part of the Contract Documents.

b. District does not warrant, and makes no representation regarding, the accuracy or thoroughness of any information regarding existing conditions. Bidder represents and agrees that in submitting a bid it is not relying on any information regarding existing conditions supplied by District.

c. Under no circumstances shall District be deemed to warrant or represent existing above-ground conditions, as-built conditions, or other actual conditions, verifiable by independent investigation. These conditions are verifiable by Contractor by the performance of its own independent investigation, which Contractor must perform as a condition to bidding, and Contractor should not and shall not rely on this information or any other information supplied by District regarding existing conditions.

d District shall be responsible only for the general accuracy of information regarding underground facilities, and only for those underground facilities that are owned by

District, and only where Bidder has conducted the independent investigation required of it pursuant to the Instructions to Bidders, and discrepancies are not apparent.

4. Investigations/Site Examinations

a. Before submitting a Bid, each Bidder is responsible for obtaining copies of, or viewing any additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and underground facilities) at or contiguous to the Site or otherwise, that may affect cost, progress, performance, or furnishing of Work or that relate to any aspect of the means, methods, techniques, sequences, or procedures of construction to be employed by Bidder and safety precautions and programs incident thereto or that Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price, and other terms and conditions of Contract Documents.

DOCUMENT 00 41 13

BID FORM AND PROPOSAL

To: Governing Board of Yosemite Community College District ("District" or "Owner")

From: _____
(Proper Name of Bidder)

The undersigned declares that the Contract Documents including, without limitation, the Notice to Bidders and the Instructions to Bidders have been read and agrees and proposes to furnish all necessary labor, materials, and equipment to perform and furnish all work in accordance with the terms and conditions of the Contract Documents, including, without limitation, the Drawings and Specifications of Bid No. 26-1957.

BID #: 26-1957: MODESTO JUNIOR COLLEGE- EAST CAMPUS: FOOTBALL FIELD (MODULAR) PRESS BOX & ELEVATOR

("Project" or "Contract") and will accept in full payment for that Work the following total lump sum amount, all taxes included:

Base Bid:
Exclude the following District previous contracts: new press box, covered filming platforms, metal stairs and support structure, guardrails and handrails.

_____ **dollars** **$**_____ ***BASE BID***
NOTE: Base Bid shall include Allowances specified in Specification Section 01 21 00 "ALLOWANCES"

1. Allowance. See Specification Section 01 21 00 "ALLOWANCES" for additional information.

2. Award of the project will be based upon the "Base Bid" amount.

3. The undersigned has reviewed the Work outlined in the Contract Documents and fully understands the scope of Work required in this Proposal, understands the construction and project management function(s) is described in the Contract Documents, and that each Bidder who is awarded a contract shall be in fact a prime contractor, not a subcontractor, to the District, and agrees that its Proposal, if accepted by the District, will be the basis for the Bidder to enter into a contract with the District in accordance with the intent of the Contract Documents.

4. The undersigned has notified the District in writing of any discrepancies or omissions or of any doubt, questions, or ambiguities about the meaning of any of the Contract Documents, and has contacted the Construction Manager before bid date to verify the issuance of any clarifying Addenda.

5. The undersigned agrees to commence work under this Contract on the date established in the Contract Documents and to complete all work within the time specified in the Contract Documents.

6. The liquidated damages clause of the General Conditions and Agreement is hereby acknowledged.

7. It is understood that the District reserves the right to reject this bid and that the bid shall remain open to acceptance and is irrevocable for a period of ninety (90) days.

8. The following documents are attached hereto:

- Bid Bond on the District's form or other security
- Designated Subcontractors List
- Non-collusion Declaration
- Verification of Contractor and Subcontractors DIR Registration
- Iran Contracting Act Certification, if contract amount value is $1,000,000 or more
- Buy American Certificate, if contract amount is over $250,000.

9. Receipt and acceptance of the following addenda is hereby acknowledged:

No.____, Dated _____	No.____, Dated _____
No.____, Dated _____	No.____, Dated _____
No.____, Dated _____	No.____, Dated _____
No.____, Dated _____	No.____, Dated _____

10. Bidder acknowledges that the license required for performance of the Work is a Type “B” license.

11. The undersigned hereby certifies that Bidder is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the Work.

12. Bidder specifically acknowledges and understands that if it is awarded the Contract, that it shall perform the Work of the Project while complying with all requirements of the SB 854. All contractors and subcontractors who bid or work on a public works project must register and pay an annual fee to Department of Industrial Relations.

13. The Bidder represents that it is competent, knowledgeable, and has special skills with respect to the nature, extent, and inherent conditions of the Work to be performed. Bidder further acknowledges that there are certain peculiar and inherent conditions existent in the construction of the Work that may create, during the Work, unusual or peculiar unsafe conditions hazardous to persons and property.

14. Bidder expressly acknowledges that it is aware of such peculiar risks and that it has the skill and experience to foresee and to adopt protective measures to adequately and safely perform the Work with respect to such hazards.

15. Bidder expressly acknowledges that it is aware that if a false claim is knowingly submitted (as the terms "claim" and "knowingly" are defined in the California False Claims Act, Cal. Gov. Code, §12650 et seq.), the District will be entitled to civil remedies set forth in the California False Claim Act. It may also be considered fraud and the Contractor may be subject to criminal prosecution.

16. The undersigned Bidder certifies that it is, at the time of bidding, and shall be throughout the period of the contract, licensed by the State of California to do the type of work required under the terms of the Contract Documents **and registered as a public works contractor with the Department of Industrial Relations.** Bidder further certifies that it is regularly engaged in the general class and type of work called for in the Contract Documents.

Furthermore, Bidder hereby certifies to the District that all representations, certifications, and statements made by Bidder, as set forth in this bid form, are true and correct and are made under penalty of perjury.

Dated this _____ day of _____ 20 ____

Name of Bidder _____

Type of Organization _____

Signed by _____

Title of Signer _____

Address of Bidder _____

Taxpayer's Identification No. of Bidder _____

Telephone Number _____

Fax Number _____

E-mail _____ Web page _____

Contractor's License No(s): No.: _____ Class: _____ Expiration Date: _____

No.: _____ Class: _____ Expiration Date: _____

No.: _____ Class: _____ Expiration Date: _____

Public Works Contractor Registration NO.:_____.

If Bidder is a corporation, affix corporate seal.

Name of Corporation: _____

President: _____

Secretary: _____

Treasurer: _____

Manager: _____

END OF DOCUMENT

DOCUMENT 00 43 13

BID BOND

(Note: If Bidder is providing a bid bond as its bid security, Bidder must use this form, NOT a surety company form.)

KNOW ALL PERSONS BY THESE PRESENTS:

That the undersigned, as _____ as Principal ("Principal"), and

_____ as Surety ("Surety"),

a corporation organized and existing under and by virtue of the laws of the State of _____ and authorized to do business as a surety in the State of California, are held and firmly bound unto the Yosemite Community College District ("District") of Stanislaus County, State of California as Obligee, in the sum of _____ ($ _____)

lawful money of the United States of America, for the payment of which sum well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the Principal has submitted a bid to the District for all Work specifically described in the accompanying bid;

now, therefore, if the Principal is awarded the Contract and, within the time and manner required under the Contract Documents, after the prescribed forms are presented to Principal for signature, enters into a written contract, in the prescribed form in accordance with the bid, and files two bonds, one guaranteeing faithful performance and the other guaranteeing payment for labor and materials as required by law, and meets all other conditions to the contract between the Principal and the Obligee becoming effective, or if the Principal shall fully reimburse and save harmless the Obligee from any damage sustained by the Obligee through failure of the Principal to enter into the written contract and to file the required performance and labor and material bonds, and to meet all other conditions to the Contract between the Principal and the Obligee becoming effective, then this obligation shall be null and void; otherwise, it shall be and remain in full force and effect. The full payment of the sum stated above shall be due immediately if Principal fails to execute the Contract within fourteen (14) days of the date of the District's Notice of Award to Principal.

Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or the call for bids, or to the work to be performed there under, or the specifications accompanying the same, shall in any way affect its obligation under this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or the call for bids, or to the work, or to the specifications.

In the event suit is brought upon this bond by the Obligee and judgment is recovered, the Surety shall pay all costs incurred by the Obligee in such suit, including a reasonable attorneys' fee to be fixed by the Court.

If the District awards the bid, the security of unsuccessful bidder(s) shall be returned within sixty (60) days from the time the award is made. Unless otherwise required by law, no bidder may withdraw its bid for ninety (90) days after the date of the bid opening.
IN WITNESS WHEREOF, this instrument has been duty executed by the Principal and Surety above

named, on the _____ day of _____, 20___.

(Affix Corporate Seal)

_____
Principal

_____
By

(Affix Corporate Seal)

_____
Surety

_____
By

_____
Name of California Agent of Surety

_____
Address of California Agent of Surety

_____
Telephone Number of California Agent of Surety

Bidder must attach Power of Attorney and Certificate of Authority for Surety and a Notarial Acknowledgment for all Surety's signatures. The California Department of Insurance must authorize the Surety to be an admitted Surety Insurer.

DOCUMENT 00 43 36

DESIGNATED SUBCONTRACTORS LIST

BID #: 26-1957: MODESTO JUNIOR COLLEGE- EAST CAMPUS: FOOTBALL FIELD (MODULAR) PRESS BOX & ELEVATOR

Bidder must list hereinafter the name and location of each subcontractor who will be employed, and the kind of Work that each will perform if the Contract is awarded to the Bidder. **Effective *July 1, 2014*, the General Contractor now must also list the subcontractor's "California contractor license number." This can be found in Public Contract Code §4104.** Bidder acknowledges and agrees that under Public Contract Code section 4100, et seq., it must clearly set forth below the name and location of each subcontractor who will perform work or labor or render service to the Bidder in or about the construction of the Work in an amount in excess of one-half of one percent (1/2 of 1%) of Bidder's total Bid, and that as to any Work that Bidder fails to list, Bidder agrees to perform that portion itself or be subjected to penalty under applicable law.

In case more than one subcontractor is named for the same kind of Work, state the portion that each will perform. Vendors or suppliers of materials only do not need to be listed.

If further space is required for the list of proposed subcontractors, additional sheets showing the required information, as indicated below, shall be attached hereto and made a part of this document.

Subcontractor Name: _____ Location: _____
California Contractors License Number: _____ **DIR Number**:_____
Portion of Work: _____

Subcontractor Name: _____ Location: _____
California Contractors License Number: _____ **DIR Number**:_____
Portion of Work: _____

Subcontractor Name: _____ Location: _____
California Contractors License Number: _____ **DIR Number**:_____
Portion of Work: _____

Subcontractor Name: _____ Location: _____
California Contractors License Number: _____ **DIR Number**:_____
Portion of Work: _____

Date: _____

Proper Name of Bidder: _____

Signature: _____

Print Name: _____

Title: _____

DOCUMENT 00 45 19

NONCOLLUSION AFFIDAVIT
Public Contract Code Section 7106
TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

STATE OF CALIFORNIA)
) ss.
COUNTY OF _____)

_____ being first duly sworn deposes and says that he or she is _____ of _____, the Bidder making the foregoing Bid that the Bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the Bid is genuine and not collusive or sham; that 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 that 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 Bid price of the Bidder or any other bidder, or to fix any overhead, profit, or cost element of the Bid price, or of that of any other bidder, or to secure any advantage against the District of anyone interested in the proposed Contract; that all statements contained in the bid are true; and, further, that 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.

I certify and declare under penalty of perjury under the laws of the State of California that all the foregoing information in this Non-collusion Affidavit is true and correct.

Date: _____

Proper Name of Bidder: _____

Signature: _____

Print Name: _____

Title: _____

(ATTACH NOTARIAL ACKNOWLEDGMENT FOR THE ABOVE SIGNATURE)

DOCUMENT 00 45 26

WORKERS'COMPENSATION CERTIFICATION

BID #: 26-1957: MODESTO JUNIOR COLLEGE- EAST CAMPUS: FOOTBALL FIELD (MODULAR) PRESS BOX & ELEVATOR

PROJECT/CONTRACT NO.: _____ between Yosemite Community College District (the "District") and _____ (the "Contractor" or the "Bidder") (the "Contract" or the "Project").

Labor Code section 3700 in relevant part provides:

> Every employer except the State shall secure the payment of compensation in one or more of the following ways:
>
> a. By being insured against liability to pay compensation by one or more insurers duly authorized to write compensation insurance in this state.
>
> b. By securing from the Director of Industrial Relations a certificate of consent to self-insure, this may be given upon furnishing proof satisfactory to the Director of Industrial Relations of ability to self-insure and to pay any compensation that may become due to his employees.

I am aware of the provisions of section 3700 of the Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the Work of this Contract.

(In accordance with Article 5 - commencing at section 1860, chapter 1, part 7, division 2 of the Labor Code, the above certificate must be signed and filed with the awarding body prior to performing any Work under this Contract.)

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

DOCUMENT 00 45 46.01

PREVAILING WAGE AND
RELATED LABOR REQUIREMENTS CERTIFICATION

PROJECT/CONTRACT NO.: _____ between Yosemite Community College District (the "District") and _____ (the "Contractor" or the "Bidder") (the "Contract" or the "Project").

I hereby certify that I will conform to the State of California Public Works Contract requirements regarding prevailing wages, benefits, on-site audits with 48-hours' notice, payroll records, and apprentice and trainee employment requirements, for all Work on the above Project including, without limitation, labor compliance monitoring and enforcement by the Department of Industrial Relations.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

DOCUMENT 00 45 46.02

VERIFICATION OF CONTRACTOR AND SUBCONTRACTORS' DIR REGISTRATION

I am the_____ of _____ ("Bidder") submitting the
(Title/Position) (Bidders Name)
accompanying Bid Proposal for the Work described as _____.

1. The Bidder is currently registered as a contractor with the Department of Industrial Relations ("DIR").
2. The Bidder's DIR Registration Number is: _____. The expiration date of the Bidder's DIR Registration is June 30, 20____.
3. If the Bidder is awarded the Contract for the Work and the expiration date of the Bidder's DIR Registration will occur: (i) prior to expiration of the Contract Time for the Work; or (ii) prior to the Bidder completing all obligations under the Contract for the Work, the Bidder will take all measures necessary to renew the Bidder's DIR Registration so that there is no lapse in the Bidder's DIR Registration while performing Work under the Contract.
4. The Bidder, if awarded the Contract for the Work will remain a DIR registered contractor for the entire duration of the Work.
5. The Bidder has independently verified that each Subcontractor identified in the Subcontractors List submitted with the Bid Proposal of the Bidder is currently a DIR registered contractor.
6. The Bidder has provided the DIR Registration Number for each subcontractor identified in the Bidder's Subcontractors' List, the Bidder will provide the District with the DIR Registration Number for each subcontractor identified in the Bidder's Subcontractors List. The Bidder's solicitation of subcontractor bids included notice to prospective subcontractors that:
    a. All sub-tier subcontractors must be DIR registered contractors at all times during performance of the Work; and
    b. Prospective subcontractors may only solicit sub-bids from and contract with lower-tier subcontractors who are DIR registered contractors.
7. If any of the statements herein are false or omit material facts rendering a statement to be false or misleading, the Bidder's Bid Proposal is subject to rejection for non-responsiveness.
8. I have personal first hand-knowledge of all of the foregoing.

I declare under penalty of perjury under California law that the foregoing is true and correct.

Executed this_____ day of _____, 20___ at _____.
(City and State)

_____
(Signature)

_____
(Name, typed or printed)

DOCUMENT 00 45 46.03

DRUG-FREE WORKPLACE CERTIFICATION

PROJECT/CONTRACT NO.: _____ between Yosemite Community College

District (the "District") and _____ (the "Contractor" or the "Bidder") (the "Contract" or the "Project").

This Drug-Free Workplace Certification form is required from the successful Bidder pursuant to Government Code section 8350 et seq., the Drug-Free Workplace Act of 1990. The Drug-Free Workplace Act of 1990 requires that every person or organization awarded a contract or grant for the procurement of any property or service from any state agency must certify that it will provide a drug-free workplace by doing certain specified acts. In addition, the Act provides that each contract or grant awarded by a state agency may be subject to suspension of payments or termination of the contract or grant, and the contractor or grantee may be subject to debarment from future contracting, if the contracting agency determines that specified acts have occurred.

The District is not a "state agency" as defined in the applicable section(s) of the Government Code, but the District is a local agency and public Community College district under California law and requires all contractors on District projects to comply with the provisions and requirements of Government Code section 8350 et seq., the Drug-Free Workplace Act of 1990.

Contractor shall certify that it will provide a drug-free workplace by doing all of the following:

a. Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is prohibited in the person's or organization's workplace and specifying actions which will be taken against employees for violations of the prohibition;

b. Establishing a drug-free awareness program to inform employees about all of the following:

   (1) The dangers of drug abuse in the workplace.
   (2) The person's or organization's policy of maintaining a drug-free workplace.
   (3) The availability of drug counseling, rehabilitation, and employee-assistance programs.
   (4) The penalties that may be imposed upon employees for drug abuse violations.

c. Requiring that each employee engaged in the performance of the contract or grant be given a copy of the statement required above, and that, as a condition of employment on the contract or grant, the employee agrees to abide by the terms of the statement.

I, the undersigned, agree to fulfill the terms and requirements of Government Code section 8355 listed above and will publish a statement notifying employees concerning (a) the prohibition of controlled substance at the workplace, (b) establishing a drug-free awareness program, and (c) requiring that each employee engaged in the performance of the contract be given a copy of the statement required by section 8355(a), and requiring that the employee agree to abide by the terms of that statement.

I also understand that if the District determines that I have either (a) made a false certification herein, or (b) violated this certification by failing to carry out the requirements of section 8355, that the Contract awarded herein is subject to termination, suspension of payments, or both. I further understand that,

should I violate the terms of the Drug-Free Workplace Act of 1990, I may be subject to debarment in accordance with the requirements of section 8350 et seq.

I acknowledge that I am aware of the provisions of Government Code section 8350 et seq. and hereby certify that I will adhere to the requirements of the Drug-Free Workplace Act of 1990.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

DOCUMENT 00 45 46.04

IRAN CONTRACTING ACT

(Public Contract Code sections 2202-2208)

Prior to bidding on, submitting a proposal or executing a contract or renewal for a State of California contract for goods or services of $1,000,000 or more, a vendor must either: a) certify it is **not** on the current list of persons engaged in investment activities in Iran created by the California Department of General Services ("DGS") pursuant to Public Contract Code section 2203(b) and is not a financial institution extending twenty million dollars ($20,000,000) or more in credit to another person, for 45 days or more, if that other person will use the credit to provide goods or services in the energy sector in Iran and is identified on the current list of persons engaged in investment activities in Iran created by DGS; or b) demonstrate it has been exempted from the certification requirement for that solicitation or contract pursuant to Public Contract Code section 2203(c) or (d).

To comply with this requirement, please insert your vendor or financial institution name and Federal ID Number (if available) and complete **one** of the options below. Please note: California law establishes penalties for providing false certifications, including civil penalties equal to the greater of $250,000 or twice the amount of the contract for which the false certification was made; contract termination; and three-year ineligibility to bid on contracts. (Public Contract Code section 2205.)

OPTION #1 - CERTIFICATION

I, the official named below, certify I am duly authorized to execute this certification on behalf of the vendor/financial institution identified below, and the vendor/financial institution identified below is **not** on the current list of persons engaged in investment activities in Iran created by DGS and is not a financial institution extending twenty million dollars ($20,000,000) or more in credit to another person/vendor, for 45 days or more, if that other person/vendor will use the credit to provide goods or services in the energy sector in Iran and is identified on the current list of persons engaged in investment activities in Iran created by DGS.

Vendor Name/Financial Institution (Printed)	*Federal ID Number (or n/a)*
By (Authorized Signature)	
Printed Name and Title of Person Signing	
Date Executed	*Executed in*

OPTION #2 – EXEMPTION

Pursuant to Public Contract Code sections 2203(c) and (d), a public entity may permit a vendor/financial institution engaged in investment activities in Iran, on a case-by-case basis, to be eligible for, or to bid on, submit a proposal for, or enters into or renews, a contract for goods and services.

If you have obtained an exemption from the certification requirement under the Iran Contracting Act, please fill out the information below, and attach documentation demonstrating the exemption approval.

Vendor Name/Financial Institution (Printed)	*Federal ID Number (or n/a)*
By (Authorized Signature)	

Printed Name and Title of Person Signing *Date Executed*

DOCUMENT 00 45 46.05

HAZARDOUS MATERIALS CERTIFICATION

PROJECT/CONTRACT NO.: _____ between Yosemite Community College District ("District" or "Owner") and _____
("Contractor" or "Bidder") ("Contract" or "Project").

1. Contractor hereby certifies that no Asbestos, or Asbestos-Containing Materials, polychlorinated biphenyl (PCB), or any material listed by the federal or state Environmental Protection Agency or federal or state health agencies as a hazardous material, or any other material defined as being hazardous under federal or state laws, rules, or regulations ("New Hazardous Material"), shall be furnished, installed, or incorporated in any way into the Project or in any tools, devices, clothing, or equipment used to affect any portion of Contractor's work on the Project for District.

2. Contractor further certifies that it has instructed its employees with respect to the above-mentioned standards, hazards, risks, and liabilities.

3. Asbestos and/or asbestos-containing material shall be defined as all items containing but not limited to chrysotile, crocidolite, amosite, anthophyllite, tremolite, and actinolite. Any or all material containing greater than one-tenth of one percent (.1%) asbestos shall be defined as asbestos-containing material.

4. Any disputes involving the question of whether or not material is New Hazardous Material shall be settled by electron microscopy or other appropriate and recognized testing procedure, at the District's determination. The costs of any such tests shall be paid by Contractor if the material is found to be New Hazardous Material.

5. All Work or materials found to be New Hazardous Material or Work or material installed with "New Hazardous Material" containing equipment will be immediately rejected and this Work will be removed at Contractor's expense at no additional cost to the District.

6. Contractor has read and understood the document Hazardous Materials Procedures & Requirements, and shall comply with all the provisions outlined therein.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

DOCUMENT 00 45 46.06

LEAD-BASED MATERIALS CERTIFICATION

PROJECT/CONTRACT NO.: _____ between Yosemite Community College District ("District" or "Owner") and _____ ("Contractor" or "Bidder") ("Contract" or "Project").

This certification provides notice to the Contractor that:

(1) The Contractor's work may disturb lead-containing building materials.

(2) The Contractor must notify the District if any work may result in the disturbance of lead-containing building materials.

1. Lead as a Health Hazard

Lead poisoning is recognized as a serious environmental health hazard facing children today. Even at low levels of exposure, much lower than previously believed, lead can impair the development of a child's central nervous system, causing learning disabilities, and leading to serious behavioral problems. Lead enters the environment as tiny lead particles and lead dust disburses when paint chips, chalks, peels, wears away over time, or is otherwise disturbed. Ingestion of lead dust is the most common pathway of childhood poisoning; lead dust gets on a child's hands and toys and then into a child's mouth through common hand-to-mouth activity. Exposures may result from construction or remodeling activities that disturb lead paint, from ordinary wear and tear of windows and doors, or from friction on other surfaces.

Ordinary construction and renovation or repainting activities carried out without lead-safe work practices can disturb lead-based paint and create significant hazards. Improper removal practices, such as dry scraping, sanding, or water blasting painted surfaces, are likely to generate high volumes of lead dust.

Because the Contractor and its employees will be providing services for the District, and because the Contractor's work may disturb lead-containing building materials, CONTRACTOR IS HEREBY NOTIFIED of the potential presence of lead-containing materials located within certain buildings utilized by the District. All school buildings built prior to 1993 are presumed to contain some lead-based paint until sampling proves otherwise.

2. Overview of California Law

Both the Federal Occupational Safety and Health Administration ("Fed/OSHA") and the California Division of Occupational Safety and Health ("Cal/OSHA") have implemented safety orders applicable to all construction work where a contractor's employee may be occupationally exposed to lead.

The OSHA Regulations apply to all construction work where a contractor's employee may be occupationally exposed to lead. The OSHA Regulations contain specific and detailed requirements imposed on contractors subject to that regulation. The OSHA Regulations define construction work as work for construction, alteration, and/or repair, including painting and decorating. It includes, but is not limited to, the following:

a. Demolition or salvage of structures where lead or materials containing lead are present;

b. Removal or encapsulation of materials containing lead;

c. New construction, alteration, repair, or renovation of structures, substrates, or portions thereof, that contain lead, or materials containing lead;

d. Installation of products containing lead;

e. Lead contamination/emergency cleanup;

f. Transportation, disposal, storage, or containment of lead or materials containing lead on the site or location at which construction activities are performed; and

g. Maintenance operations associated with the construction activities described in the subsection.

Because it is assumed by the District that all painted surfaces (interior as well as exterior) within the District contain some level of lead, it is imperative that the contractor, its workers and subcontractors fully and adequately comply with all applicable laws, rules and regulations governing lead-based materials (including title 8, California Code of Regulations, section 1532. 1).

The Contractor must notify the District if any Work may result in the disturbance of lead-containing building materials. Any and all Work that may result in the disturbance of lead-containing building materials must be coordinated through the District. A signed copy of this Certification must be on file prior to beginning Work on the Project, along with all current insurance certificates.

3. <u>Contractor's Liability</u>

If the Contractor fails to comply with any applicable laws, rules, or regulations, and that failure results in a site or worker contamination, the Contractor will be held solely responsible for all costs involved in any required corrective actions, and shall defend, indemnify, and hold harmless the District, pursuant to the indemnification provisions of the Contract, for all damages and other claims arising therefrom.

If lead disturbance is anticipated in the Work, only persons with appropriate accreditation, registrations, licenses, and training shall conduct this Work.

It shall be the responsibility of the Contractor to properly dispose of any and all waste products, including, but not limited to, paint chips, any collected residue, or any other visual material that may occur from the prepping of any painted surface. It will be the responsibility of the Contractor to provide the proper disposal of any hazardous waste by a certified hazardous waste hauler. This company shall be registered with the Department of Transportation (DOT) and shall be able to issue a current manifest number upon transporting any hazardous material from any school site within the District.

The Contractor shall provide the District with any sample results prior to beginning Work, during the Work, and after the completion of the Work. The District may request to examine, prior to the commencement of the Work, the lead training records of each employee of the Contractor.

4. Special Project Conditions

Structural steel members of this building were sampled during past projects at the site and are known to contain detectable concentrations of lead. It is not anticipated that the attachment of clamps onto the painted finishes will disturb the coating to the point of releasing dust or debris. However, in the event that paint dust or debris is released, the surfaces, including a sufficient area around the disturbed area, shall be HEPA-vacuumed clean of all dust and debris before releasing the area to any other trades or other occupants. Contractor shall disclose the release of paint to the Owner and Architect for their information.

THE CONTRACTOR HEREBY ACKNOWLEDGES, UNDER PENALTY OF PERJURY, THAT IT:

1. HAS RECEIVED NOTIFICATION OF POTENTIAL LEAD-BASED MATERIALS ON THE OWNER'S PROPERTY;

2. IS KNOWLEDGEABLE REGARDING AND WILL COMPLY WITH ALL APPLICABLE LAWS, RULES, AND REGULATIONS GOVERNING WORK WITH, AND DISPOSAL OF, LEAD.

THE UNDERSIGNED WARRANTS THAT HE/SHE HAS THE AUTHORITY TO SIGN ON BEHALF OF AND BIND THE CONTRACTOR. THE DISTRICT MAY REQUIRE PROOF OF SUCH AUTHORITY.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

DOCUMENT 00 45 46.07

IMPORTED MATERIALS CERTIFICATION

PROJECT/CONTRACT NO.: _____ between Yosemite Community College District ("District" or "Owner") and _____ Construction Co. ("Contractor" or "Bidder") ("Contract" or "Project").

This form shall be executed by the Contractor and by all entities that, in any way, provide or deliver and/or supply any soils, aggregate, or related materials ("Fill") to the Project Site. All Fill shall satisfy all requirements of any environmental review of the Project performed pursuant to the statutes and guidelines of the California Environmental Quality Act, section 21000 et seq. of the Public Resources Code ("CEQA"), and all requirements of section 17210 et seq. of the Education Code, including requirements for a Phase I environmental assessment acceptable to the State of California Department of Education and Department of Toxic Substance Control.

To the furthest extent permitted by California law, Contractor shall defend, indemnify, and hold harmless the District, its agents, representatives, officers, architects, employees, trustees, and volunteers (the "indemnified parties" from any and all losses, liabilities, claims, suits, and actions of any kind, nature, and description, including, but not limited to, attorneys; fees and costs, directly or indirectly arising out of, connected with, or resulting from the Work unless caused wholly by the sole negligence or willful misconduct of the indemnified parties.

Certification of:
□ Delivery Firm/Transporter □ Supplier □ Manufacturer
□ Wholesaler □ Broker □ Retailer
□ Distributor □ Other _____

Type of Entity
□ Corporation □ General Partnership
□ Limited Partnership □ Limited Liability Company
□ Sole Proprietorship □ Other _____

Name of firm ("Firm"): _____

Mailing address: _____

Addresses of branch office used for this Project: _____

If subsidiary, name and address of parent company: _____

_____

By my signature below, I hereby certify that I am aware of section 25260 of the Health and Safety Code and the sections referenced therein regarding the definition of hazardous material. I further certify on behalf of the Firm that all soils, aggregates, or related materials provided, delivered, and/or supplied or that will be provided, delivered, and/or supplied by this Firm to the Project Site are free of any and all hazardous material as defined in section 25260 of the Health and Safety Code. I further certify that I am authorized to make this certification on behalf of the Firm.

Date: _____

Proper Name of Contractor: _____

Signature: _____

By: _____

Its: _____

Section 25260 of the Health and Safety Code states in pertinent part that:

(d) "Hazardous material" means a substance or waste that, because of its physical, chemical, or other characteristics, may pose a risk of endangering human health or safety or of degrading the environment. "Hazardous material" includes, but is not limited to, all of the following: (1) A hazardous substance, as defined in Section 25281 or 25316. (2) A hazardous waste, as defined in Section 25117. (3) A waste, as defined in Section 470 or as defined in Section 13050 of the Water Code.

Section 25281 of the Health and Safety Code states in pertinent part that:

(g) "Hazardous substance" means either of the following: (1) All of the following liquid and solid substances, unless the department, in consultation with the board, determines that the substance could not adversely affect the quality of the waters of the state: (A) Substances on the list prepared by the Director of Industrial Relations pursuant to Section 6382 of the Labor Code. (B) Hazardous substances, as defined in Section 25316. (C) Any substance or material which is classified by the National Fire Protection Association (NFPA) as a flammable liquid, a class 11 combustible liquid, or a class 111-A combustible liquid. (2) Any regulated substance, as defined in subsection (2) of Section 6991 of Title 42 of the United States Code, as that section reads on January 1, 1989, or as it may subsequently be amended or supplemented.

Section 25316 of the Health and Safety Code states in pertinent part that:

"Hazardous substance" means: (a) Any substance designated pursuant to Section 1321 (b)(2)(A) of Title 33 of the United States Code. (b) Any element, compound, mixture, solution, or substance designated pursuant to Section 102 of the federal act (42 U.S.C. Sec.9602). (c) Any hazardous waste having the characteristics identified under or listed pursuant to Section 6921 of Title 42 of the United States Code, but not including any waste the regulation of which under the Solid Waste Disposal Act (42 U.S.C. Sec. 6901 et seq.) has been suspended by act of Congress. (d) Any toxic pollutant listed under Section 1317(a) of Title 33 of the United States Code. (e) Any hazardous air-pollutant listed under Section 7412 of Title 42 of the United States Code. (f) Any imminently hazardous chemical substance or mixture with respect to which the Administrator of the United States Environmental Protection Agency has taken action pursuant to Section 2606 of Title 15 of the United States Code. (g) Any hazardous waste or extremely hazardous waste as defined by Sections 25117 and 25115, respectively, unless expressly excluded.

Section 25117 of the Health and Safety Code states in pertinent part that:

(a) Except as provided in subdivision (d), "hazardous waste" means a waste that meets any of the criteria for the identification of a hazardous waste adopted by the department pursuant to Section 25141. (b) "Hazardous waste" includes, but is not limited to, RCRA hazardous waste. (c) Unless expressly provided otherwise, "hazardous waste" also includes extremely hazardous waste and acutely hazardous waste. (d) Notwithstanding subdivision (a), in any criminal or civil prosecution brought by a city or district attorney or the Attorney General for violation of this chapter, when it is an element of proof that the person knew or reasonably should have known of the violation, or violated the chapter willfully or with reckless disregard for the risk, or acted intentionally or negligently, the element of proof that the waste is hazardous waste may be satisfied by demonstrating that the waste exhibited the characteristics set forth in subdivision (b) of Section 25141.

Section 13050 of the Water Code states in pertinent part that:

(d) "Waste" includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal....
(p)(1) "Hazardous substance" means either of the following: (A) For discharge to surface waters, any substance determined to be a hazardous substance pursuant to Section 311 (b)(2) of the Federal Water Pollution Control Act (33 U.S.C. Sec. 1251 et seq.). (B) For discharge to groundwater, any substance listed as a hazardous waste or hazardous material pursuant to Section 25140 of the Health and Safety Code, without regard to whether the substance is intended to be used, reused, or discarded, except that "hazardous substance" does not include any substance excluded from Section 311 (b)(2) of the Federal Water Pollution Control Act because it is within the scope of Section 311(a)(1) of that act. (2) "Hazardous substance" does not include any of the following: (A) Nontoxic, nonflammable and non-corrosive storm water runoff drained from underground vaults, chambers, or manholes into gutters or storm sewers. (B) Any pesticide which is applied for agricultural purposes or is applied in accordance with a cooperative agreement authorized by Section 116180 of the Health and Safety Code, and is not discharged accidentally or for purposes of disposal, the application of which is in compliance with all applicable state and federal laws and regulations. (C) Any discharge to surface water of a quantity less than a reportable quantity as determined by regulations issued pursuant to Section 311 (b)(4) of the Federal Water Pollution Control Act. (D) Any discharge to land which results, or probably will result, in a discharge to groundwater if the amount of the discharge to land is less than a reportable quantity, as determined by regulations adopted pursuant to Section 13271, for substances listed as hazardous pursuant to Section 25140 of the Health and Safety Code. No discharge shall be deemed a discharge of a reportable quantity until regulations set a reportable quantity for the substance discharged.

END OF DOCUMENT

DOCUMENT 00 51 00

NOTICE OF AWARD TO CONTRACTOR

To: _____
(Contractor)
To: _____
(Address)

From: Governing Board ("Board") of Yosemite Community College District ("District")

BID #: 26-1957: MODESTO JUNIOR COLLEGE- EAST CAMPUS: FOOTBALL FIELD (MODULAR) PRESS BOX & ELEVATOR

Contractor has been awarded the referenced Contract on _____, 20___, by action of the District's Board.

The Contract Price is _____ Dollars ($_____), and includes alternates _____.

Three (3) copies of each of the Contract Documents (except Drawings) accompany this. Three (3) sets of the Drawings will be delivered separately or otherwise made available. Additional copies are available at cost of reproduction.

You must comply with the following conditions precedent within **TEN (10)** days of the date of this notice of award.

The Bidder to whom Contract is awarded shall execute and submit the following documents by 5:00 p.m. of the **TENTH (10th)** day following the date of this notice of award. Failure to properly and timely submit these documents entitles District to reject the bid as non-responsive.

1. Agreement: To be executed by successful Bidder. Submit three (3) copies, each bearing an original signature. **One signed copy must be acknowledged on an All-Purpose Acknowledgement form by a Notary Public.**

2. Performance Bond (100%): Submit two (2) copies on the form provided in the Contract Documents and fully executed as indicated on the form. **One copy must have issuer's signature acknowledged on an All- Purpose Acknowledgement form by a Notary Public. Also, a county clerk's certificate, verifying the surety's authority to write bonds must accompany bond.**

3. Payment Bond (100%) (Contractor's Labor and Material Bond): Submit two (2) copies on the form provided in the Contract Documents and fully executed as indicated on the form. **One copy must have issuer's signature acknowledged on an All-Purpose Acknowledgement form by a Notary Public. Also, a county clerk's certificate, verifying the surety's authority to write bonds must accompany bond.**

4. Insurance Certificates and Endorsements as required.
   Two copies of Certificate of Liability Insurance in the required limits and with an Additional Insured endorsement attached per Project Manual General Conditions paragraph 12.1.6. The Certificate of Insurance must contain a 30 day cancellation policy.

5. Workers' Compensation Certification.

Two copies of Proof of Worker's Compensation Insurance per Project Manual General Conditions paragraph 12.1.6.

6. The successful Bidder may substitute securities for any monies withheld by the District to ensure performance under the Contract, in accordance with the provisions of Section 22300 of the Public Contract Code.

7. Prevailing Wage and Related Labor Requirements Certification.

8. Drug-Free Workplace Certification.

9. Imported Materials Certification. (If relevant to Scope of Project)

Failure to comply with these conditions within the time specified will entitle District to consider your bid abandoned, to annul this, and to declare your Bid Security forfeited, as well as any other rights the District may have against the Contractor.

After you comply with those conditions, District will return to you one fully signed counterpart of the Agreement.

YOSEMITE COMMUNITY COLLEGE DISTRICT

BY: _____

NAME: _____

TITLE: _____

DOCUMENT 00 52 13

AGREEMENT

THIS AGREEMENT ("Agreement") IS MADE AND ENTERED INTO THIS _____ DAY OF _____, 20___, by and between the Yosemite Community College District ("District") and _____ _____ ("Contractor").

WITNESSETH: That the parties hereto have mutually covenanted and agreed, and by these presents do covenant and agree with each other, as follows:

1. The Work: Contractor agrees to furnish all tools, equipment, apparatus, facilities, labor, and material necessary to perform and complete in a good and workmanlike manner, the work of

BID #: 26-1957: MODESTO JUNIOR COLLEGE- EAST CAMPUS: FOOTBALL FIELD (MODULAR) PRESS BOX & ELEVATOR

The Work is reflected in the Drawings and Specifications in the Contract Documents and is identified by the signature of the parties to this Agreement. It is understood and agreed that the Work shall be performed and completed as required in the Contract Documents including, without limitation, the Drawings and Specifications, under the direction and supervision of, and subject to, the approval of the District or its authorized representative.

2. The Contract Documents: The complete Contract consists of all Contract Documents as defined in the General Conditions and incorporated herein by this reference. Any and all obligations of the District and Contractor are fully set forth and described in the Contract Documents. All Contract Documents are intended to cooperate so that any Work called for in one and not mentioned in the other or vice versa is to be executed the same as if mentioned in all Contract Documents.

3. Interpretation of Contract Documents: Should any question arise concerning the intent or meaning of Contract Documents, including the Drawings or Specifications, the question shall be submitted to the District for interpretation. If a conflict exists in the Contract Documents, Addenda shall govern over all other Contract Documents, and subsequent Addenda shall govern over prior Addenda only to the extend modified, which shall govern over this Agreement, which shall govern over the Special Conditions, which shall govern over any Supplemental Conditions, which shall govern over the General Conditions, which shall govern over the remaining Division 0 documents, which shall govern over Division 1 (General Requirements) Documents, which shall govern over remaining (technical) specification sections, which shall govern over figured dimensions, which shall govern over large-scale drawings, which shall govern over small-scale drawings. In no case shall a document calling for lower quality and/or quantity material or workmanship control. The decision of the District in the matter shall be final.

4. Time for Completion: It is hereby understood and agreed that the work under this contract shall be completed within **TWO HUNDRED-TWENTYFOUR (224)** calendar days ("Contract Time") from the date specified in the District's Notice to Proceed.

5. Completion-Extension of Time: Should the Contractor fail to complete this Contract, and the Work provided herein, within the time fixed for completion, due allowance being made for the contingencies provided for herein, the Contractor shall become liable to the District for all loss and damage that the District may suffer on account thereof. The Contractor shall coordinate its

work with the Work of all other contractors. The District shall not be liable for delays resulting from Contractor's failure to coordinate its Work with other contractors in a manner that will allow timely completion of Contractor's Work. Contractor shall be liable for delays to other contractors caused by Contractor's failure to coordinate its Work with the work of other contractors.

6. **Liquidated Damages**: Time is of the essence for all work under this Agreement. It is hereby understood and agreed that it is and will be difficult and/or impossible to ascertain and determine the actual damage that the District will sustain in the event of and by reason of Contractor's delay; therefore, Contractor agrees that it shall pay to the District the sum of ONE THOUSAND-FIVE HUNDRED dollars ($ 1,500.00) per day as liquidated damages for each and every day's delay beyond the time herein prescribed in finishing the Work.

It is hereby understood and agreed that this amount is not a penalty.

In the event that any portion of the liquidated damages is not paid to the District, the District may deduct that amount from any money due or that may become due the Contractor under this Agreement. The District's right to assess liquidated damages is as indicated herein and in the General Conditions.

The time during which the Contract is delayed for cause as hereinafter specified may extend the time of completion for a reasonable time as the District may grant. This provision does not exclude the recovery of damages for delay by either party under other provisions in the Contract Documents.

7. **Loss Or Damage**: The District and its authorized representatives shall not in any way or manner be answerable or suffer loss, damage, expense, or liability for any loss or damage that may happen to the Work, or any part thereof, or in or about the same during its construction and before acceptance, and the Contractor shall assume all liabilities of every kind or nature arising from the Work, either by accident, negligence, theft, vandalism, or any cause whatever; and shall hold the District and its authorized representatives harmless from all liability of every kind and nature arising from accident, negligence, or any cause whatever.

8. **Insurance and Bonds**: Contractor shall provide all required certificates of insurance, and payment and performance bonds as evidence thereof. Failure to maintain the required insurance coverage throughout the course of this project would void this agreement.

9. **Prosecution of Work**: If the Contractor should neglect to prosecute the Work properly or fail to perform any provisions of this contract, the District, may, pursuant to the General Conditions and without prejudice to any other remedy it may have, make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due the Contractor.

10. **Authority of Architect**: Contractor hereby acknowledges that the Architect (s), have authority to approve and/or stop Work if the Contractor’s Work does not comply with the requirements of the Contract Documents, Title 24 of the California Code of Regulations, and all applicable laws. The Contractor shall be liable for any delay caused by its non-compliant Work.

11. **Assignment of Contract**: Neither the Contract, nor any part thereof, nor any moneys due or to become due there under, may be assigned by the Contractor without the written approval of the District, nor without the written consent of the Surety on the Contractor's Performance Bond (the "Surety"), unless the Surety has waived in writing its right to notice of assignment.

12. **Classification of Contractor’s License**: Contractor hereby acknowledges that it currently holds valid Type “B” Contractor's license issued by the State of California, Contractor's State Licensing

Board, in accordance with division 3, chapter 9, of the Business and Professions Code and in the classification called for in the Contract Documents.

13. **Registration as Public Works Contractor:** The Contractor and all Subcontractors currently are registered as public works contractors with the Department of Industrial Relations, State of California, in accordance with Labor Code section 1771.4.

14. **Payment of Prevailing Wages**: The Contractor and all Subcontractors under the Contractor shall pay all workers on all Work performed pursuant to this Contract not less than the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work as determined by the Director of the Department of Industrial Relations, State of California, for the type of work performed and the locality in which the work is to be performed within the boundaries of the District, pursuant to sections 1770 et seq. of the California Labor Code.

15. This Project is subject to labor compliance monitoring and enforcement by the Department of Industrial Relations pursuant to Labor Code section 1771.4 and Title 8 of the California Code of Regulations Contractor specifically acknowledges and understands that it shall perform the Work of this Agreement while complying with all the applicable provisions of Division 2, Part 7, Chapter 1, of the Labor, including, without limitation, the requirement that the Contractor and all of its Subcontractors shall timely submit complete and accurate electronic certified payroll records as required by the Contract Documents, or the District may not issue payment.

16. **Contract Price**: In consideration of the foregoing covenants, promises, and agreements on the part of the Contractor, and the strict and literal fulfillment of each and every covenant, promise, and agreement, and as compensation agreed upon for the Work and construction, erection, and completion as aforesaid, the District covenants, promises, and agrees that it will well and truly pay and cause to be paid to the Contractor in full, and as the full Contract Price and compensation for construction, erection, and completion of the Work hereinabove agreed to be performed by the Contractor, the following price: _____ Dollars ($_____), in lawful money of the United States, which sum is to be paid according to the schedule provided by the Contractor and accepted by the District and subject to additions and deductions as provided in the Contract. This amount supersedes any previously stated and/or agreed to amount(s).

17. **Severability**: If any term, covenant, condition, or provision in any of the Contract Documents is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remainder of the provisions in the Contract Documents shall remain in full force and effect and shall in no way be affected, impaired, or invalidated thereby.

IN WITNESS WHEREOF, accepted and agreed on the date indicated above:

CONTRACTOR	**DISTRICT**
_____	YOSEMITE COMMUNITY COLLEGE DISTRICT
By: _____	By: _____
Title: _____	Title: _____

NOTE: If the party executing this Contract is a corporation, a certified copy of the by-laws, or of the resolution of the Board of Directors, authorizing the officers of said corporation to execute the Contract and the bonds required thereby must be attached hereto.

DOCUMENT 00 55 00

NOTICE TO PROCEED

Dated: _____, 20___

TO: _____
(Contractor)
ADDRESS: _____

_____

_____

BID #: 26-1957: MODESTO JUNIOR COLLEGE- EAST CAMPUS: FOOTBALL FIELD (MODULAR) PRESS BOX & ELEVATOR

PROJECT/CONTRACT NO.: _____ between the Yosemite Community College District and Contractor ("Contract").

You are notified that the Contract Time under the above Contract will commence to run on _____, 20___. By that date, you are to start performing your obligations under the Contract Documents. In accordance with the Agreement executed by Contractor, the date of completion is _____ _____, 20___.

You must submit the following documents by 5:00 p.m. of the TENTH (10th) calendar day following the date of this Notice to Proceed:

a. Contractor's preliminary schedule of construction.

b. Contractor's preliminary schedule of values for all of the Work.

c. Contractor's preliminary schedule of submittals, including Shop Drawings, Product and Equipment Data, Certificates and Samples submittals as hereinafter specified.

d. Contractor's Safety Plan specifically adapted for the Project.

e. A complete subcontractors list, including the name, address, telephone number, facsimile number, California State Contractors License number, classification, and monetary value of all Subcontracts.

Thank you. We look forward to a very successful Project.

YOSEMITE COMMUNITY COLLEGE DISTRICT

BY: _____

NAME: _____

TITLE: _____

DOCUMENT 00 56 00

ESCROW BID DOCUMENTATION

1. Requirement to Escrow Bid Documentation

a. Contractor shall submit, within seven (7) days after the date of the Notice of Award, one copy of all documentary information received or generated by Contractor, as specified herein. This material is referred to herein as "Escrow Bid Documentation". The Escrow Bid Documentation of the Contractor will be held in escrow for the duration of the Contract.

b. Contractor agrees, as a condition of award of this Contract, that the Escrow Bid Documentation constitutes all written information used in the preparation of its bid, and that no other written bid preparation information shall be considered in resolving disputes or claims. Contractor also agrees that nothing in the Escrow Bid Documentation shall change or modify the terms or conditions of the Contract Documents.

c. The Escrow Bid Documentation will not be opened by District except as indicated herein. The Escrow Bid Documentation will be used only for the resolution of change orders and claim disputes.

d. Contractor's submission of the Escrow Bid Documentation, as with the bonds and insurance documents required, is considered an essential part of the Contract Award. Should the Contractor fail to make the submission within the allowed time specified above, District may deem the Contractor to have failed to enter into the Contract, and the Contractor shall forfeit the amount of its bid security, accompanying the Contractor's bid, and District may award the Contract to the next lowest responsive bidder.

e. NO PAYMENTS WILL BE MADE, NOR WILL DISTRICT ACCEPT PROPOSED CHANGE ORDERS UNTIL THE ABOVE REQUIRED INFORMATION IS SUBMITTED AND APPROVED.

f. The Escrow Bid Documentation shall be submitted in person by an authorized representative of the Contractor to the District.

2. Ownership of Escrow Bid Documentation

a. The Escrow Bid Documentation is, and shall always remain, the property of Contractor, subject to review by District, as provided herein.

b. Escrow Bid Documentation constitutes trade secrets, not known outside Contractor's business, known only to a limited extent and only by a limited number of employees of Contractor, safeguarded while in Contractor's possession, extremely valuable to Contractor, and could be extremely valuable to Contractor's competitors by virtue of it reflecting Contractor's contemplated techniques of construction. Subject to the provisions herein, District agrees to safeguard the Escrow Bid Documentation, and all information contained therein, against disclosure to the fullest extent permitted by law.

3. Format and Contents of Escrow Bid Documentation

a. The Contractor may submit Escrow Bid Documentation in its usual cost-estimating format; a standard format is not required. The Escrow Bid Documentation shall be submitted in the language (e.g., English) of the Specification.

b. Escrow Bid Documentation must clearly itemize the estimated costs of performing the work of each bid item contained in the bid schedule, separating bid items into sub-items as required to present a detailed cost estimate and allow a detailed cost review. The Escrow Bid Documentation shall include all subcontractor bids or quotes supplier bids or

quotes, quantity takeoffs, crews, equipment, calculation of rates of production and progress, copies of quotes from subcontractors and suppliers, and memoranda, narratives, add/deduct sheets, and all other information used by the Contractor to arrive at the prices contained in the bid proposal. Estimated costs should be broken down into Contractor's usual estimate categories such as direct labor, repair labor, equipment ownership and operation, expandable materials, permanent materials, and subcontract costs as appropriate. Plant and equipment and indirect costs should be detailed in the Contractor's usual format. The Contractor's allocation of indirect costs, contingencies, markup, and other items to each bid item shall be identified.

c. All costs shall be identified. For bid items amounting to less than $ 100,000, estimated unit costs are acceptable without a detailed cost estimate, provided that labor, equipment, materials, and subcontracts, as applicable, are included and provided that indirect costs, contingencies, and mark up, as applicable, are allocated.

d. Bid Documentation provided by District should not be included in the Escrow Bid Documentation unless needed to comply with the following requirements.

4. Submittal of Escrow Bid Documentation

a. The Escrow Bid Documentation shall be submitted by the Contractor in a sealed container within seven (7) days after the date of Notice of Award. The container shall be clearly marked on the outside with the Contractor's name, date of submittal, project name and the words "Escrow Bid Documentation-Intended to be opened in the presence of Authorized Representatives of both District and Contractor".

b. By submitting Escrow Bid Documentation, Contractor represents that the material in the Escrow Bid Documentation constitutes all the documentary information used in preparation of the bid and that the Contractor has personally examined the contents of the Escrow Bid Documentation container and has found that the documents in the container are complete.

c. If Contractor's proposal is based upon subcontracting any part of the work, each subcontractor whose total subcontract price exceeds 5 percent of the total contract price proposed by Contractor, shall provide separate Escrow Documents to be included with those of Contractor. Those documents shall be opened and examined in the same manner and at the same time as the examination described above for Contractor.

d. If Contractor wishes to subcontract any portion of the work after Award, District retains the right to require Contractor to submit Escrow Documents for the Subcontractor before the subcontract is approved.

5. Storage, Examination and Final Disposition of Escrow Bid Documentation

a. The Escrow Bid Documentation will be placed in escrow, for the life of the Contract, in a mutually agreeable institution. The cost of storage will be paid by Contractor for the duration of the project until final Contract payment. The storage facilities shall be the appropriate size for all the Escrow Bid Documentation and located conveniently to both District's and Contractor's offices.

b. The Escrow Bid Documentation shall be examined by both District and Contractor, at any time deemed necessary by either District or Contractor, to assist in the negotiation of price adjustment and change orders or the settlement of disputes and claims. In the case of legal proceedings, Escrow Bid Documentation shall be used subject to the terms of an appropriate protective order if requested by Contractor and ordered by a court of competent jurisdiction. Examination of the Escrow Bid Documentation is subject to the following conditions:

(1) As trade secrets, the Escrow Bid Documentation is proprietary and confidential to the extent allowed by law.

(2) District and Contractor shall each designate, in writing to the other party seven (7) days prior to any examination, the names of representatives who are authorized to examine the Escrow Bid Documentation. No other person shall have access to the Escrow Bid Documentation.

(3) Access to the documents may take place only in the presence of duly designated representatives of the District and Contractor. If Contractor fails to designate a representative or appear for joint examination on seven (7) days notice, then the District representative may examine the Escrow Bid Documents alone upon an additional three (3) days notice if a representative of the Contractor does not appear at the time set.

(4) If a subcontractor has submitted sealed information to be included in the Escrow Bid Documents, access to those documents may take place only in the presence of a duly designated representative of the District, Contractor and that subcontractor. If that subcontractor fails to designate a representative or appear for joint examination on seven (7) days notice, then the District representative and/or the Contractor may examine the Escrow Bid Documentation without that subcontractor present upon an additional three (3) days notice if a representative of that subcontractor does not appear at the time set.

c. The Escrow Bid Documentation will be returned to Contractor at such times as the Contract has been completed and final settlement has been achieved.

DOCUMENT 00 57 00

ESCROW AGREEMENT FOR
SECURITY DEPOSITS IN LIEU OF RETENTION
Public Contact Code Section 22300

This Escrow Agreement ("Escrow Agreement") is made and entered into this ____ day of _____ _____, 20___, by and between the Yosemite Community College District (hereinafter "District"), whose address is 2201 Blue Gum Avenue, Modesto, California, and _____ whose place of business is located at _____, ("Contractor"); and _____ _____, a state or federally chartered bank in the state of California, whose place of business is located at _____, ("Escrow Agent").

For the consideration hereinafter set forth, District, Contractor, and Escrow Agent agree as follows:

Pursuant to section 22300 of Public Contract Code of the State of California, which is hereby incorporated by reference, Contractor has the option to deposit securities with Escrow Agent as a substitute for retention earnings required to be withheld by District pursuant to the Construction Contract No. _____ entered into between District and Contractor for the **BID #: 26-1957: MODESTO JUNIOR COLLEGE- EAST CAMPUS: FOOTBALL FIELD (MODULAR) PRESS BOX & ELEVATOR** in the amount of _____ dated, _____, 20___, (the "Contract"). Alternatively, on written request of Contractor, District shall make payments of the retention earnings directly to Escrow Agent. When Contractor deposits the securities as a substitute for Contract earnings, Escrow Agent shall notify District within ten (10) days of the deposit. The market value of the securities at the time of substitution and at all times from substitution until the termination of the Escrow Agreement shall be at least equal to the cash amount then required to be withheld as retention under terms of Contract between District and Contractor.

Securities shall be held in name of _____, and shall designate Contractor as beneficial owner.

1. District shall make progress payments to Contractor for those funds which otherwise would be withheld from progress payments pursuant to Contract provisions, provided that Escrow Agent holds securities in form and amount specified above.

2. When District makes payment of retention earned directly to Escrow Agent, Escrow Agent shall hold them for the benefit of Contractor until the time that the escrow created under this Escrow Agreement is terminated. Contractor may direct the investment of the payments into securities. All terms and conditions of this Escrow Agreement and the rights and responsibilities of the Parties shall be equally applicable and binding when District pays Escrow Agent directly.

3. Contractor shall be responsible for paying all fees for the expenses incurred by Escrow Agent in administering the Escrow Account, and all expenses of District. The District will charge Contractor $_____ for each of District's deposits to the escrow account. These expenses and payment terms shall be determined by District, Contractor, and Escrow Agent.

4. Interest earned on securities or money market accounts held in escrow and all interest earned on that interest shall be for sole account of Contractor and shall be subject to withdrawal by Contractor at any time and from time to time without notice to District.

5. Contractor shall have the right to withdraw all or any part of the principal in the Escrow Account only by written notice to Escrow Agent accompanied by written authorization from District to

Escrow Agent that District consents to withdrawal of amount sought to be withdrawn by Contractor.

6. District shall have the right to draw upon the securities and/or withdraw amounts from the Escrow Account in event of default by Contractor as determined solely by District. Upon seven (7) days written notice to Escrow Agent from District of the default, if applicable, Escrow Agent shall immediately convert the securities to cash and shall distribute the cash as instructed by District.

7. Upon receipt of written notification from District certifying that the Contract is final and complete, and that Contractor has complied with all requirements and procedures applicable to the Contract, Escrow Agent shall release to Contractor all securities and interest on deposit less escrow fees and charges of the Escrow Account. The escrow shall be closed immediately upon disbursement of all monies and securities on deposit and payments of fees and charges.

8. Escrow Agent shall rely on written notifications from District and Contractor pursuant to Paragraphs 5 through 8, inclusive, of this Escrow Agreement and District and Contractor shall hold Escrow Agent harmless from Escrow Agent's release and disbursement of securities and interest as set forth above.

9. Names of persons who are authorized to give written notice or to receive written notice on behalf of District and on behalf of Contractor in connection with the foregoing, and exemplars of their respective signatures are as follows:

On behalf of District:

_____
Title

_____
Name

_____
Signature

_____
Address

On behalf of Contractor:

_____
Title

_____
Name

_____
Signature

_____
Address

On behalf of Escrow Agent:

_____
Title

_____
Name

_____
Signature

_____
Address

At the time of Escrow Account is opened, District and Contractor shall deliver to Escrow Agent a fully executed of this Agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement by their proper officers on the date first set forth above.

On behalf of District:

Title

Name

Signature

Address

On behalf of Contractor:

Title

Name

Signature

Address

On behalf of Escrow Agent:

Title

Name

Signature

Address

DOCUMENT 00 61 13.13

PERFORMANCE BOND
(100% of Contract Price)

(Note: Bidders must use this form, NOT a surety company form.)

KNOW ALL PERSONS BY THESE PRESENTS:

That WHEREAS, the governing board ("Board") of the Yosemite Community College District, ("District") and _____, ("Principal)" have entered into a contract for the furnishing of all materials and labor, services and transportation, necessary, convenient, and proper to perform the following project:

BID #: 26-1957: MODESTO JUNIOR COLLEGE- EAST CAMPUS: FOOTBALL FIELD (MODULAR) PRESS BOX & ELEVATOR

which Contract dated _____, 20___, and all of the Contract Documents attached to or forming a part of the Contract, are hereby referred to and made a part hereof, and

And WHEREAS, said Principal is required under the terms of the Contract to furnish a bond for the faithful performance of the Contract;

NOW, THEREFORE, the Principal and _____ ("Surety") are held and firmly bound unto the Board of the District in the penal sum of _____ _____ DOLLARS ($_____), lawful money of the United States, for the payment of which sum well and truly to be made we bind ourselves, our heirs, executors, administrators, successors, and assigns jointly and severally, firmly by these presents, to perform all the work required to complete the Project and to pay to the District all damages the District incurs as a result of the Principal's failure to perform all the Work required to complete the Project.

The condition of the obligation is such that, if the above bounden Principal, his or its heirs, executors, administrators, successors, or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions, and agreements in the Contract and any alteration thereof made as therein provided, on his or their part to be kept and performed at the time and in the intent and meaning, and shall indemnify and save harmless the District, its trustees, officers and agents, as therein stipulated, then this obligation shall become null and void, otherwise it shall be and remain in full force and virtue.

And 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 hereunder or the specifications accompanying the same shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the Contract or to the work or to the specifications.

IN WITNESS WHEREOF, two (2) identical counterparts of this instrument, each of which shall for all purposes be deemed an original thereof, have been duly executed by the Principal and Surety above named, on the _____ day of _____, 20___.

(Affix Corporate Seal)

_____
Principal

_____
By

_____
Surety

_____
By

_____
Name of California Agent of Surety

_____
Address of California Agent of Surety

_____
Telephone Number of California Agent of Surety

Bidder must attach a Notarial Acknowledgment for all Surety's signatures and a Power of Attorney and Certificate of Authority for Surety. The California Department of Insurance must authorize the Surety to be an admitted surety insurer.

DOCUMENT 00 61 13.16

PAYMENTBOND
Contractor's Labor & Material Bond
(100% of Contract Price)

(Note: Bidders must use this form, NOT a surety company form.)

KNOW ALL PERSONS BY THESE PRESENTS:

That WHEREAS, the governing board ("Board") of the Yosemite Community College District, (or "District") and _____, ("Principal") have entered into a contract for the furnishing of all materials and labor, services and transportation, necessary, convenient, and proper to

BID #: 26-1957: MODESTO JUNIOR COLLEGE- EAST CAMPUS: FOOTBALL FIELD (MODULAR) PRESS BOX & ELEVATOR

which Contract dated _____, 20___, and all of the Contract Documents attached to or forming a part of the Contract, are hereby referred to and made a part hereof, and

WHEREAS, pursuant to law and the Contract, the Principal is required, before entering upon the performance of the work, to file a good and sufficient bond with the body by which the Contract is awarded in an amount equal to 100 percent (100%) of the Contract price, to secure the claims to which reference is made in sections 3179 through 3214 and 3247 through 3252 of the Civil Code of California, and division 2, part 7, of the Labor Code of California.

NOW, THEREFORE, WE, the Principal and_____, ("Surety") are held and firmly bound unto all laborers, material men, and other persons referred to in said statutes in the sum of _____ Dollars ($_____), lawful money of the United States, being a sum not less than the total amount payable by the terms of Contract, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, or assigns, jointly and severally, by these presents.

The condition of this obligation is that if the Principal or any of his or its subcontractors, of the heirs, executors, administrators, successors, or assigns of any, all, or either of them shall fail to pay for any labor, materials, provisions, provender, or other supplies, 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 Act with respect to such work or labor, that the Surety will pay the same in an amount not exceeding the amount herein above set forth, and also in case suit is brought upon this bond, will pay a reasonable attorney's fee to be awarded and fixed by the Court, and to be taxed as costs and to be included in the judgment therein rendered.
It is hereby expressly stipulated and agreed that this bond shall inure to the benefit of any and all persons, companies, and corporations entitled to file claims under sections 3179 through 3214 and 3247 through 3252 of the Civil Code, so as to give a right of action to them or their assigns in any suit brought upon this bond.

Should the condition of this bond be fully performed, then this obligation shall become null and void; otherwise it shall be and remain in full force and affect.

And the Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of Contract or the specifications accompanying the same shall in any

manner affect its obligations on this bond, and it does hereby waive notice of any such change, extension, alteration, or addition.

IN WITNESS WHEREOF, two (2) identical counterparts of this instrument, each of which shall for all purposes be deemed an original thereof, have been duly executed by the Principal and Surety above named, on the _____ day of _____, 20___.

(Affix Corporate Seal)

_____
Principal

_____
By

_____
Surety

_____
By

_____
Name of California Agent of Surety

_____
Address of California Agent of Surety

_____
Telephone Number of California Agent of Surety

Bidder must attach a Notarial Acknowledgment for all Surety's signatures and a Power of Attorney and Certificate of Authority for Surety. The California Department of Insurance must authorize the Surety to be an admitted surety insurer.

DOCUMENT 00 65 19.26

AGREEMENT AND RELEASE OF ANY AND ALL CLAIMS

THIS AGREEMENT AND RELEASE OF CLAIMS ("Agreement and Release") IS MADE AND ENTERED INTO THIS _____ DAY OF _____, 20___ by and between the Yosemite Community College District ("District") and _____ ("Contractor"), whose place of business is _____.

1. District and Contractor entered into PROJECT/CONTRACT NO.: _____ ("Contract" or "Project") in the County of _____, California.

2. The Work under the Contract has been completed.

NOW, THEREFORE, it is mutually agreed between District and Contractor as follows:

AGREEMENT

3. Contractor will only be assessed liquidated damages as detailed below:

Original Contract Sum	$_____
Modified Contract Sum	$_____
Payment to Date	$_____
Liquidated Damages	$_____
Payment Due Contractor	$_____

4. Subject to the provisions hereof, District shall forthwith pay to Contractor the undisputed sum of $_____ (_____Dollars and _____ Cents) under the Contract, less any amounts represented by any notice to withhold funds on file with District as of the date of such payment.

5. Contractor acknowledges and hereby agrees that there are no unresolved or outstanding claims in dispute against District arising from the performance of work under the Contract, except for the claims described in Paragraph 6 and continuing obligations described in Paragraph 8. It is the intention of the parties in executing this Agreement and Release that this Agreement and Release shall be effective as a full, final and general release of all claims, demands, actions, causes of action, obligations, costs, expenses, damages, losses and liabilities of Contractor against District, all its respective agents, employees, inspectors, assignees and transferees except for the Disputed Claim is set forth in Paragraph 6 and continuing obligations described in Paragraph 8 hereof.

6. The following claims are disputed (hereinafter, the "Disputed Claims") and are specifically excluded from the operation of this Agreement and Release:

Claim No.	Description of Claim	Amount of Claim Date Claim Submitted

[Insert information, including attachment if necessary]

7. Consistent with California Public Contract Code section 7100, Contractor hereby agrees that, in consideration of the payment set forth in Paragraph 4 hereof, Contractor hereby releases and forever discharges District, all its agents, employees, inspectors, assignees, and transferees from any and all liability, claims, demands, actions, or causes of action of whatever kind or nature arising out of or in any way concerned with the Work under the Contract.

8. Guarantees and warranties for the Work, and any other continuing obligation of Contractor, shall remain in full force and effect as specified in the Contract Documents.

9. To the furthest extent permitted by California law, Contractor shall defend, indemnify, and hold harmless the District, its agents, representatives, officers, consultants, employees, trustees, and volunteers (the "indemnified parties") from any and all losses, liabilities, claims, suits, and actions of any kind, nature, and description, including, but not limited to, attorneys' fees and costs, directly or indirectly arising out of, connected with, or resulting from the performance of the Contract unless caused wholly by the sole negligence or willful misconduct of the indemnified parties.

10. Contractor hereby waives the provisions of California Civil Code section 1542 which provides as follows:

> A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS WHICH THE CREDITOR DOES NOT KNOW OR SUSPECT TO EXIST IN HIS FAVOR AT THE TIME OF EXECUTING THE RELEASE, WHICH IF KNOWN BY HIM MUST HAVE MATERIALLY AFFECTED HIS SETTLEMENT WITH THE DEBTOR.

11. The provisions of this Agreement and Release are contractual in nature and not mere recitals and shall be considered independent and severable. If any such provision or any part thereof shall be at any time held invalid in whole or in part under any federal, state, county, municipal, or other law, ruling, or regulations, then such provision, or part thereof, shall remain in force and effect to the extent permitted by law, and the remaining provisions of this Agreement and Release shall also remain in full force and effect, and shall be enforceable.

12. All rights of District shall survive completion of the Work or termination of Contract, and execution of this Release.

* * * CAUTION: THIS IS A RELEASE - READ BEFORE EXECUTING * * *

YOSEMITE COMMUNITY COLLEGE DISTRICT

TITLE: _____

NAME: _____

SIGNATURE: _____

CONTRACTOR

TITLE: _____

NAME: _____

SIGNATURE: _____

END OF DOCUMENT

DOCUMENT 00 65 36

GUARANTEE FORM

_____("Contractor") hereby agrees that the **"describe work performed "** ("Work" of Contractor) which Contractor has installed for the Yosemite Community College District ("District") for the following project:

BID #: 26-1957: MODESTO JUNIOR COLLEGE- EAST CAMPUS: FOOTBALL FIELD (MODULAR) PRESS BOX & ELEVATOR

Specification No. and Description: _____

_____

has been performed in accordance with the requirements of the Contract Documents and that the Work as installed will fulfill the requirements of the Contract Documents.

The undersigned agrees to repair or replace any or all of such Work that may prove to be defective in workmanship or material together with any other adjacent Work that may be displaced in connection with such replacement within a period of _____ year(s) from the date of substantial completion as defined in Public Contract Code section 7107, subdivision (c), ordinary wear and tear and unusual abuse or neglect excepted.

In the event of the undersigned's failure to comply with the above-mentioned conditions within a reasonable period of time, as determined by the District, but not later than seven (7) days after being notified in writing by the District, the undersigned authorizes the District to proceed to have said defects repaired and made good at the expense of the undersigned. The undersigned shall pay the costs and charges therefor upon demand.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

Representatives to be contacted for service subject to terms of Contract:

NAME: _____

ADDRESS: _____

PHONE NO.: _____

END OF DOCUMENT

DOCUMENT 00 72 00

GENERAL CONDITIONS

1. CONTRACT TERMS AND DEFINITIONS

1.1. Definitions

Wherever used in the Contract Documents, the following terms shall have the meanings indicated, which shall be applicable to both the singular and plural thereof:

1.1.1. Addendum – A document issued by the Architect during the bidding period that modifies or supersedes portions of the Contract Documents.

1.1.2. Architect – The individual, partnership, corporation, joint venture, or any combination thereof, named Architect, who will have the rights and authority, assigned to the Architect in the Contract Documents. The term Architect means the District's Architect on this project or its authorized representative.

1.1.3. Bid Date – Shall mean the day on which bid proposals for a project are opened.

1.1.4. Bidder – Any person or business entity acting directly or through an authorized representative who submits a proposal for the work.

1.1.5. Change Order – A written order to the Contractor authorizing an addition to, deletion from, or revision in the Work, and/or authorizing an adjustment in the Contract Price or Contract Time.

1.1.6. Construction Change Directive – A written order prepared and issued by the District, the Construction Manager, and/or the Architect and signed by the District, directing a change in the Work.

1.1.7. Construction (Project) Inspector – The individual(s) retained by the District in accordance with Title 24 of the California Code of Regulations to monitor and inspect the Project.

1.1.8. Construction Manager – The individual, partnership, corporation, joint venture, or any combination thereof, or its authorized representative, named as such by the District. If no Construction Manager is used on the Project that is the subject of this Contract, then all references to Construction Manager herein shall be read to refer to District.

1.1.9. Construction Schedule – The progress schedule of construction of the Project as provided by Contractor and approved by District.

1.1.10. Contract – The Contract Documents which collectively represent the entire agreement between the District and the Contractor, and which supersede any prior negotiations, representations, or agreements either written or oral.

1.1.11. Contract Documents – The Contract consists exclusively of the documents evidencing the agreement of the District and Contractor, identified as the Contract Documents. The Contract Documents consist of the following documents:

Notice to Bidders

Instruction to Bidders
Bid Form and Proposal
Bid Bond
Designated Subcontractor List
Non-collusion Affidavit
Notice to Proceed
Agreement
Escrow Agreement for Security Deposits in Lieu of Retention
Performance Bond
Payment Bond (Contractor's Labor and Material Bond)
Division 00
Division 01
Worker's Compensation Certification
Prevailing Wage Certification
Drug-Free Work Place Certification
Hazardous Material Certification
Lead-Based Paint Certification
Imported Materials Certification (if relevant to Scope of Project)
All plans, Technical Specifications, and Drawings
Any and all addenda to any of the above documents
Any and all change orders or written modifications to the above documents if approved in writing by the District

1.1.12. Contractor – The person or business entity that has entered into this Contract with the District.

1.1.13. Day(s): Unless otherwise designated, day(s) means calendar day(s).

1.1.14. District – The Yosemite Community College District for which the Work is performed. The governing board of the District or its designees will act for the District in all matters pertaining to the Contract. The District may, at any time, direct the Construction Manager or the Architect to communicate with or direct the Contractor on matters for which the Contract Documents indicate the District will communicate with or direct the Contractor.

1.1.15. DSA – Division of the State Architect.

1.1.16. Field Instruction – A written communication to the Contractor. The field instruction may reject work, direct additional work, direct work under dispute or issue coordination communications under the District's and/or Construction Manager's signature.

1.1.17. Plans – The drawings prepared by the Architect and approved by the District which includes elevations, sections, details, schedules, diagrams, information, notes or reproductions or any of these, and which show the location character, dimensions, or details of the work.

1.1.18. Prevailing Wages – The general prevailing rate of wages identified by the Director of the Department of Industrial Relations of the State of California pursuant to Section 1770 of the Labor Code.

1.1.19. Project – The total work required by the Contract.

1.1.20. Project Manager – The on-site representative of the Construction Management organization.

1.1.21. Provide – Shall include "provide and install and complete in place," that is, "furnish and install," unless specifically stated otherwise.

1.1.22. Site – The area specified in the Contract for the project and the area available for the Contractor's operation.

1.1.23. Specifications – The instructions and requirements prepared by the Architect which complement the Plans and describe the manner of performing the work or the quantities, qualities and types of materials to be furnished.

1.1.24. Subcontractor – Any person or business entity that contracts with Contractor to furnish either labor and materials or equipment, or labor only.

1.1.25. Substantial Completion – The day the Work is completed within the Contract Time for Completion provided under Section 00530, Agreement, Article 4 and project can be used for its intended use.

1.1.26. Work – All labor, materials, equipment, appliances, supervision, and services required by, or reasonably inferred from, the Contract Documents, that are necessary for the construction and completion of the Project.

1.2 Contract, Contract Documents:

The Contract consists exclusively of the documents evidencing the agreement of the District and Contractor, identified as the Contract Documents. The Contract Documents consist of the following documents:

Notice to Bidders
Instructions to Bidders
Bid Form and Proposal
Bid Bond
Designated Subcontractors List
Non-collusion Affidavit
Notice to Proceed
Agreement
Escrow Agreement for Security Deposits in Lieu of Retention
Performance Bond
Payment Bond (Contractor's Labor & Material Bond)
Division 00
Division 01
Workers' Compensation Certification
Prevailing Wage Certification
Drug-Free Workplace Certification
Hazardous Material Certification
Lead-Based Paint Certification
Imported Materials Certification (if relevant to Scope of Project)
All Plans, Technical Specifications, and Drawings
Any and all addenda to any of the above documents
Any and all change orders or written modifications to the above documents if approved in writing by the District

1.3 Laws Concerning the Contract

This Contract is entered into pursuant to and is subject to the laws of California.

1.4. No Oral Agreements

No oral agreement or conversation with any officer, agent, or employee of District, either before or after execution of Contract, shall affect or modify any of the terms or obligations contained in any of the documents comprising the Contract.

1.5. No Assignment

Contractor shall not assign this Contract or any part thereof including, without limitation, any services or money to become due hereunder without the prior written consent of the District. Assignment without District's prior written consent shall be null and void.

1.6. No Waiver

The failure of District in any one or more instances to insist upon strict performance of any of the terms of this Contract or to exercise any option herein conferred shall not be construed as a waiver or relinquishment to any extent of the right to assert or rely upon any such terms or option on any future occasion. No action or failure to act by the District, Architect, or Construction Manager shall constitute a waiver of any right or duty afforded the District under the Contract, nor shall any action or failure to act constitute an approval of or acquiescence in any breach there under, except as may be specifically agreed in writing.

1.7. Materials and Work

1.7.1. Except as otherwise specifically stated in this Contract, Contractor shall provide and pay for all materials, labor, tools, equipment, transportation, superintendence, temporary constructions of every nature, and all other services and facilities of every nature whatsoever necessary to execute and complete this Contract within the Contract Time.

1.7.2. Unless otherwise specified, all materials shall be new and the best of their respective kinds and grades as noted or specified, and workmanship shall be of good quality.

1.7.3. Materials shall be furnished in ample quantities and at such times as to insure uninterrupted progress of Work and shall be stored properly and protected as required.

1.7.4. For all materials and equipment specified or indicated in the Drawings, the Contractor shall provide all labor, materials, equipment, and services necessary for complete assemblies and complete working systems. Incidental items not indicated on Drawings, nor mentioned in the Specifications, that can legitimately and reasonably be inferred to belong to the Work described, or be necessary in good practice to provide a complete assembly or system, shall be furnished as though itemized here in every detail. In all instances, material and equipment shall be installed in strict accordance with each manufacturer's most recent published recommendations and specifications.

1.7.5. Contractor warrants good title to all material, supplies, and equipment installed or incorporated in Work.

1.7.6. Title to new materials and/or equipment for the Work of this Contract and attendant liability for its protection and safety shall remain with Contractor until incorporated in the Work of this Contract and accepted by District.

2. DISTRICT

2.1. Occupancy

District reserves the right to occupy portions of the Project at any time before substantial completion. Neither the District's Final Acceptance, the making of Final Payment, any provision in Contract Documents, nor the use or occupancy of the Work, in whole or in part, by District shall constitute acceptance of Work not in accordance with the Contract Documents nor relieve the Contractor or the Contractor's Performance Bond Surety from liability with respect to any warranties or responsibility for faulty or defective Work or materials, equipment and workmanship incorporated therein.

2.2. District's Right to Perform Work

If the Contractor should neglect to prosecute the Work properly or fail to perform any provisions of this contract, the District, after **THREE (3)** days written notice to the Contractor, may, without prejudice to any other remedy it may have, make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due the Contractor.

3. ARCHITECT

3.1. The Architect shall represent the District during the Project and will observe the progress and quality of the Work on behalf of the District. Architect shall have the authority to act on behalf of District to the extent expressly provided in the Contract Documents and to the extent determined by District. Architect shall have authority to reject materials, workmanship, and/or the Work whenever rejection may be necessary, in Architect's reasonable opinion, to insure the proper execution of the Contract.

3.2. Architect shall, with the District and on behalf of the District, determine the amount, quality, acceptability, and fitness of all parts of the Work, and interpret the Specifications, Drawings, and shall, with the District, interpret all other Contract Documents.

3.3. Architect shall have all authority and responsibility established by law, including title 24 of the California Code of Regulations.

3.4. Contractor shall provide the District and the Construction Manager with a copy of all written communication between Contractor and Architect at the same time as that communication is made to Architect, including, without limitation, all RFIs, correspondence, submittals, claims, and proposed change orders.

4. CONSTRUCTION MANAGER

4.1. If a Construction Manager is used on this Project ("Construction Manager" or "CM"), the Construction Manager will provide administration of the Contract on the District's behalf. After execution of the Contract and Notice to Proceed, all correspondence and/or instructions from Contractor, the Architect and/or District shall be forwarded through the Construction Manager. The Construction Manager will not be responsible for and will not have control or charge of construction means, methods, techniques, sequences, or

procedures or for safety precautions in connection with the Work, which shall all remain the Contractor's responsibility.

4.2. The Construction Manager, however, will have authority to reject materials and/or workmanship not conforming to the Contract Documents, as determined by the District, the Architect, and/or the Project Inspector. He shall also have the authority to require special inspection or testing of any portion of the Work, whether it has been fabricated, installed, or fully completed. Any decision made by the Construction Manager, in good faith, shall not give rise to any duty or responsibility of the Construction Manager to the Contractor, any Subcontractor, their agents, employees, or other persons performing any of the Work.

4.3. If the District does not use a Construction Manager on this Project, all references to Construction Manager or CM shall be read as District.

5. INSPECTOR, INSPECTIONS, AND TESTS

5.1. Project Inspector

5.1.1. One or more inspector (s), including special inspector(s), as required, will be assigned to the Work by District, in accordance with requirements of title 24, part 1, of the California Code of Regulations, to enforce and monitor compliance with Plans and Specifications for the Project as and where applicable. Inspector of Records/ Project Inspector shall submit daily reports to the Construction Manager on a weekly basis.

5.1.2. No Work shall be carried on except with the knowledge and under the inspection of the inspector (s). The inspector (s) shall have free access to any or all parts of Work at any time. Contractor shall furnish inspector(s) reasonable opportunities for obtaining such information as may be necessary to keep inspector(s) fully informed respecting progress and manner of work and character of materials. Inspection of Work shall not relieve Contractor from an obligation to fulfill this Contract. Inspector(s) are authorized to stop work whenever the Contractor and/or its Subcontractor(s) are not complying with the Contract Documents. Any work stoppage by the Inspector of Records/ Project Inspector(s) shall be without liability to the District. Contractor shall instruct its Subcontractors and employees accordingly. Contractor shall provide the Inspector of Records/Project Inspector forty-eight (48) hours notification prior to the time the inspection is needed.

5.1.3. If Contractor and/or any Subcontractor requests that the Project Inspector(s) perform any inspection off-site, this shall only be done if it is allowable pursuant to applicable regulations, if the Project Inspector(s) agree to do so, and at the expense of the Contractor.

5.2. Tests and Inspections

5.2.1. Tests and Inspections shall comply with title 24, part 1, California Code of Regulations, group 1, article 5, section 4-335, and with the provisions of the Specifications.

5.2.2. The District will select an independent testing laboratory to conduct the tests. Selection of the materials required to be tested shall be by the laboratory or the District's representative and not by the Contractor. The Contractor shall notify

the District's representative forty-eight (48) hours in advance of its readiness for required observation or inspection.

5.3. Costs for After Hours and/or Off-Site Inspections

If the Contractor performs Work outside the Inspector's regular working hours or requests the Inspector to perform inspections off Site, costs of any inspections required outside regular working hours or off Site shall be borne by the Contractor and may be invoiced to the Contractor by the District and deducted from the next Progress Payment.

6. CONTRACTOR

Contractor shall construct the Work for the Contract price including any adjustment(s) to the Contract Price pursuant to provisions herein regarding changes to the Contract Price. Except as otherwise noted, Contractor shall provide and pay for all labor, materials, equipment, permits, fees, licenses, facilities, and services necessary for the proper execution and completion of the Work.

6.1. Status of Contractor

Contractor is and shall at all times be deemed to be an independent contractor and shall be wholly responsible for the manner in which it performs the services required of it by the Contract Documents. Nothing herein contained shall be construed as creating the relationship of employer and employee, or principal and agent, between the District, or any of the District's employees or agents, and Contractor or any of Contractor's agents or employees. Contractor assumes exclusively the responsibility for the acts of its employees as they relate to the services to be provided during the course and scope of their employment. Contractor, its agents, and its employees shall not be entitled to any rights or privileges of District employees. District shall be permitted to monitor the Contractor's activities to determine compliance with the terms of this Contract.

6.1.2. As required by law, Contractor and all Subcontractors shall be properly licensed and regulated by the Contractor's State License Board, 3132 Bradshaw Road, Post Office Box 2600, Sacramento, California 98826, http://www.cslb.ca.gov.

6.2. Contractor's Supervision

6.2.1. During progress of the Work, Contractor shall keep on the Premises, and at all other locations where any Work related to the Contract is being performed, a competent project manager and superintendent who are employees of the Contractor, to whom the District does not object. The Contractor's project manager and superintendent shall each represent Contractor, and all directions given to Contractor's project manager and/or superintendent shall be as binding as if given to Contractor.

6.3. Duty to Provide Fit Workers

6.3.1. Contractor and Subcontractor(s) shall at all times enforce strict discipline and good order among their employees and shall not employ or work any unfit person or anyone not skilled in work assigned to that person. It shall be the responsibility of Contractor to ensure compliance with this requirement.

6.3.2. Any person in the employ of Contractor or Subcontractor(s) whom District may deem incompetent or unfit shall be excluded from working on the Project and

shall not again be employed on the Project except with the prior written consent of District.

6.4. Documents On Work

6.4.1. Contractor shall keep on the Work Site at all times one legible copy of all Contract Documents, including Addenda and Change Orders, all approved Drawings, Plans, Schedules, and Specifications. These documents shall be kept in good order and available to District, Construction Manager, Architect, Architect 's representatives, the Project Inspector(s), and all authorities having jurisdiction.

6.4.2. Contractor must maintain, at a minimum, or at least one (1) set of daily job reports on the Project. These must be prepared by the Contractor's employee(s) who are present on Site, and must include, at a minimum, a brief description of all Work performed on that day and summary of all other pertinent events and/or occurrences. Daily reports are to be submitted to the Construction Manager on a daily basis.

6.4.3. Daily Job Reports.

6.4.3.1. Contractor shall maintain, at a minimum, at least one (1) set of Daily Job Reports on the Project. These must be prepared by the Contractor's employee(s) who are present on Site, and must include, at a minimum, the following information:

6.4.3.1.1. A brief description of all Contract Work performed on that day.
6.4.3.1.2. A brief description of all Change Order Work performed that day with a list of each employee working on Change Order Work and the total hours worked on Change Order Work for each employee.
6.4.3.1.3. A summary of all other pertinent events and/or occurrences on that day.
6.4.3.1.4. The weather conditions on that day.
6.4.3.1.5. A list of all Subcontractor(s) working on that day,
6.4.3.1.6. A list of each Contractor employee working on that day and the total hours worked for each employee.
6.4.3.1.7. A complete list of all equipment on Site that day, whether in use or not.
6.4.3.1.8. A complete list of all materials, supplies, and equipment delivered on that day.
6.4.3.1.9. A complete list of all inspections and tests performed on that day.

6.5. Preservation of Records

The District shall have the right to examine and audit all daily job reports of Contractor's project manager(s), project superintendent(s), and/or project foreperson(s), all certified payroll records and/or related documents including, without limitation, payroll, payment, timekeeping and tracking documents; all books, estimates, records, contracts, documents, bid documents, bid cost data, Contractor's job cost reports, subcontract job cost reports, and other data of the Contractor, any Subcontractor, and/or supplier, including computations and projections related to bidding, negotiating, pricing, or performing the Work or Contract modification, in order to evaluate the accuracy,

completeness, and currency of the cost, manpower, coordination, supervision, or pricing data at no additional cost to the District. These documents may be duplicative and/or be in addition to any Bid Documents held in escrow by the District. The Contractor shall make available at its office at all reasonable times the materials described in this paragraph for the examination, audit, or reproduction until three (3) years after final payment under this Contract. Notwithstanding the provisions above, Contractor shall provide any records requested by any governmental agency, if available, after the time set forth above.

6.6. Obtaining of Permits and Licenses

Contractor shall secure and pay for all permits, licenses, and certificates necessary for prosecution of Work before the date of the commencement of the Work or before the permits, licenses, and certificates are legally required to continue the Work without interruption. The Contractor, acting in the name of the District, shall obtain and pay, only when legally required, for all licenses, permits, inspections, and inspection certificates required to be obtained from or issued by any authority having jurisdiction over any part of the Work included in the Contract. All permits, licenses, and certificates shall be delivered to District before demand is made for final payment.

6.7. Work to Comply with Applicable Laws and Regulations

6.7.1. Contractor shall comply will all applicable mitigation measures, if any, adopted by any public agency with respect to this Project pursuant to the California Environmental Quality Act (Public Resources Code section 21000 et. Seq.)

6.7.2. Where Specifications or Drawings state that materials, processes, or procedures must be approved by the DSA, State Fire Marshall, or other body or agency, Contractor shall be responsible for satisfying requirements of such bodies or agencies.

6.8. Safety/Protection of Persons and Property

6.8.1. The Contractor will be solely and completely responsible for conditions of the Work Site, including safety of all persons and property during performance of the Work. This requirement will apply continuously and not be limited to normal working hours.

6.8.2. Contractor shall be responsible for all damages to persons or property that occur as a result of its fault or negligence in connection with the prosecution of this Contract and shall take all necessary measures and be responsible for the proper care and completion and final acceptance by District. All Work shall be solely at Contractor's risk with the exception of damage to the Work caused by "acts of God" as defined in Public Contract Code section 7105.

6.8.3. Contractor shall take, and require Subcontractors to take, all necessary precautions for safety of workers on the Project and shall comply with all applicable federal, state, local, and other safety laws, standards, orders, rules, regulations, and building codes to prevent accidents or injury to persons on, about, or adjacent to premises where Work is being performed and to provide a safe and healthful place of employment.

6.8.4. All salvage materials will become the property of the Contractor and shall be removed from the Site unless otherwise called for in the Contract Documents.

However, the District reserves the right to designate certain items of value that shall be turned over to the District unless otherwise directed by District.

6.8.5. All connections to public utilities and/or existing on-site services shall be made and maintained in such a manner as to not interfere with the continuing use of same by the District during the entire progress of the Work.

6.8.6. The Contractor shall protect and preserve the Work from all damage or accident, providing any temporary roofs, window and door coverings, boxing, or other construction as required by the Architect. The Contractor shall be responsible for existing structures, walks, roads, trees, landscaping, and/or improvements in working areas; and shall provide adequate protection therefore. Contractor, prior to the start of any on site work, is to document existing conditions surrounding the site in the form of pictures or video and provide a copy to the District. If temporary removal is necessary of any of the above items, or damage occurs due to the Work, the Contractor shall replace same at his expense with same kind, quality, and size of Work or item damaged. This shall include any adjoining property of the District and others.

6.8.7. Contractor, Contractor's employees, Subcontractors, Subcontractors' employees, or any person associated with the Work shall conduct themselves in a manner appropriate for a Community College site. No verbal or physical contact with neighbors, students, and faculty, profanity, or inappropriate attire or behavior will be permitted. District may request that non-complying persons be permanently removed from Project Site.

6.8.8. In the event that the Contractor enters into any agreement with owners of any adjacent property to enter upon the adjacent property for the purpose of performing the Work, Contractor shall fully indemnify, defend, and hold harmless each person, entity, firm, or agency that owns or has any interest in adjacent property. The form and content of the agreement of indemnification shall be approved by the District prior to the commencement of any Work on or about the adjacent property. The Contractor shall also indemnify the District as provided in the indemnification provision herein. These provisions shall be in addition to any other requirements of the owners of the adjacent property.

6.9. Working Evenings and Weekends

Contractor may be required to work evenings and/or weekends at no additional cost to the District. Contractor shall give the District seventy-two (72) hours' notice prior to performing any evening and/or weekend work. Contractor shall perform all evening and/or weekend work only upon District's approval and in compliance with all applicable rules, regulations, laws, and local ordinances including, without limitation, all noise and light limitations. Contractor shall reimburse the District, either through Change Order or otherwise, for any charges by the Inspector necessitated by the Contractor's evening and/or weekend work.

6.10. Cleaning Up

6.10.1. The Contractor shall provide all labor, materials, and equipment necessary for protecting the Work, all Community College occupants, furnishings, equipment, and building structure from damage until its completion and final acceptance by District. Dust barriers shall be provided to isolate dust and dirt from construction operations. At completion of the Work and portions thereof, Contractor shall

clean to the original state any areas beyond the Work area that become dust laden as a result of the Work. The Contractor must erect the necessary warning signs and barricades to insure the safety of all Community College occupants. The Contractor at all times must maintain good housekeeping practices to reduce the risk of fire damage and must make a fire extinguisher, fire blanket, and/or fire watch, as applicable, available at each location where cutting, braising, soldering, and/or welding is being performed or where there is an increased risk of fire.

7. SUBCONTRACTORS

7.1. No contractual relationship exists between the District and any Subcontractor, supplier, or sub-subcontractor by reason of this Contract.

7.2. Contractor agrees to bind every Subcontractor by terms of Contract as far as those terms are applicable to Subcontractor's work including, without limitation, all provisions and requirements of the District's Labor Compliance Program ("LCP"), if an LCP is in force on this Project. If Contractor shall subcontract any part of this Contract, Contractor shall be as fully responsible to District for acts and omissions of any Subcontractor and of persons either directly or indirectly employed by any Subcontractor, as it is for acts and omissions of persons directly employed by Contractor. The divisions or sections of the Specifications are not intended to control the Contractor in dividing the Work among Subcontractors or limit the work performed by any trade.

7.3. Contractor is directed to familiarize itself with sections 4100 through 4114 of the Public Contract Code of the State of California, as regards subletting and subcontracting, and to comply with all applicable requirements therein. In addition, Contractor is directed to familiarize itself with sections 1720 through 1861 of the Labor Code of the State of California, as regards the payment of prevailing wages and related issues, and to comply with all applicable requirements therein all including, without limitation, section 1775 and the Contractor's and Subcontractors' obligations and liability for violations of prevailing wage law and other applicable laws.

8. OTHER CONTRACTS/CONTRACTORS

8.1. District reserves the right to let other contracts in connection with the Project. Contractor shall afford other contractors reasonable opportunity for introduction and storage of their materials and execution of their work and shall properly coordinate and connect Contractor's Work with the work of other contractors.

9. DRAWINGS AND SPECIFICATIONS

9.1. Specifications

9.1.1. Materials or Work described in words that so applied have a well-known technical or trade meaning shall be deemed to refer to recognized standards.

9.1.2. Trade Name or Trade Term. It is not the intention of this Contract to go into detailed descriptions of any materials and/or methods commonly known to the trade under "trade name" or "trade term." The mere mention or notation of "trade name" or "trade term" shall be considered a sufficient notice to Contractor that it will be required to complete the work so named, complete, finished, and operable, with all its appurtenances, according to the best practices of the trade.

9.1.3. The naming of any material and/or equipment shall mean furnishing and installing of same, including all incidental and accessory items thereto and/or labor therefore, as per best practices of the trade(s) involved, unless specifically noted otherwise.

9.1.4. Contract Documents are complementary, and what is called for by one shall be binding as if called for by all. As such, Drawings and Specifications are intended to be fully cooperative and to agree. However, if Contractor observes that Drawings and Specifications are in conflict, Contractor shall promptly notify District and Architect in writing, and any necessary changes shall be made as provided in the Contract Documents.

9.1.5. Drawings and Specifications are intended to comply with all laws, ordinances, rules, and regulations of constituted authorities having jurisdiction, and where referred to in the Contract Documents, the laws, ordinances, rules, and regulations shall be considered as a part of the Contract within the limits specified. Contractor shall bear all expense of correcting work done contrary to said laws, ordinances, rules, and regulations.

9.2. Ownership of Drawings

All copies of Plans, Drawings, Designs, Specifications, and copies of other incidental Architect and engineering work, or copies of other Contract Documents furnished by District, are the property of District. They are not to be used by Contractor in other work and, with the exception of signed sets of Contract Documents, are to be returned to District on request at completion of Work, or may be used by District as it may require without any additional costs to District. Neither the Contractor nor any Subcontractor, or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications, and other documents prepared by the Architect. District hereby grants the Contractor, Subcontractors, sub-subcontractors, and material or equipment suppliers a limited license to use applicable portions of the Drawings prepared for the Project in the execution of their Work under the Contract Documents.

9.3. Detail Drawings and Instructions

9.3.1. In case of ambiguity, conflict, or lack of information, District will furnish clarifications with reasonable promptness.

9.3.2. Should any clarification, in the opinion of Contractor, cause an increase in the Contract Price, Contractor my request a change in the Contract Price and/or Contract. Any request for a change shall be according to the applicable procedures indicated herein.

9.4. Interpretation of Contract Requirements

9.4.1. Correlation. Contract Documents shall be interpreted as being complementary, requiring a complete project. Any requirement occurring in any one of the Contract Documents is as binding as though occurring in all Contract Documents. Generally, the Specifications address quality, types of materials and Contract Conditions, while the Plans show placement, sizes, and fabrication details of materials.

9.4.2. Conflicts. In the event of a conflict in the Contract Documents, the priorities stated below shall govern:

a. Addenda shall govern over all other Contract Documents, and subsequent Addenda shall govern over prior Addenda only to the extent modified.

b. Addenda shall govern over the Contract Agreement.

c. Agreement shall govern over Contract Special Conditions.

d. Special Conditions shall govern over Contract Supplemental Conditions.

e. Contract Supplemental Conditions shall govern over Division 0 General Conditions

f. Division 0 Contract General Requirements shall govern over remaining Division 0 documents.

g. Remaining Division 0 documents shall govern over Division 1 (General Requirements) documents.

h. Contract General Requirements shall govern over all sections of the technical Specifications.

i. In case of conflict between Plans and Specifications, the Specifications shall govern.

j. Conflicts within the Plans:

i. Schedules, when identified as such, shall govern over all other portions of the Plans.
ii. Specific notes shall govern over all other notes and all other portion of the Plans except the schedules described in Article 9.4.2 j, I above.
iii. Figured dimensions shall govern over larger scale drawings which shall govern over smaller scale drawings.
iv. Figured or numerical dimensions shall govern over dimensions obtained by scaling.
v. In the event the provisions of codes, safety orders, Contract Documents, referenced manufacturers' specifications or industry standards are in conflict, the more restrictive or higher quality shall govern.

10. CONTRACTOR'S SUBMITTALS AND SCHEDULES

Contractor's submittals shall comply with the provisions and requirements of the Specifications herein.

10.1. Schedule of Work, Schedule of Submittals, and Schedule of Values

10.1.1. Within **TEN (10)** days after the date of the Notice to Proceed (unless otherwise specified in the Specifications), the Contractor shall prepare and submit to the District for review, in a form supported by sufficient data to substantiate its accuracy as the District may require:

10.1.1.1. **Preliminary (Initial) Schedule.** A preliminary (initial) schedule of construction is to be submitted as detailed in the Construction Specifications.

10.1.1.2. **Preliminary Schedule of Values.** A preliminary schedule of values for all of the Work, which must include quantities and prices of items aggregating the Contract Price and must subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. The preliminary schedule of values shall include, at a minimum, the following information and the following structure:

10.1.1.2.1 Divided into at least the following categories:

- **10.1.1.2.1.1** General Conditions
- **10.1.1.2.1.2** Mobilization and Layout
- **10.1.1.2.1.3** Submittals
- **10.1.1.2.1.4** Bonds and Insurance
- **10.1.1.2.1.5** Contract Allowances
- **10.1.1.2.1.6** Division 2
- **10.1.1.2.1.7** Division 3
- **10.1.1.2.1.8** Division 4
- **10.1.1.2.1.9** Division 5
- **10.1.1.2.1.10** Division 6
- **10.1.1.2.1.11** Division 7
- **10.1.1.2.1.12** Division 8
- **10.1.1.2.1.13** Division 9
- **10.1.1.2.1.14** Division 10
- **10.1.1.2.1.15** Division 11
- **10.1.1.2.1.16** Division 12
- **10.1.1.2.1.17** Division 13
- **10.1.1.2.1.18** Division 14
- **10.1.1.2.1.19** Division 15
- **10.1.1.2.1.20** Division 21
- **10.1.1.2.1.21** Division 22
- **10.1.1.2.1.22** Division 23
- **10.1.1.2.1.23** Division 26
- **10.1.1.2.1.24** Division 27
- **10.1.1.2.1.25** Division 28
- **10.1.1.2.1.26** Division 31
- **10.1.1.2.1.27** Division 32
- **10.1.1.2.1.28** Division 33
- **10.1.1.2.1.29** Testing/Training
- **10.1.1.2.1.30** Punch list and Acceptance
- **10.1.1.2.1.31** Closeout Documentation

10.1.1.2.2 Divided by each of the following areas:

- **10.1.1.2.2.1** Site work;
- **10.1.1.2.2.2** By each building;
- **10.1.1.2.2.3** By each floor.

10.1.1.2.3 The preliminary schedule of values shall not provide for values any greater than the following percentages of the Contract value:

- **10.1.1.2.3.1** Mobilization and layout combined to equal not more than 1%;

10.1.1.2.3.2 Submittals, samples and shop drawings combined to equal not more than 3%,

10.1.1.2.3.3 bonds and insurance combined to equal not more than 1.5%

10.1.1.2.4 Punch list and Acceptance and Closeout documentation shall have a value in the preliminary schedule of value of not less than 5%.

10.1.1.2.5 Notwithstanding any provision of the Contract Documents to the contrary, payment of the Contractor's overhead, supervision and general conditions costs and profit, as reflected in the Cost Breakdown, shall be paid by the District in equal installments, based on percentage complete, with the disbursement of Progress Payments and the Final Payment.

10.1.1.2.6 Contractor shall certify that the preliminary schedule of values as submitted to the District is accurate and reflects the costs as developed in preparing Contractor's bid. The preliminary schedule of values shall be subject to the District's review and approval of the form and content thereof. In the event that the District objects to any portion of the preliminary schedule of values, the District shall notify the Contractor, in writing of the District's objection(s) to the preliminary schedule of values. Within five (5) days of the date of the District's written objection(s), Contractor shall submit a revised preliminary schedule of values to the District for review and approval. The foregoing procedure for the preparation, review and approval of the preliminary schedule of values shall continue until the District has approved the entirety of the preliminary schedule of values.

10.1.1.3. **Preliminary Schedule of Submittals.** A preliminary schedule of submittals, including Shop Drawings, Product Data, and Samples submittals. Once approved by District, this shall become the Submittal Schedule. All submittals shall be forwarded to the District by the date indicated on the approved Submittal Schedule, unless an earlier date is necessary to maintain the Construction Schedule, in which case those submittals shall be forwarded to the District so as not to delay the Construction Schedule.

10.1.1.4. **Safety Plan and Work Plan.** Contractor's Safety Plan and Work Plan specifically adapted for the Project. Contractor's plans shall comply with all provisions regarding Project safety and Scope of Work including all applicable provisions in these General Conditions.

10.1.1.5. **Complete Subcontractor List.** The name, address, telephone number, facsimile number, California State Contractors License number, classification, and monetary value of all Subcontracts for parties furnishing labor, material, or equipment for completion of the Project.

10.1.2. Contractor must provide all schedules both in hard copy and electronically, in a format approved in advance by the District.

10.1.3. The District will review the schedules submitted and the Contractor shall make changes and corrections in the schedules as requested by the District and resubmit the schedules until approved by the District.

10.1.4. The District shall have the right at any time to revise the schedule of values if, in the District's sole opinion, the schedule of values does not accurately reflect the value of the Work performed.

10.1.5. All submittals and schedules must be approved by the District before Contractor can rely on them as a basis for payment.

10.2. Material Safety Data Sheets (MSDS)

Contractor is required to ensure Material Safety Data Sheets are available in a readily accessible place at the Work Site for any material requiring a Material Safety Data Sheet per the Federal "Hazard Communication" standard, or employees right to know law. The Contractor is also required to ensure proper labeling on substances brought onto the job site and that any person working with the material or within the general area of the material is informed of the hazards of the substance and follows proper handling and protection procedures. Two additional copies of the Material Safety Data Sheets shall also be submitted directly to the District.

11. SITE ACCESS, CONDITIONS, AND REQUIREMENTS

11.1. Site Investigation

Before bidding on this Work, Contractor shall make a careful investigation of the Site and thoroughly familiarize itself with the requirements of the Contract. By the act of submitting a bid for the Work included in this Contract, Contractor shall be deemed to have made a complete study and investigation, and to be familiar with and accepted the existing conditions of the Site.

11.2. Access to Work

District and its representatives shall at all times have access to Work wherever it is in preparation or progress. Contractor shall provide safe and proper facilities for such access so that District's representatives may perform their functions.

12. INSURANCE AND BONDS

12.1. Insurance

Unless different provisions and/or limits are indicated in the Special Conditions, all insurance required of Contractor and/or its Subcontractor(s) shall be in amounts and including the provisions as set forth herein.

12.1.1. Commercial General Liability and Automobile Liability Insurance

12.1.1.1. Contractor shall procure and maintain, during the life of this Contract, Commercial General Liability Insurance and Automobile Liability Insurance that shall protect Contractor, District, State, Construction Manager(s), Project Inspector(s), and Architect (s) from all claims for bodily injury, property damage, personal injury, death, advertising injury, and medical payments arising from operations under

this Contract. Contractor shall ensure that Products Liability and Completed Operations coverage and Fire Damage Liability is included within the above policies and at the required limits, or Contractor shall procure and maintain this coverage separately.

12.1.1.2. **Subcontractor:** Contractor shall require its Subcontractors, if any, to procure and maintain similar Commercial General Liability Insurance and Automobile Liability Insurance with minimum limits equal to the amount required of the Contractor.

12.1.2. Excess Liability Insurance

12.1.2.1. Contractor shall procure and maintain, during the life of this Contract, Excess Liability Insurance that shall protect Contractor, District, State, Construction Manager(s), Project Manager(s), and Architect (s) and in amounts and including the provisions as set forth in the General Conditions.

12.1.2.2. **Subcontractor:** Contractor shall require its Subcontractor(s), if any, to procure and maintain similar Excess Liability Insurance with minimum limits equal to the amount required of the Contractor.

12.1.3. Workers' Compensation and Employers' Liability Insurance

12.1.3.1. In accordance with provisions of section 3700 of the California Labor Code, the Contractor and every Subcontractor shall be required to secure the payment of compensation to its employees.

12.1.3.2. Contractor shall procure and maintain, during the life of this Contract, Workers' Compensation Insurance and Employers' Liability Insurance for all of its employees engaged in work under this Contract, on/or at the Site of the Project. This coverage shall cover, at a minimum, medical and surgical treatment, disability benefits, rehabilitation therapy, and survivors' death benefits. Contractor shall require its Subcontractor(s), if any, to procure and maintain Workers' Compensation Insurance and Employers' Liability Insurance for all employees of Subcontractor(s). Any class of employee or employees not covered by a Subcontractor's insurance shall be covered by Contractor's insurance. If any class of employee or employees engaged in Work under this Contract, on or at the Site of the Project, is not protected under the Workers' Compensation Statute, Contractor shall provide, or shall cause a Subcontractor to provide, adequate insurance coverage for the protection of any employee(s) not otherwise protected before any of those employee(s) commence work.

12.1.4. Builder's Risk/Course of Construction Insurance

Contractor shall procure and maintain, during the life of this Contract, Builder's Risk (Course of Construction), or similar first party property coverage acceptable to the District, issued on a replacement cost value basis. The cost shall be consistent with the total replacement cost of all insurable Work of the Project included within the Contract Documents. Coverage is to insure against all risks of accidental physical loss and shall include without limitation the perils of vandalism and/or malicious mischief (both without any limitation regarding

vacancy or occupancy), sprinkler leakage, civil authority, sonic disturbance, earthquake, flood, collapse, wind, fire, war, terrorism, lightning, smoke, and rioting. Coverage shall include debris removal, demolition, increased costs due to enforcement of all applicable ordinances and/or laws in the repair and replacement of damaged and undamaged portions of the property, and reasonable costs for the Architect's and engineering services and expenses required as a result of any insured loss upon the Work and Project, including completed Work and Work in progress, to the full insurable value thereof.

12.1.5. Proof of Carriage of Insurance and Other Requirements: Endorsements and Certificates

12.1.5.1. Contractor shall not commence Work nor shall it allow any Subcontractor to commence Work under this Contract, until Contractor and its Subcontractor(s) have procured all required insurance and Contractor has delivered in duplicate to the District complete endorsements (or entire insurance policies) and certificates indicating the required coverage have been obtained, and the District has approved these documents.

12.1.5.2. Endorsements, certificates and insurance policies shall include the following:

A clause stating:

"This policy shall not be canceled or reduced in required limits of liability or amounts of insurance until notice have been mailed to District, Architect, and Construction Manager stating date of cancellation or reduction. Date of cancellation or reduction may not be less than thirty (30) days after date of mailing notice."

2. Language stating in particular those insured, extent of insurance, location and operation to which insurance applies, expiration date, to whom cancellation and reduction notice will be sent, and length of notice period.

12.1.5.3. All endorsements, certificates and insurance policies shall state that District, the State of California, Construction Manager(s), Project Manager(s), Inspector(s) and Architect (s) are named additional insured under all policies except Workers' Compensation Insurance and Employers' Liability Insurance. Contractor's and Subcontractors' insurance policy(s) shall be primary to any insurance or self-insurance maintained by District, the State of California, Construction Manager(s), Project Manager(s), Inspector(s), and/or Architect (s).

12.1.5.4. All policies shall be written on an occurrence form.

12.1.5.5. All of Contractor's insurance shall be with insurance companies with an A.M. Best rating of no less than **A: VII.**

12.1.6. Insurance Policy Limits

Unless different limits are indicated in the Special Conditions, the limits of insurance shall not be less than the following amounts:

A. Project under $500,000

Commercial General Liability	Each Occurrence	$1,000,000
	General Aggregate	$2,000,000
	Product Liability and Completed Operations	$1,000,000
Automobile Liability – Any Auto	Combined Single Limit	$1,000,000
Excess Liability		
Workers Compensation		Statutory limits pursuant to State law
Employers' Liability		$1,000,000
Builders Risk (Course of Construction)		Issued for the value of the Contract

B. Projects over $ 500,000

Commercial General Liability	Each Occurrence	$2,000,000
	General Aggregate	$2,000,000
	Product Liability and Completed Operations	$4,000,000
Automobile Liability – Any Auto	Combined Single Limit	$1,000,000
Excess Liability		$5,000,000
Workers Compensation		Statutory limits pursuant to State law
Employers' Liability		$1,000,000
Builders Risk (Course of Construction)		Issued for the value of the Contract

12.2. Contract Security – Bonds

12.2.1. Contractor shall furnish two surety bonds issued by a California admitted surety insurer as follows:

12.2.1.1. **Performance Bond**: A bond in an amount at least equal to one hundred percent (100%) of Contract Price as security for faithful performance of this Contract.

12.2.1.2. **Payment Bond**: A bond in an amount at least equal to one hundred percent (100%) of the Contract Price as security for payment of persons performing labor and/or furnishing materials in connection with this Contract.

12.2.2. Cost of bonds shall be included in the Bid and Contract Price.

12.2.3. All bonds related to this Project shall be in the forms set forth in these Contract Documents and shall comply with all requirements of the Contract Documents, including, without limitation, the bond forms.

13. WARRANTY/GUARANTEE/INDEMNITY

13.1 Warranty/Guarantee

13.1.1. The Contractor shall obtain and preserve for the benefit of the District, manufacturer's warranties on materials, fixtures, and equipment incorporated into the Work.

13.1.2. In addition to guarantees required elsewhere, Contractor shall, and hereby does guarantee and warrant all Work furnished on the job against all defects for a period of **ONE (1)** year after the later of the following dates:

13.1.2.1. The date of completion as defined in Public Contract Code section 7107, subdivision l,

13.1.2.2. The commissioning date for the Project, if any.

At the District's sole option, Contractor shall repair or replace any and all of that Work, together with any other Work that may be displaced in so doing, that may prove defective in workmanship and/or materials within a **ONE (1)** year period from date of completion as defined above without expense whatsoever to District. In the event of failure of Contractor and/or Surety to commence and pursue with diligence said replacements or repairs within ten (10) days after being notified in writing, Contractor and Surety hereby acknowledge and agree that District is authorized to proceed to have defects repaired and made good at expense of Contractor and/or Surety who hereby agree to pay costs and charges therefore immediately on demand.

13.1.3. If, in the opinion of District, defective work creates a dangerous condition or requires immediate correction or attention to prevent further loss to District or to prevent interruption of operations of District, District will attempt to give the notice required above. If Contractor or Surety cannot be contacted or neither complies with District's request for correction within a reasonable time as determined by District, District may, notwithstanding the above provision, proceed to make any and all corrections and/or provide attentions the District believes are necessary. The costs of correction or attention shall be charged against Contractor and Surety of the guarantees provided in this Article or elsewhere in this Contract.

13.1.4. The above provisions do not in any way limit the guarantees on any items for which a longer guarantee is specified or on any items for which a manufacturer

gives a guarantee for a longer period. Contractor shall furnish to District all appropriate guarantee or warranty certificates as indicated in the Specifications or upon request by District.

13.1.5. Nothing herein shall limit any other rights or remedies available to District.

13.2. Indemnity

13.2.1. The Contractor shall indemnify, defend with legal counsel reasonably acceptable to the District, keep and hold harmless the District and its architects, the Architect and its architects, the Construction Manager and its architects, separate contractors, and their respective board members, officers, representatives, contractors, agents, and employees, in both individual and official capacities ("Indemnities"), against all suits, claims, damages, losses, and expenses, including but not limited to attorney's fees, caused by, arising out of, resulting from, or incidental to, the performance of the Work under this Contract by the Contractor or its Subcontractors to the full extent allowed by the laws of the State of California, and not to any extent that would render these provisions void or unenforceable, including, without limitation, any such suit, claim, damage, loss, or expense attributable to, without limitation, bodily injury, sickness, disease, death, alleged patent violation or copyright infringement, or to injury to or destruction of tangible property (including damage to the Work itself) including the loss of use resulting there from, except to the extent caused wholly by the sole negligence or willful misconduct of the Indemnities.

13.2.2. In any and all claims against any of the Indemnities by any employee of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the Contractor's indemnification obligation herein shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the Contractor or any Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

14. TIME

14.1. Notice to Proceed

District may issue a Notice to Proceed within ten (10) days from the date of the Notice of Award. Once Contractor has received the Notice to Proceed, Contractor shall complete the Work within the period of time indicated in the Contract Documents.

14.2. Computation of Time / Adverse Weather

The Contractor will only be allowed a time extension for adverse weather conditions if requested by Contractor and only if all of the following conditions are met:

Adverse Weather Days. Delays due to adverse weather conditions will only be permitted in compliance with the provisions in the General Conditions and only if the number of days of adverse weather exceeds the following parameters and only if Contractor can verify that adverse weather caused delays exceeded the following days:

January	(11)	July	(0)
February	(10)	August	(0)
March	(10)	September	(0)

April	(6)	October	(0)
May	(3)	November	(7)
June	(0)	December	(10)

Contractor can verify that adverse weather caused delays in excess of seventy-five percent (75%) for a period of at least five hours, of the indicated labor and equipment required to complete Critical Path activities on the day affected by the adverse weather; and the crew is dismissed as a result of the adverse weather.

A day-for-day extension will only be allowed for those days in excess of the norm.

14.3 Hours of Work

14.3.1. Sufficient Forces

Contractor and Subcontractors shall continuously furnish sufficient forces to ensure the prosecution of the Work in accordance with the Contractor's submitted schedule.

14.3.2. Performance During Working Hours

Work shall be performed during regular working hours as permitted by the appropriate governmental agency except that in the event of an emergency, or when required to complete the Work in accordance with job progress, Work may be performed outside of regular working hours with the advance written consent of the District and approval of any required governmental agencies.

14.4. Progress and Completion

14.4.1. Time of the Essence

Time limits stated in the Contract Documents are of the essence to the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

15. EXTENSIONS OF TIME – LIQUIDATED DAMAGES

15.1. Liquidated Damages

Contractor and District hereby agree that the exact amount of damages for failure to complete the Work within the time specified is extremely difficult or impossible to determine. If the Work is not completed within the time specified in the Contract Documents, it is understood that the District will suffer damage. It being impractical and unfeasible to determine the amount of actual damage, it is agreed the Contractor shall pay to District as fixed and liquidated damages, and not as a penalty, the amount set forth in the Agreement for each calendar day of delay in completion. Contractor and its Surety shall be liable for the amount thereof pursuant to Government Code section 53069.85.

15.2. Excusable Delay

15.2.1. In the event the Contractor requests an extension of Contract Time for unavoidable delay, such request shall be submitted in accordance with the provisions in the Contract Documents governing changes in Work. The

Contractor shall be entitled only to such adjustment in time by which completion of the entire work is delayed due solely to performance of the changed work. However, no extension of time shall be granted for a change in the work unless the Contractor demonstrates to the satisfaction of the District that the work is on the Critical Path and submits an updated CPE schedule showing that an extension of time is required and that the Contractor is making, or has made, every reasonable effort to guarantee completion of the additional work called for by the change within the time originally allotted for the Contract.

15.3. Float or Slack in the Schedule

Float or slack is the amount of time between the early start date and the late start date, or the early finish date and the late finish date, of any of the activities in the schedule. Float or slack is not for the exclusive use of or benefit of either the District or the Contractor, but its use shall be determined solely by the District.

16. CHANGES IN THE WORK

16.1. No Changes Without Authorization

16.1.1. There shall be no change whatsoever in the Drawings, Specifications, or in the Work without an executed Change Order or a written Construction Change Directive authorized by the District as herein provided. The provisions of the Contract Documents shall apply to all such changes, additions, and omissions with the same effect as if originally embodied in the Drawings and Specifications.

16.1.2. Should any Change Order result in an increase in the Contract Price, the cost of that Change Order shall be agreed to, in writing, in advance by Contractor and District and be subject to the monetary limitations set forth in Public Contract Code section 20118.4. In the event that Contractor proceeds with any change in Work without a Change Order executed by the District or Construction Change Directive, Contractor waives any claim of additional compensation or time for that additional work.

16.2. Architect Authority

The Architect will have authority to order minor changes in the Work not involving any adjustment in the Contract Price, or an extension of the Contract Time, or a change that is inconsistent with the intent of the Contract Documents. These changes shall be affected by written Proposal Request, or Architect's response to RFI's.

16.3. Change Orders

16.3.1. A Change Order is a written instrument prepared and issued by the District or the Construction Manager and signed by the District (as authorized by the District's Board of Trustees), the Contractor, the Construction Manager, the Architect, and approved by the Project Inspector (if necessary) and DSA (if necessary), stating their agreement regarding all of the following:

16.3.1.1. A description of a change in the Work;

16.3.1.2. The amount of the adjustment in the Contract Price, if any; and

16.3.1.3. The extent of the adjustment in the Contract Time, if any.

16.4. Construction Change Directives

16.4.1. A Construction Change Directive is a written order prepared, issued and signed by the District and the Construction Manager, directing a change in the Work. The District may, as provided by law, by Construction Change Directive and without invalidating the Contract, order changes in the Work consisting of additions, deletions, or other revisions. Any dispute as to the sum of the Construction Change Directive or timing of payment shall be resolved pursuant to the Payment and Claims and Disputes provisions herein.

16.4.2. The District may issue a Construction Change Directive in the absence of agreement on the terms of a Change Order.

16.5. Force Account Directives

16.5.1. When work, for which a definite price has not been agreed upon in advance, is to be paid for on a force account basis, all direct costs necessarily incurred and paid by the Contractor for labor, material, and equipment used in the performance of that Work, shall be subject to the approval of the District and compensation will be determined as set forth herein.

16.5.2. The District will issue a Force Account Directive to proceed with the Work on a force account basis, and a not-to-exceed budget will be established by the District.

16.5.3. All requirements regarding direct cost for labor, labor burden, material, equipment, and markups on direct costs for overhead and profit described in this section shall apply to Force Account Directives. However, the District will only pay for actual costs verified in the field by the District or its authorized representative(s) on a daily basis.

16.6. Proposal Request

16.6.1. Definition of Proposal Request

A Proposal Request ("PR") is a written request prepared by the Architect requesting the Contractor to submit to the District an estimate of the effect of a proposed change in the Work on the Contract Price and the Contract Time. The Contractor shall provide pricing within seven (7) days of issuance of the PR.

16.6.2. Scope of Proposal Request

A Proposal Request shall contain adequate information, including any necessary Drawings and Specifications, to enable Contractor to provide the cost breakdowns required herein. The Contractor shall not be entitled to any additional compensation for preparing a response to a l Proposal Request, whether ultimately accepted or not.

16.7. Proposed Change Order

16.7.1. Definition of Proposed Change Order

A Proposed Change Order ("PCO") is a written request prepared by the Contractor requesting that the District issue a Change Order based upon a proposed change to the Work. This includes issued Proposal Requests, Construction Change Directives or RFI's.

16.7.2. Changes in Contract Price

A PCO shall include breakdowns pursuant to the revisions herein to validate any change in Contract Price.

16.7.3. Changes in Time

A PCO shall also include any changes in time required to complete the Project. Any additional time requested shall not be the number of days to make the proposed change, but must be based upon the impact to the Project Schedule Completion Date as defined in the Contract Documents. If Contractor fails to request a time extension in a PCO, then the Contractor is thereafter precluded from requesting time and/or claiming a delay.

16.8. Format for Proposed Change

16.8.1. The following format shall be used as applicable by the District and the Contractor (e.g. Change Orders, PCO's) to communicate proposed additions and deductions to the Contract, supported by attached forms.

	SUBCONTRACTOR PERFORMED WORK	*ADD*	*DEDUCT*
(a)	**Material** (attach itemized quantity and unit cost plus sales tax)		
(b)	**Labor** (attach itemized hours and rates, fully encumbered)		
l	**Equipment** (attach suppliers' invoice)		
(d)	**Subtotal**		
l	**Subcontractor's overhead and profit** not to exceed ten percent (10%) of **item (d)**		
(f)	**Subtotal**		
(g)	**Contractor's overhead and profit**, not to exceed five percent (5%) of **Item (f)**		
(h)	**Subtotal**		
(i)	**Bond not to exceed one percent (1.5%) of Item (h)**		
(j)	**TOTAL**		
(k)	Time		

	CONTRACTOR PERFORMED WORK	*ADD*	*DEDUCT*
(a)	**Material** (attach itemized quantity and unit cost plus sales tax)		
(b)	**Labor** (attach itemized hours and rates, fully encumbered)		
l	**Equipment** (attach suppliers' invoice)		
(d)	**Subtotal**		
l	**Contractor's overhead and profit** not to exceed fifteen percent (15%) of **item (d).**		
(f)	**Subtotal**		
(g)	**Bond and Insurance not to exceed one and one half percent (1.5%) of Item (f)**		
(h)	**TOTAL**		
(i)	Time		

Yosemite Community College District

Project No. _____ DATE:

School: _____ CONTRACTOR:

CONTRACTOR COST PROPOSAL #:

POTENTIAL CHANGE ORDER (PCO) - COST PROPOSAL - PRIME CONTRACTOR

DESCRIPTION OF CHANGE:

ITEM DESCRIPTION	MATERIAL (sales tax included)				LABOR (fully encumbered)			EQUIPMENT (attach invoice)		
	QUANTITY	UNIT	UNIT COST	EXTENSION	QUANTITY HOURS	RATE	EXTENSION	QUANTITY	UNIT COST	EXTENSION
				$ -			$ -			$ -
				$ -			$ -			$ -
				$ -			$ -			$ -
				$ -			$ -			$ -
				$ -			$ -			$ -
				$ -			$ -			$ -
SUBTOTALS:				$ -			$ -			$ -

MATERIAL	$0.00
LABOR	$0.00
EQUIPMENT	$0.00
SUBTOTAL DIRECT COSTS	$0.00
FEE ON DIRECT COSTS (15%)	$0.00
PRIME CONTRACTOR SUBTOTAL	**$0.00**

Subcontractor Costs from Attached Cost Proposal(s)

SUBCONTRACTOR SUBTOTAL DIRECT COSTS	$ -
CONTRACTOR 5% FEE ON SUBCONTRACTOR DIRECT COSTS	$0.00
CONTRACTOR SUBTOTAL	**$0.00**
PCO SUBTOTAL	**$ -**
BOND (not to exceed 1.5% of sub total)	**$ -**
TOTAL	**$ -**

PREPARED & SUBMITTED BY: _____

COMPANY: _____ TITLE: _____

REVIEW COMMENTS

Yosemite Community College District

Project No. _____ DATE:

School: _____ CONTRACTOR:

CONTRACTOR COST PROPOSAL #:

POTENTIAL CHANGE ORDER (PCO) - COST PROPOSAL - SUBCONTRACTOR CONTRACTOR

DESCRIPTION OF CHANGE:

ITEM DESCRIPTION	MATERIAL (sales tax included)				LABOR (fully encumbered)			EQUIPMENT (attach invoice)		
	QUANTITY	UNIT	UNIT COST	EXTENSION	QUANTITY HOURS	RATE	EXTENSION	QUANTITY	UNIT COST	EXTENSION
				$ -			$ -			$ -
				$ -			$ -			$ -
				$ -			$ -			$ -
				$ -			$ -			$ -
				$ -			$ -			$ -
				$ -			$ -			$ -
				$ -			$ -			$ -
SUBTOTALS:				$ -			$ -			$ -

MATERIAL	$0.00
LABOR	$0.00
EQUIPMENT	$0.00
SUBTOTAL DIRECT COSTS	$0.00
FEE ON DIRECT COSTS (10%)	$0.00
SUBCONTRACTOR SUBTOTAL	**$ -**
Third and Fourth Tier Sub Contractor Costs from Attached Cost Proposal	**$ -**
SUBCONTRACTOR SUBTOTAL **TOTAL**	**$ -**

PREPARED & SUBMITTED BY: _____

COMPANY: _____ TITLE: _____

REVIEW COMMENTS

Yosemite Community College District

Project No: DATE:

School: CONTRACTOR:

CONTRACTOR COST PROPOSAL #:

POTENTIAL CHANGE ORDER (PCO) - COST PROPOSAL - CREDIT

DESCRIPTION OF CHANGE:

ITEM DESCRIPTION	MATERIAL (sales tax included)				LABOR (fully encumbered)			EQUIPMENT (attach invoice)		
	QUANTITY	UNIT	UNIT COST	EXTENSION	QUANTITY HOURS	RATE	EXTENSION	QUANTITY	UNIT COST	EXTENSION
				$ -			$ -			$ -
				$ -			$ -			$ -
				$ -			$ -			$ -
				$ -			$ -			$ -
				$ -			$ -			$ -
				$ -			$ -			$ -
				$ -			$ -			$ -
				$ -			$ -			$ -
SUBTOTALS:				$ -			$ -			$ -

MATERIAL	$0.00	
LABOR	$0.00	
EQUIPMENT	$0.00	
SUBTOTAL DIRECT COSTS	$0.00	
FEE ON DIRECT COSTS (10%)	$0.00	
PRIME CONTRACTOR SUBTOTAL (Credit)		< $ - >
Subcontractor Costs from Attached Cost Proposal (Credit)		< $ - >
SUBCONTRACTOR 5% PROFIT AND OVERHEAD ON DEDUCTED WORK	$0.00	
SUBCONTRACTOR SUBTOTAL		TOTAL < $ - >

PREPARED & SUBMITTED BY: _____

COMPANY: _____ TITLE: _____

REVIEW COMMENTS

DAILY TIME & MATERIALS RECORD

ATTN PM: _____

PCO No.: _____

Authorized by: _____

Project Name: _____ Date of Work: _____

Contractor: _____ Work Status: More to Follow / Complete

Scope of Work: _____

_____

_____

Reference Documents Attached: _____

_____

The work described above shall be performed on a time & material basis. Units of labor, materials and equipment shall be tabulated below on a copy of this form and submitted to Owner or Architect by 4:00pm on the day the work occurs.

MATERIALS		EMPLOYEE NAME & CLASSIFICATION	ST Hours	OT Hours
		EQUIPMENT		**HOURS**

_____ _____

(Name) (Date)

_____ _____

(Name) (Date)

16.8.2 Allowable Labor Costs to be used in Change Order pricing.

Costs are allowed for the actual payroll cost to the Contractor for labor, filed supervision of changed work, (but not field office supervision not indirect supervision) and engineering or technical services directly required for the performance of the changed work (but not site management such as field office estimating, clerical, purchasing, as-builts, change order coordination, or warranty). Costs include payments, assessments, or benefits required by lawful labor union collective bargaining agreements, compensation insurance payments, liability insurance premium on labor only, contributions made to the State pursuant to the Unemployment Insurance Code, and for taxes paid to the federal government required by the Social Security Act.

16.8.3 Mark-ups on Change Orders.

The mark-ups allowed on the direct cost of changed work include all incidental overhead costs and profit. Such incidental overhead costs include estimating and purchasing; indirect supervision and project management; home office overhead; site overhead including facilities and utilities; change order coordination; engineering; as-built drawings; warranties; liability insurance (however the cost of liability insurance premium for labor only is allowed as a cost for labor) ; and small tools. Any incidental overhead support cost not expressly identified herein shall be included in the Contractor's mark-up.

16.9 Deductive Change Orders

All deductive Change Order(s) must be prepared pursuant to the provisions herein. If Contractor offers a proposed amount for a deductive Change Order(s), Contractor shall include a minimum of five percent (5%) total profit and overhead to be deducted with the amount of the work of the Change Order(s). If Subcontractor work is involved, Subcontractors shall include a minimum of five percent (5%) profit and overhead on its deducted work. Any deviation from this provision shall not be allowed.

For a proposed change order that involves both added and omitted work, the Contractor shall separately calculate its own total added costs and its own total deducted costs, including applicable mark ups and shall then sum its total added and deducted costs, resulting in the Contractor's net cost for the change Order. Similarly, the Contractor shall separately calculate each subcontractor's total added costs and deducted costs, including applicable subcontractor's mark ups and shall then sum each subcontractor's total added and deducted costs, resulting in each subcontractor's net cost for the change order. Contractor's mark up on subcontractor's work shall then apply to this total.

16.10 Change Order Certification

16.10.1. All Change Orders and PCO's must include the following certification by the Contractor:

16.10.1.1. The undersigned Contractor approves the foregoing as to the changes, if any, and the Contract Price specified for each item and as to the extension of time allowed, if any, for completion of the entire Work as stated herein, and agrees to furnish all labor, materials, and service, and perform all work necessary to complete any additional work specified for the consideration stated herein. Submission of sums which have no basis in fact or which Contractor

knows are false are at the sole risk of Contractor and may be a violation of the False Claims Act set forth under Government Code section 12650 et seq. It is understood that the changes herein to the Contract shall only be effective when approved by the governing board of the District.

16.10.1.2. It is expressly understood that the value of the Extra Work or changes expressly includes any and all of the Contractor's costs and expenses, direct and indirect, resulting from additional time required on the Project or resulting from delay to the Project. Any costs, expenses, damages, or time extension not included are deemed waived.

16.11. Failure to agree as to Cost

For Added Work: Notwithstanding the failure of the District and the Contractor to agree as to the cost of the proposed change order, the Contractor, upon written order from the District, shall proceed immediately with the changed work. A Construction Change Directive or a letter signed by the District shall be used for this written order. At the start of each day's work on the change, the Contractor shall notify the District in writing as to the size of the labor force to be used for the changed work and its location. Failure to so notify may result in the non-acceptance of the costs for that day. At the completion of each day's work, the Contractor shall furnish to the Construction Inspector a detailed summary of all labor, materials, and equipment employed in the changed work for review and approval. This approved summary shall then become the basis for determining costs for the additional work. The sum of these costs, plus appropriate mark-ups will constitute the payment for the changed work. When changed work is performed at locations away from the job site, the Contractor shall furnish in lieu of the daily summary, a summary submitted at the completion of the work containing a detailed statement of labor, material, and equipment used in the work. This latter summary shall be signed by the Contractor who shall certify thereon under penalty of perjury that the information is true, and the costs are as allowed in Article 16.8. If changed work is to be paid on the basis or time and materials, a credit for deleted Contract work shall be included with appropriate mark-ups per Article 16.8.

For Deleted Work: When a proposed change order contains a deletion of any work, and the District and the Contractor are unable to agree upon the value thereof, the District's estimate may be deducted from the Contract price and may be withheld from any payment due the Contractor until the Contractor presents proof convincing to the District that the District's estimate was in error. The amount to be deducted shall be the cost to the Contractor for labor, material and equipment which would have been used on the deleted work together with the credit mark-up.

16.12. Discounts, Rebates and Refunds

For purposes of determining the cost, if any, of any change, addition, or omission to the Work hereunder, all trade discounts, rebates, refunds, and all returns from the sale of surplus materials and equipment shall accrue and be credited to the Contractor, and the Contractor shall make provisions so that such discounts, rebates, refunds, and returns may be secured, and the amount thereof shall be allowed as a reduction of the Contractor's cost in determining the actual cost of construction for purposes of any change, addition, or omission in the Work as provided herein.

16.13. Accounting Records

With respect to portions of the Work performed by Change Order and Construction Change Directives, the Contractor shall keep and maintain cost accounting records satisfactory to the District, which shall be available to the District on the same terms as any other books and records the Contractor is required to maintain under the Contract Documents.

16.14. Notice Required

If the Contractor desires to make a claim for an increase in the Contract price, or any extension in the Contract Time for completion, it shall notify the District pursuant to the provisions herein. No claim shall be considered unless made in accordance with this subparagraph. Contractor shall proceed to execute the Work even though the adjustment may not have been agreed upon. A change in the Contract Price or extension of the Contract Time resulting from such claim shall be authorized by a Change Order.

16.15. Applicability to Subcontractors

Any requirements under this Article shall be equally applicable to Change Orders or Construction Change Directives issued to Subcontractors by the Contractor to the extent as required by the Contract Documents.

16.16. Alteration to Change Order Language

Contractor shall not alter Change Orders or reserve time in Change Orders. Contractor shall execute finalized Change Orders and proceed under the provisions herein with proper notice.

16.17. Failure of Contractor to Execute Change Order

Contractor shall be in default of the Contract if Contractor fails to execute a Change Order when the Contractor agrees with the addition and/or deletion of the Work in that Change Order.

17 REQUEST FOR INFORMATION

Any Request for Information shall reference all applicable Contract Document(s), including Specification section(s), detail(s), page number(s), drawing number(s), and sheet number(s), etc. Requests for Information submittals must follow Specification General Requirements Section 01318. The Contractor shall make suggestions and interpretations of the issue raised by each Request for Information. The Contractor, upon receipt of a response from the Architect thru the Construction Manager, shall notify the District whether or not the response constitutes any additional cost or time within seven (7) days of receipt of the response. The Contractor shall be responsible for any costs incurred for professional services that the District may deduct from any amounts owing to the Contractor, if a Request for Information requests an interpretation or decision of a matter where the information sought is equally available to the party making the request. District, at its sole discretion shall deduct from and/or invoice Contractor for all the professional services arising herein.

18 PAYMENTS

18.1 Applications for Progress Payments

18.1.1. Application for Progress Payment

Between the 25th and the end of each month, Contractor shall submit to the Construction Manager a rough draft of an Application for Payment proposing items to be paid. Construction Manager shall review this rough draft within 5 days and upon acceptance, the Contractor shall submit a final Application for Payment to the Construction Manager containing the following:

1. The amount paid to the date of the Application

2. The amount being requested under the Application for Payment

3. The balance that will be due after said payment is made;

4. If the District has an LCP in force on this Project, all remaining certified payroll record ("CPR(s)") for each journeyman, apprentice, worker, or other employee employed by the Contractor and/or each Subcontractor in connection with the Work for the period of the Application for Payment. No payment shall be due until verification of full compliance with the LCP.

5. A duly completed and executed unconditional waiver and release upon progress payment compliant with Civil Code section 3262 from the Contractor and each subcontractor of any tier and supplier that was paid from the previous progress payment; and

6. A certification by the Contractor of the following:

   The Contractor warrants title to all Work performed as of the date of this payment application. The Contractor further warrants that all Work performed as of the date of this payment application is free and clear of liens, claims, security interests, or encumbrances in favor of the Contractor, Subcontractors, material and equipment suppliers, workers, or other persons or entities making a claim by reason of having provided labor, materials, and equipment relating to the Work, except those of which the District has been informed.

18.1.2. First Payment Request: Before the District will accept and/or process the Contractor's first payment request, Contractor must provide:

1. Schedule of Values;

2. Contractor's Construction Schedule, as required by the Contract Documents;

3. Proof of receipt by Architect of all submittals due as of the date of the payment application;

4. Copies of necessary permits;

5. List of all Subcontractors, with names, license numbers, telephone numbers, and Scope of Work;

6. All bonds and insurance endorsements.

18.1.3. Progress Payment Requests: Before the District will accept and/or process the Contractor's Progress Payments, Contractor must provide:

1. Monthly Construction Schedule Updates;

2. Certified Payroll, as required by the Contract Documents;

3. As-built documents have been updated;

4. Proof of receipt by Architect of all submittals due as of the date of the Payment Application;

5. Submittal of Conditional and Unconditional releases from all Subcontractors and Contractor itself as required. Contractor(s) can use its own form provided it is approved by the District. Otherwise Contractor shall use a District provided form.

6. Copies of Daily Reports.

18.1.4. Payments to Contractor

Within thirty (30) days after approval of the Application for Payment, Contractor shall be paid a sum equal to ninety five percent (95%) of the value of the Work performed (as verified by Construction Manager and Inspector and certified by Contractor) up to the last day of the previous month, less the aggregate of previous payments and amount to be withheld.

District may, in its discretion, apply any amounts otherwise due Contractor to pay outstanding claims against, or fulfill obligations of, Contractor arising under this Contract.

18.1.5. Reasons to Withhold Payments

The District may withhold payment in whole, or in part, to the extent reasonably necessary to protect the District if, in the District's opinion, the representations to the District required herein cannot be made. The District may withhold payment, in whole or in part, to such extend as may be necessary to protect the District from loss because of, but not limited to:

1. Defective work not remedied within three (3) days of written notice to Contractor;

2. Stop Notices or other liens served upon the District as a result of the Contract;

3. Liquidated damages assessed against the Contractor;

4. The cost of completion of the Contract if there exists reasonable doubt that the work can be completed for the unpaid balance of the Contract Price or by the completion date;

5. Damage to the District or other contractor(s);

6. Unsatisfactory prosecution of the Work by the Contractor;

7. Failure to store and properly secure materials;

8. Failure of the Contractor to submit, on a timely basis, proper, sufficient, and acceptable documentation required by the Contract Documents, including, without limitation, a Construction Schedule, Schedule of Submittals, Schedule of Values, Monthly Progress Schedules, Shop Drawings, Product Data and samples, Proposed product lists, executed Change Orders, and/or verified reports;

9. Failure of the Contractor to maintain Record Drawings;

10. Erroneous estimates by the Contractor of the value of the Work performed, or other false statements in an Application for Payment;

11. Unauthorized deviations from the Contract Documents;

12. Failure of the Contractor to prosecute the Work in a timely manner in compliance with the Construction Schedule, established progress schedules, and/or completion dates;

13. If the District has an LCP in force on this Project, the failure to provide certified payroll records acceptable to the District for such journeyman, apprentice, worker, or other employee employed by the Contractor and/or each Subcontractor in connection with the Work for the period of the Application for Payment;

14. Failure to properly pay prevailing wages as defined in Labor Code section 1720 et seq., failure to comply with any other Labor Code requirements, and/or failure to comply with the District's LCP, if one is in force on this Project;

15. Failure to properly maintain or clean up the site;

16. Payments to indemnify defend, or hold harmless the District;

17. Any payments due to the District, including but not limited to payments for failed tests, utilities changes, or permits;

18. Failure to pay Subcontractor(s) or supplier(s) as required by law and by the Contract Documents;

19. Contractor is otherwise in breach, default, or in substantial violation of any provision of this Contract.

18.2. <u>Subcontractor Payments</u>

No later than ten (10) days after receipt, or pursuant to Business and Professions Code section 7108.5 and Public Contract Code section 7107, the Contractor shall pay to each Subcontractor, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to its Sub-subcontractors in a similar manner.

19 COMPLETION OF THE WORK

19.1. Completion

19.1.1. District, at its sole option, may accept completion of Contract and establish the Substantial Completion Date when the entire Work has been completed to the satisfaction of the District with the exception of a few minor corrective items, as distinguished from incomplete items. Following the completion of these minor corrective items to the satisfaction of the District, the District shall then issue a Notice of Completion and have such Notice recorded with the County. If Contractor fails to complete all minor corrective items within thirty (30) days after the date of the District issues the Substantial Completion Notice, District shall withhold from the final payment one hundred fifty percent (150%) of an estimate of the amount sufficient to complete the corrective items, as determined by District, until the item(s) are completed.

19.1.2. At the end of the thirty-five (35) day period, following the recording of the project Final Completion Notice, if there are any items remaining to be corrected, District may elect to proceed as provided herein related to adjustments to Contract Price, and/or District's right to perform the Work of the Contractor.

19.2. Punch List

The Contractor shall notify the District when Contractor considers the Work complete. Upon notification, the Architect will prepare a list of minor items to be completed or corrected ("Punch List"). The Contractor and/or its Subcontractors shall proceed promptly to complete and correct items on the Punch List. Upon completion and correction of all outstanding items, Contractor shall then notify the District that all punch list items have been completed. Upon review of all items by the District and the Architect and provided all the items have been completed to the satisfaction of the District and Architect, the District would then issue a Substantial Completion Notice to the Contractor, including a list of outstanding minor items of work in need of correction. Failure to include an item on Punch List does not alter the responsibility of Contractor to complete all Work in accordance with the Contract Documents.

19.3. Close-Out Requirements

19.3.1. Utility Connections

Buildings shall be connected to water, gas, sewer, and electric services, complete and ready for use. Service connections shall be made and existing services reconnected.

19.3.2. As-Built Drawings

19.3.2.1. Contractor shall provide exact "as-built" of the Work upon completion of the Project as indicated in the Specifications ("As-built Drawings").

19.3.2.2. Contractor is liable and responsible for any and all inaccuracies in As-Built Drawings, even if inaccuracies become evident at a future date.

19.3.2.3. For detailed requirements for "as-built" drawings see Section 01710, Record Documents.

19.3.3. Maintenance Manuals: Contractor shall prepare all operation and maintenance manuals and date as indicated in the Specifications.

19.4. Final Inspection

Following the issuance of the Substantial Completion Notice, the Contractor shall maintain the presence of a Project Superintendent and Project Manager until the Punch List is complete to ensure proper and timely completion of the Punch List. Contractor shall inform the District when District's reasonable satisfaction to all remaining items listed in the Substantial Completion Notice are complete and upon review by the District, if it determines that all work is complete, the District would then issue a Notice Of Completion and file such Notice with the County Recorder.

19.5. Partial Occupancy or Use Prior to Completion

The District may occupy or use any completed or partially completed portion of the Work at any stage, subject to receipt of proper clearance tests and results. The District and the Contractor shall agree in writing to the responsibilities assigned to each of them for payments, security, maintenance, heat, utilities, damage to the Work, insurance, the period for correction of the Work, and the commencement of warranties required by the Contract Documents. If District and Contractor cannot agree as to responsibilities, any disagreement(s) shall be resolved pursuant to provisions herein. When the Contractor considers a portion complete, the Contractor shall prepare and submit a Contractor's Punch List to the District as indicated herein.

20 FINAL PROGRESS PAYMENT AND RETENTION

20.1. Final Progress Payment

Upon receipt and approval of a valid and final progress Application for Payment, the District shall provide payment to the Contractor, minus retention, provided the following conditions must be fulfilled prior to Final Payment:

1. A full and final waiver or release of all Stop Notices in connection with the Work shall be submitted by Contractor, including a release of Stop Notice in recordable form, together with (to the extent permitted by law) a copy of the full and final release of all Stop Notice rights.

2. A duly completed and executed conditional waiver and release upon final payment compliant with Civil Code section 3262 from the Contractor and each subcontractor of any tier and supplier to be paid from the current progress payment;

3. A duly completed and executed unconditional waiver and release upon progress payment compliant with Civil Code section 3262 from the Contractor and each subcontractor of any tier and supplier that was paid from the previous progress payment; and

4. The Contractor shall have made all corrections to the Work that are required to remedy any defects therein, to obtain compliance with the Contract Documents or any requirements of applicable codes and ordinances, or to fulfill any of the orders or directions of District required under the Contract Documents.

5. Each Subcontractor shall have delivered to the Contractor all written guarantees, warranties, applications, and bonds required by the Contract Documents for its portion of the Work.

6. Architect shall have issued a Final Certificate of Payment.

7. The Contractor shall have delivered to the District all manuals and materials required by the Contract Documents.

8. The Contractor shall have completed final clean up as provided herein.

20.2. Retention

The retention, less any amounts disputed by the District or that the District has the right to withhold pursuant to provisions herein shall be paid:

20.2.1. After approval of the Certificate of Payment by the District,

20.2.2. After the satisfaction of the conditions set forth herein, and

20.2.3. After thirty-five (35) days after the recording of the Notice of Completion by District.

No interest shall be paid on any retention, or on any amounts withheld due to a failure of the Contractor to perform, in accordance with the terms and conditions of the Contract Documents, except as provided to the contrary in any Escrow Agreement between the District and the Contractor pursuant to Public Contract Code section 22300.

20.3. Substitution of Securities

The District will permit the substitution of securities in accordance with the provisions of Public Contract Code section 22300.

21 UNCOVERING OF WORK

If a portion of the Work is covered without Inspector or Architect approval or not in compliance with the Contract Documents, it must, if required in writing by the District, the Construction Manager, or the Architect, be uncovered for the Construction Manager's or the Architect's observation and be replaced at the Contractor's expense without change in the Contract Price or Contract Time.

22. NONCONFORMING WORK AND CORRECTION OF WORK

22.1. Correction of Work

22.1.1. Correction of Rejected Work

The Contractor shall promptly correct the Work rejected by the District, the Architect, or the Construction Manager as failing to conform to the requirements of the Contract Documents, whether observed before or after Completion and whether or not fabricated, installed, or completed.

22.1.2. One-Year Warranty Corrections

If, within one (1) year after the date of Completion of the Work or a designated portion thereof, or after the date for commencement of warranties established hereunder, or by the terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the District to do so. This period of one (1) year shall be extended with respect to portions of the Work first performed after Completion by the period of time between Completion and the actual performance of the Work.

22.1.3. District's Rights if Contractor Fails to Correct

If the Contractor fails to correct nonconforming Work within a reasonable time, the District may correct it after **THREE (3)** days written notice, pursuant to the applicable provisions in these General Conditions regarding the District's right to perform work.

23. TERMINATION AND SUSPENSION

23.1. District's Right to Terminate Contractor for Cause

Grounds for Termination. The District, in its sole discretion, may terminate the Contract and/or terminate the Contractor's right to perform the work of the Contract based upon the following:

1. Contractor refuses or fails to execute the Work or any separable part thereof with sufficient diligence as will insure its completion within the time specified or any extension thereof, or

2. Contractor persistently fails or refused to perform Work or provide material of sufficient quality as to be in compliance with Contract Documents; or

3. Contractor files a petition for relief as a debtor, or a petition is filed against the Contractor without its consent, and the petition not dismissed within sixty (60) days; or

4. Contractor makes a general assignment for the benefit of its creditors, or a receiver is appointed on account of its insolvency; or

5. Contractor persistently or repeatedly refuses or fails, except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials to complete the Work in the time specified; or

6. Contractor fails to make prompt payment to Subcontractors, or for material, or for labor; or

7. Contractor persistently disregards laws, or ordinances, or instructions of District; or

8. Contractor or its Subcontractor(s) is/are otherwise in breach, default, or in substantial violation of any provision of this Contract.

23.2. Notification of Termination

Upon the occurrence at District's sole determination of any of the above conditions, District may, without prejudice to any other right or remedy, serve written notice upon Contractor and its Surety of District's termination of this Contract and/or the Contractor's right to perform the work of the Contract. This notice will contain the reasons for termination. Unless, within three (3) days after the service of the notice, any and all condition(s) shall cease or an arrangement is made satisfactory to District for the correction of the condition(s) and/or violation(s), this Contract shall cease and terminate. Upon Termination, Contractor shall not be entitled to receive any further payment until the entire Work is finished.

Upon Termination, District may immediately serve written notice of tender upon Surety whereby Surety shall have the right to take over and perform this Contract only if Surety:

Within three (3) days after service upon it of the notice of tender, gives District written notice of Surety's intention to take over and perform this Contract; and commences performance of this Contract within three (3) days from date of serving of its notice to District.

If Surety fails to notify District or begin performance as indicated herein, District may take over the Work and execute the Work to completion by any method it may deem advisable at the expense of Contractor and/or its Surety. Contractor and/or its Surety shall be liable to District for any excess cost or other damages the District incurs thereby. Time is of the essence in this Contract. If the District takes over the Work as herein provided, District may, without liability for so doing, take possession of and utilize in completing the Work such materials, appliances, plan, and other property belonging to Contractor as may be on the Site of the Work, in bonded storage, or previously paid for.

23.3. Termination of Contractor for Convenience

District in its sole discretion may terminate the Contract upon three (3) days written notice to the Contractor. Under a termination for convenience, the District retains the right to all the options available to the District if there is a termination for cause. In case of a termination for convenience, the Contractor shall have no claims against the District except:

23.3.1. The actual cost for labor, materials, and services performed that is unpaid and can be documented through timesheets, invoices, receipts, or otherwise, and

23.3.2. Five percent (5%) of the total cost of work performed as of the date of termination or five percent (5%) of the value of the Work yet to be performed, whichever is less. This five percent (5%) amount shall be full compensation for all Contractors' and its Subcontractor(s)' mobilization and/or demobilization costs and any anticipated loss profits resulting from termination of the Contractor for convenience.

24. CLAIMS AND DISPUTES

24.1. Performance During Claim Process

The Contractor shall continue to perform its Work under the Contract and shall not cause a delay of the Work during any dispute, claims definition, negotiation, mediation, or arbitration proceeding, except by written agreement by the District.

24.2. Definition of Claim

For purposes of this section, a claim means a separate demand by the Contractor for:

1. A time extension,

2. Payment of money or damages arising from Work done by or on behalf of the Contractor pursuant to the Contract and payment of which is not otherwise expressly provided for or the claimant is not otherwise entitled to, or

3. Payment of money that the District disputes is owing.

24.3. Claim Presentations

If Contractor intends to claim an increase in the Contract Price or Contract Time for any reason including, without limitation, the acts of District or its agents, Contractor shall, within ten (10) days after the event giving rise to the claim, give notice of the claim in writing and submit to the District a written statement of the damage sustained or time requested. On or before twenty (20) days after Contractor's written notice of claim, Contractor shall file with the District an itemized statement of the details and amounts of its claim for any increase in the Contract Price of Contract Time. Contractor must timely submit the Notice of Claim and the substantiating documentation for any claim. Otherwise, Contractor shall have waived and relinquished its claim against the District and Contractor's claims for compensation or an extension of time shall be forfeited and invalidated, and Contractor shall not be entitled to consideration for payment or time on account of the instant matter.

1. The attention of the Contractor is drawn to Government Code section 12650, et seq. regarding penalties for false claims.

2. Contractor shall file with the District any written claim, including the documents necessary to substantiate it, on or before the day of final payment on the Contract.

3. The Contractor shall bind all its Subcontractors, material persons, and suppliers to the provisions of this section on mediation and arbitration and will hold the District harmless against disputes and claims by Subcontractors, material persons, or suppliers.

24.4. Claim Resolution

24.4.1. In the event of a dispute between the parties as to performance of the Work, the interpretation of this Contract, or payment or nonpayment for Work performed or not performed, the parties shall attempt to resolve the dispute by those procedures set forth in Public Contract Code section 20104, if applicable. Pending resolution of the dispute, if the dispute is not resolved, Contractor agrees it will neither rescind the Contract nor stop the progress of the Work, but will allow determination by the court of the State of California in the county in

which the District office resides, having competent jurisdiction of the dispute, after the Project has been completed, and not before.

24.4.2. If the claimant disputes the District's written response, or the District fails to respond within the time prescribed, the claimant may so notify the District, in writing, either within fifteen (15) days of receipt of the District's response or within fifteen (15) days of the District's failure to respond within the time prescribed, respectively, and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon a demand, the District shall schedule a meet and confer conference within thirty (30) days for settlement of the dispute.

25. LABOR, WAGE & HOUR, APPRENTICE, AND RELATED PROVISIONS

25.1. Labor Compliance Program

If the Project is at least partially funded with State bond money, then, pursuant to Labor Code section 1771.7, the District and/or its designee is operating a labor compliance program ("LCP") on this Project as indicated in the Labor Compliance Program Information and Forms. If there is no LCP on this Project, the Contractor and all of its subcontractor(s) are still required to comply with all applicable provisions of the Labor Code and the obligation to provide certified payroll records to the District as indicated herein.

25.2. Wage Rates, Travel, and Subsistence

Pursuant to the provisions of article 2 (commencing at section 1770), chapter 1, part 7, division 2, of the Labor Code of California, the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work in the locality in which this public work is to be performed for each craft, classification, or type of worker needed to execute this Contract are on file at the District's principal office and copies will be made available to any interested party on request. Contractor shall obtain and post a copy of these wage rates at the job site.

Holiday and overtime work, when permitted by law, shall be paid for at a rate of at least one and one-half times the above specified rate of per diem wages, unless otherwise specified. The holidays upon which those rates shall be paid need not be specified by the District, but shall be all holidays recognized in the applicable collective bargaining agreement. If the prevailing rate is not based on a collectively bargained rate, the holidays upon which the prevailing rate shall be paid shall be as provided in Section 6700 of the Government Code.

Contractor shall pay and shall cause to be paid each worker engaged in Work on the Project not less than the general prevailing rate of per diem wages determined by the Director of the Department of Industrial Relations ("DIR") ("Director"), regardless of any contractual relationship which may be alleged to exist between Contractor or any Subcontractor and such workers.

Pursuant to Labor Code section 1775, Contractor shall, as a penalty to District, forfeit the statutory amount (believed by the District to be currently fifty dollars ($50)) for each day, or portion thereof, for each worker paid less than the prevailing rates, determined by the District and/or the Director, for the work or craft in which that worker is employed for any public work done under Contract by Contractor or by any Subcontractor under it. The difference between such prevailing wage rates and the amount paid to each worker for

each day or portion thereof for which each worker was paid less than the prevailing wage rate, shall be paid to each worker by Contractor.

Contractor shall post at appropriate conspicuous points on the Site of Project, a schedule showing all determined minimum wage rates and all authorized deductions, if any, from unpaid wages actually earned. In addition, Contractor shall post a sign-in log for all workers and visitors to the Site, a list of all subcontractors of any tier on the Site, and the required Equal Employment Opportunity poster(s).

25.3. Hours of Work

As provided in article 3 (commencing at section 1810), chapter 1, part 7, division 2, of the Labor Code, eight (8) hours of labor shall constitute a legal days work. The time of service of any worker employed at any time by Contractor or by any Subcontractor on any subcontract under this Contract upon the Work or upon any part of the Work contemplated by this Contract shall be limited and restricted by Contractor to eight (8) hours per day, and forty (40) hours during any one week, except as hereinafter provided. Notwithstanding the provisions hereinabove set forth, Work performed by employees of Contractor in excess of eight (8) hours per day and forty (40) hours during any one week, shall be permitted upon this public work upon compensation for all hours worked in excess of eight (8) hours per day at not less than one and one-half times the basic rate of pay.

25.4. Apprentices

Contractor acknowledges and agrees that, if this Contract involves a dollar amount greater than or a number of working days greater than that specified in Labor Code section 1777.5, then this Contract is governed by the provisions of Labor Code Section 1777.5. It shall be the responsibility of Contractor to ensure compliance with this Article and with Labor Code section 1777.5 for all apprenticeship occupations.

Contractor shall become fully acquainted with the law regarding apprentices prior to commencement of the Work. Special attention is directed to sections 1777.5, 1777.6, and 1777.7 of the Labor Code, and title 8, California Code of Regulations, section 200 et seq. Questions may be directed to the State Division of Apprenticeship Standards, 455 Golden Gate Avenue, San Francisco, California 94102.

25.5. Non-Discrimination

Contractor herein agrees not to discriminate in its recruiting, hiring, promotion, demotion, or termination practices on the basis of race, religious creed, national origin, ancestry, sex, age, or physical handicap in the performance of this Contract and to comply with the provisions of the California Fair Employment and Housing Act as set forth in part 2.8 of division 3 of the California Government Code, commencing at section 12900; the Federal Civil Rights Act of 1964, as set forth in Public Law 88-352, and all amendments thereto; Executive Order 11246, and all administrative rules and regulations found to be applicable to Contractor and Subcontractor.

25.6. Labor First Aid

Contractor shall maintain emergency first aid treatment for Contractor's workers on the Project which complies with the Federal Occupational Safety and Health Act of 1970 (29 U.S.C. § 651 et seq.) and the California Occupational Safety and Health Act of 1973 (8 Cal. Code of Regs., §1 et seq.).

26. MISCELLANEOUS

26.1. Assignment of Antitrust Actions

Section 7103.5(b) of the Public Contract Code states:

In entering into a public works contract or subcontract to supply goods, services, or materials pursuant to a public works contract, the Contractor 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 (commending with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, made and become effective at the time the awarding body tenders final payment to the Contractor, without further acknowledgment by the parties.

26.2. Excise Taxes

If, under Federal Excise Tax Law, any transaction hereunder constitutes a sale on which a Federal Excise Tax is imposed and the sale is exempt from such Federal Excise Tax because it is a sale to a State or Local Government for its exclusive use, District, upon request, will execute documents necessary to show (1) that District is a political subdivision of the State for the purposes of such exemption, and (2) that the sale is for the exclusive use of District. No Federal Excise Tax for such materials shall be included in any Contract Price.

26.3. Taxes

Contract Price is to include any and all applicable sales taxes or other taxes that may be due in accordance with section 7051 of the Revenue and Taxation Code; Regulation 1521 of the State Board of Equalization or any other tax code that may be applicable.

26.4. Shipments

All shipments must be F.O.B. destination to Site or sites, as indicated in the Contract Documents. There must be no charge for containers, packing, unpacking, drayage, or insurance. The total Contract Price shall be all inclusive (including sales tax) and no additional costs of any type will be considered.

END OF DOCUMENT

DOCUMENT 00 73 13

SPECIAL CONDITIONS

1. Mitigation Measures

Contractor shall comply with all applicable mitigation measures, if any, adopted by any public agency with respect to this Project pursuant to the California Environmental Quality Act. (Public Ressources Code section 21000 et. seq.)

2. Modernization Projects

a. **Access**. Access to the school buildings and entry to buildings, classrooms, restrooms, mechanical rooms, electrical rooms, or other rooms, for construction purposes, must be coordinated with District and onsite District personnel before Work is to start. Unless agreed to otherwise in writing, only a District custodian will be allowed to unlock and lock doors in existing building(s). The custodian will be available only while college is in session. If a custodian is required to arrive before 7:00 a.m. or leave after 3:30 p.m. to accommodate Contractor's Work, the overtime wages for the custodian will be paid by the Contractor, unless, at the discretion of the District, other arrangements are made in advance.

b. **Master Key**. Upon request, the District may, at its own discretion, provide a master key to the school site for the convenience of the Contractor. The Contractor agrees to pay all expenses to re-key the entire school site and all other affected District buildings if the master key is lost or stolen or if any unauthorized party obtains a copy of the key or access to the school.

c. **Maintaining Services**. The Contractor is advised that Work is to be performed in spaces regularly scheduled for instruction. Interruption and/or periods of shutdown of public access, electrical service, water service, lighting, or other utilities shall be only as arranged in advance with the District. Contractor shall provide temporary services to all facilities interrupted by Contractor's Work.

d. **Maintaining Utilities**. The Contractor shall maintain in operation during duration of Contract, drainage lines, storm drains, sewers, water, gas, electrical, steam, and other utility service lines within working area.

e. **Confidentiality**. Contractor shall maintain the confidentiality of all information, documents, programs, procedures and all other items that Contractor encounters while performing the Work. This requirement shall be ongoing and shall survive the expiration or termination of this Contract and specifically includes, without limitation, all student, parent, and employee disciplinary information and health information.

3. Substitution for Specified Items

a. Requests for substitutions **prior** to award of the Contract shall be done within the time period indicated in the Instructions to Bidders.

Requests for substitutions **after** award of the Contract shall be within **THIRTY-FIVE** (**35**) days of the date of the Contractor's Notice to Proceed.

b. Whenever in the Specifications any materials, process, or article is indicated or specified by grade, patent, or proprietary name, or by name of manufacturer, that Specification shall be deemed to be followed by the words “or equal.” Contractor may, unless otherwise stated, offer any material, process, or article that shall be substantially equal or better in every respect to that so indicated or specified.

   i. If the material, process, or article offered by Contractor is not, in the opinion of the District, substantially equal or better in every respect to that specified, then Contractor shall furnish the material, process, or article specified in the Specifications without any additional compensation or change order.

   ii. This provision shall not be applicable with respect to any material, product, thing or service for which District made findings and gave notice in accordance with Public Contract Code section 3400(b); therefore, Contractor shall not be entitled to request a substitution with respect to those materials, products or services.

c. A request for a substitution shall be in writing and shall include:

   i. All variations of the proposed substitute from the material specified including, but not limited to, principles of operation, materials, or construction finish, thickness or gauge of materials, dimensions, weight, and tolerances;

   ii. Available maintenance, repair or replacement services;

   iii. Increases or decreases in operating, maintenance, repair, replacement, and spare parts costs;

   iv. Whether or not acceptance of the substitute will require other changes in the Work (or in work performed by the District or others under Contract with the District); and

   v. The time impact on any part of the Work resulting directly or indirectly from acceptance of the proposed substitute.

d. No substitutions shall be made until approved, in writing, by the District. The burden of proof as to equality of any material, process, or article shall rest with Contractor. The Contractor warrants that if substitutes are approved:

   i. The proposed substitute is equal or superior in all respects to that specified, and that such proposed substitute is suitable and fit for the intended purpose and will perform adequately the function and achieve the results called for by the general design and the Contract Documents;

   ii. The Contractor provides the same warranties and guarantees for the substitute that would be provided for that specified;

   iii. The Contractor shall be fully responsible for the installation of the substitute and any changes in the Work required, either directly or indirectly, because of the acceptance of such substitute, with no increase in Contract Price or Contract Time. Incidental changes or extra component parts required to accommodate the substitute will be made by the Contractor without a change in the Contract Price or Contract Time;

   iv. The Contractor shall be responsible for any re-design costs occasioned by District's acceptance and/or approval of any substitute; and

v. The Contractor shall, in the event that a substitute is less costly than that specified, credit the District with one hundred percent (100%) of the net difference between the substitute and the originally specified material. In this event, the Contractor agrees to execute a deductive Change Order to reflect that credit.

e. In the event Contractor furnishes a material, process, or article more expensive than that specified, the difference in the cost of that material, process, or article so furnished shall be borne by Contractor.

f. In no event shall the District be liable for any increase in Contract Price or Contract Time due to any claimed delay in the evaluation of any proposed substitute or in the acceptance or rejection of any proposed substitute.

4. <u>Storm Water Permits and Inspections (If Applicable)</u>

A. NPDES Requirements: Prior to the disturbance of any soil, the Contractor shall verify that coverage under the State of California Construction Activities Storm Water General Permit (CASWGP) has been obtained, and that the 'Notice of Intent' (NOI) has been filed by the legally responsible person (LRP = Property Owner). The contractor shall implement and monitor the Storm Water Pollution Prevention Plan (SWPPP) in accordance with the State of California Water Resources Control Board (SWRCB) requirements. The contractor shall have a Qualified SWPPP Practitioner (QSP) on the project site throughout the construction process as required by the SWRCB, and the QSP shall submit all required reports to the owner (LRP) for submittal to the SWRCB. The legally responsible person (LRP = Owner) with assistance from the qualified SWPPP practitioner (QSP) must prepare and electronically submit an annual report no later than September 1 of each year using the storm water multi-application reporting and tracking system (SMARTS). The annual report must include a summary and evaluation of all sampling and analysis results, original laboratory reports, and chain of custody forms, site inspection forms, a summary of all corrective actions taken during the compliance year, and identification of any compliance activities or corrective actions that were not implemented. The contractor shall include the costs for the QSP to provide this information and assistance to the LRP in the price bid for the project work. **Any fines levied by the State of California for the failure of filing required reports or information shall be paid for by the contractor.** The contractor shall be responsible for coordination with the owner for the filing of the 'Notice of Termination' (NOT) at the conclusion of this project.

B. The Contractor shall retain the services of a Qualified SWPPP Practitioner (QSP). The QSP will be required to implement the SWPPP and all required BMP's, prepare the required reports and provide the reports to the owner for the required annual reporting (SMARTS) and the close-out processing (NOT) as per the State Water Resources Control Board requirements.

C. Contractor shall comply with the drawings that are part of the Contract Documents and the District prepared Storm Water Pollution Prevention Plan (SWPPP) requirements and Contractor shall be responsible for implementing all requirements throughout the duration of the project, at no additional cost to the District.

D. All permits and inspections required for the work shall be obtained and paid for by the Contractor. The SWPPP and NOI will be provided to the contractor by the owner.

E. The Contractor shall give all required notices to proper authorities relative to work in his charge and shall be responsible for all losses and damages occasioned by failure to give

such notices. The Contractor shall procure at his own expense all required certificates covering inspection and acceptance of work by such authorities as being in conformity with controlling ordinances and regulations.

F. The Contractor shall be responsible for including copies of all documents and reports produced on a monthly basis in the monthly payment applications. Payment applications will be considered incomplete without these reports and will not be processed.

END OF DOCUMENT

CONTRACTOR NOTIFICATION

FOR ASBESTOS AND LEAD CONTAINING MATERIALS

I, _____ (printed name of contractor's supervisor), representing

_____(name of contractor), acknowledge that I have received notification that the red primer coating applied to structural steel of the building is known to contain lead paint. In addition, any other suspect paints, coatings, or materials to be disturbed shall be reviewed to ensure they do not contain asbestos or lead prior to impact.

I acknowledge each of the items below, which I have initialed:

_____ It is understood that the mechanism used to latch the new equipment onto existing structural members of the building should not disturb the painted surface to the point of releasing dust and debris. In the event that this cannot be accomplished, the Architect and Owner will be notified prior to work commencing.

_____ In the event that paint dust or debris is released during attachment, all dust and debris shall be HEPA-vacuumed clean from exposed surfaces immediately and controls evaluated to determine if adjustments can be made to prevent impact to painted surfaces.

_____ I understand that I, or any of my employees, **may not** disturb any materials (other than wood, glass, concrete, rubber, plastic, or metal) unless they are identified as being asbestos free ("Non-Suspect" or "None Detected"). I am aware that any materials encountered that are not listed in any reports provided by the Owner must be treated as asbestos-containing until sampled, or declared non-suspect, by Forensic Analytical Consulting Services, Inc.

_____ I am aware that any paints encountered that are not listed in any reports provided by the Owner must be treated as lead-containing until sampled by Forensic Analytical Consulting Services, Inc.

_____ I understand that if a painted/glossed surface must be disturbed, I must use lead trained workers, and follow all applicable regulations, or report the necessary work to the District and Architect.

_____ I have informed all employees, for the contractor named above, who will be working on this project on the items in this notification. Furthermore, I have instructed all employees to seek clarification from the Owner or Architect on any issues arising on this project concerning asbestos or lead painted materials.

_____ All employees assigned to this project will review and sign a copy of this notification.

Signature_____ Date _____

Copies of notification signed by employees, must be submitted prior to employee's start of work on this project. Failure to submit notification may cause delay in contractor's start date, this delay will not affect contractor's required completion date.

END OF SECTION

BUY AMERICA CERTIFICATE

(To be submitted with each bid or offer exceeding $250,000)

Certification requirement for procurement of steel, iron, or manufactured products.

Certificate of Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it will meet the requirements of 49 U.S.C. 5323 (j)(1) and the applicable regulations in 49 CFR Part 661.5.

Date_____

Signature_____

Company Name _____ Title _____

Certificate of Non-Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(1) and 49

C.F.R. 661.5, but it may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 C.F.R. 661.7.

Date_____

Signature_____

Company Name _____ Title _____

Title _____

END OF SECTION

SECTION 010270
CONTRACTOR'S APPLICATION FOR PAYMENT FORM

PROJECT: _____ PERIOD ENDING:_____20__

BID PACKAGE: _____ BID DIVISION: _____

CONTRACTOR: _____

ADDRESS: _____

AGREEMENT #:_____ PROGRESS PAYMENT REQUEST NO._____

1. Original Agreement Amount	$_____
2. Contract Increased by Change Order #____ Through C.O. #_____	$_____
3. Contract Credit by Change Order #_____ Through C. O. #_	$_____
4. Revised Agreement Amount to Date (Lines 1+2)	$_____
5. Value of Work Completed to Date (Per Attached Breakdown)	$_____
6. Less 5% Retention of Completed Work	($_____)
7. Earned to Date Less Retention	($_____)
8. Previous Payments	$_____
9. CURRENT AMOUNT DUE THIS REQUEST	$_____
10. Balance of Contract	$_____

CERTIFICATE OF THE CONTRACTOR:
I hereby certify that the work performed and the materials supplied to date, as shown on the above, represents the actual value of accomplishment under the terms of the contract (and all authorized changes thereto) between the undersigned and the Yosemite Community College District relating to the above referenced project.

I hereby certify that payments, less applicable retention, have been made through the period covered by previous payments received from the District, to (1) all my subcontractors (sub-subcontractors) and (2) for all materials and labor used in or in connection with the performance of this Contract. I further certify I have complied with Federal, State and Local tax laws, including Social Security laws and Unemployment Compensation laws and Workman's Compensation laws insofar as applicable to the performance of this contract.

(Status is a necessary condition of payment - Cross out incorrect indication) I hereby certify that we (have completed) or (have not completed) a sufficient portion of the work of this contract to maintain our current completion schedule (contract plus change orders) and are familiar with the liquidated damages clause contained in this contract.

_____ _____
Contractor Date

BY:_____ _____
Authorized Agent Title

RECOMMENDED FOR PROCESSING

_____ _____
Inspector of Record Date

_____ _____
Construction Manager (If Applicable) Date

_____ _____
Architect Date

_____ _____
Senior Director, Facilities Planning, Maintenance & Transportation Date

CONDITIONAL WAIVER AND RELEASE UPON PROGRESS PAYMENT

Upon receipt by the undersigned of a check from _____
MAKER OF CHECK

in the sum of $ _____ payable to _____
AMOUNT OF CHECK 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 _____
OWNER

located at _____ to the following extent.

This release covers a progress payment for labor, services, equipment, or material furnished to

_____ through _____
YOUR CUSTOMER DATE

only and does not cover any retentions retained before or after the release date; extras furnished before the release date for which payment has not been received; extras or items furnished after the release date. Rights based upon work performed or items furnished under a written change order which has been fully executed by the parties prior to the release date are covered by this release unless specifically reserved by the claimant in this release. This release of any mechanic's lien, stop notice, or bond right shall not otherwise affect the contract rights, including rights between parties to the contract based upon a rescission, abandonment, or breach of the contract, or the right of the undersigned to recover compensation for furnished labor, services, equipment, or material covered by this release if that furnished labor, services, equipment, or material was not compensated by the progress payment.

Before any recipient of this document relies on it, said party should verify evidence of payment to the undersigned.

Dated: _____ _____
COMPANY NAME

By: _____
TITLE

If the claimant is required to execute a waiver and release in exchange for, or in order to induce payment of, a progress payment and the claimant asserts in the waiver it has, in fact, been paid the progress payment, the waiver and release shall follow substantially the following form:

UNCONDITIONAL WAIVER AND RELEASE UPON PROGRESS PAYMENT

The undersigned has been paid and has received a progress payment in the sum of

$_____ for labor, services, equipment, or material furnished to _____
YOUR CUSTOMER

on the job of _____ located at _____
OWNER JOB DESCRIPTION

and does hereby release any mechanic's lien, stop notice, or bond right that the undersigned has on the above referenced job to the following extent.

This release covers a progress payment for labor, services, equipment, or materials furnished

to _____ through _____
YOUR CUSTOMER DATE

only and does not cover any retentions retained before or after the release date; extras furnished before the release date for which payment has not been received; extras or items furnished after the release date. Rights based upon work performed or items furnished under a written change order which has been fully executed by the parties prior to the release date are covered by this release unless specifically reserved by the claimant in this release. This release of any mechanic's lien, stop notice, or bond right shall not otherwise affect the contract rights, including rights between parties to the contract based upon a rescission, abandonment, or breach of the contract, or the right of the undersigned to recover compensation for furnished labor, services, equipment, or material covered by this release if that furnished labor, services, equipment, or material was not compensated by the progress payment.

Dated: _____ _____
COMPANY NAME

By: _____
TITLE

NOTICE: THIS DOCUMENT WAIVES RIGHTS UNCONDITIONALLY AND STATES THAT YOU HAVE BEEN PAID FOR GIVING UP THOSE RIGHTS. THIS DOCUMENT IS ENFORCEABLE AGAINST YOU IF YOU SIGN IT, EVEN IF YOU HAVE NOT BEEN PAID. IF YOU HAVE NOT BEEN PAID, USE A CONDITIONAL RELEASE FORM.

If the claimant is required to execute a waiver and release in exchange for, or in order to induce the payment of, a final payment and the claimant is not, in fact, paid in exchange for the waiver and release or a single payee check or joint payee check is given in exchange for the waiver and release, the waiver and release shall follow substantially the following form:

CONDITIONAL WAIVER AND RELEASE UPON FINAL PAYMENT

Upon receipt by the undersigned of a check from _____
MAKER OF CHECK

in the sum of $_____ payable to _____
AMOUNT OF CHECK 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 _____
OWNER

located at _____.
JOB DESCRIPTION

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

If the claimant is required to execute a waiver and release in exchange for, or in order to induce payment of, a final payment and the claimant asserts in the waiver it has, in fact, been paid the final payment, the waiver and release shall follow substantially the following form:

UNCONDITIONAL WAIVER AND RELEASE UPON FINAL PAYMENT

The undersigned has been paid in full for all labor, services, equipment, or material furnished

to _____ on the job of _____
YOUR CUSTOMER OWNER

located at _____ and does hereby waive and release any

right to a mechanic's lien, stop notice, or any right against a labor and material bond on the job,

except for disputed claims for extra work in the amount of $ _____.

Dated: _____ _____
COMPANY NAME

By: _____
TITLE

NOTICE: THIS DOCUMENT WAIVES RIGHTS UNCONDITIONALLY AND STATES THAT YOU HAVE BEEN PAID FOR GIVING UP THOSE RIGHTS. THIS DOCUMENT IS ENFORCEABLE AGAINST YOU IF YOU SIGN IT, EVEN IF YOU HAVE NOT BEEN PAID. IF YOU HAVE NOT BEEN PAID, USE A CONDITIONAL RELEASE FORM.

END OF SECTION

SECTION 011100
SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes:

1. Project information.
2. Work covered by Contract Documents.
3. Sitework Contract.
4. Work by Owner.
5. Work under separate contracts and/or work by owner designated contractors.
6. Access to site.
7. Work restrictions.
8. Specification and drawing conventions.
9. Proposed Project Schedule.

B. Related Sections:

1. Division 01 Section "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

2. Division 01 Section "Multiple Contract Summary", for summary of work to be completed under separate contracts.

3. See APPENDIX for:

a. Construction Schedule
b. Geotechnical information
c. Hazardous Material information
d. CAL-Green Code Submittal Check list, 403-C
e. Contractor Laydown, Storage Area, Vehicle Access Location and Extent of Temporary Fencing.

1.3 PROJECT INFORMATION

A. Project Identification:

Modesto Junior College, East Campus
Football Field Press Box & Elevator
435 College Ave.,
Modesto, CA 95350

Architect's Project Number: 21-12111
District Bid Number: 26-1957
DSA Application Number: 02-123619
DSA File Number: 50-C1

B. Owner:

Yosemite Community College District
2201 Blue Gum Ave.
Modesto, CA 95358

Telephone: (209) 575-6512
Contact: Yolanda Perregil

Telephone: (209) 575-6574
Contact: Crista Noakes

C. Architect:

TETER, Inc.
7535 North Palm Avenue, Suite 201
Fresno, California 93711

Telephone 559.437.0887
Contact: James E. Hickman, Jr.

D. Structural Engineer:

Axiom Structural Engineer
167 S. Thor Street
Turlock, California 95380

Telephone 209.604.2898
Contact: Michael Showerman

E. Civil Engineer:

Associated Engineering Group
4206 Technology Drive, Ste. 4
Modesto, CA 95356

Telephone 209.545.3390
Contact: Ryan Carrel

F. Electrical Engineer:

TETER, Inc.
7535 North Palm Avenue, Suite 201
Fresno, California 93711

Telephone 559.437.0887
Contact: Evan Bastian

G. Press Box/Covered Filming Platforms and Stairs Manufacturer:

Southern Bleacher Company
P,O. Box One
Graham, Texas 76450

Telephone 916.812.4901
Contact: Joseph Hoy

H. Elevator Manufacturer:

Phoenix Modular Elevator
4800 Phoenix Dr.
Mount Vernon, IL 62864

Telephone 618.244.2314
Contact: Tim House

1.4 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of the Project is defined by the Contract Documents and will be executed under multiple separate contracts; work of each contract will be conducted simultaneously with the work of other contracts. Separate bid package and contracts will be issued for the following:

1. Current Contract

a. Site Work. Including on-site work and designated work within the public right of way.

2. Previous Contracts

a. New press box, covered filming platforms, metal stairs and support structure, guardrails and handrails.

B. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts

C. Refer to Division 01 Section “Multiple Contract Summary” for additional information regarding multiple contracts and coordination of the work.

1.5 SITE WORK CONTRACT:

A. Demolition of selective existing site features, existing concrete bleacher features, two (2) existing press boxes, existing stud walls, and other designated items and systems.

B. Asbestos and Lead Abatement

C. Synthetic track surfacing repairs and striping.

D. New site concrete, paving, bollards and other site improvements.

E. New site utilities and associated site work in connection to new press box and prefabricated elevator, and elevator machine room.

F. Relocation of existing designated site utilities and systems.

G. New concrete elevator hoist way and associated site work for prefabricated elevator.

H. Removal and replacement of designated existing metal siding and accessories at existing bleachers (south end bleachers).

I. Installation of metal siding, roofing flashings and accessories at prefabricated elevator and machine room.

J. Installation of subflooring and finished flooring at prefabricated elevator.

K. Painting

L. Removal and replacement of existing designated chain link fencing, gates and accessories.

M. Site lighting

N. Coordination with work of press box and prefabricated elevator manufacturers.

O. Signage and dimension character signage.

P. Removal and reinstallation of existing exhaust fan (above the existing restrooms).

Q. Designated concrete removal and replacement work at the existing concrete bleachers.

R. Fire alarm system at new press box and prefabricated elevator.

S. I.T., UPS and other designated electrical and low voltage equipment and systems.

T. Securement of project site and project site maintenance and clean up.

U. Procurement, fabrication, shipping and installation of prefabricated elevator and elevator machine room components.

1.6 TYPE OF CONTRACT

A. Project will be constructed under a single prime contract.

1.7 WORK BY OWNER

A. Preceding Work: Owner will perform the following construction operations at Project site. Those operations are scheduled to be substantially complete before work under this Contract begins.

1. Owner to remove existing equipment in existing press boxes and items above the existing restrooms.
2. Owner to remove existing trees along Tully Road, West of the new press box.

1.8 WORK UNDER SEPARATE CONTRACTS AND/OR WORK BY OWNER DESIGNATED CONTRACTORS.

A. General: Site Work contractor shall cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract or other contracts. Site Work contractor shall coordinate the Work of this Contract with work performed under separate contracts.

B. Concurrent Work: Owner has awarded a Contractor separate contract for the following construction operations at the Project site. Those operations will be conducted simultaneously with work under this Contract.

1. New press box, covered filming platforms, metal stairs and support structure, guardrails and handrails.

1.9 EXAMINATION OF EXISTING CONDITIONS

A. The Contractor shall be held to have examined the Project Site and building and acquainted themselves with the conditions of the site and building and access to the streets and roads serving the site and building.

B. Prior to commencement of Work, Contractor shall survey the site and observe existing conditions of the site.

C. Hazardous Materials are known to be present. Refer to APPENDIX for Hazardous Material reports.

1.10 ACCESS TO SITE

A. General: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.

B. General: Contractor shall have limited use of Project site for construction operations as indicated in the Appendix by the Contract limits and as indicated by requirements of this Section.

C. Use of Site: Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Driveways, Walkways and Entrances: Other than those specifically designated for the contractor, contractor shall keep all driveways, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

    a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
    b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

D. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weather tight condition throughout construction period. Repair damage caused by construction operations.

E. Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.

1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied prior to Owner acceptance of the completed Work.

2. Obtain a Certificate of Occupancy from authorities having jurisdiction before limited Owner occupancy.
3. Before limited Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of Work.
4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of Work.
5. Contractor shall allow access by Owner's staff to the ground's storage area, which is located below the southernmost section of metal bleachers on the Home Side of the field. Access is required for vehicles (mowers) and other equipment which cannot be relocated.

1.11 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work to between 7:00 a.m. to 5:00 p.m., Monday through Friday, unless otherwise indicated. Work hours may be modified to meet Project requirements if approved by Owner and authorities having jurisdiction.

1. Submit a written request to the Architect for work hours outside of the indicted on-site hours; request subject to review by the Owner.

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:

1. Notify Architect and Owner not less than 2 days in advance of proposed utility interruptions.
2. Obtain Architect's and Owner's written permission before proceeding with utility interruptions.

D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.

1. Notify Architect and Owner not less than 2 days in advance of proposed disruptive operations.
2. Obtain Architect's and Owner's written permission before proceeding with disruptive operations.

E. Smoking and Controlled Substance Restrictions: Use of tobacco products, alcoholic beverages, and other controlled substances on Project site is not permitted.

1.12 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Specification requirements shall be complied with by Contractor unless specifically stated otherwise.

B. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.

C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

1. Where conflicts occur between Division 00 Contracting Requirements and Division 01 General Requirements, the most restrictive requirements shall apply; Architect shall make the final decision on which requirement(s) apply.

D. Drawing and Specification Coordination:

1. Requirements for materials and products identified on Drawings are described in detail in the Specifications unless materials and products are described in detail on the Drawings.
2. Generic terms are used to identify materials and products on the Drawings.
3. Specifications establish minimum quality standards for products, materials, and installation requirements unless more stringent requirements are indicated on the Drawings; Drawings establish material and product location and quantity.
4. Where requirements for materials and products indicated on the Drawings are not specified, provide heavy duty commercial grade products and materials.

1.13 PROPOSED PROJECT SCHEDULE

A.	First Advertisement	September 16, 2026
B.	Mandatory Pre-Bid Job Walk	September 30, 2026, at 9:00am
C.	Last day for submission for RFI's	October 14, 2026, at noon
D.	Issuance of Final Addenda	October 16, 2026, at 4:00pm
E.	Bid Opening	October 21, 2026, 4:00pm
F.	Estimated Notice of Award	October 28, 2026
G.	Estimated Notice to Proceed	November 11, 2026
H.	Onsite Construction	November 16, 2026

Note: No construction activities can be on going on during the following dates:

- November 21, 2026
- November 28, 2026
- December 5, 2026

I.	Construction Complete	June 23, 2027

** (refer to APPENDIX for detailed Construction Schedule)

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 011101
MULTIPLE CONTRACT SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes a summary of the Work of each contract including responsibilities for coordination and temporary facilities and controls. Contracts include the following:

1. Site Work Contract.
2. New Press Box, covered filming plat forms, metal stairs and support structure, guardrails and handrails.

B. Specific requirements for Work of each contract are also indicated in individual Specification Sections and on Drawings.

C. Related Requirements:

1. Division 01 Section "Summary of Work" for the Work covered by the Contract Documents, restrictions on use of Project site, coordination with occupants, and work restrictions.
2. Division 01 Section "Project Management and Coordination" for general coordination requirements.

1.3 COORDINATION

A. Coordinators: The Contractor for each contract shall appoint a project coordinator to be responsible for coordination of each contractor’s work with other contractors.

B. Coordination Activities: Coordination requirements shall include, but are not limited to, coordination of the following:

1. Work between contracts.
2. Access to shared or common work spaces.
3. Temporary facilities and controls.
4. Interruptions of permanent and temporary utilities, including those necessary to make connections for temporary services.
5. Construction and operations of the Work with work performed by each Contract.
6. Coordination drawings in collaboration with each contractor to coordinate work by more than one contract.

7. Quality-assurance and quality-control services specified in Division 01 Section "Quality Requirements" as applicable to respective Work.
8. Sequence of activities to accommodate tests and inspections, and coordinate schedule of tests and inspections as applicable to respective Work.
9. Information necessary to adjust, move, or relocate existing utility structures affected by construction.
10. Locate existing permanent benchmarks, control points, and similar reference points, and establish permanent benchmarks on Project site.
11. Provide progress cleaning of common areas and coordinate progress cleaning of areas or pieces of equipment where more than one contractor has worked.
12. Cutting and patching.
13. Protection of the Work.
14. Completion of interrelated punch list items.

1.4 GENERAL REQUIREMENTS OF CONTRACTS

A. Extent of Contract: Unless the Agreement contains a more specific description of the Work of each Contract, requirements indicated on Drawings and in Specification Sections determine which contract includes a specific element of Project.

1. Unless otherwise indicated, the work described in this Section for each contract shall be complete systems and assemblies, including products, components, accessories, and installation required by the Contract Documents.
2. Requirements Division 01 Specification Sections shall be applicable to each Contract for its own work.

B. Temporary Facilities and Controls: In addition to specific responsibilities for temporary facilities and controls indicated in this Section and in Division 01 Section "Temporary Facilities and Controls," contractor for each contract is responsible for the following:

1. Plug-in electric power cords and extension cords, supplementary plug-in task lighting, and special lighting necessary exclusively for its own activities.
2. Its own storage and fabrication sheds.
3. Temporary enclosures for its own construction activities.
4. Staging and scaffolding for its own construction activities.
5. General hoisting facilities for its own construction activities.
6. Progress cleaning of work areas affected by its operations on a daily basis.
7. Secure lockup of its own tools, materials, and equipment.
8. Construction aids and miscellaneous services and facilities necessary exclusively for its own construction activities.

1.5 SITE WORK CONTRACT

A. Work of the Site Work Contract includes, but is not limited to, the following:

1. Remaining work not identified as work under other contracts.

2. Selective demolition of selected site, existing bleacher and existing structure improvements as indicated on Drawings and as necessary to accommodate to complete the Work.
3. Site preparation; site clearing, earthwork including over excavation and backfill in preparation for prefabricated elevator and machine room and site improvements.
4. Structural pad and subgrade site preparation for concrete slabs on grade and recessed prefabricated elevator hoistway for the prefabricated elevator and machine room.
5. Site improvements, paving for walkways, and track surfacing repairs.
6. Site utilities, trenching, backfill, and patching.
7. Off haul and disposal of all earth spoils from footing excavations, slab and hoistway excavations, subgrade pad, and other site improvements.
8. See PART 1.7 for additional information.

B. Temporary facilities and controls of the Site Work Contract include, but are not limited to, the following:

1. Temporary facilities and controls that are not otherwise specifically assigned to the Press Box Contract.
2. Unpiped temporary toilet fixtures, wash facilities, and drinking water facilities, including disposable supplies.
3. Temporary project signs.
4. Waste disposal facilities, including construction aids and miscellaneous services and facilities necessary exclusively for its own construction activities.
5. Temporary fire-protection facilities.
6. Barricades, warning signs, and lights.
7. Site enclosure fencing.
8. Security enclosure and lockup.

C. Plumbing Work of the Site Work Contract includes, but is not limited to, the following:

1. Site water distribution, sewers, and storm drainage systems as indicated on the drawings.

D. Electrical Work of the Site Work Contract includes, but is not limited to, the following:

1. Site electrical distribution system.
2. Site communications and security systems.
3. Electrical service and distribution systems.
4. Communication and security systems.
5. Electrical disconnections and reconnections as indicated on the drawings.
6. Disconnection of electrical power at existing Press Box, distribution to new Press Box, and reconnection at new location shall be the responsibility of the Site Work Contract.
7. Fire alarm systems and devices.

1.6 PRESS BOX CONTRACT

A. Work of the Press Box Contract includes, but is not limited to, the following:

1. Structural design and preparation of construction documents through California Division of the State Architect Approval.

2. Construction and installation of a new Press Box including but not limited to the following:

   a. Covered filming platforms, walkway, stairs, and guardrails and handrails.

1.7 PREFABRICATED ELEVATOR AND MACHINE ROOM CONTRACT

A. Work of the Prefabricated Elevator and Machine Room Contract includes, and is limited to, the following:

1. Structural design and preparation of construction documents through California Division of the State Architect Approval.

2. ALL OTHER WORK ASSOCIATED WITH THE PREFABRICATED WITH THE ELEVATOR AND MACHINE ROOM IS TO BE INCLUDED WITHIN THE SITE WORK CONTRACT. (SEE PART 1.5).

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 011103
ADDENDA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for Addenda issued prior to bid and award of the Contract.

B. Related Requirements:

1. Division 00 Sections as applicable to contract requirements and modifications.
2. Division 01 Section "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.
3. Division 01 Section "Contract Modification Procedures" for changes to the Contract Documents after award of the Contract.

1.3 NOTICE TO BIDDERS

A. Addenda will be issued to registered plan holders for changes to the drawings and specifications during the bidding period prior to the award of the contract. Addenda shall serve to clarify, revise, and supersede information in the Project Manual, Drawings, and previously issued Addenda. Portions of the Addenda affecting the Contract Documents will be incorporated into the Contract by enumeration of the Addendum in the Owner/Contractor Agreement.

B. The Bidder shall acknowledge receipt of this Addendum in the appropriate space on the Bid Form.

1.4 GOVERNING AGENCY REVIEW AND APPROVAL

A. Addenda shall be submitted to the Division of the State Architect (DSA) by the project Architect. Addenda shall be approved by DSA prior to incorporation into the construction documents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 011105
USE OF ARCHITECT'S ELECTRONIC FILES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes Administrative and procedural requirements for use of Architect's electronic Contract Document drawing files.

B. Related Sections:

1. Division 01 Section "Project Management and Coordination."
2. Division 01 Section "Submittal Procedures."
3. Division 01 Section "Project Record Drawings."

1.3 USE OF ARCHITECT'S ELECTRONIC FILES

A. Architect may make available to Contractor digital data files of Architect's Drawings for use in preparing shop drawings, coordination drawings, and project record drawings.

1. Electronic files will be available without charge.
2. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.
3. Files will be supplied digitally via email or FTP site and will be in PDF, DWG, or similar common format.
4. Waiver of Liability: Contractor, Subcontractors, and Suppliers of this Project shall each execute a waiver of liability for each use of the Architects electronic files.
    a. Waiver of Liability form shall be submitted to the Architect at the time or request for use of Architect's electronic data files.
    b. Waiver of Liability form shall be the "ELECTRONIC DATA FILE DISTRIBUTION WAIVER OF LIABILITY FORM" included at the end of this Specification Section.
    c. The use of the electronic files shall only be used for this Project and for the identified purposes noted in the Waiver of Liability form.
        1) Each entity shall be responsible for complying with the restrictions of the Liability Waiver form.
        2) Electronic Contract Document drawing files received from the architect shall not be duplicated without written permission of the Architect.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

(Electronic Data File Distribution Waiver of Liability included on the following page)

ELECTRONIC DATA FILE DISTRIBUTION WAIVER OF LIABILITY

TETER
7535 North Palm, Suite 201
Fresno, California 93711

Project: _____

Intended Use: _____

Requested Documents: _____

_____

Any electronic data, files or information provided under this Agreement are the property of the above listed Professionals and consultants (Team). It is understood and agreed that the information contained in these electronic data file shall not be copied or duplicated for any use other than the project for which they were created. It is understood by the undersigned that compatibility of this electronic media with other systems is not guaranteed, and conversion to other systems is done at the user's own risk.

The user hereby agrees and recognizes that designs, plans and data stored on electronic media including, but not limited to, computer disk and magnetic tape, may be subject to undetectable alteration and/or uncontrollable deterioration. It is agreed by the undersigned that the Team shall not be liable for the completeness or accuracy of any material provided on electronic media.

The undersigned agrees to defend, hold harmless and indemnify the Team and its officers, directors, employees, agents and consultants for any and all claims, losses, costs or damage whatsoever arising out of, resulting from, or in any way related to the use of electronic data files provided hereunder, whether that use is authorized or unauthorized. The user further agrees to defend, indemnify and hold harmless the Team its officers, directors, employees, agents and consultants from any and all claims, damages, losses, expenses and injuries arising out of the modification of the electronic data files by the user or by anyone obtaining said files through or from the user.

The Team bears no responsibility for the information in the electronic data files once it leaves the offices of **TETER**. The undersigned understands that the electronic data files are subject to applicable copyright laws of the United States and agrees to be bound by same. Upon our receipt of this agreement duly executed by an Officer of your firm you may request the Data files.

Name (Print/Sign): _____ Date: _____

Firm: _____ _____

Phone and email: _____ _____

Name (Print/Sign): _____ Date: _____

Firm: _____ _____

Phone and email: _____ _____

Name (Print/Sign): _____ Date: _____

Firm: _____ _____

Phone and email: _____ _____

SECTION 012116
ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements governing unit price allowances.

1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.

B. Related Requirements:

1. Division 01 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders.

C. Types of allowances to include the following:

1. Allowance No. 1: Lump Sum allowance, “Not to exceed” $25,000.00.

2. Allowance No. 2: Lump Sum allowance, “Not to exceed” $100,000.00.

1.3 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection, or purchase and delivery, of each product or system described by an allowance must be completed by the Owner to avoid delaying the Work.

B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

1.4 ACTION SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances in the form specified for Change Orders.

1.5 INFORMATIONAL SUBMITTALS

A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.

C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.6 COORDINATION

A. Coordinate allowance items with other portions of the work. Furnish templates as required to coordinate installation.

1.7 LUMP-SUM – “NOT TO EXCEED” ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include taxes, freight, and delivery to Project site.

B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner or selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.

C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

A. Allowance No. 1 Synthetic Track Repairs: Include the sum of $25,000.00, Lump-Sum Not to Exceed for unforeseen conditions or modifications not addressed with the Contract Documents.

1. This allowance includes material cost, receiving, handling, installation, and contractor overhead and profit.
2. Prior approval and use of this Allowance by the owner is required. Lack of owner approval may be grounds for rejection of any contractor submitted costs.
3. Contractor shall submit all material invoices for material being replaced as part of the allowance. Any portion of the allowance that is not used will be credited back to the owner in a deductive Change Order.

B. Allowance No. 2 Unforeseen Conditions and Owner directed modifications: Include the sum of $100,000.00, Lump-Sum Not to Exceed for unforeseen conditions or modifications not addressed with the Contract Documents.

1. This allowance includes material cost, receiving, handling, installation, and contractor overhead and profit.
2. Prior approval and use of this Allowance by the owner is required. Lack of owner approval may be grounds for rejection of any contractor submitted costs.
3. Contractor shall submit all material invoices for material being replaced as part of the allowance. Any portion of the allowance that is not used will be credited back to the owner in a deductive Change Order.

END OF SECTION

SECTION 012500
SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Sections:

1. Division 01 Section “DSA Hourly Fee Services” for DSA hourly fee services for review of changes to DSA approved Construction Documents.
2. Division 01 Section “Contract Modification Procedures” for changes to DSA approved Construction Documents.”
3. Division 01 Section "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.
4. Divisions 02 through 33 Sections for specific requirements and limitations for substitutions.

1.3 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor that are not required in order to meet other Project requirements but may offer advantage to the Owner.

A. Division of the State Architect (DSA) Review and Approval: Substitutions resulting in changes to DSA approved Construction Documents may be considered a change requiring DSA review and approval and submission of a DSA Construction Change Document (CCD) form by the Architect.

1. DSA Construction Change Documents shall be as specified in Division 01 Section “Contract Modification Procedures.”
2. DSA Hourly Fee Services for review of CCD’s shall be as specified in Division 01 Section “DSA Hourly Fee Services.”

1.5 SUBMITTALS

A. Substitution Requests: Submit documentation identifying product or fabrication or installation method to be replaced. Include Specification Section number and title, and Drawing numbers and titles.

1. Substitution Request Form: Use form provided at the end of this Section.
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable specification section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. Certificates and qualification data, where applicable or requested.
g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
k. Cost information, including a proposal of change, if any, in the Contract Sum.

l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within 7 days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later. Architect will not act on any Post-Bid Substitutions until 7 days following the submission of the Schedule of Values per Division 01 Section “Payment Procedures.”

a. Forms of Acceptance:

1) Substitutions Prior to Bid: Addenda will be issued for substitutions accepted prior to bid.
2) Substitutions After Award of Contract: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.

b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.6 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage qualified testing agency to perform compatibility tests recommended by manufacturers.

1.7 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.8 SUBSTITUTIONS

A. Substitutions Prior to Bid: Architect will consider requests for substitution if received within 21 days prior to the submission of bids. Requests received after that time may be considered or rejected at discretion of Architect.

1. Conditions: Architect will consider bidder’s request for substitution when the following conditions are satisfied.

a. Substitutions prior to bid shall also be subject to the requirements of applicable Division 00 Specification Sections.
b. Substitutions prior to bid shall comply with the requirements for Substitutions for Cause or Substitutions for Convenience as applicable.

2. Substitutions requested by bidders during the bidding period, and accepted by Addendum prior to award of the Contract, are considered as included in the Contract Documents.

B. Substitutions After Award of Contract: The Contractor after award of the Contract, as allowed by the General Conditions, may submit materials and methods to be considered for substitutions.

1. The following are not considered to be substitutions:

a. Revisions to the Contract Documents requested by the Owner or Architect.
b. Specified options of products and construction methods included in the Contract Documents.
c. The Contractor’s compliance with governing regulations and orders issued by governing authorities.

C. Substitutions for Cause: Submit requests for substitution immediately upon discovery of need for change, but not later than 21 days prior to time required for preparation and review of related submittals.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
b. Substitution request is fully documented and properly submitted.
c. Requested substitution will not adversely affect Contractor's construction schedule.
d. Requested substitution has received necessary approvals of authorities having jurisdiction.
e. Requested substitution is compatible with other portions of the Work.
f. Requested substitution has been coordinated with other portions of the Work.
g. Requested substitution provides specified warranty.
h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

D. Substitutions for Convenience: Architect will consider requests for substitution if received within 60 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

    a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
    b. Requested substitution does not require extensive revisions to the Contract Documents.
    c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
    d. Substitution request is fully documented and properly submitted.
    e. Requested substitution will not adversely affect Contractor's construction schedule.
    f. Requested substitution has received necessary approvals of authorities having jurisdiction.
    g. Requested substitution is compatible with other portions of the Work.
    h. Requested substitution has been coordinated with other portions of the Work.
    i. Requested substitution provides specified warranty.
    j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

(Substitution Request Form included on the following page)

Substitution Request Form

Corporate Headquarters
7535 N. Palm Ave. #201
Fresno, CA 93711

559.437.0887 T
559.438.7554 F
teterae.com

FOR: MJC East- Football Press Box & Elevator

We hereby submit for your consideration the following product instead of the specified item for the above project:

SECTION	PARAGRAPH	SPECIFIED ITEM

Proposed Substitution: _____

Attach complete technical data, including laboratory tests, if applicable.

Include complete information on changes to Drawings and/or Specifications which proposed substitution will require for its proposed installation.

Fill in the blanks below:

A. Does the substitution affect dimension on Drawings:

_____

B. Will the undersigned pay for changes to the building design, including engineering and detailing costs caused by the requested substitution?

_____

C. What affect does substitution have on other trades?

_____

D. Difference between proposed substitution and specified item?

_____

E. Manufacturer's guarantees of the proposed and specified items are:

_____ Same _____ Different (explain on attachment)

F. Cost difference between proposed substitution and specified item - savings to Owner?

_____

The undersigned states that the function, appearance and quality are equivalent or superior to the specified item and will be at no additional cost to the Owner.

Submitted to the Architect by:

Signature: _____

Firm: _____

Address: _____

_____

Date: _____

Telephone: _____

Remarks: _____

For Use by Design Consultant

Accepted _____
Accepted as Noted _____
Not Accepted _____
Received Too Late _____

By: _____

Date: _____

SECTION 012600
CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications including the following:

1. Governing Agency approval.
2. Bulletins.
3. Architect’s Supplemental Instructions.
4. Architect’s Change Directive.
5. Requests for Proposals.
6. Change Order Requests.
7. Cost Change Directives.
8. Change Orders.
9. Weather related delays.

B. Related Requirements:

1. Division 00 Sections as applicable to contract requirements and modifications.
2. Division 01 Section "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.
3. Division 01 Section “DSA Hourly Fee Services” for fees charged by DSA for changes to the Construction Documents.
4. Division 01 Section “Construction Progress Documentation” for contractor’s construction schedule.

1.3 DEFINITIONS

A. Contract Modification: A change to the Contract Agreement between the Owner and the Contractor affecting the Contract Documents, the Contract Time, and/or the Contract Amount.

1.4 GOVERNING AGENCY APPROVAL

A. DSA Approval: Changes to DSA approved Construction Documents shall be reviewed and approved by DSA.

1. Changes to DSA Approved Construction Documents shall comply with requirements of DSA Interpretive Regulation IR A-6, “Construction Change Document Submittal and Approval Process” and shall be accompanied by DSA Form 140 “Application for Submittal of Post-Approval Document.”
2. Architect shall be responsible for preparing Construction Change Documents and submitting documentation to DSA.

B. DSA Hourly Fee Services: Changes to DSA approved Construction Documents shall be reviewed by DSA and shall be subject to DSA Hourly Fee Services. Charges will be made to the Owner by DSA.

1. Where changes to DSA approved Construction Documents are the result of actions by the Contractor, the Contractor shall be liable for DSA Hourly Fee Services as described in Division 01 Section “DSA Hourly Fee Services.”

1.5 BULLETINS

A. Bulletins: A form used by the Architect for issuing Architect’s Supplemental Instructions (ASI), Architect’s Change Directives (ACD), and Requests for Proposals (RFP).

1.6 ARCHITECT’S SUPPLEMENTAL INSTRUCTION

A. Architect’s Supplemental Instruction (ASI): Supplemental instructions will be issued by the Architect authorizing minor changes in the Work not involving adjustment to the Contract Sum or the Contract Time.

1. Architect’s Supplemental Instructions will be issued via Bulletin and signed by the Architect.
2. Contractor’s Response: Contractor shall perform the work indicated in the Architect’s Supplemental Instruction without adjustment to the Contract Sum or the Contract Time. If the Contractor determines that an adjustment to the Contract Sum or the Contract Time is necessary due to the Architect’s Supplemental Instruction, the Contractor shall respond to the Architect’s Supplemental Instruction as if it were an Architect/Owner initiated Request for Proposal.

B. DSA Review and Approval: Architect’s Supplemental Instructions affecting changes to the DSA Approved Construction Documents shall be subject to DSA review and approval; Architect shall submit applicable DSA CCD documentation to DSA for approval.

1.7 ARCHITECT’S CHANGE DIRECTIVE

A. Architect’s Change Directive (ACD): Architect’s Change Directives will be issued by the Architect instructing the Contractor to proceed with a change in the Work for subsequent inclusion in a Change Order.

1. Architect's Change Directives will be issued via Bulletin and signed by the Architect.
2. Architect's Change Directives contain a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation by Contractor: Maintain detailed records on a time and material basis of work required by the Architect's Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

C. DSA Review and Approval: Architect's Change Directives affecting changes to the DSA Approved Construction Documents shall be subject to DSA review and approval; Architect shall submit applicable DSA CCD documentation to DSA for approval.

1.8 REQUEST FOR PROPOSALS

A. Requests for Proposals: Requests for Proposals are Architect/Owner initiated requests for estimates of changes to the Contract Sum and/or Contract Time for proposed changes; Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. The description may include supplemental or revised Drawings and Specifications.

1. Requests for Proposals will be issued by the Architect via Bulletin.
2. Requests for Proposals are not authorization or instructions to either stop work in progress or execute proposed change(s).
3. Contractor's Response: Within not more than 7 days after receipt of Request for Proposal, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

    a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include costs of labor and supervision directly attributable to the change.
    d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
    e. Quotation Form: Use forms acceptable to Architect.

B. Architect's Response: Within 7 days after receipt of Contractor's response to Architect/Owner initiated Request for Proposal, Architect will:

1. Issue a Change Order or Cost Change Directive for accepted proposals.
2. Notify the Contractor of unaccepted proposals.

3. Issue an Architect's Change Directive where changes are necessary for the progress of the Work and changes to the Contract Sum and the Contract Time are in dispute.

1.9 CHANGE ORDER REQUEST

A. Change Order Request (COR): Change Order Requests are documents initiated by the Contractor requesting a Contract Modification due to unforeseen conditions, or latent or changed conditions.

1. Change Order Request Form: Use form acceptable to Architect.
2. Include a statement outlining reasons for the Change Order Request and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
3. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
4. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
5. Include costs of labor and supervision directly attributable to the change.
6. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
7. Comply with requirements in Division 01 Section "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.

B. Architect's Response: Within 7 days after receipt of Contractor's Change Order Request, Architect will:

1. Issue a Cost Change Directive for accepted Change Order Requests that do not require changes to the approved Construction Documents.
2. Issue a Change Order and/or Cost Change Directive for accepted Change Order Requests that require changes to the approved Construction Documents.

    a. Where Change Order Requests require changes to the Contract Documents, Architect will provide a detailed description of proposed changes in the Work via Change Order.

3. Issue an Architect's Change Directive where changes are necessary for the progress of the Work and changes to the Contract Sum and the Contract Time are in dispute.
4. Notify the Contractor of unaccepted proposals.

1.10 COST CHANGE DIRECTIVE (CCD)

A. Cost Change Directive: A Cost Change Directive is a document issued by the Architect notifying Contractor of Owner's acceptance of changes to the Contract Sum proposed by the Contractor.

1.11 CHANGE ORDERS

A. Change Orders: Change orders are a document defining Contract Modifications; upon Owner's approval of proposed Contract Modifications, Architect will issue a Change Order for signatures of Owner and Contractor on form provided by Architect.

B. DSA Review and Approval: Change Orders affecting changes to the DSA Approved Construction Documents shall be subject to DSA review and approval; Architect shall submit applicable DSA CCD documentation to DSA for approval.

1.13 WEATHER RELATED DELAYS

A. Extensions of contract time for delays caused by the effects of weather are justified only when rain or other weather conditions or related adverse soil conditions prevent the Contractor from productively performing controlling items of work resulting in the Contractor being unable to work at least 50% of the normal work day on predetermined controlling work items or the contractor must make major repairs to work damaged by weather provided the damage was not attributable to a failure to perform or neglect by the contractor.

B. Justification for weather related delays shall demonstrate the following:

1. The delay is within the terms and time frame of the contract.
2. The activity delayed had a direct effect on the project end date (The work item(s) affected is on the critical path).
3. The weather event occurred in excess of the anticipated weather for the season for the project location.
4. There is documentation of which specific activities were delayed on each weather occurrence.

C. Compensation: The Contractor will be granted a time extension only for justified weather-related delays for the number of days as accepted by the Architect, no monetary compensation will be granted (Weather event related delays are outside of the control of the Contractor and the Owner, and both parties share in the cost of time and expense).

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 012605
DSA HOURLY FEE SERVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. Division of the State Architect (DSA) Interpretive Regulation IR A-30 “DSA Hourly Fee Services” latest edition (Document is available on DSA’s website under “Publications;” Interpretive Regulations (IRs); A- Administrative; IR-30).

https://www.dgs.ca.gov/dsa/

1.2 SUMMARY

A. Section includes administrative and procedural requirements for DSA Hourly Fee Services associated with changes to DSA approved Construction Documents.

B. Related Requirements:

1. Division 00 Sections as applicable to contract requirements and modifications.
2. Division 01 Section "Addenda."
3. Division 01 Section "Substitution Procedures."
4. Division 01 Section "Contract Modification Procedures."
5. Division 01 Section "Payment Procedures."
6. Division 01 Section "Submittal Procedures."
7. Division 01 Section "Product Requirements."

1.3 DSA HOURLY FEE SERVICES

A. General: Changes to DSA approved Construction Documents shall be documented by the use of DSA Construction Change Document (CCD) forms. CCD forms shall be submitted to DSA by the Architect.

1. Refer to Division 01 Section “Contract Modification Procedures” for additional information regarding DSA CCD’s.

B. DSA Hourly Fee Services: Changes to DSA approved Construction Documents shall be reviewed by DSA and shall be subject to DSA Hourly Fee Services for review at a rate established by DSA IR A-30. Charges will be made to the Owner by DSA.

1. Hourly Rate: Rate per hour as established by DSA IR A-30, latest edition.

C. Bidder's Responsibility: Prior to bidding, where a bidder's request for substitution or similar action results in a change requiring DSA Hourly Fee Services, bidder shall submit a deposit to the Architect for reimbursement for DSA Hourly Fee Services. The deposit amount shall be established by the Architect, a minimum of one hour of DSA Hourly Fee Services (hourly rate as established by DSA IR A-30) will not be refundable. Deposits shall be made payable to the Owner.

D. Contractor's Responsibility: When a contractor's action results in a change requiring DSA Hourly Fee Services, charges by DSA to the Owner will be deducted from the Contract Sum and the Architect will issue a Change Order on a quarterly basis to adjust the Contract Sum.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 012613
REQUEST FOR INFORMATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative provisions for preparation, submittal and response to Contractor’s Request for Information (RFI’s) during construction of project.

1.3 DEFINITIONS

A. RFI, Request for Information: Request from Contractor seeking information required by or clarification of the Contract Documents.

1.4 SUBMITTALS

A. RFI Submittals: Submit RFI’s via email as PDF electronic files; include attachments in PDF electronic file format.

1.5 REQUESTS FOR INFORMATION (RFIs)

A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.
2. Project number.
3. Date.
4. Name of Contractor.
5. Name of Architect
6. RFI number, numbered sequentially.
7. RFI subject.
8. Specification Section number and title and related paragraphs, as appropriate.
9. Drawing number and detail references, as appropriate.
10. Field dimensions and conditions, as appropriate.
11. Contractor's suggested resolution. If Contractor's solution(s) impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
12. Contractor's signature.
13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

    a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. RFI Form: Use RFI form included at end of this Section or form acceptable to Architect. Upon request from the Contractor, the form at the end of this section will be made available in WORD format from the Architect.

D. Architect's Action: Architect will review each RFI, determine action required, and respond.

1. Allow 10 working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
2. Architect will not act on any RFI’s until 7 days following the submission of the Schedule of Values per Division 01 Section “Payment Procedures.”
3. The following RFIs will be returned without action:

    a. Requests for approval of submittals.
    b. Requests for approval of substitutions.
    c. Requests for approval of Contractor’s means and methods.
    d. Requests for coordination information already indicated in the Contract Documents.
    e. Requests for adjustments in the Contract Time or the Contract Sum.
    f. Requests for interpretation of Architect's actions on submittals.
    g. Incomplete RFIs or inaccurately prepared RFIs.

4. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
5. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 01 Section "Contract Modification Procedures."

a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.

6. Distribution: The Architect shall distribute one electronic copy of each completed RFI review to the Contractor and the Owner.

E. Regulatory Requirements: Architect's responses that modify the Contract Documents affecting Structural Safety, Fire and Life Safety, and/or Access Compliance shall be submitted to the Division of the State Architect for review and approval.

1. Changes to DSA approved Construction Documents shall be as specified in Division 01 Section "Contract Modification Procedures."

F. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the sequential RFI number. Submit log weekly unless otherwise directed in writing by Architect. Include the following:

1. Project name.
2. Name and address of Contractor.
3. Name and address of Architect.
4. RFI number including RFIs that were returned without action or withdrawn.
5. RFI description.
6. Date the RFI was submitted.
7. Date Architect's response was received.

G. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within 7 days if Contractor disagrees with response.

H. Contractor's Expense for RFI's: Architect will review and respond to legitimate RFI's at no additional cost to the Contractor. RFI's determined by the Architect to be flagrant or unnecessary will have the expense for the Architect's time paid by the Owner with the amount being deducted from the Contract Sum. The expense will be based on an hourly rate in accordance with the Architect's standard hourly rate schedule in effect at the time the work is performed with a minimum of one hour for each flagrant or unnecessary RFI.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

(REQUEST FOR INFORMATION form included on the following page)

Request for Information

Corporate Headquarters
7535 N. Palm Ave. #201
Fresno, CA 93711

559.437.0887 T
559.438.7554 F
teterae.com

Project:
MJC East- Football Press Box & Elevator
TETER Project No. 21-12111
435 College Ave.
Modesto, CA 95350

From:
Name
Company Name

To:
James E. Hickman, Jr.
Architect of Record
TETER
7535 N. Palm Ave., Ste 201
Fresno, CA 93711

Client Project No. 26-1957

DSA File No. 50-C1

DSA Appl No. 02-123619

Drawing:_____

Detail No._____

Specification:_____

Addendum:_____

Date:

Request for Information No. _____

☐ Deviation from Contract Docs

☐ Correction of Non-Compliant Work

Respond by:

Priority
(Low) 1 2 3 4 5 (High)

Subject: _____

Information Requested:

Contractor's Recommendation:

Probable Cost Effect: _____ Probable Time Effect: _____

Architect's Response:

Disclaimer
The work shall be carried out in accordance with the above supplemental instructions pursuant the Contract Documents, without change in the Contract Sum or Contract Time. Proceeding with the Work, according to these instructions, indicates your acknowledgement that there will be no change in the Contract Sum or Contract Time. If the Contractor considers that this response requires a change in the Contract Sum or Contract Time, the Contractor shall not proceed with this Work and shall promptly submit an item proposal.

SECTION 012900
PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Sections:

1. Division 01 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
2. Division 01 Section "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.
3. Division 01 Section "Submittal Procedures" for administrative requirements governing the preparation and submittal of the submittal schedule.
4. Division 01 Section “Photographic Documentation” for procedures for providing construction photographs.

1.3 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.

1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:

a. Application for Payment forms with continuation sheets.
b. Submittal schedule.
c. Items required to be indicated as separate activities in Contractor's construction schedule.

2. Submit the schedule of values to Architect at earliest possible date but no later than 7 days before the date scheduled for submittal of initial Applications for Payment.
3. Subschedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values correlated with each phase of payment.
4. Subschedules for Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work, provide subschedules showing values correlated with each element.

B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the schedule of values:

    a. Project name and location.
    b. Name of Architect.
    c. Architect's project number.
    d. Contractor's name and address.
    e. Date of submittal.

2. Arrange the schedule of values in tabular form with separate columns to indicate the following for each item listed:

    a. Related Specification Section or Division.
    b. Description of the Work.
    c. Name of subcontractor.
    d. Name of manufacturer or fabricator.
    e. Name of supplier.
    f. Change Orders (numbers) that affect value.
    g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.

        1) Labor.
        2) Materials.
        3) Equipment.

3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide multiple line items for principal subcontract amounts in excess of 5 percent of Contract Sum.

    a. Include separate line items under Contractor and principal subcontracts for project closeout requirements in an amount totaling 5 percent of the Contract Sum and subcontract amount.

4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.

5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

    a. Differentiate between items stored on-site and items stored off-site. If required, include evidence of insurance.

6. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
7. 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.

    a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.

8. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.5 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.

    1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Payment Application Times: The date for each progress payment application shall be as indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

    1. If dates and periods are not indicated in the Agreement between Owner and Contractor at time of bidding, the date for Application for Payment shall be established by the Owner to correspond with the Owner’s administrative procedures in order to allow for processing and approval of Application for Payment. The period of construction work covered by each Application for Payment shall be one month.
    2. Submit draft copy of Application for Payment 7 days prior to due date for review by Architect.

C. Application for Payment Forms: Use forms acceptable to Architect and Owner for Applications for Payment. Submit forms for approval with initial submittal of schedule of values.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.

1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.

E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.

1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
3. Provide summary documentation for stored materials indicating the following:

    a. Materials previously stored and included in previous Applications for Payment.
    b. Work completed for this Application utilizing previously stored materials.
    c. Additional materials stored with this Application.
    d. Total materials remaining stored, including materials with this Application.

F. Transmittal: Submit 6 signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
2. When an application shows completion of an item, submit conditional final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.

4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
5. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.

H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of values.
3. Contractor's construction schedule (preliminary if not final).
4. Submittal schedule (preliminary if not final).
5. List of Contractor's staff assignments.
6. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
7. Initial progress report.
8. Report of preconstruction conference.
9. Site Safety Plan (SSP)

I. Application for Payment at Substantial Completion: After issuance of the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portions of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

J. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Updated final statement, accounting for final changes to the Contract Sum.
3. Evidence that claims have been settled.
4. Submission and approval of “Record Drawings”.

K. Provide electronic Photographic Documentation of construction progress at the submission of all Application for Payment. Failure to provide Photographic Documentation of the construction progress will be grounds for not processing the Application for Payment

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 013113
PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General project coordination procedures.
2. Administrative and supervisory personnel.
3. Coordination drawings.

B. Related Sections:

1. Division 01 Section "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
2. Division 01 Section "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
3. Division 01 Section "Closeout Procedures" for coordinating closeout of the Contract.
4. Coordinate with local Building Department and/ or AHJ for street closures and any off-site encroachment permits.

1.3 SUBMITTALS

A. List of Key Personnel Names: Within 14 calendar days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and email addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1. Post copies of list in project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

B. Coordination Drawings:

1. Initial Submittal: Submit 3 printed copies of each coordination drawing for each condition where Coordination Drawings are required.
2. Project Closeout:

    a. Submit 3 printed “Record” copies of each coordination drawing for each condition where Coordination Drawings are required.
    b. Submit “Record” electronic coordination drawing files.

1.4 COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Startup and adjustment of systems.
8. Project closeout activities.

D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

E. Coordinate with the local Building Department and/or AHJ for street closures and any off-site encroachment permits. Owner will reimburse contractor for any encroachment permit fees. Fees may not be marked up.

PART 2 - PRODUCTS

2.1 COORDINATION DRAWINGS

A. Coordination Drawings, General: Prepare coordination drawings in accordance with requirements in individual Sections, where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity. Coordination Drawings shall include the work of multiple trades on the same drawing. Prepare Coordination Drawings in addition to Shop Drawings required in individual Sections.

1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:

   a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
   b. Coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
   c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
   d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
   e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
   f. Indicate required installation sequences.
   g. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Drawings, Required: Coordination drawings shall include plans, elevations, sections, and details of the Work for each trade as required to adequately represent the work. Clearly indicate and identify conflicts between components for review by Architect. Provide Coordination Drawings as follows:

1. Equipment Rooms: Show work above and below grade including mechanical, plumbing, fire protection, fire alarm, and electrical equipment, and related supports, accessories, and utility connections. Include the following information:

    a. Equipment: Show equipment and locations, utility connections, and working and service clearances.
    b. Utilities: Show above and below grade utilities; indicate heights and below grade elevations, sizes of piping and conduit, dimensions between utilities and between utilities and other obstructions including concrete footings for other work. Show locations of all shut-off and isolation valves, cleanouts, filters, and other devices requiring human access for maintenance and repair.
    c. Enclosures: Show limits of enclosure including walls, doors, fences, and gates; confirm door and gate access width for equipment.
    d. Dimensions: Indicate dimensions as appropriate to insure adequate clearance will be provided for installation, service, and operation of equipment; include horizontal and vertical dimensions between utilities to insure clearance for installation of utilities. Include vertical dimension(s) of equipment and distances to overhead obstructions where applicable.

2. Underground Site Utilities and Utilities Below Slabs on Grade within Building Areas: Where underground utilities cross other utilities, penetrate footings, underground structures or other obstructions; show the work that will be placed underground; include the following information:

    a. Indicate types and sizes of utility piping and elevations below grade.
    b. Show footings and other underground structures; where unavoidable conflicts occur between underground structures/footings and utilities, indicate depths below grade and clearly identify locations for sleeving for review by Architect.

C. Preparation: Prepare coordination drawings electronically using same digital data software program, version, and operating system as the Architect's original Drawings (DWG files).

1. Submittal Format:

    a. Electronic Format: Submit electronic drawing files using Portable Data File (PDF) format.
    b. Printed Format: Submit plotted drawings on opaque bond paper not of at least 8.5 inches by 11 inches and not larger than 24 inches by 36 inches.

2. Architect will furnish Contractor digital data files of base drawings as appropriate for use in preparing coordination digital data files.

    a. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to the Drawings.
    b. Digital Data Software Program: The Drawings are available in DWG format.

c. Contractor shall execute a data licensing agreement in the form of an Agreement form acceptable to the Owner and Architect.

D. Review: Architect will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are the Contractor's responsibility. If the Architect determines that the coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, the Architect will so inform the Contractor, who shall make changes as directed and resubmit.

PART 3 - EXECUTION

3.1 GENERAL COORDINATION PROVISIONS

A. Examination of Conditions: Require the Installer of each major component to examine both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

3.2 CLEANING AND PROTECTION

A. Clean and protect construction in progress and adjoining materials in place, during handling and installation. Apply protective covering where required to assure protection from damage or deterioration at Substantial Completion.

B. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period.

C. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

END OF SECTION

SECTION 013119
PROJECT MEETINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative provisions for project meetings, including, but not limited to, the following:

1. Preconstruction conferences.
2. Preinstallation conferences.
3. Progress meetings.
4. Project Closeout Conference.

B. Related requirements include but are not limited to the following:

1. Division 01 Sections as applicable to project management.

1.3 PRECONSTRUCTION CONFERENCE

A. Preconstruction Conference: Schedule a preconstruction conference before starting construction at the project site, at a time convenient to the Owner, Project Inspector, and the Architect, but no later than 14 days after execution of the Agreement. Hold the conference at the Project Site or another convenient location. Owner and Architect to conduct the meeting to review responsibilities and personnel assignments.

B. Attendees: Authorized representatives of the Owner, Architect, and their consultants; the Contractor and its superintendent shall attend the conference. Major subcontractors and other concerned parties shall be invited to attend the conference, but attendance is not mandatory. Participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.

C. Agenda: Discuss items of significance that could affect progress, including but not limited to the following:

1. Tentative construction schedule.
2. Critical work sequencing and long-lead items.
3. Designation of key personnel and their duties.
4. Lines of communication.
5. Procedures for processing field decisions and Change Orders.

6. Procedures for processing Applications for Payment.
7. Procedures for RFI's.
8. Procedures for testing and inspection.
9. Submittal procedures.
10. Sustainability requirements including construction waste management and disposal.
11. Preparation of record documents.
12. Use of the premises.
13. Work restrictions and working hours.
14. Temporary facilities and controls.
15. Parking availability.
16. Office, work, and storage areas.
17. Equipment deliveries and priorities.
18. Safety procedures and first aid.
19. Security.
20. Housekeeping.
21. Owner's alcohol, drug and tobacco policy.

D. Minutes: Contractor shall record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner, Project Inspector, and Architect, within three days of the meeting.

1.4 PREINSTALLATION CONFERENCES

A. Preinstallation Conferences: Conduct a preinstallation conference at the Project Site before each construction activity that requires coordination with other construction.

B. Attendees: Installers and representatives of manufacturers and fabricators involved in or affected by the installation, and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise the Owner, Project Inspector, and Architect of scheduled meeting dates.

C. Agenda: Review the progress of other construction activities and preparations for the particular activity under consideration at each preinstallation conference, including requirements for the following:

1. Contract Documents.
2. Options.
3. Related RFI's, Proposal Requests, and Change Orders.
4. Purchases.
5. Deliveries.
6. Submittals.
7. Sustainability requirements.
8. Possible conflicts.
9. Compatibility problems.
10. Time schedules.
11. Weather limitations.
12. Manufacturer's written instructions.
13. Warranty requirements.

14. Compatibility of materials.
15. Acceptability of substrates.
16. Temporary facilities.
17. Space and access limitations.
18. Regulations of authorities having jurisdiction.
19. Safety.
20. Testing and inspecting requirements.
21. Required performance results.
22. Recording requirements.
23. Protection.
24. Record significant conference discussions, agreements, disagreements, including corrective measures and actions.
25. Promptly distribute minutes of the meeting to each party present and to other parties requiring information, including the Owner and the Architect.
26. Do not proceed with the installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of Work and reconvene the conference at the earliest feasible date.

D. Minutes: Contractor shall record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner, Project Inspector, and Architect, within three days of the meeting.

1.5 PROGRESS MEETINGS

A. Progress Meetings: Conduct progress meetings at the Project Site at regular intervals to be established by the Architect, Project Inspector, Contractor, and Owner.

1. Coordinate dates of meetings with preparation of the payment request.

B. Attendees: In addition to representatives of the Owner and Architect, each subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.

C. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the status of the Project. Review proposed percentages of work completed for current months progress payment.

1. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

2. Review the present and future needs of each entity present, including the following:

    a. Interface requirements.
    b. Sequence of operation.
    c. Status of submittals.
    d. Status of Sustainability documentation.
    e. Deliveries.
    f. Off-site fabrication.
    g. Access.
    h. Site utilization.
    i. Temporary facilities and services.
    j. Status of correction of deficient items.
    k. Field observations.
    l. Status of RFI's, Proposal Requests, and Change Orders.
    m. Progress cleaning.
    n. Quality and work standards.
    o. Documentation of information for payment requests.
    p. Request for Information

D. Minutes: Contractor shall record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner, Project Inspector, and Architect, within three days of the meeting.

E. Schedule Updating: Revise the Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule to the Owner, the Architect, and all other parties involved in the project. Failure to revise and keep current the Contractor's construction schedule will be grounds for returning Application for Payment unreviewed.

1.6 PROJECT CLOSEOUT CONFERENCE

A. Project Closeout Conference: Conduct a project closeout conference, at a time convenient to Owner and Architect, but not less than 90 days prior to the scheduled date of Substantial Completion. Conduct the conference to review requirements and responsibilities related to Project closeout.

B. Attendees: Authorized representatives of Owner, Architect and their consultants; Contractor and its superintendent. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

C. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:

1. Preparation of record documents.
2. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
3. Submittal of written warranties.
4. Requirements for completing Sustainability documentation.

5. Requirements for preparing operations and maintenance data.
6. Requirements for delivery of material samples, attic stock, and spare parts.
7. Requirements for demonstration and training.
8. Preparation of Contractor's punch list.
9. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
10. Submittal procedures.
11. Responsibility for removing temporary facilities and controls.

D. Minutes: Contractor shall record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner, Project Inspector, and Architect, within three days of the meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 013200
CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Contractor's construction schedule.
2. Reports.
3. Scheduling for weather-related delays.

B. Related Sections include but are not limited to the following:

1. Division 01 Section "Submittal Procedures" for submitting schedules and reports.
2. Division 01 Section "Quality and Testing Requirements" for submitting a schedule of tests and inspections.

1.3 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of the Project.

C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

D. Event: The starting or ending point of an activity.

E. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

F. Milestone: An activity, which occurs in an instant and thus has no time duration, a key or critical point in time for reference or measurement.

1.4 SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. Working electronic copy of schedule file, where indicated.
2. PDF electronic file.

B. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.

C. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

1. Submit electronic copy of schedule labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.

D. Construction Schedule Updating Reports: Submit with Applications for Payment.

E. Special Reports: Submit at time of unusual event.

1.5 QUALITY ASSURANCE

A. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Meetings." Review methods and procedures related to the preliminary construction schedule and Contractor's construction schedule, including, but not limited to, the following:

1. Discuss constraints, including **phasing, work stages, and area separations and interim milestones.**
2. Review schedule for work of Owner's separate contracts.
3. Review submittal requirements and procedures.
4. Review time required for review of submittals and resubmittals.
5. Review requirements for tests and inspections by independent testing and inspecting agencies.
6. Review time required for Project closeout and Owner startup procedures, including commissioning activities.

7. Review and finalize list of construction activities to be included in schedule.
8. Review procedures for updating schedule.

1.6 COORDINATION

A. Coordinate Contractor's construction schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from entities involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

1.7 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules and is acceptable to Architect and Owner.

B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of final completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

C. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
2. Temporary Facilities: Indicate start and completion dates for the following as applicable:

a. Securing of approvals and permits required for performance of the Work.
b. Temporary facilities.
c. Construction of mock-ups, prototypes and samples.
d. Owner interfaces and furnishing of items.
e. Interfaces with Separate Contracts.
f. Regulatory agency approvals.
g. Punch list.

3. Procurement Activities: Include procurement process activities for long lead time items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
4. Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.

5. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
6. Commissioning Time: Include no fewer than 15 days for commissioning.
7. Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
8. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.

D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

1. Phasing: Arrange list of activities on schedule by phase.
2. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
3. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Division 01 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
4. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Division 01 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
5. Work Restrictions: Show the effect of the following items on the schedule:

    a. Coordination with existing construction.
    b. Limitations of continued occupancies.
    c. Uninterruptible services.
    d. Partial occupancy before Substantial Completion.
    e. Use of premises restrictions.
    f. Provisions for future construction.
    g. Seasonal variations.
    h. Environmental control.

6. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:

    a. Submittals.
    b. Purchases.
    c. Fabrication.
    d. Sample testing.
    e. Deliveries.
    f. Installation.
    g. Tests and inspections.
    h. Adjusting.
    i. Curing.
    j. Startup and placement into final use and operation.
    k. Commissioning.

7. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:

    a. Structural completion.
    b. Temporary enclosure and space conditioning.
    c. Permanent space enclosure.
    d. Completion of mechanical installation.
    e. Completion of electrical installation.
    f. Substantial Completion.

E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion.

F. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis to demonstrate the effect of the proposed change on the overall project schedule.

G. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:

1. Unresolved issues.
2. Unanswered Requests for Information.
3. Rejected or unreturned submittals.
4. Notations on returned submittals.
5. Pending modifications affecting the Work and Contract Time.

H. Weather Related Delays: Construction schedule shall include the number of weather-related delay days for each calendar month as indicated below.

J	F	M	A	M	J	J	A	S	O	N	D
6	6	5	4	2	1	0	0	0	2	3	5

1. Delay days shall be cumulative for the duration of the project; where the actual number of delay days are less than the scheduled delay days for a given month, the unused days shall be carried forward to the next month.
2. Unused delay days may be used as float time.

I. Contractor's Construction Schedule Updating: At not less than monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting and with each Application For Payment.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.

2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate Final Completion percentage for each activity.

J. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.

K. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

1.8 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)

A. General: Prepare network diagrams using AON (activity-on-node) format.

B. CPM Schedule: Prepare Contractor's construction schedule using a time-scaled CPM network analysis diagram for the Work.

1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 30 days after date established for the Notice to Proceed.

a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Architect's approval of the schedule.

2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
4. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule in order to coordinate with the Contract Time.

C. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Prepare a skeleton network to identify probable critical paths.

1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:

    a. Preparation and processing of submittals.
    b. Mobilization and demobilization.
    c. Purchase of materials.
    d. Delivery.
    e. Fabrication.
    f. Utility interruptions.
    g. Installation.
    h. Work by Owner that may affect or be affected by Contractor's activities.
    i. Testing
    j. Commissioning.
    k. Punch list and final completion.
    l. Activities occurring following final completion.

2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.

    a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.

D. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall project schedule.

E. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:

1. Contractor or subcontractor and the Work or activity.
2. Description of activity.
3. Main events of activity.
4. Immediately preceding and succeeding activities.
5. Early and late start dates.
6. Early and late finish dates.
7. Activity duration in workdays.
8. Total float or slack time.
9. Average size of workforce.

F. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:

1. Identification of activities that have changed.
2. Changes in early and late start dates.
3. Changes in early and late finish dates.
4. Changes in activity durations in workdays.
5. Changes in the critical path.
6. Changes in total float or slack time.
7. Changes in the Contract Time.

1.9 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. Equipment at Project site.
5. Material deliveries.
6. Weather conditions; include general weather conditions, high and low temperatures, and presence of rain or snow.
7. Testing and inspection.
8. Accidents.
9. Meetings and significant decisions.
10. Unusual events.
11. Stoppages, delays, shortages, and losses.
12. Meter readings and similar recordings.
13. Emergency procedures.
14. Orders and requests of authorities having jurisdiction.
15. Change Orders received and implemented.
16. Services connected and disconnected.
17. Equipment or system tests and startups.
18. Partial completions and occupancies.
19. Substantial Completions authorized.

B. Material Location Reports: At weekly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:

1. Material stored prior to previous report and remaining in storage.
2. Material stored prior to previous report and since removed from storage and installed.
3. Material stored following previous report and remaining in storage.

C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

D. Special Reports: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, responses by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable. Submit Special Reports to Architect within two days of an occurrence. Distribute copies of report to parties affected by the occurrence.

1. Weather Event Reports: Prepare Special Reports for weather related events that affect or prevent progress of the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 013233
PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Preconstruction photographs.
2. Periodic construction photographs.

B. Related Sections:

1. Division 01 Section “Project Meetings.”
2. Division 01 Section "Payment Procedures” for photographic documentation to be submitted at all Application for Payments.
3. Division 02 Section "Selective Demolition" for photographic documentation before building demolition operations commence.
4. Division 31 Section "Site Clearing" (on drawings) for photographic documentation before site clearing operations commence.

1.3 SUBMITTALS

A. Digital Photographs: Submit image files at regularly scheduled progress meetings.

1. Format: Minimum 3200 by 2400 pixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

A. Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of 8 megapixels, and at an image resolution of not less than 3200 by 2400 pixels.

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.

1. Maintain key plan with each set of construction photographs that identifies each photographic location.

B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

1. Date and Time: Include date and time in file name for each image.
2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Architect.

C. Preconstruction Photographs: Before commencement of excavation, commencement of demolition, or starting construction, take photographs of Project site and surrounding area, including existing items to remain during construction, from different vantage points as necessary to document preconstruction conditions.

1. Take not less than 20 photographs to show existing conditions adjacent to Project area before starting the Work.
2. Take not less than 20 photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
3. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

D. Periodic Construction Photographs: Take not less than 20 photographs bi-weekly, with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

END OF SECTION

SECTION 013300
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Submittal schedule requirements.
2. Administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
3. Cost for multiple resubmittals.

B. Related Sections:

1. Division 01 Section “Payment Procedures” for submitting Applications for Payment and the schedule of values.
2. Division 01 Section "Project Management and Coordination" for submitting coordination drawings.
3. Division 01 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
4. Division 01 Section "Quality and Testing Requirements" for submitting test and inspection reports, and schedule of tests and inspections.
5. Division 01 Section "Closeout Procedures" for submitting closeout submittals and maintenance material submittals.
6. Division 01 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
7. Division 01 Section "Project Record Drawings" for submitting record Drawings.
8. Division 01 Section "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.3 ACTION SUBMITTALS

A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and Owner and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.

1.4 SUBMITTAL FORMAT AND PROCEDURES

A. General: Prepare and submit submittals required by individual Specification Sections.

1. Architect will not review submittals received from Contractor that do not have Contractor's review and approval.
2. Architect will not review submittals received from sources other than the Contractor.

B. Electronic Digital Submittals: Prepare submittals as PDF package unless otherwise indicated, incorporate complete information into each PDF file, name PDF file with submittal number, and transmit submittal package to Architect via email.

1. Paper Submittals: Where paper submittals are requested, necessary, or required in lieu of electronic submittals, prepare submittals in paper form and deliver to Architect. Transmit each paper submittal using transmittal form. Comply with the following:

    a. Place a permanent label or title block on each submittal item for identification; include name of firm or entity that prepared submittal.
    b. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
    c. Number of Copies: Submit not less than three paper copies of each submittal unless otherwise indicated. Architect will return two copies.
    d. Transmittal for Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using transmittal form.

C. Submittal Cover Page Information: Include the following information on the submittal cover page for each submittal:

1. Project name.
2. Date.
3. Name of Architect.
4. Name of Contractor.
5. Name of firm or entity that prepared submittal.
6. Names of subcontractor, manufacturer, and supplier.
7. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier and alphanumeric suffix for resubmittals.

8. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
9. Drawing number and detail references, as appropriate.
10. Indication of full or partial submittal.
11. Location(s) where product is to be installed, as appropriate.
12. Other necessary identification.
13. Remarks.
14. Signature of transmitter.
15. Contractor’s review/approval stamp of size required by contractor, approximately 3 inches by 3 inches, on or beside title block to record Contractor's review and approval.
16. Space for Architect’s review stamp of not less than 4 inches wide by 3-1/2 inches high on or beside title block to record Architect’s review stamp and action taken by Architect.

D. Product Options:

1. Clearly identify options requiring selection by Architect.
2. Clearly identify product options required to comply with the Contract Documents.

E. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

F. Field Conditions: Indicate field conditions where applicable to the work associated with the submittal.

G. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
4. Coordinate timing of submitting submittals for related parts of the Work specified in different Sections so processing will not be delayed because of need to review related submittals concurrently for coordination.

    a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

H. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 14 calendar days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow 14 calendar days for review of each resubmittal.
4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 calendar days for initial review of each submittal.
5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 14 calendar days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.

    a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect.

I. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

J. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

K. Use for Construction: Retain complete copies of submittals on Project site. Use only final submittals that are marked with acceptable notation from Architect's action stamp.

1.5 SUBMITTAL REQUIREMENTS

A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specifications.
    c. Standard color charts.

d. Statement of compliance with specified referenced standards.
e. Testing by recognized testing agency.
f. Application of testing agency labels and seals.
g. Notation of coordination requirements.
h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:

a. Wiring diagrams that show factory-installed wiring.
b. Printed performance curves.
c. Operational range diagrams.
d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before Shop Drawings, and before or concurrently with Samples.

B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

a. Identification of products.
b. Schedules.
c. Compliance with specified standards.
d. Notation of coordination requirements.
e. Notation of dimensions established by field measurement.
f. Relationship and attachment to adjoining construction clearly indicated.
g. Seal and signature of professional engineer if specified.

2. Drawing Sheet Size: Except for templates, patterns, and similar full-size Drawings, prepare Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.
3. Submit Shop Drawings in PDF format unless otherwise indicated.

C. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other materials.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Permanently attach label on unexposed side of Samples that includes the following:

a. Project name and submittal number.
b. Generic description of Sample.
c. Product name and name of manufacturer.
d. Sample source.
e. Number and title of applicable Specification Section.

f. Specification paragraph number and generic name of each item.

3. Submit samples in PDF format unless physical samples are required.
4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

   a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
   b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

   a. Number of Samples: Submit one full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

   a. Number of Samples: Submit three (3) sets of Samples. Architect will retain two (2) Sample sets; remainder will be returned.

      1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
      2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three (3) sets of paired units that show approximate limits of variations.

D. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
2. Manufacturer and product name, and model number if applicable.
3. Number and name of room or space.

4. Location within room or space.

E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

F. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

G. Certificates:

1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
2. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
4. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
5. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.

H. Test and Research Reports:

1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

    a. Name of evaluation organization.
    b. Date of evaluation.
    c. Time period when report is in effect.
    d. Product and manufacturers' names.
    e. Description of product.
    f. Test procedures and results.
    g. Limitations of use.

1.6 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

    1. If criteria indicated are insufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF file(s) of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

    1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

1.7 CONTRACTOR'S REVIEW

A. Contractor's Review of Submittals: Contractor shall review each submittal and check for completeness, coordination with other Work of the Contract, and compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

1. Architect will not review submittals received from Contractor that do not have Contractor's review and approval.
2. Contractor's approval shall certify the following actions by the Contractor:

    a. Field measurements have been determined, verified, and indicated on submittal.
    b. Field conditions have been verified and coordinated with Work associated with the submittal.
    c. The Work associated with the submittal is in conformance with the Contract Documents.
    d. Work being performed by various subcontractors and trades is coordinated with Work associated with the submittal including work being performed by others for the Owner.
    e. Deviations from the Contract Documents are identified and notes.

1.8 ARCHITECT'S REVIEW

A. Architect's Review and Action: Architect will review each submittal, indicate corrections or revisions required, mark with an action stamp indicating one of the following actions, and return it.

1. Reviewed: Final unrestricted release, work may proceed, provided it complies with the Contract Documents.
2. Furnish as Corrected: Final but restricted release, work may proceed, provided written confirmation is delivered to Architect by Contractor that installed work complied with notations and corrections on submittal and with Contract Documents.
3. Revise and Resubmit: Returned for resubmittal, do not proceed with work. Revise submittal in accordance with notations thereon, and resubmit without delay to obtain an acceptable action marking. Do not allow submittals with this marking (or unmarked submittals where a marking is required) to be used in connection with performance of the Work.

4. Rejected: Submittal content varies from the Contract Documents and is not acceptable for use on the Project, do not proceed with work. Revise submittal in accordance with notations thereon, and resubmit without delay to obtain an acceptable action marking. Do not allow submittals with this marking (or unmarked submittals where a marking is required) to be used in connection with performance of the Work.

B. Non-conforming Submittals: The following are considered non-confirming submittals and will not be reviewed by the Architect.

1. Architect will not review submittals received from Contractor that do not have Contractor's review and approval.
2. Architect will not review submittals received from sources other than the Contractor.
3. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.
4. Incomplete submittals are not acceptable, will be considered nonresponsive, and will be returned without review.

C. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

1.9 COST FOR MULTIPLE RESUBMITTALS

A. Contractor’s initial submittal and one resubmittal are included in the Architect’s Construction Administration services to the Owner. Architect’s services for review of subsequent resubmittals will be charged to the Owner at the Architect’s current billing rate, and the Owner will deduct the charges from the Contract Amount by a change order.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 014000
QUALITY AND TESTING REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control including but not limited to the following:

1. General quality requirements.
2. Reports and documents.
3. Contractor’s responsibilities in regard to testing and inspections.
4. Inspector of Record (IOR).
5. Testing Agency.
6. Governing agency testing and inspection requirements.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

C. Related Requirements:

1. Divisions 02 through 33 Sections for specific test and inspection requirements.

D. DSA Testing and Inspection Requirements for School Construction: The following requirements are per the Division of the State Architect (DSA); requirements indicated below may be repeated elsewhere in this Section or in other Sections of the Project Manual, where conflicts occur, the most stringent condition shall apply.

1. Tests:

a. The owner will select an independent testing laboratory, approved by DSA, to conduct the tests. Selection of the material required to be tests shall be by the laboratory or the Owner's representative and not by the Contractor.
b. The Contractor shall notify the Owner's representative a sufficient time in advance of the manufacture of material to be supplied by him under the Contract Documents, which must by terms of the Contract be tested, in order that the Owner may arrange for the testing of same at the source of supply.
c. Any material shipped by the Contractor from the source of supply prior to having satisfactorily passed such testing and inspection or prior to the receipt of notice from said representative that such testing and inspection will not be required shall not be incorporated in the job.
d. The Owner will pay testing laboratory costs for all tests and inspections, but may be reimbursed by the Contractor for such costs under the Contract documents.

2. Tests Reports: One copy of all test reports shall be forwarded to the Division of the State Architect by the testing agency. Such reports shall include all the tests made, regardless of whether such tests indicate that the material is satisfactory or unsatisfactory. Samples taken but not tested shall also be reported. Records of special sampling operations as required shall also be reported. The reports shall show that the material or materials were sampled and tested in accordance with the requirements of Title 24 and with the approved specifications. Test reports shall show the specified design strength. They shall also state defiantly whether or not the material or materials tested comply with requirements.
3. Verification of Test Reports: Each testing agency shall submit to the Division of the State Architect a verified report in duplicate covering all the tests which are required to be made by that agency during the progress of the project. Such report shall be furnished each time that work on the project is suspended, covering the tests up to that time, and at the completion of the project, covering all tests.
4. Inspection by the Owner:

a. The Owner and his representatives shall at all times have access for the purpose of inspection to all parts of the work and to the shops wherein the work is in preparation, and the Contractor shall at all times maintain proper facilities and provide safe access for such inspection.
b. The Owner shall have the right to reject materials and workmanship which are defective, or to require their correction. Rejected workmanship shall be satisfactorily corrected and rejected materials shall be removed from the premises without charge to the Owner. If the Contractor does no correct such rejected work within a reasonable time, fixed by written notice, the Owner may correct same and charge expense to the Contractor.
c. Should it be considered necessary or advisable by the Owner at any time before final acceptance of the entire work to make an examination of the work already completed by removing or tearing out the same, the Contractor shall on request promptly furnish all necessary facilities, labor and materials. If such work is found to be defective in any respect due to the fault of the Contractor or his subcontractor, he shall defray all expenses of such examinations and of satisfactory reconstruction. If however, such

work is found to meet the requirements of the Contract, the additional cost of labor and material necessarily involved in the examination and replacement shall be allowed the Contractor.

5. Inspector – Owner's:

   a. An Inspector employed by the Owner, and approved by DSA, in accordance with the requirements of the California Code of Regulations, Title 24 will be assigned to the work. His duties are specifically defined in Title 24, Part I, Sec. 4-342.
   b. The work of construction in all stages of progress shall be subject to the personal continuous observation of the Inspector. He shall have free access to any or all parts of the work at any time. The Contractor shall furnish the Inspector reasonable facilities for obtaining such information as may be necessary to keep him fully informed respecting the progress and manner of the work and the character of materials. Inspection of the work shall not relieve the Contractor from any obligation to fulfill this contract.

6. Inspector – Owner – Field Office: The Contractor shall provide for the use of the Owner's Inspector a temporary office to be located as directed by the Inspector and to be maintained until removal is authorized by the Owner. This office shall of substantial water proof construction with adequate natural light and ventilation by means of stock design windows. The door shall have a lock. A table satisfactory for the study of plans and two chairs shall be provided by the Contractor. The Contractor shall provide and pay for adequate electric lights, private local telephone service with a loud exterior bell, and adequate heat for this field office until the completion of the Contract.

1.3 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.

C. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

E. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.

F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

H. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).

I. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of 5 previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Reports shall be prepared by the person performing the testing and inspecting. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.

7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Governing Agency Verified Reports: Complete and submit Verified Reports as required by the Division of the State Architect and the 2016 California Administrative Code, Section 4-336. Reports are required to be completed by Architect, Architect's consulting Engineers, Owner's Inspector of Record, Contractor, and Testing Agency.

1. Form:

a. DSA form DSA-6C for Contractor.
b. DSA form DSA-6PI for Project Inspector.
c. DSA form DSA-6A/E for Architect and Architect's consulting Engineers.

C. Manufacturer's Technical Representative's Field Reports: Provide written report documenting tests and inspections specified in other Sections. Reports shall be prepared by Manufacturer's technical representative performing the testing and inspecting. Include the following:

1. Name, address, and telephone number of technical representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

D. Factory-Authorized Service Representative's Reports: Provide written report documenting tests and inspections specified in other Sections. Reports shall be prepared by Factory-authorized service representative performing the testing and inspecting. Include the following:

1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement that equipment complies with requirements.
3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
4. Statement whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

E. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.6 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally licensed to practice in the state where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.

F. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

G. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

1. Contractor responsibilities include the following:

a. Provide test specimens representative of proposed products and construction.
b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
f. When testing is complete, remove test specimens, assemblies, and mockups; do not reuse products on Project.

2. Testing Agency Responsibilities: Submit a written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

1.7 INSPECTOR OF RECORD

A. General: Owner will employ an Inspector of Record (IOR) for continuous inspection of the Work. Inspector of Record shall be acceptable to Architect and approved by the Division of the State Architect.

1. Inspector of Record shall act under the direction of the Architect and shall be subject to supervision by a representative of the Division of the State Architect.

B. Qualifications for Inspector of Record: Qualifications for the Inspector of Record shall be as stated in the California Code of Regulations, Title 24, Part 1, 2016 California Administrative Code, Section 4-333.1. Inspector of Record shall be DSA certified under one of the following classes:

1. Class 1: May inspect any project.
2. Class 2: May inspect any project except a project containing one or more new large structures with a primary lateral load resisting system of steel, masonry, or concrete.
3. Class 3: May inspect projects containing alterations to approved buildings, site placement of relocatable buildings, and construction of minor structures.
4. Class 4: May inspect site placement of relocatable buildings and associated site work.

C. Duties of the Inspector of Record: Duties of the Inspector of Record shall be as stated in the California Code of Regulations, Title 24, Part 1, 2016 California Administrative Code, Sections 4-333(b) and 4-342, and include the following:

1. Provide continuous inspection of the work.
2. Maintain files and records of approved plans and specifications including addenda and change orders.
3. Prepare semi-monthly reports of the progress of the work and submit copies to the Architect and the Division of the State Architect.
4. Notify the Division of the State Architect at the following times:

    a. At the start of construction of the project or restart of construction if work has suspended for a period of 2 or more weeks.
    b. At least 48 hours in advance of the time when foundation trenches will be complete, ready for footing forms.
    c. At least 48 hours in advance of the first placement of foundation concrete and 24 hours in advance of any subsequent or significant concrete placement.
    d. When all work on the project has been suspended for a period of more than 2 weeks.

5. Prepare and maintain records of certain phases of construction including but not limited to the following:

    a. Concrete placing operations. Show date and time of placing concrete and the time and date of removal of forms in each portion of the structure.
    b. Welding operations. The record shall include identification marks of welders, lists of defective welds, and manner of correction of defects.

6. Notify the Contractor, in writing, of any deviations from the approved construction documents.
7. Prepare and submit IOR’s Verified Report as required by DSA.

1.8 TESTING AGENCY

A. General: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to conduct tests and inspections required by authorities having jurisdiction. Testing agency shall be acceptable to Architect and the Division of the State Architect. Requirements for tests and testing agency shall be as stated in the California Code of Regulations, Title 24, Part 1, 2016 California Administrative Code, Section 4-335.

1. Costs for testing agency services will be paid by the Owner.
2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be paid by the Owner and the amount will be deducted from the Contract Sum by Change Order.

B. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Perform testing as required by the Contract Documents.
2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
3. Taking all test specimens.
4. Prepare written reports of tests and inspections, and submit reports of each test, inspection, and similar quality-control service to Architect, Division of the State Architect, and Contractor.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
7. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work.
8. Retesting and reinspecting corrected work.
9. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
10. Do not perform any duties of Contractor.

1.9 CONTRACTOR REQUIREMENTS

A. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.

    a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
7. Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested.

Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

a. Access to the Work.
b. Incidental labor and facilities necessary to facilitate tests and inspections.
c. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
d. Facilities for storage and field curing of test samples.
e. Preliminary design mix proposed for use for material mixes that require control by testing agency.
f. Security and protection for samples and for testing and inspecting equipment at Project site.

8. Coordinate sequence of activities to accommodate required quality-assurance and control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

a. Schedule times for tests, inspections, obtaining samples, and similar activities.

B. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section "Submittal Procedures."

C. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

1.10 TESTS AND INSPECTIONS

A. Structural Tests and Inspections shall be as specified in Division 02 through 33 Sections for specific materials and as required by form DSA-103 which lists tests and inspections required by DSA as applicable to Project conditions.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Division 01 Section "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION

SECTION 014200
REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract. Architect’s approval does not release the Contractor from the responsibility to fulfill Contract requirements.

C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."

D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.4 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. AABC - Associated Air Balance Council; www.aabc.com.
2. AAMA - American Architectural Manufacturers Association; www.aamanet.org.
3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
7. ABMA - American Boiler Manufacturers Association; www.abma.com.
8. ACI - American Concrete Institute; (Formerly: ACI International); www.abma.com.
9. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.
10. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
11. AF&PA - American Forest & Paper Association; www.afandpa.org.
12. AGA - American Gas Association; www.aga.org.
13. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
14. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
15. AI - Asphalt Institute; www.asphaltinstitute.org.
16. AIA - American Institute of Architects (The); www.aia.org.
17. AISC - American Institute of Steel Construction; www.aisc.org.
18. AISI - American Iron and Steel Institute; www.steel.org.
19. AITC - American Institute of Timber Construction; www.aitc-glulam.org.

20. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
21. ANSI - American National Standards Institute; www.ansi.org.
22. AOSA - Association of Official Seed Analysts, Inc.; www.aosaseed.com.
23. APA - APA - The Engineered Wood Association; www.apawood.org.
24. APA - Architectural Precast Association; www.archprecast.org.
25. API - American Petroleum Institute; www.api.org.
26. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
27. ARI - American Refrigeration Institute; (See AHRI).
28. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
29. ASCE - American Society of Civil Engineers; www.asce.org.
30. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
31. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
32. ASME - ASME International; (American Society of Mechanical Engineers); www.asme.org.
33. ASSE - American Society of Safety Engineers (The); www.asse.org.
34. ASSE - American Society of Sanitary Engineering; www.asse-plumbing.org.
35. ASTM - ASTM International; www.astm.org.
36. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
37. AWEA - American Wind Energy Association; www.awea.org.
38. AWI - Architectural Woodwork Institute; www.awinet.org.
39. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
40. AWPA - American Wood Protection Association; www.awpa.com.
41. AWS - American Welding Society; www.aws.org.
42. AWWA - American Water Works Association; www.awwa.org.
43. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
44. BIA - Brick Industry Association (The); www.gobrick.com.
45. BICSI - BICSI, Inc.; www.bicsi.org.
46. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); www.bifma.org.
47. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
48. BWF - Badminton World Federation; (Formerly: International Badminton Federation); www.bissc.org.
49. CDA - Copper Development Association; www.copper.org.
50. CEA - Canadian Electricity Association; www.electricity.ca.
51. CEA - Consumer Electronics Association; www.ce.org.
52. CFFA - Chemical Fabrics and Film Association, Inc.; www.chemicalfabricsandfilm.com.
53. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
54. CGA - Compressed Gas Association; www.cganet.com.
55. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
56. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
57. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
58. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
59. CPA - Composite Panel Association; www.pbmdf.com.
60. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.

61. CRRC - Cool Roof Rating Council; www.coolroofs.org.
62. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
63. CSA - Canadian Standards Association; www.csa.ca.
64. CSA - CSA International; (Formerly: IAS - International Approval Services); www.csa-international.org.
65. CSI - Construction Specifications Institute (The); www.csinet.org.
66. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
67. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.cti.org.
68. CWC - Composite Wood Council; (See CPA).
69. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
70. DHI - Door and Hardware Institute; www.dhi.org.
71. ECA - Electronic Components Association; (See ECIA).
72. ECAMA - Electronic Components Assemblies & Materials Association; (See ECIA).
73. ECIA - Electronic Components Industry Association; www.eciaonline.org.
74. EIA - Electronic Industries Alliance; (See TIA).
75. EIMA - EIFS Industry Members Association; www.eima.com.
76. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
77. ESD - ESD Association; (Electrostatic Discharge Association); www.esda.org.
78. ESTA - Entertainment Services and Technology Association; (See PLASA).
79. EVO - Efficiency Valuation Organization; www.evo-world.org.
80. FCI - Fluid Controls Institute; www.fluidcontrolsinstitute.org.
81. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
82. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
83. FM Approvals - FM Approvals LLC; www.fmglobal.com.
84. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.
85. FRSA - Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.; www.floridaroof.com.
86. FSA - Fluid Sealing Association; www.fluidsealing.com.
87. FSC - Forest Stewardship Council U.S.; www.fscus.org.
88. GA - Gypsum Association; www.gypsum.org.
89. GANA - Glass Association of North America; www.glasswebsite.com.
90. GS - Green Seal; www.greenseal.org.
91. HI - Hydraulic Institute; www.pumps.org.
92. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
93. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
94. HPVA - Hardwood Plywood & Veneer Association; www.hpva.org.
95. HPW - H. P. White Laboratory, Inc.; www.hpwhite.com.
96. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
97. IAS - International Accreditation Service; www.iasonline.org.
98. IAS - International Approval Services; (See CSA).
99. ICBO - International Conference of Building Officials; (See ICC).
100. ICC - International Code Council; www.iccsafe.org.
101. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.

102. ICPA - International Cast Polymer Alliance; www.icpa-hq.org.
103. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
104. IEC - International Electrotechnical Commission; www.iec.ch.
105. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
106. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
107. IESNA - Illuminating Engineering Society of North America; (See IES).
108. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
109. IGMA - Insulating Glass Manufacturers Alliance; www.igmaonline.org.
110. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.okstate.edu.
111. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
112. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.
113. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
114. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).
115. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.
116. ISO - International Organization for Standardization; www.iso.org.
117. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
118. ITU - International Telecommunication Union; www.itu.int/home.
119. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
120. LMA - Laminating Materials Association; (See CPA).
121. LPI - Lightning Protection Institute; www.lightning.org.
122. MBMA - Metal Building Manufacturers Association; www.mbma.com.
123. MCA - Metal Construction Association; www.metalconstruction.org.
124. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
125. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
126. MHIA - Material Handling Industry of America; www.mhia.org.
127. MIA - Marble Institute of America; www.marble-institute.com.
128. MMPA - Moulding & Millwork Producers Association; www.wmmpa.com.
129. MPI - Master Painters Institute; www.paintinfo.com.
130. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.
131. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
132. NACE - NACE International; (National Association of Corrosion Engineers International); www.nace.org.
133. NADCA - National Air Duct Cleaners Association; www.nadca.com.
134. NAIMA - North American Insulation Manufacturers Association; www.naima.org.
135. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
136. NBI - New Buildings Institute; www.newbuildings.org.
137. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
138. NCMA - National Concrete Masonry Association; www.ncma.org.
139. NEBB - National Environmental Balancing Bureau; www.nebb.org.
140. NECA - National Electrical Contractors Association; www.necanet.org.
141. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
142. NEMA - National Electrical Manufacturers Association; www.nema.org.

143. NETA - InterNational Electrical Testing Association; www.netaworld.org.
144. NFHS - National Federation of State High School Associations; www.nfhs.org.
145. NFPA - National Fire Protection Association; www.nfpa.org.
146. NFPA - NFPA International; (See NFPA).
147. NFRC - National Fenestration Rating Council; www.nfrc.org.
148. NHLA - National Hardwood Lumber Association; www.nhla.com.
149. NLGA - National Lumber Grades Authority; www.nlga.org.
150. NOFMA - National Oak Flooring Manufacturers Association; (See NWFA).
151. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
152. NRCA - National Roofing Contractors Association; www.nrca.net.
153. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
154. NSF - NSF International; www.nsf.org.
155. NSPE - National Society of Professional Engineers; www.nspe.org.
156. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
157. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
158. NWFA - National Wood Flooring Association; www.nwfa.org.
159. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
160. PDI - Plumbing & Drainage Institute; www.pdionline.org.
161. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); www.plasa.org.
162. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
163. RFCI - Resilient Floor Covering Institute; www.rfci.com.
164. RIS - Redwood Inspection Service; www.redwoodinspection.com.
165. SAE - SAE International; www.sae.org.
166. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
167. SDI - Steel Deck Institute; www.sdi.org.
168. SDI - Steel Door Institute; www.steeldoor.org.
169. SEFA - Scientific Equipment and Furniture Association (The); www.sefalabs.com.
170. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
171. SIA - Security Industry Association; www.siaonline.org.
172. SJI - Steel Joist Institute; www.steeljoist.org.
173. SMA - Screen Manufacturers Association; www.smainfo.org.
174. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
175. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
176. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
177. SPIB - Southern Pine Inspection Bureau; www.spib.org.
178. SPRI - Single Ply Roofing Industry; www.spri.org.
179. SRCC - Solar Rating & Certification Corporation; www.solar-rating.org.
180. SSINA - Specialty Steel Industry of North America; www.ssina.com.
181. SSPC - SSPC: The Society for Protective Coatings; www.sspc.org.
182. STI - Steel Tank Institute; www.steeltank.com.
183. SWI - Steel Window Institute; www.steelwindows.com.
184. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
185. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
186. TCNA - Tile Council of North America, Inc.; www.tileusa.com.
187. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.tema.org.

188. TIA - Telecommunications Industry Association (The); (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.
189. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
190. TMS - The Masonry Society; www.masonrysociety.org.
191. TPI - Truss Plate Institute; www.tpinst.org.
192. TPI - Turfgrass Producers International; www.turfgrasssod.org.
193. TRI - Tile Roofing Institute; www.tileroofing.org.
194. UL - Underwriters Laboratories Inc.; www.ul.com.
195. UNI - Uni-Bell PVC Pipe Association; www.uni-bell.org.
196. USAV - USA Volleyball; www.usavolleyball.org.
197. USGBC - U.S. Green Building Council; www.usgbc.org.
198. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
199. WASTEC - Waste Equipment Technology Association; www.wastec.org.
200. WCLIB - West Coast Lumber Inspection Bureau; www.wclib.org.
201. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
202. WDMA - Window & Door Manufacturers Association; www.wdma.com.
203. WI - Woodwork Institute; www.wicnet.org.
204. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.
205. WWPA - Western Wood Products Association; www.wwpa.org.

B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.

1. DIN - Deutsches Institut fur Normung e.V.; www.din.de.
2. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
3. ICC - International Code Council; www.iccsafe.org.
4. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Information is subject to change and is up to date as of the date of the Contract Documents.

1. COE - Army Corps of Engineers; www.usace.army.mil.
2. CPSC - Consumer Product Safety Commission; www.cpsc.gov.
3. DOC - Department of Commerce; National Institute of Standards and Technology; www.nist.gov.
4. DOD - Department of Defense; www.quicksearch.dla.mil.
5. DOE - Department of Energy; www.energy.gov.
6. EPA - Environmental Protection Agency; www.epa.gov.
7. FAA - Federal Aviation Administration; www.faa.gov.
8. FG - Federal Government Publications; www.gpo.gov.
9. GSA - General Services Administration; www.gsa.gov.
10. HUD - Department of Housing and Urban Development; www.hud.gov.

11. LBL - Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; www.eetd.lbl.gov.
12. OSHA - Occupational Safety & Health Administration; www.osha.gov.
13. SD - Department of State; www.state.gov.
14. TRB - Transportation Research Board; National Cooperative Highway Research Program; The National Academies; www.trb.org.
15. USDA - Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.
16. USDA - Department of Agriculture; Rural Utilities Service; www.usda.gov.
17. USDJ - Department of Justice; Office of Justice Programs; National Institute of Justice; www.ojp.usdoj.gov.
18. USP - U.S. Pharmacopeial Convention; www.usp.org.
19. USPS - United States Postal Service; www.usps.com.

D. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. CFR - Code of Federal Regulations; Available from Government Printing Office; www.gpo.gov/fdsys.
2. DOD - Department of Defense; Military Specifications and Standards; Available from DLA Document Services; www.quicksearch.dla.mil.
3. DSCC - Defense Supply Center Columbus; (See FS).
4. FED-STD - Federal Standard; (See FS).
5. FS - Federal Specification; Available from DLA Document Services; www.quicksearch.dla.mil.

    a. Available from Defense Standardization Program; www.dsp.dla.mil.
    b. Available from General Services Administration; www.gsa.gov.
    c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org/ccb.

6. MILSPEC - Military Specification and Standards; (See DOD).
7. USAB - United States Access Board; www.access-board.gov.
8. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (See USAB).

E. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. CBHF; State of California; Department of Consumer Affairs; Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation; www.bearhfti.ca.gov.
2. CCR; California Code of Regulations; Office of Administrative Law; California Title 24 Energy Code; www.calregs.com.
3. CDHS; California Department of Health Services; (See CDPH).

4. CDPH; California Department of Public Health; Indoor Air Quality Program; www.cal-iaq.org.
5. CPUC; California Public Utilities Commission; www.cpuc.ca.gov.
6. SCAQMD; South Coast Air Quality Management District; www.aqmd.gov.
7. TFS; Texas A&M Forest Service; Sustainable Forestry and Economic Development; www.txforestservice.tamu.edu.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 015000
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Requirements:

1. Division 01 Section "Summary of Work" for work restrictions and limitations on utility interruptions.
2. Division 01 Section "Multiple Contract Summary" for responsibilities for temporary facilities and controls for projects utilizing multiple contracts.
3. Division 01 Section “Fire Safety During Construction” for fire safety requirements during construction.
4. Division 07 Sections as applicable.
5. Division 31 Sections applicable to site clearing, earthwork, and trenching for temporary erosion and sedimentation control. (see drawings).
6. Appendix for additional information on the extent of portable chain-link fencing and track surfacing protection.

1.3 USE CHARGES

A. General: Installation, removal, and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to Owner, Architect, testing agencies, and authorities having jurisdiction.

B. Water Service from Existing System: Water from Owner's existing water system is available for use; provide connections and extensions of services as required for construction operations.

1. Water service is available for use without metering and without payment of use charges.

C. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use; provide connections and extensions of services as required for construction operations.

1. Electric power service is available for use without metering and without payment of use charges.

1.4 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.5 REGULATORY REQUIREMENTS

A. Regulatory Requirements: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction including, but not limited to, the following:

1. California Code of Regulations, Title 24, California Code requirements as applicable to the project.
2. Health and safety regulations.
3. Utility company regulations.
4. Police, fire department, and rescue squad rules.
5. Environmental protection regulations.
6. Regional Air Pollution Control District permits and requirements.
7. California Department of Water Resources, Stormwater General Permit for projects with site work area greater than one acre.
8. Comply with NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations," ANSI A10 Series standards for "Safety Requirements for Construction and Demolition," and NECA Electrical Design Library "Temporary Electrical Facilities."

1.6 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Relocate temporary services and facilities as the Work progresses. Do not overload facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Materials for temporary facilities shall be acceptable to Architect, Owner, and Authorities having Jurisdiction (AHJ), shall be appropriate for intended use, and shall comply with governing codes and regulations.

B. Portable Chain-Link Fencing: Minimum 2-inch, 0.148-inch thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts. Provide concrete or galvanized-steel bases for supporting posts.

1. See the Appendix for the extent to the portable chain link fencing.
2. Fencing shall remain in place for the duration of the project.

C. Fencing Windscreen: Polyester fabric scrim with grommets for attachment to chain link fence, color as acceptable to Owner.

1. Fencing windscreen material shall be installed on all portable chain link fencing and along the indicated fencing on the west side of the stadium.

D. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil minimum thickness, with flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2.

E. Track Surfacing Protection: Plywood or other track surfacing manufacturer recommended material (Beynon) to protect the entire track surfacing and below the portable chain-link fencing system for the duration of all construction operations. See the Appendix for additional information on the extent of area to be protected.

2.2 TEMPORARY STORAGE FACILITIES

A. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

1. Store combustible materials apart from buildings.

2.3 TEMPORARY SANITARY FACILITIES

A. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use by construction and related administrative personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities. Temporary toilets shall be self-contained, single-occupant units of the chemical, aerated recirculation type; provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material. Use of Owner’s sanitary facilities is not permitted.

1. Accessibility Requirements: Sanitary facilities serving support facilities such as offices, meeting rooms, plan rooms, and serving personnel not directly associated with the actual processes of construction shall be accessible for a person using a wheelchair and shall comply with CBC Section 11B-213 (Ref. CBC 11B-201.4).

2.4 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.1 TEMPORARY FACILITIES, GENERAL

A. Conservation: Coordinate construction and use of temporary facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

3.2 INSTALLATION, GENERAL

A. Locate facilities at locations directed by the Owner where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.3 TEMPORARY UTILITIES

A. General: Install temporary service or connect to existing service.

1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.

1. Connect temporary sewers to private or municipal system as indicated on Drawings and as directed by authorities having jurisdiction.

C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.

1. Existing Water Service: Where connection to Owner’s existing water service is available and allowed, clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

D. Temporary Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

1. Provide temporary dehumidification systems when required to reduce ambient and substrate moisture levels to level required to allow installation or application of finishes and their proper curing or drying.

E. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

1. Where temporary power service is required, install electric power service overhead unless otherwise indicated.
2. Where Owner’s existing power service is available, connect temporary service to Owner's existing power source, as directed by Owner, maintain equipment in a condition acceptable to Owner.

F. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

3.4 SUPPORT FACILITIES INSTALLATION

A. General: Locate storage containers, and other temporary construction and support facilities for easy access in the areas designated and approved by the Architect and Owner. Comply with the following:

1. Do not locate temporary sheds within 30 feet of building lines.
2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Sanitary Facilities: Provide temporary toilets, wash facilities, safety shower and eyewash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

1. Use of Permanent Toilets: Use of Owner's existing or new toilet facilities is not permitted.

C. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

D. Parking: Parking areas for construction personnel shall be at location as indicated in the Appendix.

E. Storage and Staging: Use the area noted in the Appendix for storage and staging needs.

F. Dewatering: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.

G. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.

a. Provide temporary, directional signs for construction personnel and visitors.

2. Maintain and touchup signs so they are legible at all times.

H. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations.

1. Comply with requirements of the following:

a. Authorities having jurisdiction.
b. Division 01 Section "Execution" for progress cleaning.
c. Division 01 Section "Construction Waste Management and Disposal."

2. Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F. Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material lawfully.

I. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

3.5 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

1. Comply with work restrictions specified in Division 01 Section "Summary of Work."

C. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

D. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

E. Security Enclosure Fence (with windscreen) and Lockup: Before construction operations begin, furnish and install project enclosure fence in a manner that will prevent people and animals from easily entering the site except by entrance gates. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each work day.

1. Extent of Fence: As indicted in the Appendix and required to enclose entire Project site or portion determined sufficient to accommodate construction operations.

F. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

G. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.

H. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.

1. Prohibit smoking in construction areas. Comply with additional limits on smoking specified in other Sections.
2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
3. Develop and supervise an overall fire-prevention and protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

3.6 MOISTURE AND MOLD CONTROL

A. General: Avoid trapping water in finished work. Document visible signs of mold that may appear during construction.

B. Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:

1. Protect porous materials from water damage.
2. Protect stored and installed material from flowing or standing water.
3. Keep porous and organic materials from coming into prolonged contact with concrete.
4. Remove standing water from decks.
5. Keep deck openings covered or dammed.

C. Partially Enclosed Construction Phase: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:

1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
2. Keep interior spaces reasonably clean and protected from water damage.
3. Periodically collect and remove waste containing cellulose or other organic matter.
4. Discard or replace water-damaged material.
5. Do not install material that is wet.
6. Discard, replace, or clean stored or installed material that begins to grow mold.
7. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.

3.7 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 01 Section "Closeout Procedures."

END OF SECTION

SECTION 015116
FIRE SAFETY DURING CONSTRUCTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Requirements for fire safety during construction and demolition.
2. Requirements for submittal of Contractor's Site Safety Plan (SSP).

B. Related Sections:

1. Division 01 Section "Temporary Facilities and Controls" for additional facilities, requirements, and procedures required during construction.

1.3 SUBMITTALS

A. Site Safety Plan: Submit Site Safety Plan (SSP) as required by California Fire Code (CFC) Section 3303.1.1.

1. Submit SSP in pdf format to Architect, Architect will submit SSP to DSA.

a. DSA Form 102-IC (Construction Start Notice) requires a SSP to be submitted separately and in conjunction with Form 102-IC; failure to include the SSP will result in rejection of the DSA Form 102-IC.
b. Submit SSP to Architect within 7 calendar days of Notice of Award.

1) Additional Contract Time will not be granted for failure of DSA to approve or accept the Contractor's SSP.

2. The Contractor shall be responsible for the development, implementation and maintenance of an approved, written SSP establishing a fire prevention program at the project site applicable throughout all phases of the construction, repair, alteration or demolition work. The plan shall address the requirements of CFC Chapter 33 and other applicable portions of the CFC, the duties of staff and staff training requirements. The SSP shall be submitted and approved by the governing agency before the start of construction. Any changes to the SSP shall be submitted for approval.

a. SSP shall include the following information as applicable (Per CFC Section 3303.1.1):

1) Name and contact information of site safety director.
2) Documentation of the training of the site safety director and fire watch personnel.
3) Procedures for reporting emergencies.
4) Fire department vehicle access routes.
5) Location of fire protection equipment including portable fire extinguishers, standpipes, fire department connections and fire hydrants.
6) Smoking and cooking policies, designated areas to be used where approved, and signage locations in accordance with CFC Section 3305.8.
7) Location and safety considerations for temporary heating equipment.
8) Hot work permit plan.
9) Plans for control of combustible waste material.
10) Locations and methods for storage and use of flammable and combustible liquids and other hazardous materials.
11) Provisions for site security.
12) Changes that affect this plan.
13) Other site-specific information required by the fire code official.

1.4 REGULATORY REQUIREMENTS

A. Regulatory Requirements: Comply with applicable provisions of the following:

1. NFPA 241.
2. California Fire Code, 2022 Edition, Chapter 33 “Fire Safety During Construction and Demolition” and the 2022 Editions of the following California Codes as Referenced by the California Fire Code:

a. California Building Code (CBC).
b. California Mechanical Code (CMC).
c. California Plumbing Code (CPC).
d. California Electrical Code (CEC).

B. Responsibility for Fire Protection (CFC 3303)

1. Program Development and Maintenance: The Contractor shall be responsible for the development, implementation and maintenance of an approved written site safety plan establishing a fire prevention program at the project site applicable throughout all phases of the construction, repair, alteration, or demolition work. The plan shall address the requirements of CFC Section 3303.1
2. Site Safety Director: The Contractor shall designate a person to be the Site Safety Director. The Site Safety Director shall be responsible for ensuring compliance with the site safety plan. The Site Safety Director shall have the authority to enforce the provisions of the California Fire Code, Chapter 33, and other provisions as necessary to secure the intent of the California Fire Code,

Chapter 33. Where guard service is provided in accordance with NFPA 241, the Site Safety Director shall be responsible for the guard service.

3. Daily Fire Safety Inspection: The Site Safety Inspector shall be responsible for completion of a daily fire safety inspection at the project site. Each day, all building and outdoor areas shall be inspected to ensure compliance with the inspection list in California Fire Code Section 3303.3. The results of each inspection shall be documented and maintained on-site util a certificate of occupancy has been issued. Documentation shall be immediately available on-site for presentation to the fire code official upon request.

    a. Qualifications: Site Safety Directors shall acquire training specific to their roles and responsibilities. Upon request, the training and qualifications of the Site Safety Director shall be submitted to the fire code official for approval.

4. Training: Training of fire watch and other responsible personnel in the use of fire protection equipment shall be the responsibility of the Site Safety Director. Records of training shall be kept and made a part of the written plan for the Site Safety Plan.
5. Fire Protection Devices: The Site Safety Director shall ensure that all fire protection equipment is maintained and serviced in accordance with the California Fire Code. Fire protection equipment shall be inspected in accordance with the fire protection program.
6. Hot Work Operations: The Site Safety Director shall ensure hot work operations and permit procedures are in accordance with the California Fire Code, Chapter 35.
7. Impairment of Fire Protection Systems: The Site Safety Director shall ensure impairments to any fire protection system are in accordance with California Fire Code, Section 901.

    a. Smoke detectors and smoke alarms located in an area where airborne construction dust is expected shall be covered to prevent exposure to dust or shall be temporarily removed. Smoke detectors and alarms that were removed shall be replaced upon conclusion of dust producing work. Smoke detectors and smoke alarms that were covered shall be inspected and cleaned, as necessary, upon conclusion of dust producing work.

8. Temporary Covering of Fire Protection Devices: Coverings placed on or over fire protection devices to protect them from damage during construction processes shall be immediately removed upon the completion of the construction processes in the room or area in which the devices are installed.

C. Temporary Heating Equipment (CFC 3304):

1. Listing: Temporary heating devices shall be listed and labeled. Installation, maintenance and use of temporary heating devices shall be in accordance with the terms of the listing and the manufacturer’s directions.
2. LP-Gas Heaters: Fuel supplies for liquified petroleum gas fired heaters shall comply with California Fire Code, Chapter 61 Liquefied Petroleum Gases, and the California Mechanical Code.

3. Refueling: Refueling operations for liquid fueled equipment or appliances shall be conducted in accordance with the California Fire Code, Section 5705. The equipment or appliance shall be allowed to cool prior to refueling.
4. Installation: Clearance to combustibles from temporary heating devices shall be maintained in accordance with the labeled equipment. When in operation, temporary heating devices shall be fixed in place and protected from damage, dislodgement or overturning in accordance with the manufacturer's instructions.
5. Supervision: The use of temporary heating devices shall be supervised and maintained only by competent personnel.
6. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.

D. Precautions Against Fire (CFC 3305):

1. Smoking: Smoking shall not be allowed on the project site.
2. Combustible Debris, Rubbish and Waste:

    a. Combustible debris, rubbish and waste shall not be accumulated within buildings.
    b. Combustible debris, rubbish and waste material shall be removed from buildings at the end of each shift of work.
    c. Rubbish containers with a capacity exceeding 5.33 cubic feet (40 gallons) used for temporary storage of combustible debris, rubbish and waste materials, shall have tight fitting or self-closing lids. Such containers shall be constructed entirely of materials that are non-combustible or materials that meet a peak rate of heat release not exceeding 300 kW/m^2 when tested in accordance with ASTM E 1354 at an incident heat flux of 50 kW/m^2 in the horizontal orientation.
    d. Materials susceptible to spontaneous ignition, such as oily rags, shall be stored in a listed disposal container.

3. Burning: Burning of materials shall not be allowed on the project site.
4. Fire Watch: Where required by the fire code official or the Site Safety Plan established in accordance with California Fire Code Section 3303.1, a fire watch shall be provided for building demolition and for building construction.

    a. Fire Watch During Construction: A fire watch shall be provided during non-working hours for new construction that exceeds 40 feet in height above the lowest adjacent grade at any point along the building perimeter, for new multi-story construction with aggregate area exceeding 50,000 sf per story or as required by the fire code official.
    b. Fire Watch Personnel:

        1) Duties: The primary duty of fire watch personnel shall be to perform constant patrols and watch for the occurrence of fire. The combination of fire watch duties and site security duties is acceptable.
        2) Training: Personnel shall be trained to serve as an on-site fire watch. Training shall include the use of portable fire extinguishers. Fire

extinguishers and fire reporting shall be in accordance with California Fire Code, Section 3310.

3) Means of Notification: Fire watch personnel shall be provided with not fewer than one approved means for notifying the fire department.

c. Fire Watch Location: The fire watch shall include areas specified by the Site Safety Plan established in accordance with California Fire Code Section 3303.

d. Fire Watch Records: Fire watch personnel shall keep a record of all time periods of duty, including the log entry for each time the site was patrolled and each time a structure was entered and inspected. Records shall be made available for review by the fire code official upon request.

5. Cutting and Welding: Welding, cutting, open torches, and other hot work operations and equipment shall comply with California Fire Code Chapter 35 “Welding and Other Hot Work.’

6. Temporary Wiring for Electrical Power: Temporary wiring for electrical power and lighting installations used in connection with the construction, alteration or demolition of buildings, structures, equipment, or similar activities shall comply with the California Electrical Code.

E. Flammable and Combustible Liquids (CFC 3306):

1. Storage of Flammable and Combustible Liquids: Storage of flammable and combustible liquids shall be in accordance with California Fire Code Section 5704.

2. Class I and Class II Liquids: Storage, use, and handling of flammable and combustible liquids at construction sites shall be in accordance with California Fire Code Section 5706.2. Ventilation shall be provided for operations involving the application of materials containing flammable solvents.

3. Housekeeping: Flammable and combustible liquid storage areas shall be maintained clear of combustible vegetation and waste materials. Such storage areas shall not be used for the storage of combustible materials.

4. Precautions Against Fire: Sources of ignition and smoking shall be prohibited in flammable and combustible liquid storage areas. Signs shall be posted in accordance with California Fire Code Section 310.

5. Handling at Point of Final Use: Class I and Class II liquids shall be kept in approved safety containers.

6. Leakage and Spills: Leaking vessels shall be immediately repaired or taken out of service and spills shall be cleaned up and disposed of properly.

F. Flammable Gases (CFC 3307):

1. Storage and Handling: Storage and handling of flammable gasses shall comply with California Fire Code Chapter 58 “Flammable Gases and Flammable Cryogenic Fluids.”

2. Cleaning with Flammable Gases: Flammable gases shall not be used to clean or remove debris from piping open to the atmosphere.

G. Explosive Materials (CFC 3308): Explosive materials shall not be allowed.

H. Portable Generators (CFC 3309): Portable generators used at construction and demolitions sites shall comply with California Fire Code Section 1204

I. Fire Reporting (CFC 3310)

1. Emergency Telephone: Emergency telephone facilities with ready access shall be provided in an approved location at the construction site, or an approved equivalent means of communication shall be provided. The street address of the construction site and the emergency telephone number of the fire department shall be posted adjacent to the telephone. Alternatively, where an equivalent means of communication has been approved, the site address and fire department emergency telephone number shall be posted at the main entrance to the site, in guard shacks, and in the construction site office.

J. Access for Fire Fighting (CFC 3311):

1. Required Access: Approved vehicle access for firefighting shall be provided to all construction or demolition sites. Vehicle access shall be provided to within 100 feet of temporary or permanent fire department connections. Vehicle access shall be provided by either temporary or permanent roads capable of supporting vehicle loading under all weather conditions. Vehicle access shall be maintained until permanent fire apparatus access roads are available.
2. Key Boxes: Key boxes shall be provided as required by California Fire Code Chapter 5 “Fire Service Features.”

K. Means of Egress (CFC 3312):

1. Stairways Required: Where building construction exceeds 40 feet in height above the lowest level of fire department vehicle access, a temporary or permanent stairway shall be provided.
2. Means of Egress: Required means of egress and required accessible means of egress shall be maintained during construction and demolition, remodeling or alterations and additions to any building unless an approved temporary means of egress system is provided.
3. Combustible Materials Storage: Combustible materials associated with construction, demolition, remodeling or alterations to an occupied structure shall not be stored in exits, enclosures for stairs, or exit access corridors serving an occupant load of 30 or more.

L. Water Supply for Fire Protection (CFC 3313):

1. When Required: An approved water supply for fire protection, either temporary or permanent, shall be made available as soon as combustible building materials arrive on the site, on concealment of vertical combustible construction, and on installation of a standpipe system in buildings under construction, in accordance with California Fire Code Section 3313.2 through 3313.5.

M. Standpipes (CFC 3314):

1. Where Required: In buildings required to have standpipes by California Fire Code Section 905.3.1, not less than one standpipe shall be provided for use during construction. Such standpipes shall be installed prior to construction exceeding 40 feet in height above the lowest level of fire department vehicle access. Such standpipes shall be provided with fire department hose connections at locations adjacent to stairways complying with California Fire Code Section 3312.1. As construction progresses, such standpipes shall be extended to within one floor of the highest point of construction having secured decking or flooring.
2. Buildings Being Demolished: Where a building is being demolished and a standpipe is existing within such a building, such standpipe shall be maintained in an operable condition so as to be available for use by the fire department. Such standpipe shall be demolished with the building but shall not be demolished more than one floor below the floor being demolished.
3. Detailed Requirements: Standpipes shall be installed in accordance with the provisions of California Fire Code Section 905.

    a. Standpipes shall be either temporary or permanent in nature, and with or without a water supply, provided that such standpipes comply with the requirements of California Fire Code Section 905 as to capacity, outlets and materials.

N. Automatic Sprinkler System (CFC 3315):

1. Completion Before Occupancy: In buildings where an automatic sprinkler system is required by the California Fire Code or California Building Code, it shall be unlawful to occupy any portion of a building or structure until the automatic sprinkler system installation has been tested and approved, except as provided in California Fire Code Section 105.3.4.
2. Operation of Valves: In buildings where an automatic sprinkler system is provided, operation of sprinkler control valves shall be allowed only by properly authorized personnel and shall be accompanied by notification of duly designated parties. Where the sprinkler protection is being regularly turned off and on to facilitate connection of newly completed segments, the sprinkler control valves shall be checked at the end of each work period to ascertain that protection is in service.

O. Portable Fire Extinguishers (CFC 3316):

1. Portable Fire Extinguishers: Structures under construction, alteration or demolition shall be provided with not less than one approved portable fire extinguisher in accordance with the California Fire Code, Section 906 and sized for not less than ordinary hazard, as follows:

    a. At each stairway on all floor levels where combustible materials have accumulated.
    b. In every storage and construction shed.
    c. Additional portable fire extinguishers shall be provided where special hazards exist including, but not limited to, the storage and use of flammable and combustible liquids.

P. Motorized Construction Equipment (CFC 3317):

1. Conditions of Use: Internal combustion powered construction equipment shall be used in accordance with all of the following conditions:

   a. Equipment shall be located so that exhausts do not discharge against combustible material.
   b. Exhausts shall be piped to the outside of the building.
   c. Equipment shall not be refueled while in operation.
   d. Fuel for equipment shall be stored in approved areas outside of the building.

Q. Safeguarding Roofing Operations (CFC 3318):

1. General: Roofing operations utilizing heat producing systems or other ignition sources shall be conducted in accordance with California Fire Code Sections 3318.2 and 3318.3, and Chapter 35.
2. Asphalt and Tar Kettles: Asphalt and tar kettles shall be operated in accordance with the California Fire Code, Section 303.
3. Fire Extinguishers for Roofing Operations: Fire extinguishers shall comply with the California Fire Code, Section 906. There shall be not less than one multi-purpose portable fire extinguisher with a minimum 3-A 40-B:C rating on the roof being covered or repaired.

PART 2 - PRODUCTS

2.1 TEMPORARY EQUIPMENT, GENERAL

A. Temporary Equipment: Temporary equipment shall comply with requirements of Division 01 Section “Temporary Facilities and Controls,” and shall comply with the requirements of this Section.

PART 3 - EXECUTION

A. Fire Safety Observation, Procedures, and Features: Provide fire safety observation activities, procedures, and features as required and in compliance with regulatory requirements.

END OF SECTION

SECTION 016000
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

B. Related Requirements:

1. Division 01 Section "Substitution Procedures" for requests for substitutions.

1.3 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, which is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
3. Comparable Products: Products of a listed manufacturer that are demonstrated to meet or exceed the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified ‘Basis of Design’ product.

B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.4 SUBMITTALS

A. Product Submittals: Comply with requirements in Division 01 Section "Submittal Procedures" and submittal requirements of Division 02 through 33 Sections to show compliance with product requirements.

1.5 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
3. See Divisions 02 through 33 Sections for specific content requirements and particular requirements for submitting special warranties.

C. Warranty Submittals: Comply with requirements in Division 01 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.

B. Product Selection Procedures:

1. Restricted List: Where Specifications include the phrase “provide one of the following” or similar phrase and lists 2 or more manufacturers and/or products, provide one of the products indicated. Comply with requirements in Division 01 Section "Substitution Procedures" for consideration of an unnamed manufacturer or product.
2. Non-restricted List: Where Specifications include the phrase “includes, but are not limited to the following” or similar phrase, provide one of the products indicated or an unnamed product that complies with requirements indicated.
3. Basis of Design: Where Specifications include the phrase “Basis of Design” and lists a named manufacturer and product, provide the product indicated.

    a. Where a “Comparable” product of listed manufacturers is indicated following a “Basis of Design” manufacturer/product, a comparable product of one of the listed manufacturers may be provided in lieu of the basis of design manufacturer/product subject to compliance with product requirements and the following:

        1) Evidence that the proposed product:

            a) Does not require revisions to the Contract Documents.
            b) Is consistent with the Contract Documents and will produce the indicated results.
            c) Is compatible with other portions of the Work.

        2) Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
        3) Evidence that proposed product provides specified warranty.

    b. Where no “Comparable” manufacturers/products are indicated following a “Basis of Design” manufacturer/product, comply with requirements in Division 01 Section "Substitution Procedures" for consideration of an unnamed manufacturer or product.

C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Division 01 Section "Substitution Procedures" for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

PART 3 - EXECUTION

3.1 PRODUCT INSTALLATION

A. General: Install products in accordance with Drawings, Specifications, and product manufacturer's written installation instructions. Installation shall include examination of conditions and preparations necessary for proper installation.

END OF SECTION

SECTION 017300
EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. Installation of the Work.
4. Cutting, patching and repairing.
5. Coordination of Owner-installed products.
6. Progress cleaning.
7. Starting and adjusting.
8. Protection of installed construction.
9. Correction of the Work.

B. Related Requirements:

1. Division 01 Section "Summary of Work" for limits on use of Project site.
2. Division 01 Section "Submittal Procedures" for submitting surveys.
3. Division 02 Section "Selective Demolition" for demolition and removal of selected portions of the building.

1.3 DEFINITIONS

A. Accessible Route: A continuous unobstructed path connecting accessible elements and spaces of an accessible site, building or facility that can be negotiated by a person with a disability using wheelchair, and that is also safe for and usable by persons with other disabilities. Interior accessible routes may include corridors, hallways, floors, ramps, elevators and lifts. Exterior accessible routes may include accessible parking stalls and access aisles, curb ramps, crosswalks at vehicular ways, walks, ramps and lifts.

B. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.

C. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.4 QUALITY ASSURANCE

A. Surveyor Qualifications: A professional engineer or land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

1. Structural Elements: When cutting of structural elements must be performed, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.

2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:

a. Primary operational systems and equipment.
b. Fire separation assemblies.
c. Air or smoke barriers.
d. Fire-suppression systems.
e. Mechanical systems piping and ducts.
f. Control systems.
g. Communication systems.
h. Fire-detection and alarm systems.
i. Conveying systems.
j. Electrical wiring systems.
k. Operating systems of special construction.

3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:

a. Water, moisture, or vapor barriers.
b. Membranes and flashings.
c. Sprayed fire-resistive material.
d. Equipment supports.
e. Piping, ductwork, vessels, and equipment.

4. Visual Elements: Cut and patch construction in a manner that results in no visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.

3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work.
2. List of detrimental conditions, including substrates.
3. List of unacceptable installation tolerances.
4. Recommended corrections.

D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Division 01 Section "Request for Information."

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.

B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
2. Establish limits on use of Project site.
3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.

4. Inform installers of lines and levels to which they must comply.
5. Check the location, level and plumb, of every major element as the Work progresses.
6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.4 FIELD ENGINEERING

A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
3. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
4. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

B. Certified Survey: On completion of site drainage features, foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.

3.5 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.

F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. 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. Deliver such items to Project site in time for installation.

I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 CUTTING, PATCHING, AND REPAIRING

A. Cutting, Patching and Repairing, General: Employ skilled workers to perform cutting, patching, and/or repairing. Proceed with cutting, patching, and repairing at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

C. Temporary Support: Provide temporary support of work to be cut.

D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Division 01 Section "Summary of Work."

F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.

H. Patching and Repairing: Patch and repair construction by grinding, filling, leveling, refinishing, closing up, and similar operations following performance of other work. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched and repaired areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.

    a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    b. Restore damaged pipe covering to its original condition.

3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

    a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
    b. Where finishes have been removed, patch and repair substrates to receive new finishes; substrates shall be prepared to comply with requirements of manufacturer of final finish material.
4. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.

I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 OWNER-INSTALLED PRODUCTS

A. Site Access: Provide access to Project site for Owner's construction personnel.

B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel.

1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.

2. Preinstallation Conferences: Include Owner's construction personnel at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

3.8 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

    a. Use containers intended for holding waste materials of type to be stored.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Division 01 Section "Construction Waste Management and Disposal."

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.9 STARTING AND ADJUSTING

A. Coordinate startup and adjusting of equipment and operating components with requirements in Division 01 Section "General Commissioning Requirements."

B. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

C. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

D. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

E. Manufacturer's Field Service: Comply with qualification requirements in Division 01 Section "Quality Requirements."

3.10 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION

SECTION 017419
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Disposing of nonhazardous construction and demolition waste.

B. Related Requirements:

1. Division 01 Section “Sustainable Designs Requirements, DSA CALGREEN” for requirements and procedures with California Green Building Standard Code (CGBSC) for DSA requirements.
2. Division 02 Section "Selective Demolition" for disposition of waste resulting from partial demolition of buildings, structures, and site improvements.
3. Division 04 Sections as applicable to masonry for disposal requirements for masonry waste.
4. Drawings: "Site Clearing" (See Drawings) for disposition of waste resulting from site clearing and removal of above- and below-grade improvements.

1.3 DEFINITIONS

A. CGBSC: California Green Building Standards Code.

B. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

C. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

D. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

E. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

F. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

G. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition and construction waste becomes property of Contractor.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with transportation and disposal regulations of authorities having jurisdiction.

1.6 REGULATORY REQUIREMENTS

A. Construction Waste Management: Refer to CGBSC Section 5.408.1 Construction Waste Management. Recycle and/or salvage for reuse a minimum of 65 percent of the non-hazardous construction and demolition waste in accordance with CGBSC Section 5.408.1.1, 5.408.1.2, or 5.408.1.3 (Below) or meet a local construction and demolition waste management ordinance, whichever is more stringent:

1. GBSC Section 5.408.1.1, Construction Waste Management Plan: Where a local jurisdiction does not have a construction and demolition waste management ordinance that is more stringent, provide Waste Management Plan that:

    a. Identifies the construction and demolition waste materials to be diverted from disposal by efficient usage, recycling, reuse on the project or salvage for future use or sale.
    b. Determines if construction and demolition waste materials will be sorted on-site (source separated) or bulk mixed (single stream).
    c. Identifies diversion facilities where construction and demolition waste material collected will be taken.
    d. Specifies the amount of construction and demolition waste materials diverted shall be calculated by weight or volume, but not by both.

2. GBSC Section 5.408.1.2, Waste Management Company: Utilize a waste management company that can provide verifiable documentation that the percentage of construction and demolition waste material diverted from the landfill complies with CGBSC Section 5.408.1.

    a. Exception 1: Excavated soil and land-clearing debris.
    b. Exception 2: Alternate waste reduction methods developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist.
    c. Demolition waste meeting local ordinance or calculated in consideration of local recycling facilities and markets.

3. GBSC Section 5.408.1.3, Waste Stream Reduction Alternative: The combined weight of new construction disposal that does not exceed two pounds per square foot of building area may be deemed to meet the 65 percent minimum requirement as approved by the enforcing agency.

B. Documentation, CGBSC Section 5.408.1.4: Documentation shall be provided to the enforcing agency which demonstrates compliance with Sections 5.408.1.1. through 5.408.1.3. The Waste management plan shall be updated as necessary and shall be accessible during construction for examination by the enforcing agency.

PART 2 - PRODUCTS - (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. General: Implement approved waste management procedures. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management procedures during the entire duration of the Contract.

1. Comply with operation, termination, and removal requirements in Division 01 Section "Temporary Facilities and Controls."

B. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
2. Comply with Division 01 Section "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 UNIVERSAL WASTE

A. Additions and alterations to a building shall require verification that Universal Waste items such as fluorescent lamps and mercury containing ballasts and thermostats as well as other California prohibited Universal waste materials are disposed of properly and are diverted from landfills.

1. Refer to Universal Waste Rule link at https://dtsc.ca.gov/universalwaste/.

3.3 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Disposal: Remove waste materials from Owner's property and legally dispose of them.

END OF SECTION

SECTION 017700
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Closeout procedures at completion.
2. Final cleaning.
3. Repair of the Work.

B. Related Requirements:

1. Division 01 Section "Operation and Maintenance Data" for operation and maintenance documentation requirements.
2. Division 01 Section "Project Record Drawings" for preparing and submitting Project Record Drawings.
3. Division 01 Section "Warranties" for submitting final warranty information.
4. Division 01 Section "Demonstration and Training" for requirements for instructing Owner's personnel.
5. Divisions 02 through 33 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Submit the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

2. Submit closeout documentation specified in other Division 01 Sections, including project record drawings, operation and maintenance data, construction photographic documentation, warranties, and similar final record information.
3. Submit closeout documentation specified in individual Division 02 through 33 Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance materials specified in individual Division 02 through 33 Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number where applicable.
5. Submit test/adjust/balance records.
6. Submit sustainable design submittals not previously submitted.
7. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Division 01 Section "Demonstration and Training."
6. Advise Owner of changeover in utilities.
7. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
8. Complete final cleaning requirements, including touchup painting.
9. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection for Completion a minimum of 10 days prior to date the work will be completed and ready for inspection. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected.

1. Architect’s Punch List: During inspection, Architect will prepare a list of items needing completion or correction (punch list), a copy of the punch list will be distributed to the Contractor and Owner.
2. Reinspection: Request reinspection when the Work identified in previous inspection as incomplete is completed or corrected.
3. Results of completed inspection will form the basis of requirements for final completion.

E. Contractor's Cost for Reinspection: Architect will perform one inspection and one reinspection at no additional cost to the Contractor. The expense for the Architect's time for additional inspections will be paid by the Owner with the amount being deducted from the Contract Sum. The expense will be based on an hourly rate in accordance with the Architect's standard hourly rate schedule in effect at the time the work is performed with a minimum of $400.00 dollars for each additional reinspection.

1.4 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:

    a. Project name.
    b. Date.
    c. Name of Architect (Company name).
    d. Name of Contractor (Company Name).
    e. Page number.

4. Submit list of incomplete items in one of the following formats:

    a. MS Excel electronic file. Architect will return annotated file.
    b. PDF electronic file. Architect will return annotated file.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

1. Use cleaning products that comply with the California Green Building Standards Code maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for Completion for entire Project or for a designated portion of Project:

a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
d. Remove tools, construction equipment, machinery, and surplus material from Project site.
e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
g. Sweep concrete floors broom clean in unoccupied spaces.
h. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
i. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
j. Remove labels that are not permanent.
k. Wipe surfaces of mechanical, electrical, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
l. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
m. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

n. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
o. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
p. Leave Project clean and ready for occupancy.

C. Construction Waste Disposal: Comply with waste disposal requirements in Division 01 Section "Construction Waste Management and Disposal."

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

1. Comply with requirements of Division 02 through 33 Sections as applicable to the Work to be restored and/or repaired.

B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.

a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.

3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION

SECTION 017823
OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for preparing operation and maintenance documentation, including the following:

1. Operation and maintenance documentation directory.
2. Operation and maintenance data for equipment and systems.
3. Product maintenance data.

B. Related Sections:

1. Division 01 Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
2. Division 01 Section "Demonstration and Training" for demonstration and training materials.
3. Divisions 02 through 33 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.3 SUBMITTALS

A. Content: Operations and maintenance documentation content is specified in individual Specification Sections and is to be reviewed at the time of Section submittals. Submit reviewed documentation formatted and organized as required by this Section.

1. Architect will comment on whether content of operations and maintenance submittals are acceptable.
2. Where applicable, clarify and update reviewed content to correspond to revisions and field conditions.

B. Format: Submit documentation in the following format:

1. PDF electronic file. Assemble documentation into a composite electronically indexed file; submit two (2) copies on compact disc (CD) media for each submittal.

   a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked directory to data documents.
   b. Enable inserted reviewer comments on initial submittals.
   c. Label CD's and case/cover as follows:

      1) First Line: CLOSE-OUT DOCUMENTS.
      2) Project name and date.
      3) Architect company name.
      4) Division of State Architect application number.
      5) Building permit reference.
      6) Contractor company name.

2. Initial Submittal: Submit initial submittal at least 30 days before commencing demonstration and training. Architect will comment on whether general scope and content is acceptable.

3. Final Submittal: Submit in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training.

   a. Correct or modify each manual to comply with Architect's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's comments and prior to commencing demonstration and training.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION, GENERAL

A. Electronic Files: Develop documentation in the form of a multiple file composite electronic PDF file stored on a compact disc (CD) for each data type required.

1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

2.2 OPERATION AND MAINTENANCE DATA DIRECTORY

A. Directory: Prepare a single, comprehensive directory of operation and maintenance data and materials, listing items and their location to facilitate ready access to desired information. Include a section in the directory for each of the following:

1. List of documents.
2. List of systems.
3. List of equipment.
4. List of Products.
5. Table of contents.

B. List of Systems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.

D. Tables of Contents: Include a table of contents for each operation and maintenance documentation section.

E. Identification: In the documentation directory and in each section, identify each piece of equipment with same designation used in the Contract Documents. If no designation exists, assign an appropriate designation.

2.3 REQUIREMENTS FOR OPERATION AND MAINTENANCE DATA

A. Organization: Unless otherwise indicated, organize data into a separate section for each system and a separate section for each piece of equipment not part of a system. Documentation shall contain the following materials, in the order listed:

1. Title page.
2. Table of contents.
3. Data contents.

B. Title Page: Include the following information as applicable:

1. Subject matter.
2. Name and address of Project.
3. Name and address of Owner.
4. Date of submittal.
5. Architect company name.
6. Contractor company name.
7. Installer company name.
8. Cross-reference to related systems in other operation and maintenance documentation.

C. Table of Contents: List each item (Product, equipment or system) included in documentation, identify by name and/or equipment reference, and cross-reference to Specification Section number in Project Manual.

D. Data Content: Arrange content alphabetically by designation. If possible, assemble instructions for subsystems, equipment, and components of one system into a single section.

2.4 OPERATION DOCUMENTATION

A. Content: In addition to requirements in this Section, include operation documentation required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
2. Performance and design criteria if Contractor is delegated design responsibility.
3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:

1. Product name and model number. Use designations for products indicated on Contract Documents.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.5 SYSTEMS AND EQUIPMENT MAINTENANCE DOCUMENTATION

A. Content: For each system and piece of equipment, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system and piece of equipment included in documentation, identify by product name and arrange to match table of contents. For each piece of equipment, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:

1. Standard maintenance instructions and bulletins.
2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training video recording, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

2.6 PRODUCT MAINTENANCE DATA

A. Content: Organize data into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in data identified by product name and arranged to match table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

C. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 DOCUMENTATION PREPARATION

A. Directory: Prepare a directory that provides an organized reference to operation and maintenance documentation.

B. Product Maintenance Documentation: Assemble a complete set of product maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

C. Operation and Maintenance Documentation: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.

D. Manufacturers' Data: Where documentation contains manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

E. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.

1. Do not use original project record documents as part of operation and maintenance documentation.
2. Comply with requirements of newly prepared Record Drawings in Division 01 Section "Project Record Documents."

F. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION

SECTION 017836
WARRANTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for warranties required by the Contract Documents, including manufacturers' standard warranties on products and special warranties.

B. Related Sections include but are not limited to the following:

1. Division 01 Section "Closeout Procedures."
2. Division 01 Section "Operation and Maintenance Data."
3. Division 02 through 33 Sections for specific warranty requirements.

1.3 DEFINITIONS

A. Standard product warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.

B. Special project 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 the Owner.

1.4 WARRANTY REQUIREMENTS

A. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

B. Related Damages and Losses: When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.

C. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

D. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

E. Owner's Recourse: Expressed warranties made to the 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 the Owner can enforce such other duties, obligations, rights, or remedies.

1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

F. Where the Contract Documents require a special warranty, or similar commitment on the Work or part of the Work, the Owner reserves the right to refuse to accept the Work, until the Contractor presents evidence that entities required to countersign such commitments are willing to do so.

1.5 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

C. Warranties: Submit (2) copies of each required warranty properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
2. Include copy of each warranty in operation and maintenance documentation.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 017839
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:

1. Record drawings.

B. Related Sections:

1. Division 01 Section "Execution" for surveys of exterior accessible routes.
2. Division 01 Section "Closeout Procedures" for general closeout procedures.
3. Division 01 Section “Payment Procedures" for continuous updating of “Record Documents” as a requirement for processing Application for Payment.
4. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
5. Divisions 02 through 33 Sections for specific requirements for project record documents of the Work in those Sections.

1.3 CLOSEOUT SUBMITTALS

A. Record Drawings: Submit Record Drawings as follows:

1. Initial Submittal: Submit an original paper copy set of marked-up “Record Drawings.”

a. Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.

2. Final Submittal: Submit the following:

a. Original paper copy set of marked-up “Record Drawings.”
b. Record Digital Data Files: PDF electronic digital data files of scanned original Record Drawings, scan all drawings whether or not changes and additional information were recorded; save electronic files to compact disc (CD) format; submit two (2) copies.

c. Print Set of Record Drawings: Print set of Record digital data files; print each drawing whether or not changes and additional information were recorded; print in color. Submit one set.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued. Record Print sets shall include all drawings of the construction documents including original project Drawings, Shop Drawings, Supplemental Drawings, Coordination Drawings, Clarification Drawings, Change Orders, and similar drawings. Record Print sets shall include all drawings of contract documents whether or not changes and additional information were recorded.

1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up Record Prints.

    a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    b. Accurately record information in an understandable drawing technique.
    c. Record data as soon as possible after obtaining it.
    d. Record and check the markup before enclosing concealed installations.
    e. Cross-reference record prints to corresponding archive photographic documentation.

2. Content: Types of items requiring marking include, but are not limited to, the following:

    a. Dimensional changes to Drawings.
    b. Revisions to details shown on Drawings.
    c. Depths of foundations below first floor.
    d. Locations and depths of underground utilities.
    e. Revisions to routing of piping and conduits.
    f. Revisions to electrical circuitry.
    g. Actual equipment locations.
    h. Duct size and routing.
    i. Locations of concealed internal utilities.
    j. Changes made by Change Order or Construction Change Directive.
    k. Changes made following Architect's written orders.
    l. Details not on the original Contract Drawings.
    m. Field records for variable and concealed conditions.
    n. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, Change Order numbers, and similar identification, where applicable.

B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:

1. Format: Annotated PDF electronic file with comment function enabled.
2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
3. Refer instances of uncertainty to Architect for resolution.
4. Architect will furnish Contractor one set of digital data files of the Contract Drawings for use in recording information.

    a. Refer to Section 013300 "Submittal Procedures" for requirements related to use of Architect's digital data files.
    b. Architect will provide data file layer information. Record markups in separate layers.

C. Newly Prepared Record Drawings: Prepare new Drawings instead of preparing Record Drawings where Architect determines that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation.

1. New Drawings may be required when a Change Order is issued as a result of accepting an alternate, substitution, or other modification.
2. Consult Architect for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly prepared Record Drawings into Record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.

D. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Identification: As follows:

    a. Project name.
    b. Date.
    c. Designation "PROJECT RECORD DRAWINGS."
    d. Name of Architect (Company name).

e. Name of Contractor (Company name).

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of Record Drawings during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.

B. Maintenance of Record Drawings: Store Record Drawings in the field office apart from the Contract Documents used for construction. Do not use Project Record Drawings for construction purposes. Maintain Record Drawings in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Drawings for Architect's reference during normal working hours.

END OF SECTION

SECTION 017900

DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for instructing Owner's personnel in operation and maintenance of systems, subsystems, and equipment.

B. Related Sections:

1. Division 01 Section “Operation and Maintenance Data” for operation and maintenance manuals and data.
2. Divisions 02 through 33 Sections for specific requirements for demonstration and training for products in those Sections.

1.3 INFORMATIONAL SUBMITTALS

A. Training materials in addition to Operation and Maintenance manuals required in Division 01 Section “Operation and Maintenance Data.”

B. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

1. Schedule shall be coordinated and finalized with the Owner.

C. Qualification Data: For instructor.

D. Attendance Record: For each training module, submit list of participants and length of instruction time.

E. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.4 QUALITY ASSURANCE

A. Instructor Qualifications: A factory-authorized service representative experienced in operation and maintenance procedures and training of Owner's personnel.

1.5 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved operation and maintenance manuals. Do not submit instruction program until operation and maintenance data have been reviewed and approved by Architect.

1.6 INSTRUCTION PROGRAM

A. Provide instruction programs that include training sessions for each system and for equipment not part of a system, as required by individual Specification Sections. Include instruction for the following as applicable to the system, equipment, or component:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:

    a. System, subsystem, and equipment descriptions.
    b. Operating standards.
    c. Regulatory requirements.
    d. Equipment function.
    e. Operating characteristics.
    f. Limiting conditions.
    g. Performance curves.

2. Documentation: Review the following items in detail:

    a. Emergency manuals.
    b. Operations manuals.
    c. Maintenance manuals.
    d. Project record documents.
    e. Identification systems.
    f. Warranties and bonds.
    g. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include 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: Include 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 emergencies.
j. Operating procedures for system, subsystem, or equipment failure.
k. Seasonal and weekend operating instructions.
l. Required sequences for electric or electronic systems.
m. Special operating instructions and procedures.

5. Adjustments: Include the following:

a. Alignments.
b. Checking adjustments.
c. Noise and vibration adjustments.
d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:

a. Diagnostic instructions.
b. Test and inspection procedures.

7. Maintenance: Include the following:

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 preventive maintenance.
f. Procedures for routine maintenance.
g. Instruction on use of special tools.

8. Repairs: Include the following:

a. Diagnosis instructions.
b. Repair instructions.

c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
d. Instructions for identifying parts and components.
e. Review of spare parts needed for operation and maintenance.

1.7 PREPARATION

A. Assemble educational materials necessary for instruction and training. Assemble training manuals organized in coordination with requirements in Division 01 Section "Operation and Maintenance Data."

B. Set up instructional equipment at instruction location.

1.8 INSTRUCTION

A. Develop instruction program and prepare training modules; coordinate instructors, and coordinate with Owner for the number of participants, instruction times, and locations.

B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

1. Owner will furnish Contractor with names and positions of participants.

C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule initial training with Owner**,** through Architect, with at least 7 days' advance notice.

D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

E. Cleanup: Collect used and leftover educational materials and deliver to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 018113
SUSTAINABLE DESIGN REQUIREMENTS, DSA CALGREEN

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes general requirements and procedures for compliance with the 2022 California Green Building Standards Code (CGBSC) for Division of the State Architect (DSA) requirements.

B. Related Sections:

1. Project Manual Appendix No. 2, DSA Form 403-C “CALGREEN CODE SUMBITTAL CHECKLIST.”

1.3 SUBMITTALS

A. Submit Sustainable Design Requirement submittals as required by Division 02 through 33 Specification Sections. Submittals may include, but are not limited to, the following:

1. Construction Waste Management Plan and other submittals as required by Division 01 Section "Construction Waste Management and Disposal."
2. Air Quality: Product data for filtration media.
3. Product data for adhesives, sealants, and coatings indicating VOC content of each product used.
4. Product data for products containing composite wood or agrifiber products or wood glues indicating that they do not contain urea-formaldehyde resin.

1.4 REGULATORY REQUIREMENTS

A. DSA Form 403-C “CALGREEN CODE SUMBITTAL CHECKLIST.”

1. DSA Form 403-C completed by Architect and included in the Appendix of this Project Manual; design and construction to comply with requirements indicated.

B. California Code of Regulations, Title 24, Part 11, California Green Building Standards Code (CGBSC). Requirements include but are not limited to the following:

1. Construction Waste Management: Comply with requirements of the 2022 CGBSC, Section 5.408.1 and Division 01 Section “Construction Waste Management and Disposal.” Construction Waste Management shall include, but not be limited to, the following:

   a. Construction Waste Management Plan.
   b. Recycling, reuse, and/or salvaging non-hazardous construction waste.

2. Environmental Quality/Pollutant Control: Comply with requirements of the 2022 CGBSC, Sections as follows:

   a. Section 5.504.3, Covering of Duct Openings and Protection of Mechanical equipment. At the time of rough installation and during storage on the construction site until final startup of the heating, cooling and ventilating equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, sheet metal or other methods acceptable to the enforcing agency to reduce the amount of dust, water and debris which may enter the system.
   b. Section 5.504.4.1, Adhesives and Sealants: Adhesives and sealants shall comply with the following VOC content limits when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

      1) Adhesives: 2022 CGBSC Table 5.504.4.1 Adhesive VOC Limit:

         a) Indoor Carpet Adhesives: 50 g/L.
         b) Carpet Pad Adhesives: 50 g/L.
         c) Rubber Floor Adhesives: 60 g/L.
         d) Wood Flooring Adhesive: 100 g/L.
         e) Subfloor Adhesives: 50 g/L.
         f) Ceramic Tile Adhesives: 65 g/L.
         g) VCT and Asphalt Tile Adhesives: 50 g/L.
         h) Gypsum Board and Panel Adhesives: 50 g/L.
         i) Cove Base Adhesives: 50 g/L.
         j) Multipurpose Construction Adhesives: 70 g/L.
         k) Structural Glazing Adhesives: 100 g/L.
         l) Single-Ply Roof Membrane Adhesive: 250 g/L.
         m) Other Adhesives not specifically listed: 50 g/L.
         n) PVC Welding Compounds: 510 g/L.
         o) CPVC Welding Compounds: 490 g/L.
         p) ABS Welding Compounds: 325 g/L.
         q) Plastic Cement Welding Compounds: 250 g/L.
         r) Adhesive Primer for Plastic: 550 g/L.
         s) Contact Adhesive: 80 g/L.
         t) Special-Purpose Contact Adhesive (contact adhesive that is used to bond melamine-covered board, metal, unsupported vinyl, rubber, or wood veneer 1/16 inch or less in thickness to any surface): 250 g/L.

u) Structural Wood Member Adhesive: 140 g/L.
v) Top and Trim Adhesive: 250 g/L.
w) Metal-to-Metal Adhesives: 30 g/L.
x) Plastic Foam Adhesives: 50 g/L.
y) Adhesives for Porous Materials (Except Wood): 50 g/L.
z) Wood Glues: 30 g/L.
aa) Fiberglass Adhesives: 80 g/L.

2) Sealants: 2022 CGBSC Table 5.504.4.2, Sealant VOC Limit:

a) Architectural Sealants: 250 g/L.
b) Nonmembrane Roof Sealants: 300 g/L.
c) Paving Sealants: 250 g/L.
d) Single-Ply Roof Membrane Sealants: 450 g/L.
e) Other Sealants: 420 g/L.
f) Sealant Primers for Nonporous Substrates: 250 g/L.
g) Sealant Primers for Porous Substrates: 775 g/L.
h) Modified Bituminous Sealant Primers: 500 g/L.
i) Other Sealant Primers: 750 g/L.

c. Section 5.504.4.3, Paints and Coatings: Architectural Coatings shall comply with the following VOC content limits when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1) Paints and Coatings: 2022 CGBSC Table 5.504.4.3, VOC Content Limits for Architectural Coatings:

a) Flat Paints and Coatings: VOC not more than 50 g/L.
b) Nonflat Paints and Coatings: VOC not more than 100 g/L.
c) Nonflat High-Gloss Paints and Coatings: VOC not more than 150 g/L.
d) Dry-Fog Coatings: VOC not more than 150 g/L.
e) Floor Coatings: VOC not more than 100 g/L.
f) Pretreatment Wash Primers: VOC not more than 420 g/L.
g) Primers, Sealers, and Undercoaters: VOC not more than 100 g/L.
h) Rust Preventative Coatings Applied to Ferrous Metals: VOC not more than 250 g/L.
i) Shellacs, Clear: VOC not more than 730 g/L.
j) Shellacs, Pigmented: VOC not more than 550 g/L.
k) Stains: VOC not more than 250 g/L.
l) Clear Wood Finishes, Varnishes: VOC not more than 275 g/L.
m) Clear Wood Finishes, Lacquers: VOC not more than 275 g/L.

n) Zinc-Rich Industrial Maintenance Primers: VOC not more than 340 g/L.

d. Section 5.504.4.3.1, Aerosol Paints and Coatings: Aerosol paints and coatings shall meet the PWMIR Limits for ROC in Section 94522(a)(3) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Sections 94522(c)(2) and (d)(2) of California Code of Regulations, Title 17, commencing with Section 94520; and in areas under the jurisdiction of the Bay Area Air Quality Management District additionally comply with the percent VOC by weight of product limits of Regulation 8 Rule 49. Comply with requirements of 2022 CGBSC, Table 5.504.4.3.

3. Composite Wood Products: Comply with requirements of CGBSC Section 5.504.4.5; hardwood plywood, particleboard, and medium density fiberboard composite wood products used on the interior or exterior of the building shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure (ATCM) for Composite Wood (17 CCR 93120 et seq.) Those materials not exempted by the ATCM must meet the specified emission limits, as shown in CGBSC Table 5.504.4.5.

4. Resilient Flooring Systems: Comply with requirements CGBSC, Section 5.504.4.6.

   a. Where resilient flooring is installed, at least 80% of floor area receiving resilient flooring shall meet the requirements of California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.2, January 2017 (Emissions testing method for California Specification 01350).
   b. Resilient Floor Adhesive: VOC content not exceeding 50 g/L per CGBSC Table 5.504.4.1 when calculated according to 40 CFR 59, Subpart D (EPA Method 24)

5. Thermal Insulation: Comply with requirements of CGBSC, Section 5.504.4.7.

   a. All thermal insulation installed in buildings shall comply with the requirements of the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.2, January 2017 (Emissions testing method for California Specification 01350).

      1) See California Department of Public Health's website for certification programs and testing labs.

6. Acoustical Ceilings and Wall Panels: Comply with requirements of CGBSC, Section 5.504.4.8.

    a. Acoustical ceiling and wall panels installed in building interiors shall comply with the requirements of the California Department of Public Health, “Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers,” Version 1.2, January 2017 (Emissions testing method for California Specification 01350).

        1) See California Department of Public Health’s website for certification programs and testing labs.

7. HVAC Filters: Comply with requirements CGBSC, Section 5.504.5.3; in mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air prior to occupancy that provides at least a Minimum Efficiency Reporting Value (MERV) of 13. MERV 13 filters shall be installed prior to occupancy and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

    a. Exception: Existing mechanical equipment.
    b. Labeling: Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating.

8. Interior Sound Transmission: Comply with requirements CGBSC, Section 5.507.4.3; wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 023000
SUBSURFACE INVESTIGATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes information for the Geotechnical Investigation Report prepared for this Project.

B. Related Sections:

1. Division 31 Sections (see drawings) as applicable to site clearing, earthwork, excavations, fill, trenching, and paving.

1.3 GEOTECHNICAL REPORT

A. Geotechnical reports have been prepared for this project, including one report for a project adjacent to the this project, reports are prepared by:

Krazan & Associates, Inc.,
Geotechnical Engineering Division
448 Mitchell Road, Suite C
Modesto, California 95354
(209) 572-200

Geotechnical Engineering Investigation Report dated October 20, 2022,
Report No. 072-22066. [Appendix No. 01]

Geotechnical Engineering / Geologic Hazards Investigation Update, dated
April 26, 2026
Report No. 072-26013. [Appendix No. 02]

B. Copies of the Geotechnical Investigation Reports are contained in the Appendix of this Project Manual.

C. The Geotechnical Investigation Report shall be considered to be a part of the Contract Documents. The Contractor shall become familiar and comply with the requirements and recommendations in the Report.

D. The Geotechnical Investigation Report identifies subsurface soil and ground water conditions and offers recommendations for earthwork and preparation of subsurface conditions for the Work of this Project.

E. The Geotechnical Investigation Report is not a warranty of subsurface conditions. Should subsurface conditions be found to vary substantially from the Report, changes in design and construction of foundations may be made by the Architect, with resulting credits or expenditures to the Contract sum accruing to the Owner.

1.4 QUALITY ASSURANCE

A. A soil engineer will be retained by the Owner to observe performance of work in connection with excavating, trenching, filling, backfilling, and grading, and to perform compaction tests.

1. Requirements for Field Quality Control are included in individual Sections as applicable to excavating, trenching, filling, backfilling, and grading.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 024119
SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Demolition and removal of selected portions of building, structure and site.
2. Demolition and removal of selected site elements.

B. Related Sections include the following:

1. Division 01 Section "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for selective demolition operations.
2. Division 01 Section "Photographic Documentation" for photographic documentation of pre-demolition conditions.
3. Division 01 Section "Execution" for cutting and patching procedures, and for protection of existing construction.
4. Division 01 Section “Construction Waste Management and Disposal” for salvaging, recycling, and disposing of nonhazardous demolition and construction waste.
5. Division 09 Sections as applicable to adhered floor systems.

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be salvaged or reinstalled.

B. Remove and Salvage to Owner: Detach item from existing construction in a manner to prevent damage and deliver to Owner ready for reuse.

C. Remove and Salvage for Reinstallation: Detach item from existing construction in a manner to prevent damage, prepare for reuse, and securely store item until it is to be reinstalled at locations indicated.

D. Existing to Remain: Existing items or improvements that are to remain and not be removed. Existing items to remain shall be protected from damage during the course of construction.

1.4 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.5 SUBMITTALS

A. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property, for physical damage, for dust control, and for noise control. Indicate proposed locations and construction of barriers.

B. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's operations at adjacent areas are uninterrupted.
2. Interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.

C. Predemolition Photographs: Show existing conditions of adjoining construction, including finish surfaces, that might be misconstrued as damage caused by demolition operations. Comply with Division 01 Section "Photographic Documentation." Submit before Work begins.

1.6 QUALITY ASSURANCE

A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

B. Predemolition Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to selective demolition.

1.7 FIELD CONDITIONS

A. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

B. Survey of Existing Conditions: Record existing conditions that affect the Work by use of preconstruction photographs. Comply with requirements specified in Division 01 Section "Photographic Documentation."

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Hazardous Materials: It is expected that hazardous materials will not be encountered in the Work.

1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Owner will remove hazardous materials under a separate contract.

E. Utility Services: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1. Maintain fire-protection facilities in service during selective demolition operations.

F. Storage or sale of removed items or materials on-site is not permitted.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

1. If unanticipated mechanical, electrical, or structural elements are encountered and found to be in conflict with intended function or design, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

C. Inventory and record the condition of items to be removed and salvaged or removed and reinstalled. Provide photographs of conditions that might be misconstrued as damage caused by salvage operations.

3.2 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Comply with requirements for access and protection specified in Division 01 Section "Temporary Facilities and Controls."

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

1. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
2. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.

3.3 PROTECTION

A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
4. Cover and protect furniture, furnishings, and equipment that have not been removed.
5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Division 01 Section "Temporary Facilities and Controls."

B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of selective demolition.

C. Protection of Existing Construction: Protect existing construction to remain with temporary protections and construction. Do not remove existing construction unless otherwise indicated.

D. Remove temporary barricades and protections where hazards no longer exist.

3.4 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.

1. Arrange to shut off utilities with Owner and/or utility companies.
2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
3. Disconnect, demolish, and remove, plumbing, and equipment, and components indicated on Drawings to be removed.

    a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
    b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
    c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
    d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
    e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
    f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
    g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

3.5 SELECTIVE DEMOLITION, GENERAL

A. General: Remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
4. Do not use plasma or flame cutting torches without written approval from Architect. Where allowed, clear area of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations. Maintain fire watch during and for at least two hours after flame-cutting operations. Maintain adequate ventilation when using cutting torches.

5. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
6. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
7. Dispose of demolished items and materials promptly, comply with requirements of Division 01 Section “Construction Waste Management and Disposal.”

B. Minor Accessories and Fixtures: Remove minor accessories and fixtures as required to accommodate removal of existing finishes or application new finishes whether items are indicated to be removed or not.

1. Minor accessories and fixtures shall include but not be limited to toilet room accessories; classroom accessories such as pencil sharpeners coat hooks, flag holders, and similar items.
2. Where new replacement items are not indicated or specified in other sections, minor accessories and fixtures shall be considered to be items to be removed and reinstalled.

C. Removed and Reinstalled Items:

1. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.

1. Items removed, salvaged, and reinstalled for the Contractor’s convenience shall be considered the same as items to be removed and salvaged for reinstallation.

3.6 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete Slabs-on-Grade: Using power-driven saw, cut perimeter of area to be demolished, then break up and remove.

1. Where possible or feasible, cut concrete at existing joints.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

A. Recycle or dispose demolition waste materials according to Division 01 Section "Construction Waste Management and Disposal." Remove demolition waste materials from Project site and legally dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in accordance with local regulations and in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn demolished materials.

3.8 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION

SECTION 030130
CONCRETE REPAIR AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes repair and patching of concrete surfaces.

B. Related Sections:

1. Division 03 Section "Cast-In-Place Concrete" for general building applications of concrete.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 CONCRETE MATERIALS

A. Cementitious Material: Portland cement, ASTM C 150, Type I or Type II.

B. Normal-Weight Aggregates: ASTM C 33, Class 3M coarse aggregate or better, graded. Provide aggregates from a single source.

1. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Water: ASTM C 94/C 94M and potable.

2.2 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations. Use for concrete slab areas to receive subsequent floor coverings.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 4100 psi at 28 days when tested according to ASTM C 109/C 109M.

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch and that can be filled in over a scarified surface to match adjacent floor elevations. Use for concrete slab areas to remain exposed.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C 109/C 109M.

2.3 ACCESSORY MATERIALS

A. Bonding Agent: ASTM C 1059/C 1059M, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

B. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:

PART 3 - EXECUTION

3.1 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect and Structural Engineer. Remove and replace concrete that cannot be repaired and patched to Architect's and Structural Engineer’s approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete.

    a. Limit cut depth to 3/4 inch.
    b. Make edges of cuts perpendicular to concrete surface.
    c. Perimeters of cut areas shall be square or rectangular in shape with cuts vertical and horizontal.
    d. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried.
    e. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.

2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect and Structural Engineer.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer

according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.

6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Architect's and Structural Engineer’s approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's and Structural Engineer’s approval.

END OF SECTION

SECTION 031512
POST INSTALLED CONCRETE ANCHORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes the following types of post installed anchors:

1. Expansion anchors.
2. Adhesive anchors.

B. Related Sections:

1. Division 03 Section "Cast-in-Place Concrete."
2. Division 05 Section "Structural Steel Framing."
3. Division 05 Section "Metal Fabrications."

1.3 REFERENCES

A. ACI:

1. ACI 318 – Building Code Requirements for Structural Concrete
2. ACI 355.2 – Standard for Evaluating the Performance of Post-Installed Mechanical Anchors in Concrete

B. ASTM:

1. ASTM A36 – Standard Specification for Carbon Structural Steel
2. ASTM A153 – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
3. ASTM A615 – Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
4. ASTM B633 – Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel
5. ASTM B695 – Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel
6. ASTM C881 – Standard Specification Epoxy-Resin-Based Bonding Systems for Concrete
7. ASTM E488 – Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements

8. ASTM E1512 – Standard Test Methods for Testing Bond Performance of Bonded Anchors
9. ASTM F593 – Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs

C. Federal Specifications A-A-1922A, A-A01923A and A-A-55614 for Expansion and Shield-Type Anchors

D. ICC-ES
1. ICC-ES AC70 – Acceptance Criteria for Fasteners Power-Driven into Concrete, Steel and Masonry Elements
2. ICC-ES AC193 – Acceptance Criteria for Mechanical Anchors in Concrete Elements
3. ICC-ES AC308 – Acceptance Criteria for Post-Installed Adhesive Anchors in Concrete Elements

1.4 SUBMITTALS

A. Product Data: For each type of product indicated; include manufacturer's written installation instructions, physical characteristics, and load tables.

B. Evaluation Reports: From ICC-ES or IAPMO ES for each type of post installed anchor indicated.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer who has completed post-installed anchor installations similar in material, design, and extent to that indicated for Project that have resulted in construction with a record of not less than 5 years of successful in-service performance.

B. Evaluation Service Approval: Use only products that have current ICC or IAPMO Evaluation Service approval.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to job site in manufacturer's or distributor's packaging undamaged, complete with installation instructions.

B. Protect and handle materials in accordance with manufacturer's recommendations to prevent damage or deterioration.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Carbon and Alloy Steel Nuts: ASTM A563.

B. Carbon Steel Washers: ASTM F436.

C. Carbon Steel Threaded Rod: ASTM F 1554; or ASTM A193 Grade B7; or ISO 898 Class 5.8.

D. Wedge Anchors: ASTM A510; or ASTM A108.

E. Stainless Steel Bolts, Hex Cap Screws, and Studs: ASTM F593.

F. Stainless Steel Nuts: ASTM F594.

G. Zinc Plating: ASTM B633.

H. Hot-Dip Galvanizing: ASTM A153.

2.2 POST INSTALLED ANCHORS

A. Manufacturers: Post installed concrete anchors for structural applications shall be by the manufacturer and of type and size indicated on the DSA approved Drawings.

1. This specification includes products by the following:

a. Hilti Corporation.
b. Simpson Strong-Tie Company.

B. Post Installed Anchor Material:

1. Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5 unless otherwise indicated.
2. Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 (A1) stainless-steel bolts (Type 304), ASTM F 593, and nuts, ASTM F 594.

C. Expansion Anchors: Wedge type, torque-controlled, with impact section to prevent thread damage complete with required nuts and washers. Provide anchors with length identification markings conforming to ICC ES AC01 or ICC ES AC193. Type and size as indicated on Drawings.

1. Anchorage to Concrete, provide one of the following:

a. Hilti Kwik Bolt TZ2, ICC ESR-4266 (carbon steel and AISI Type 304 Stainless Steel).
b. Simpson Strong-Tie, Strong-Bolt 2 wedge anchor, ICC ESR-3037.

D. Adhesive Anchors: Two component, all weather, high performance epoxy complying with descriptive requirements of ASTM C 881, Type IV, Grade 3, Classes A, B, and C, except for gel time; mixed and dispensed through motionless, static mixing nozzle and dispensing tool. Threaded steel rod, inserts or reinforcing dowels, complete with nuts, washers, adhesive injection system, and manufacturer's installation instructions. Type and size as indicated on Drawings.

1. Anchorage to Concrete, provide one of the following:

a. Hilti: Threaded rods or steel reinforcing bars with HIT RE 500 V3 Adhesive Anchoring System, ICC ESR-3814.
b. Simpson Strong-Tie: Threaded rods or steel reinforcing bars with SET-3G Adhesive Anchorage System, ICC ESR-4057.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install anchors in accordance with manufacturer's written installation instructions and as indicated on Structural Drawings.

B. Drilling Concrete:

1. Base Material Strength: Do not drill holes in concrete until concrete complies with the following for the type of anchor indicated:

a. Expansion Anchors: Do not drill base material until base material has cured 28 days minimum.
b. Adhesive Anchors: Do not drill base material until base material has cured 14 days minimum.

2. Drill holes with rotary impact hammer drills using carbide-tipped bits and core drills using diamond core bits. Drill bits shall be of diameters as specified by the anchor manufacturer. Unless otherwise shown on the Drawings, all holes shall be drilled perpendicular to the concrete surface. Do NOT cut or bore through reinforcing without written authorization from the Structural Engineer of Record.

a. Cored Holes: Where anchors are to be installed in cored holes, use core bits with matched tolerances as specified by the manufacturer.

b. Embedded Items: Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. **Exercise care in coring or drilling to avoid damaging existing reinforcing or embedded items**. **If reinforcing steel or other embedded items are encountered during drilling, stop drilling and notify the Architect and Structural Engineer before proceeding**. Take precautions as necessary to avoid damaging prestressing tendons, electrical and telecommunications conduit, and gas lines.

C. Wedge Anchors: Protect threads from damage during anchor installation. Set anchors to manufacturer's recommended torque, using a torque wrench. Following attainment of 10% of the specified torque, 100% of the specified torque shall be reached within 7 or fewer complete turns of the nut. If the specified torque is not achieved within the required number of turns, the anchor shall be removed and replaced unless otherwise directed by the Architect or Structural Engineer.

D. Cartridge Injection Adhesive Anchors: Clean all holes per manufacturer instructions to remove loose material and drilling dust prior to installation of adhesive. Inject adhesive into holes proceeding from the bottom of the hole and progressing toward the surface in such a manner as to avoid introduction of air pockets in the adhesive. Follow manufacturer recommendations to ensure proper mixing of adhesive components. Sufficient adhesive shall be injected in the hole to ensure that the annular gap is filled to the surface. Remove excess adhesive from the surface. Shim anchors with suitable device to center the anchor in the hole. Do not disturb or load anchors before manufacturer specified cure time has elapsed.

E. Observe manufacturer recommendations with respect to installation temperatures for cartridge injection adhesive anchors.

3.3 FIELD QUALITY CONTROL

A. Testing and Inspecting Agency: Owner will engage and pay for a qualified independent testing and inspecting agency to perform tests and inspections as applicable and prepare reports. Testing and Inspection Agency shall be acceptable to the Architect, Structural Engineer, and the Division of the State Architect.

B. Contractor Responsibilities:

1. The Contractor shall maintain control of the quality of materials and workmanship in order to conform with the drawings and specifications.
2. To facilitate testing and inspection, the Contractor shall:

    a. Schedule tests and inspections with the Testing and Inspection Agency sufficiently in advance of operations to allow for the assignment of personnel and for the completion of testing and inspecting responsibilities.
    b. Provide access to the Work for the designated Testing and Inspection Agency.

3. The Contractor shall correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

C. Testing: Each type and size of anchor shall be proof load tested by the independent testing laboratory. Adhesive anchors shall not be torque tested unless otherwise directed by the Structural Engineer. If any anchor fails testing, all anchors of the same type, diameter, and which were installed by the same trade and not previously tested, shall be tested until twenty (20) consecutive anchors pass, then resume the initial test frequency.

1. Anchors shall not be tested prior to base material having cured for a minimum of 28 days and achieved design strength.
2. Minimum anchor embedments, proof loads and torques shall be as indicated on the Structural Drawings.
3. Torque shall be applied with a calibrated torque wrench.
4. Proof loads shall be applied with a calibrated hydraulic ram. Displacement of adhesive anchors at proof load shall not exceed D/10, where D is the nominal anchor diameter.
5. Testing frequency shall be per 2022 CBC 1910A.5.3.

    a. Sill Plate Bolting: Test 10 percent of anchors.
    b. Structural Applications other than Sill Plate Bolting: Test all anchors.
    c. Non-Structural Applications (Equipment Anchorage): Test 50 percent or alternate bolts in a group, including at least one-half the anchors in each group, shall be tested.

6. Test acceptance criteria shall be per 2022 CBC 1910A.5.5.

END OF SECTION

SECTION 03 25 13
GLASS FIBER-REINFORCED POLYMER REINFORCING

1. GENERAL

1.1. DESCRIPTION OF WORK

1. This specification is intended to define the minimum requirements of structural strengthening of concrete structures using externally bonded fiber reinforced polymer (FRP) composite systems.

2. The work includes furnishing all design, materials, labor, equipment and services for the supply, installation and finish of all structural strengthening works using externally bonded FRP composite systems.

3. Strengthening of the existing structure is a delegated design to be performed by a specialty repair/strengthening engineer working for the FRP contractor or material supplier.

4. Strengthening solutions and the associated design calculations shall be based on the design criteria provided in project documents and the original construction details of the structure.

1.2. WORK INCLUDED

A. This Section of the Specification is not necessarily complete in itself. Read in conjunction with the Contract Documents.

1.3. REFERENCE STANDARDS

A. General

1. The publications listed below form a part of this specification to the extent referenced. Where a date is given for referenced standards, the edition of that date shall be used. Where no date is given for reference standards, the latest edition available on the date of the Notice of Invitation to Bid shall be used.

B. International Code Council (ICC)

1. ICC AC125, Acceptance Criteria for Concrete and Reinforced and Unreinforced Masonry Strengthening Using Externally Bonded Fiber Reinforced Polymer (FRP) Composite Systems.

2. ICC AC178, Acceptance Criteria for Inspection and Verification of Concrete and Reinforced and Unreinforced Masonry Strengthening Using Externally Bonded Fiber Reinforced Polymer (FRP) Composite Systems.

C. American Standard for Testing and Materials (ASTM)

1. ASTM D7565, Standard Test Method for Determining Tensile Properties of Fiber Reinforced Polymer Matrix Composites Used for Strengthening of Civil Structures.

2. ASTM D3039, Standard Test Method for Tensile Properties of Polymer Matrix Composite Materials.

3. ASTM D7522, Standard Test Method for Pull-Off Strength for FRP Bonded to Concrete Substrate.

4. ASTM D7205, Standard Test Method for Tensile Properties of Fiber Reinforced Polymer Matrix Composite Bars.

D. American Concrete Institute (ACI)

1. ACI 440.2R-08, Guide for the Design and Construction of Externally Bonded FRP Systems for Strengthening Concrete Structures.

2. ACI CODE-355.4, Qualification of Post-Installed Adhesive Anchors in Concrete.

E. International Concrete Repair Institute (ICRI)

1. ICRI Technical Guideline No. 310.2R-2013 (formerly No. 03732), Guideline for Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair.

1.2. MATERIAL QUALIFICATIONS

A. Externally bonded FRP strengthening system shall be CSS V-Wrap FRP Strengthening System per ICC ESR-4930, as manufactured and supplied by Structural Technologies (10150 Old Columbia Rd., Columbia, MD, Tel: 410-850-7000):

Composite fabric:
CSS V-Wrap C440HM high modulus carbon fiber sheets.

Epoxy saturant/primer:
CSS V-Wrap 770 is a primer and is also combined with the fiber to form the CSS V-Wrap composite system.

Epoxy Adhesive / Filler:
CSS V-Wrap PF putty filler or thickened CSS V-Wrap 770 for filling voids.

FRP Anchors:
CSS V-Wrap HMCA Carbon Fiber Anchors (1" Diameter).

Filler:
Cab-O-Sil TS-720 fumed silica.

Properties	CSS V-Wrap C440HM	CSS V-Wrap HMCA Anchors
Tensile strength (f_{fu})	128 ksi	165 ksi
Design modulus of Elasticity (E_f) - primary Fiber direction	14,200 ksi	15,000 ksi
Elongation at break, ε_{fu}	0.9% (in/in)	1.1% (in/in)
Thickness of Composite	0.08 in	n/a
Cross sectional area (A) (in^2/ per ft width)	0.96 in^2/ft width	Varies

1.3. SUBMITTALS

A. Quality Control and Quality Assurance:

1. Submit product data including the following:

2. Product installation manual including the following:

   a. Instructions for storage, handling and installation of each component of the system.

   b. Instructions for assembling FRP laminate samples for tensile testing as required by project specifications.

   c. Quality control procedures to be conducted before, during, and after FRP installation.

3. Submit ICC Evaluation Service Report for FRP system that meets the requirements of ICC Evaluation Service Report (ESR 4930), compliant with 2018 International Building Code, or later.

4. A manufacturer approved testing laboratory that can perform ASTM D7565/D3039 tests as per Section 3.4 of this specification.

5. A written consent from the FRP Supplier that the contractor is a certified applicator and has been trained on the surface bonded FRP composite system.

6. A letter from the manufacturer including description of the FRP certified applicator training program by the FRP manufacturer. The training program should include at least 6 hours of in-class education and hands-on training on surface preparation, FRP saturation, installation, and quality control.

7. The FRP certified applicator shall have a minimum of 2 years of experience in performing FRP composite retrofits has completed at least 15 FRP strengthening projects in the past 3 years.

B. Design and installation shop drawings:

1. Stamped and signed structural calculations and drawings by a professional Civil or Structural Engineer licensed in the state where the project site is located. Design shall be based on the written performance and/or design criteria provided on the structural drawings.

2. Working drawings shall detail the type, locations, dimensions, anchorage, numbers of layers, and orientation of all FRP materials and coatings to be installed. Working drawings shall also show details, quantity, type, and location of FRP composite anchors.

C. Product Information:

1. Provide an ICC Evaluation Service Report for the proposed FRP products compliant with 2018 IBC (or later) and includes the following:

1.1 Evaluation report must include approval for application for concrete slabs and beams.

2. Provide test report for tensile properties of the composite materials as determined based on 50 tests performed by independent laboratory in accordance with ASTM D7565/D3039 (tensile modulus, stress and strain). FRP material design properties, reliability, and durability shall be established in accordance with ICC-ES AC125.

3. Tensile properties (tensile modulus, stress, and strain) of the fiber anchors (if used on the project) as determined by independent laboratory testing per ASTM D7205. A minimum of 20 specimens shall be submitted.

4. Installation procedures, maintenance instructions, and general recommendations regarding each material to be used.

5. Manufacturer’s Safety Data Sheets (SDS) for all materials to be used.

6. Manufacturer’s product data sheet indicating physical, mechanical and chemical characteristics of all materials used in the FRP system.

7. Certification by the manufacturer that the supplied products comply with local regulations controlling use of volatile organic compounds (VOC's). Products that require the use of respirators do not comply with local regulations controlling the use of VOC's and shall not be allowed.

8. Test report for Class A Flame & Smoke Spread (IBC Section 803.1) per ASTM E84.

9. Test report for FRP anchors pull out testing in cracked and uncracked concrete.

1.4. PERFORMANCE

1. Design the FRP composite system to achieve the structural performance specified by the Structural Engineer of Record. The design of the FRP system shall be based on published design values determined in accordance with AC125 and listed in the manufacturer's ICC-ES code report consistent with long term durability exposure testing.

2. FRP application for beams and columns is a bond critical application.

3. Design calculations for the FRP composite system shall be submitted for approval by the structural engineer of record and shall be stamped by a Civil or Structural Engineer registered in the state where the project site is located.

4. The Structural Engineer of Record may suspend the work if the Contractor substitutes an unapproved fiber reinforced composite system or unapproved personnel during construction.

1.5. PRODUCT DELIVERY, HANDLING AND STORAGE

1. Deliver adhesive resin materials in factory-sealed containers with the manufacturer's labels intact and legible with verification of date of manufacture and shelf life.

2. Store materials in a protected area at a temperature between 40°F and 100°F.

3. Products shall be stored according to the manufacturer's requirements and shall avoid contact with soil and moisture. Products shall be stored to avoid UV exposure.

1.6. COORDINATE WITH OTHER TRADES

1. Prior to construction, the trades shall be briefed on any new or unusual construction procedures to ensure that they are aware of special conditions (e.g. new penetrations, construction anomalies).

1.7. CERTIFIED APPLICATORS

1. Installation of the CSS V-Wrap FRP shall be performed by applicators trained and certified by the FRP manufacturer (See Sections 1.5.A.5-7 of this specification).

1.2. OTHER MATERIALS

1. Contractor to provide compatible primer, filler and other materials recommended by the manufacturer as needed for the proper installation of the surface bonded FRP composite system.

2. APPLICATION

2.1. SURFACE PREPARATION

1. Bond critical applications: substrate shall be prepared for bonding by means of abrasive blasting or grinding to remove existing laitance and expose aggregate [minimum ICRI CSP-3 concrete surface profile].

2. Unless otherwise stated on project drawings, round off sharp and chamfered corners (to be wrapped around) to a minimum radius of 0.5” by means of grinding or forming with the system’s thickened epoxy or putty filler.

2.2. INSTALLATION

1. Preparation work for project: Visit site to ensure that all repair work is complete. Review project specifications in detail.

2. Verify ambient and concrete temperatures. No work shall proceed if the temperature of the concrete surface is less than 40°F or greater than 100°F or as specified on the epoxy component labels. The ambient temperature and temperature of the components shall be between 40°F and 100°F, unless provisions have been made to ensure components’ temperature is maintained within this range or the range specified by the manufacturer.

3. Prepare the adhesive matrix by combining components at the weight (or volume) ratio specified by the manufacturer. The components of epoxy resin shall be mixed with a mechanical mixer until uniformly mixed, per manufacturer’s recommended procedure.

4. Components that have exceeded their shelf life shall not be used.

5. The manufacturer shall clearly define the adhesive resin working time. Any batch of materials that exceeds the working time shall not be used.

A. FRP Fabric

1. Saturation of the fabric shall be performed and monitored according to the manufacturer's specified fiber-adhesive resin ratio. Fabric shall be completely saturated prior to application to contact surface in order to ensure complete impregnation. Saturation shall be supervised and checked by the certified installer. Both the epoxy resin and fabric shall be measured accurately, combined, and applied uniformly at the rates shown on the approved working drawings and per manufacturer's recommendations.

2. Unless otherwise stated, all FRP fabric saturation shall be achieved using a saturator machine using the procedure outlined in the manufacturer's installation manual.

3. All cutting of fabrics, mixing of adhesive resin and combination thereof shall take place in a protected area away from any electrical equipment.

4. Remove dust and debris by hand or with compressed air as per specification.

5. Clean up and protect area adjacent to element where FRP composite is being applied.

6. Using a roller or trowel, apply one prime coat of epoxy resin to the substrate. Allow primer to become tacky to the touch.

7. Fill any uneven surfaces or recesses with thickened epoxy or putty filler.

8. Do not apply primer or thickened epoxy over a previously applied primer or putty that has fully cured (more than 72 hours after application), unless the surface has been scuff sanded and cleaned with solvent.

9. Apply saturated fabric to substrate surface by hand lay-up, using methods that produce intimate contact with the substrate. Verify proper orientation of the fabric per project drawings. A minimum lap length of at least 12" is required (unless otherwise specified on drawings) at all necessary overlaps in the primary fiber direction of the fabric.

10. Using a roller or hand pressure, release or roll out entrapped air, and ensure that each individual layer is firmly adhered to the preceding layer or substrate.

11. Apply subsequent layers, continuously or spliced, until the total number of layers specified on project drawings is achieved.

12. Do not apply additional layers of fabric to previously cured plies unless the applied laminate surface is first scuff sanded (without damaging the fibers) and cleaned with denatured alcohol.

13. Finish: Detail all fabric edges, including termination points and edges, with thickened epoxy or putty filler, as directed by the manufacturer. Finish as specified between 24 and 72 hours after final application of epoxy. If after 72 hours the adhesive is cured, the surface must be roughened by hand sanding or brush blasting followed by cleaning with denatured alcohol, prior to finishing.

14. System may incorporate structural fasteners but limitations and detailing must be verified with composite system manufacturer.

15. When metal penetrations are made through carbon FRP or metal is to be placed against carbon FRP, provide dielectric barrier details to prevent potential galvanic corrosion.

2.3. INSPECTION

1. The contractor shall monitor the mixing of all adhesive components for proper ratio and adherence to manufacturer's recommendations. Record lot/batch numbers for fabric and epoxy used each day and note locations of installation. Measure square footage of fabric and volume of epoxy used each day. Complete report and submit to engineer and FRP composite system manufacturer.

2. If FRP inspection is specified, a Qualified Inspector shall periodically observe all aspects of preparation, mixing, and application.

   A. FRP fabrics: All FRP composite applied areas shall be inspected, in accordance with the manufacturer's specifications for voids, bubbles, and delaminations. All defective areas shall be repaired as specified in Section "Required Remediation".

2.4. TESTING

1. In-situ Testing

   A. FRP Fabrics: Adhesion Tests - ASTM D7522 and/or ASTM D4541 (if required by engineer-of-record)

      1. Direct tension adhesion testing is not required for contact-critical applications.

      2. Direct tension adhesion testing of cored samples shall be conducted using the method described by ASTM D7522. A minimum of three tests shall be performed for each day of production or for each 1,000 ft² of FRP application, whichever is less. Tests shall be performed for each surface preparation technique used.

3. The prepared surface of the bonded FRP system shall be allowed to cure a minimum of 72 hours before execution of the direct tension pull-off test. The locations of the pull-off tests shall be representative adjacent locations to the area being strengthened and on flat surfaces. If no adjacent areas exist, the tests shall be conducted on areas of the FRP system subjected to relatively low stress during service.

4. Criteria for determining adequate bond strength:

   Concrete Substrate

   a. The minimum acceptable value for any single tension test is 175psi (1.2 MPa). The average of the tests at each location shall not be less than 200 psi (1.4 MPa).

   b. Failure occurs in the substrate (mode G in ASTM D7522).

      If either of the two requirements above is not met, the Engineer must be notified. The Engineer may request additional tests to be performed to qualify the work, or may consider the following as acceptable:

   c. A bond strength less than 175 psi with failure in the substrate.

   d. A bond strength greater than 500 psi with failure not in the substrate.

5. Test locations shall be filled with thickened adhesive after the values have been recorded and verified by the special inspector and the test dollies have been removed.

2. Laboratory Testing of FRP Fabric – Tension Tests – ASTM D7565/D3039

   A. Sampling

      1. Labeling of test samples shall include the following: project name, fabric type, resin type, lot number of fabric and batch numbers of epoxy resin components used, date of sample fabrication, location of installation, and name of the certified installer that prepared the sample.

      2. A “sample batch” shall consist of two 12” by 12” samples of cured composite. One panel shall be made for batch of FRP materials installed on the project. The two samples will be taken at appropriate times during the day as to ensure the maximum material deviance in the components of the FRP composite.

   B. Preparation of Samples

      1. Prepare sample on a smooth, flat, level surface covered with polyethylene sheeting, or 16 mil plastic film, and secure the edges.

2. Apply a coat of adhesive resin with roller or brush to plastic surface.

3. Place one layer of saturated fabric into the resin. Fabric piece must be minimum 12” by 12”. Ensure that fibers are straight and do not contain waves.

4. Overcoat fabric layer with additional resin. Lightly rib roll FRP laminate to remove air and impregnate fibers (rib roll only along the direction of the fibers). Work from middle of laminate towards the end, or from one end to the other end.

5. Place a second sheet of plastic film over the entire area.

6. Using a flat paddle or putty knife, squeegee out excess resin by applying pressure on the straight blade and moving the blade in the fiber direction.

7. Starting in the middle and working in the direction of the fiber, pull putty knife towards the ends. Air should be seen in front of the blade, and excess resin will collect in the area around the test sample. Panels should be made as thin as possible. Extra effort should be made to remove any excess resin.

8. Turn the panel over gently and repeat the process on the other side. Make sure that all air bubbles have been squeegeed out of the panel.

9. Samples shall be stored on a hard and flat surface and not moved for a minimum 48 hours after casting. The prepared and labeled samples shall be given to a pre-approved and experienced testing laboratory. The laboratory shall then precondition samples for 48 hours at 140°F before testing.

10. If the panel is warped or misalignment of fibers is observed, discard panel and fabricate new one. Do not ship defective panel.

C. Testing

1. Testing specimens shall be cut from samples and tested for ultimate tensile strength, tensile modulus and percentage elongation as per ASTM D7565/D3039 in the longitudinal fiber direction.

2. A minimum one sample should be tested for each batch of materials used. If one coupon fails for a sample, additional test coupon from the same 12” by 12” sample should be tested. If these specimens also fail, the other 12” by 12” sample from the same “sample batch” should be tested.

3. Testing results shall be made available within 3 weeks of sample submission.

D. Acceptance Criteria

1. Acceptable mean values for ultimate tensile strength, tensile modulus, and elongation determined per ASTM D7565/D3039 for field prepared specimens shall not be below the submitted FRP design values.

2. Mean test values below the submitted design values are considered a failure and require remediation.

3. If FRP material properties are considered as potentially deficient, calculations prepared by the licensed Engineer responsible for the FRP design demonstrating that the portion of the structure strengthened with the potentially deficient material possesses adequate design capacity, can be submitted for approval. Alternately, additional layers shall be installed until the composite thickness is increased by the same percentage as the deficiency of the material's tensile modulus, or any other remediation as directed by the licensed engineer.

2.5. REQUIRED REMEDIATION

1. Small delaminations of 2 in^2 or less are acceptable as long as the delaminated area is less than 5% of the total laminate area and there are no more than 10 such delaminations per 10 ft^2.

2. Voids and bubbles larger than 2 in^2 and less than 25 in^2 shall be injected or back filled with epoxy.

3. Voids and delaminations on the order of 6" in diameter or an area of 5" x 5" shall be reported to the engineer of record and remediation shall be submitted by the contractor for approval.

2.6. MAKE GOOD

Make good at no cost to the Owner, for any damage to the new or existing structures, property or services caused by the installation and testing of the FRP composite.

2.7. CLEAN UP

Remove all surplus material, equipment and debris from the site on completion of the work. Leave the site clean.

END OF SECTION

SECTION 033000

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:

1. Footings.
2. Slabs-on-grade.
3. Pre-Engineered elevator hoist way walls/curbs and slab and machine room slab/curbs.

B. Related Sections:

1. Division 01 Section “Quality and Testing Requirements” for administrative and procedural requirements for quality assurance including independent testing requirements.
2. Division 03 Section "Concrete Cure-Sealer-Hardener.”
3. Division 22 and 23 Sections as applicable to Plumbing and Mechanical items embedded in concrete.
4. Division 26 Sections as applicable to Electrical items embedded in concrete.
5. Division 31 Sections as applicable to earthwork.
6. Division 32 Sections as applicable to concrete paving and site concrete work.

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

B. Water/Cement Ratio (w/cm): The ratio by weight of water to cementitious materials.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

1. Shop drawings shall be in accordance with ACI SP-66 or CRSI “Manual of Standard Practice.”
2. Mill certificates: Steel producer's certificates of mill analysis, tensile, and bend tests for reinforcing steel. Submit certificates accompanying the Shop Drawings.

D. Construction Joint Layout Shop Drawings: Show locations of proposed construction and control joints other than, or in addition to, those as indicated on the drawings. Location of joints is subject to approval of the Architect and Structural Engineer.

E. Qualification Data: For the Ready-mixed concrete manufacturer, include copies of applicable ACI certificates.

F. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Admixtures.
3. Form materials and form-release agents.
4. Steel reinforcement and accessories.
5. Waterstops.
6. Curing compounds.
7. Floor and slab treatments.
8. Bonding agents.
9. Adhesives.
10. Semirigid joint filler.
11. Joint-filler strips.
12. Repair materials.

G. Material Test Reports: For aggregates, from a qualified testing agency, indicating compliance with requirements:

H. Mill certificates: Steel producer's certificates of mill analysis, tensile, and bend tests for reinforcing steel. Submit certificates accompanying the Shop Drawings.

I. Welding certificates.

J. Delivery Tags: Delivery tags for all concrete.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs on Project personnel who shall be thoroughly familiar with the specified requirements, completely trained and experienced in the necessary skills required for work performed under this Section. In actual installation of the work of this Section, use adequate numbers of skilled workmen to insure installation in strict accordance with the contract documents design.

B. Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer shall be certified in accordance with NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

C. Testing Agency: An independent agency retained by the Owner, acceptable to the Architect, Structural Engineer, and the Division of the State Architect and qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.

E. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4/D 1.4M, "Structural Welding Code - Reinforcing Steel."

F. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301, "Specifications for Structural Concrete," Sections 1 through 5.
2. ACI 318-19, “Building Code Requirements for Structural Concrete” with amendments per 2022 California Building Code, Chapter 19A, Section 1905A.
3. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

G. Preinstallation Conference: Conduct conference at Project site.

1. Review the following:

a. Special inspection and testing and inspecting agency procedures for field quality control.
b. Construction joints, control joints, isolation joints, joint-filler strips, and semirigid joint fillers.
c. Steel reinforcement installation.
d. Anchor rod and anchorage device installation tolerances.
e. Cold and hot weather concreting procedures.
f. Concrete finishes and finishing.
g. Curing procedures.
h. Forms and form-removal limitations.
i. Floor and slab flatness and levelness measurements.

j. Concrete repair procedures.
k. Concrete protection.
l. Initial curing and field curing of field test cylinders (ASTM C31/C31M.)
m. Protection of field cured field test cylinders.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

1. Identification: Bundle and tag reinforcing steel with grades and suitable identification marks for checking, sorting and placing. Use waterproof tags and markings and do not remove until steel is in place.

1.7 COORDINATION

A. Slab Finishes: Coordinate slab finish requirements with trades installing or applying floor finishes or treatments over slabs. Finishes shall include but not be limited to concrete sealing, topical concrete vapor control barrier, and resinous/fluid applied floor systems.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

A. Earth Forms: Use for sides of footings only where soil is firm and stable and concrete will not be exposed. Where earth forms are used, cut excavations neat and accurate to size for placing concrete directly against the excavation.

B. Rough-Formed Finished Concrete: Use for formed concrete that will not be exposed in the finished work, fabricate forms of plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Smooth-Formed Finished Concrete: Use for formed concrete that will be exposed in the finished work, fabricate forms of form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

1. Plywood, metal, or other approved panel materials.

D. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.

E. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.

2. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface.

F. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

2.2 STEEL REINFORCEMENT

A. Reinforcing Bars: Deformed, ASTM A615 Grade 60, 80 ksi minimum tensile strength with 1.10 minimum ratio of actual tensile strength to actual yield strength based on mill testing.

B. Low-Alloy-Steel Reinforcing Bars: ASTM A 706/A 706M, deformed.

C. Plain-Steel Wire: ASTM A 82/A 82M, as drawn.

D. Plain-Steel Welded Wire Reinforcement: ASTM A1064, plain, fabricated from as-drawn steel wire into flat sheets.

E. Joint Dowel Bars: Plain-steel bars, cut true to length with ends square and free of burrs, ASTM A615 Grade 60, 80 ksi minimum tensile strength with 1.10 minimum ratio of actual tensile strength to actual yield strength based on mill testing.

F. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

1. Slabs on Grade and Foundations: Use precast concrete blocks, plastic-coated steel with bearing plates or specifically designed wire-fabric supports fabricated of plastic. Precast blocks shall be not less than 3 inches by 3 inches square and shall have a compressive strength equal to or greater than the strength of the surrounding concrete.
2. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.

G. Fabricating Reinforcement: Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice" or ACI SP-66 and the details shown on the Drawings.

1. In the case of fabricating errors, do not rebend or straighten reinforcement in a manner that will damage or weaken the material.
2. Bends shall be made cold using pin sizes as recommended ACI 318 as modified by T24, CCR, Part 2.
3. Unacceptable Work: Reinforcement with any of the following defects will not be permitted:

a. Bar lengths, depths, and bends exceeding specified fabrication tolerance.
b. Bends or kinks not indicated on the project Drawings or the final Shop Drawings.
c. Bars with reduced cross-section due to excessive rusting or other cause.

2.3 CONCRETE MATERIALS

A. Source Limitations:

1. Obtain all concrete mixtures from a single ready-mixed concrete manufacturer for entire Project.
2. Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant.
3. Obtain aggregate from single source.
4. Obtain each type of admixture from single source from single manufacturer.

B. Cementitious Material:

1. Portland Cement: ASTM C 150, Type I or Type II, gray.
2. Portland Cement: ASTM C 150, Type V, gray.

a. Use where concrete will be in contact with corrosive soils or mixed with aggregates containing reactive substances. Low alkali cement shall contain not more than 0.6 percent total alkali when calculated as sodium oxide as determined by the method given in ASTM C114.

3. Fly Ash: ASTM C 618, Class F. The use of a quality fly ash will be permitted as a cement-reducing admixture up to a maximum of 15% of the weight of portland-cement.

C. Normal-Weight Aggregates: ASTM C 33, Class 3M coarse aggregate or better, graded. Provide aggregates from a single source.

1. Where concrete expansion from alkali silica or alkali carbonate reactions is anticipated, provide aggregate with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.
2. Fine and coarse aggregates shall be regarded as separate ingredients. Each size of coarse aggregate, as well as the combination of sizes when two or more are used, shall conform to the grading requirements of ASTM C33.
3. Coarse aggregate: Coarse aggregate shall consist of a clean, hard, fine grained, sound crushed rock, or washed gravel or a combination of both. It shall be free from oil, organic matter, or other deleterious substances. Aggregate shall be uniformly graded from one-quarter inch size to maximum size.

4. The maximum size of aggregates used in the project shall be as specified on the Structural Drawings consistent with the dimensions and form of the section being placed, the location and spacing of the reinforcing bars, and with the method of compaction, and shall be such as will produce dense and uniform concrete free from rock pockets, honey-comb and other irregularities. The nominal maximum size of the aggregate shall not be more than one-fifth the narrowest dimension between forms, one-third the depth of slabs nor three-fourths the minimum clear spacing between reinforcing bars.
5. Combined Grading: The combined grading shall be such that the percentage by weight of the combined aggregates shall fall within the limits established as follows:

Sieve number or size in inches (max-imum)	Percentage by Weight		
	1-1/2”	1”	3/4”
Passing a 2 inch	---	---	---
Passing a 1-1/2 inch	95-100	---	---
Passing a 1 inch	70-90	90-100	---
Passing a 3/4 inch	50-80	70-95	90-100
Passing a 3/8 inch	40-60	45-70	55-75
Passing a No. 4	35-55	35-55	40-60
Passing a No. 8	25-40	27-45	30-46
Passing a No. 16	16-34	20-38	23-40
Passing a No. 30	12-25	12-27	13-28
Passing a No. 50	2-12	5-15	5-15
Passing a No. 100	0-3	0-5	0-5

6. Special grading or size limitations: When reviewed and approved by the Architect and Structural Engineer, other gradings or maximum size limitations may be used if mixes are designed and tested in accordance with the concrete mixture specified in the “Concrete Mixtures” Article.
7. Soundness of Aggregates: Both the coarse and fine aggregate shall be tested by the use of a solution of sodium or magnesium sulfate, or both, whenever in the judgment of the Architect or Structural Engineer, such tests are necessary to determine the quality of the material. Such tests shall be performed in accordance with ASTM C88 and the results shall show compliance with the limits set forth in ASTM C33.
8. Reactivity: Aggregates shall be free from any substance which may be deleteriously reactive with the alkalies in the cement in an amount sufficient to cause excessive expansion of the concrete or which will interfere with normal hydration of the cement. Acceptability of the aggregate shall be based upon satisfactory evidence that the aggregate is free from such materials.

9. Aggregates shall be tested, when required by the Architect or Structural Engineer prior to the concrete mix being established, in accordance with the following specifications:

Test	Specification
Abrasion	ASTM C131 and C535
Gradation	ASTM C136
Alkali Reactivity	ASTM C289 and C227
Organic Impurities	ASTM C40
Clay Lumps	ASTM C142

10. Maximum Coarse-Aggregate Size: Nominal size as indicated on Structural Drawings.
11. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

D. Water: ASTM C 94/C 94M and potable.

2.4 ADMIXTURES

A. Admixtures shall be reviewed and approved by the Architect, Structural Engineer, and the Division of the State Architect.

B. Calcium chloride, thiocyanates or admixtures containing more than 0.05% chloride ions are not permitted.

C. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Certification of requirements and chloride ion content is required from the admixture manufacturer prior to mix design review.

1. Air-entraining Admixture: ASTM C260.

   a. Available Products: Subject to compliance with requirements, provide one of the following products:

      1) Euclid Chemical Company (The); Air Mix.
      2) BASF/Master Builders, Inc.; Micro-Air.
      3) Sika Corporation; Sika AER.

2. Water-reducing Admixtures: ASTM C494 Type A.

   a. Available Products: Subject to compliance with requirements, provide one of the following products:

      1) Euclid Chemical Company (The); Eucon WR-75.
      2) BASF/Master Builders Inc.; Pozzolith 220N.
      3) Sika Corporation; Plastocrete 161.

3. Water-reducing, Retarding Admixtures: ASTM C494 Type D.

    a. Available Products: Subject to compliance with requirements, provide one of the following products:

        1) Euclid Chemical Company (The); Eucon Retarder-75.
        2) BASF/Master Builders Inc.; Pozzolith 300 R.
        3) Sika Corporation; Plastiment.

4. High Range Water-Reducing Admixture (HRWR): ASTM C494 type F or G.

    a. Available Products: Subject to compliance with requirements, provide one of the following products:

        1) Euclid Chemical Company (The); Eucon 37.
        2) BASF/Master Builders Inc.; Rheobuild 1000.
        3) Sika Corporation; Sikament 300.

    b. When more than 30 minutes is required between the addition of admixtures to final placement of the concrete, a combination of water-reducing, set controlling admixtures (ASTM C494, Types A, D and E) may be used.

5. Non-Corrosive, Non-Chloride Accelerator: ASTM C494 Type C or E.

    a. Available Products: Subject to compliance with requirements, provide one of the following products:

        1) Euclid Chemical Company (The); Accelguard 80.
        2) BASF/Master Builders Inc.; Pozzutec 20+.
        3) Sika Corporation, Plastocrete 161FL.

    b. The admixture manufacturer shall have long-term (more than one year duration) non-corrosive test data on metal deck and reinforcing steel from an independent testing laboratory using an acceptable accelerated corrosion test method such as using electrical potential measures.

2.5 CURING AND SEALING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

1. Products: Subject to compliance with requirements, provide one of the following:

    a. BASF Construction Chemicals - Building Systems; Confilm.
    b. ChemMasters; SprayFilm.
    c. Conspec by Dayton Superior; Aquafilm.
    d. Dayton Superior Corporation; Sure Film (J-74).
    e. Edoco by Dayton Superior; BurkeFilm.
    f. Euclid Chemical Company (The), an RPM company; Eucobar.
    g. Lambert Corporation; LAMBCO Skin.

h. L&M Construction Chemicals, Inc.; E-CON.
i. Meadows, W. R., Inc.; EVAPRE.
j. Sika Corporation; SikaFilm.
k. Symons by Dayton Superior; Finishing Aid.

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

C. Moisture-Retaining Cover: ASTM C 171, clear or white polyethylene film, 6 mil minimum thickness, or white burlap-polyethylene sheet.

D. Water: Potable.

E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.

1. Products: Subject to compliance with requirements, provide one of the following:

a. BASF Construction Chemicals - Building Systems; Kure 200.
b. ChemMasters; Safe-Cure Clear.
c. Conspec by Dayton Superior; W.B. Resin Cure.
d. Dayton Superior Corporation; Day-Chem Rez Cure (J-11-W).
e. Edoco by Dayton Superior; Res X Cure WB.
f. Euclid Chemical Company (The), an RPM company; Kurez W VOX; TAMMSCURE WB 30C.
g. L&M Construction Chemicals, Inc.; L&M Cure R.
h. Meadows, W. R., Inc.; 1100-CLEAR.
i. Symons by Dayton Superior; Resi-Chem Clear.

2. Curing compounds are subject to removal after curing period has elapsed; refer to Part 3 Article “Concrete Protecting and Curing.”

F. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

1. Products: Subject to compliance with requirements, provide one of the following:

a. BASF Construction Chemicals - Building Systems; Kure 1315.
b. ChemMasters; Polyseal WB.
c. Conspec by Dayton Superior; Sealcure 1315 WB.
d. Edoco by Dayton Superior; Cureseal 1315 WB.
e. Euclid Chemical Company (The), an RPM company; Super Diamond Clear VOX; LusterSeal WB 300.
f. Meadows, W. R., Inc.; Vocomp-30.
g. Symons by Dayton Superior; Cure & Seal 31 Percent E.

2. VOC Content: Curing and sealing compounds shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.6 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.

B. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80 per ASTM D 2240.

C. Bonding Agent: ASTM C 1059/C 1059M, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

D. Epoxy Bonding Adhesive: ASTM C881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade and class to suit requirements, and as follows:

1. Type V, load bearing, for bonding freshly mixed concrete to hardened concrete.

2.7 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 4100 psi at 28 days when tested according to ASTM C 109/C 109M.

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch and that can be filled in over a scarified surface to match adjacent floor elevations.

1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C 109/C 109M.

2.8 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301, ACI 318, Chapter 26; and Chapter 19A of the California Building Code.

1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

    a. The testing agency used for preparing mixture designs shall be different from the testing agency retained by the Owner for testing concrete strength and materials.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:

1. Fly Ash: 15 percent.

C. Limit water-soluble, chloride-ion content in hardened concrete to the following percentages by weight of cement.

1. Prestressed concrete: 0.06 percent.
2. Reinforced concrete exposed to chloride in service: 0.15 percent.
3. Reinforced concrete that will be dry or protected from moisture in service: 1.00 percent.
4. Other reinforced concrete: 0.30 percent.

D. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing, high-range water-reducing, or plasticizing admixture in concrete, as required, for placement and workability.
2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.

2.9 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Proportion normal-weight concrete mixture as indicated on Structural Drawings for strength, slump, water/cement ratio, and maximum aggregate size.

B. Proportion normal-weight concrete mixture as indicated below for strength, slump, water/cement ratio, and maximum aggregate size.

1. Slabs-on-Grade:

    a. Strength: 4000 psi at 28 days.
    b. Cement Content: 5 1/2 sacks per cubic yard minimum.
    c. Aggregate Size: 3/4 inch maximum.

d. Slump: 4 inches.
e. Water Cement Ratio: 0.45 Maximum.

2. Footings:

a. Strength: 4000 psi at 28 days.

b. Cement Content: 6 sacks per cubic yard minimum.
c. Aggregate Size: 1 inche maximum.
d. Slump: 4 inches.
e. Water Cement Ratio: 0.50 Maximum.

3. Stairs:

a. Strength: 4000 psi at 28 days.
b. Cement Content: 6 sacks per cubic yard minimum.
c. Aggregate Size: ½ inch maximum.
d. Slump: 4 inches.
e. Water Cement Ratio: 0.50 Maximum.

2.10 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

B. Project-Site Mixing: Project site mixing of structural concrete will not be permitted. Project site mixing of concrete for other purposes may be permitted only when reviewed and approved by the Architect, Structural Engineer, and the Division of the State Architect. When allowed, measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M and ACI 318. Mix concrete materials in appropriate drum-type batch machine mixer, the capacity of the mixer shall be such that it will handle one or more full sack batches.

C. Control of Admixtures:

1. Admixtures shall be charged into the mixer as solutions and shall be measured by means of an approved mechanical dispensing device. The liquid shall be considered a part of the mixing water. Admixtures that cannot be added in solution may be weighed or may be measured by volume if so recommended by the manufacturer.
2. If two or more admixtures are used in the concrete, they shall be added separately to avoid possible interaction that might interfere with the efficiency of either admixture or adversely affect the concrete.

3. Addition of retarding admixtures shall be completed within 1 minute after addition of water to the cement has been completed, or prior to the beginning of the last three-quarters of the required mixing, whichever occurs first.
4. Admixtures shall be used in accordance with the manufacturer's instructions.

D. Concrete shall be mixed only in quantities for immediate use. Concrete which has set shall not be retempered, but shall be discarded.

E. When concrete arrives at the project with slump below that suitable for placing, as indicated by the specifications, water may be added only if neither the maximum permissible water-cement ratio nor the maximum slump is exceeded. The water shall be incorporated by additional mixing equal to at least half of the total mixing required. An addition of water shall be accompanied by a quantity of cement sufficient to maintain the proper water-cement ratio. Such addition shall be reviewed by the Architect and Structural Engineer.

PART 3 - EXECUTION

3.1 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

1. Where earth is used for forming sides of footings, increase the width of footings by 1 inch on each side of the footing.

C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:

1. Class A, 1/8 inch for smooth-formed finished surfaces.
2. Class B, 1/4 inch for rough-formed finished surfaces.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

1. Install keyways, recesses, and the like, for easy removal.
2. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Chamfer exterior corners and edges of permanently exposed concrete.

I. Form openings, chases, offsets, sinkages, keyways, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."

B. Conduits and Pipes Embedded in Concrete:

1. Pipes, other than conduits for electrical circuits, shall not be embedded in structural concrete unless specifically reviewed and approved by the Architect and Structural Engineer. Any pipe or conduit may pass through any walls or floor slab by means of a sleeve so located that it does not impair the strength of the structure. Openings larger than 12 inches in any dimension shall be as detailed on the structural drawings.
2. Unless otherwise approved, embedded pipes or conduits, other than those merely passing through, shall be not larger in outside dimension than one-third the thickness of the slab, wall, or beam in which they are embedded, nor shall they be spaced closer than three diameters or widths on center and shall have at least 1-1/2 inches concrete cover.
3. Sleeves, pipes, or conduits of aluminum shall not be embedded in structural concrete unless effectively coated or covered to prevent aluminum-concrete reaction or electrolytic action between aluminum and steel.

3.3 REMOVING AND REUSING FORMS

A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 48 hours after placing concrete. Concrete must be hard enough to not be damaged by form-removal operations and curing and protection operations need to be maintained.

B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 STEEL REINFORCEMENT

A. Quality Control: Reinforcement steel and placement shall be subject to inspection and testing per Part 3 Article “Field Quality Control.”

B. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

C. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.

D. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

E. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

3.5 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect and Structural Engineer.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
2. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Control Joints in Slabs-on-Grade: Form weakened-plane control joints, sectioning concrete into areas as indicated. Construct control joints for a depth equal to at least one-fourth of concrete thickness as follows:

1. Grooved Joints: Form control joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of control joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.

    a. Use only grooved joints for concrete surfaces that will be permanently exposed to view.

2. Sawed Joints: Form control 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 concrete develops random contraction cracks.

    a. Sawn joints shall not be used for concrete surfaces that will be permanently exposed to view.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Division 07 Section "Joint Sealants," are indicated.
3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.6 CONVEYING

A. Concrete shall be handled from the mixer to the place of final deposit as rapidly as practicable by methods which will prevent segregation or loss of ingredients and in a manner which will assure that the required quality of the concrete is maintained.

B. Conveying equipment shall be of a size and design such that detectable setting of concrete shall not occur before adjacent concrete is placed. Conveying equipment shall be cleaned at the end of each operation or work day. Conveying equipment and operations shall conform to the following additional requirements:

1. Truck mixers, agitators and non-agitating units and their manner of operation shall conform to the applicable requirements of ASTM C94.

2. Belt conveyors shall be horizontal or at a slope which will not cause excessive segregation or loss of ingredients. Concrete shall be protected against undue drying or rise in temperature. A suitable device shall be used at the discharge end to prevent apparent segregation. Mortar shall not be allowed to adhere to the return length of the belt. Long runs shall be discharged into a hopper or through a baffle.
3. Do not use reinforcement or reinforcement supports to support runways for concrete conveying equipment.

C. Chutes shall be metal or metal-lined and shall have a slope not exceeding 1 vertical to 2 horizontal and not less than 1 vertical to 3 horizontal. Chutes more than 20 feet long and chutes not meeting the slope requirements may be used provided they discharge into a hopper before distribution.

D. Pumping or pneumatic conveying equipment shall be of suitable kind with adequate pumping capacity. Pneumatic placement shall be controlled so that segregation is not apparent in the discharged concrete. The loss of slump in pumping or pneumatic conveying equipment shall not exceed 2 inches. Concrete shall not be conveyed through pipe made of aluminum or aluminum alloy. When the concrete is placed into final position by means of pumping, the pumping method for placing concrete shall be reviewed and approved by the Architect and Structural Engineer at least one week prior to placing the concrete.

3.7 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

1. Reposition any misaligned reinforcement.

B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect and Structural Engineer.

C. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit

duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

D. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
2. Maintain reinforcement in position on chairs during concrete placement.
3. Screed slab surfaces with a straightedge and strike off to correct elevations.
4. Slope surfaces uniformly to drains where required.
5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

E. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

F. Hot-Weather Placement: Comply with ACI 305 and as follows:

1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.8 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces not permanently exposed to public view.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and

patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces permanently exposed to public view, to receive a rubbed finish, or to be covered with a coating or covering material applied directly to concrete.

C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:

1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.

D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.9 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Slab Finishes: Provide finished slab surfaces as indicated below; confirm and coordinate surface finishes for adhered and fluid applied floor finishes with trades installing/applying respective floor systems required for the project conditions.

	Finish Floor Application	Slab Finish Type
1.	Surfaces to receive mortar setting beds for tile flooring and similar applications.	Scratch Finish
2.	Surfaces to receive thinset tile flooring directly over concrete	Trowel and Fine Broom Finish
3.	Surfaces to receive adhered carpet, resilient sheet, or resilient tile flooring	Trowel and Fine Broom Finish
4.	Surfaces to receive epoxy or polyurethane fluid applied flooring	Light Broom Finish (Confirm with floor system manufacturer)
5.	Surfaces to be exposed and sealed concrete	Troweled Finish
6.	Ramped exposed concrete	Medium Broom Finish
7.	Surfaces to receive waterproof membranes	Floated Finish

	Finish Floor Application	Slab Finish Type

C. Slab Flatness (F_F) and Levelness (F_L): Provide finished slab flatness and levelness as indicated below; confirm and coordinate surface finishes for floor finishes with trades installing/applying respective floor systems required for the project conditions.

	Application		Flatness (F_F)	Levelness (F_L)
1.	Slabs to receive resilient flooring	Overall: Local:	30 24	25 15
2.	Slabs to receive carpet flooring	Overall: Local:	25 17	20 15
3.	Other areas not specified	Overall: Local:	25 17	20 15

D. Sloped Slab Finishes: Where slabs are indicated to be sloped, finished slabs shall have a slope not to exceed 1/4 inch per one foot unless otherwise indicted on the Drawings.

E. Slab Finish Types: Slab finish types shall be as follows:

1. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch in one direction.
2. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture. Apply float finish to surfaces to receive trowel finish and to be covered with fluid-applied or sheet waterproofing.
3. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
4. Trowel and Fine-Broom Finish: After applying a trowel finish and while concrete is still plastic, slightly scarify surface with a fine broom to produce a fine directional finish.

5. Broom Finish: Immediately after float finishing, slightly roughen surface by brooming with fiber-bristle broom perpendicular to main traffic route and/or ramp surfaces. Coordinate required final finish with Architect before application.

3.10 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and equipment.

D. Steel Pan at Elevator Landing: Provide concrete fill for steel pan landing and associated items as shown on the Elevator Hoistway Drawings and specified by the Elevator Hoistway Engineer. Cast-in inserts and accessories as shown on the Elevator Hoistway Structural Drawings. Screed, tamp, and trowel finish concrete surfaces.

3.11 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 305 for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days using a water saturated absorptive cover kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

    a. This method shall not be used on floor slabs receiving adhered floor systems, fluid applied floor systems, or sealers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

    a. Use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
    b. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

    a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.

4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.12 LIQUID FLOOR TREATMENTS

A. Sealing Coat: Uniformly apply a continuous sealing coat of curing and sealing compound to hardened concrete by power spray or roller according to manufacturer's written instructions.

3.13 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.

1. Defer joint filling as long as possible and until concrete has aged at least one month. Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.14 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect and Structural Engineer. Remove and replace concrete that cannot be repaired and patched to Architect's and Structural Engineer’s approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete.

    a. Limit cut depth to 3/4 inch.
    b. Make edges of cuts perpendicular to concrete surface.
    c. Perimeters of cut areas shall be square or rectangular in shape with cuts vertical and horizontal.
    d. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried.
    e. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.

2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect and Structural Engineer.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.

3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Architect's and Structural Engineer’s approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's and Structural Engineer’s approval.

3.15 FIELD QUALITY CONTROL

A. Testing and Inspecting Agency: Owner will engage and pay for a qualified independent testing and inspecting agency to perform tests and inspections as applicable and prepare reports.

1. Testing and Inspection Agency shall be acceptable to the Architect, Structural Engineer, and the Division of the State Architect.

B. The Architect, Structural Engineer, and the Division of the State Architect shall have the right to order the testing of any materials used in the concrete construction to determine if they are of the quality specified.

C. Contractor Responsibilities:

1. The Contractor shall maintain control of the quality of materials and workmanship in order to conform with the drawings and specifications.
2. To facilitate testing and inspection, the Contractor shall:

    a. Schedule tests and inspections with the Testing and Inspection Agency sufficiently in advance of operations to allow for the assignment of personnel and for the completion of testing and inspecting responsibilities.
    b. Provide access to the Work for the designated Testing and Inspection Agency.
    c. Furnish all necessary materials and labor to assist the designated Testing and Inspection Agency in obtaining and handling samples at the project or other sources of materials.
    d. Provide and maintain for the sole use of the Testing and Inspection Agency adequate facilities for safe storage and proper curing of concrete test specimens on the project site for the first 24 hr. as required by ASTM C31.

3. The Contractor shall correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

D. Testing and Inspection Services:

1. Testing and inspections shall be performed by the designated Testing and Inspection Agency.
2. Testing and inspections shall be in accordance with the 2022 California Building Code, Section 1705A.3 and Table 1705A.3, DSA Statement of Structural Tests and Inspections form DSA 103, Structural Drawings Special Inspection Criteria, and shall include but not be limited to the following:

    a. Inspection of steel reinforcement.
    b. Inspection of headed bolts and studs prior and during concrete placement.
    c. Verification of use of required design mixture.
    d. Sampling of concrete for strength tests, slump, air content, and temperature of concrete at time of placement.
    e. Inspection of concrete placement, including conveying and depositing.
    f. Inspection of curing procedures and maintenance of curing temperature.
    g. Verification of concrete strength before removal of shores and forms from beams and slabs.
    h. Inspection of formwork.

E. Sampling and Testing of Steel Reinforcement:

1. Samples of reinforcing steel shall be taken by a designated approved testing agency at place of distribution prior to shipment or at project site.
2. Where samples are taken from bundles as delivered from the mill, with the bundles identified as to heat number and provided the mill analyses accompany the report, one tensile test and one bend test shall be made from a specimen from each 10 tons or fraction thereof of each size of reinforcing steel.

a. Where positive identification of the heat number cannot be made or where random samples are to be taken, one series of tests shall be made from each 2-1/2 tons or fraction thereof of each size of reinforcing steel.

3. Each sample shall consist of no fewer than two pieces, each 18 inches long, of each size and grade or reinforcing steel.

F. Batch Plant Inspection: The quality and quantity of materials used in transit mixed concrete and in batched aggregates shall be continuously inspected at the location where materials are measured by an approved Testing and Inspection Agency.

G. Placement Record: A record shall be kept on-site of the time and date of placing the concrete in each portion of the structure. Such record shall be kept until the completion of the structure and shall be open to the inspection of the Division of the State Architect.

H. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture but not less than one sample for each 50 cu. yd. or fraction thereof and one sample for each 2,000 square feet of slab area.

a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C 31/C 31M.

a. Cast and laboratory cure four (4) standard cylinder specimens for each composite sample.

6. Compressive-Strength Tests: ASTM C 39/C 39M; test one specimen at 7 days for information and two cured specimens at 28 days for strength acceptance, the fourth specimen shall be held in reserve in case additional testing in necessary.

a. A compressive-strength test shall be the average compressive strength from a set of two 28-day specimens obtained from same composite sample and tested at age indicated.

7. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.

8. Test results shall be reported in writing to Architect, Structural Engineer, Division of the State Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7 and 28-day tests.
9. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.

10. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect or Structural Engineer. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect or Structural Engineer.

11. Additional testing and inspecting will be performed to determine compliance of replaced or additional work with specified requirements.

    a. The cost of additional testing and inspection of replaced work will be paid for by the Owner with the amount being deducted from the Contract Amount by a Change Order.

3.16 PROTECTION OF SEALED FLOORS

A. Protect sealed floor surfaces from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by floor treatment installer.

END OF SECTION

SECTION 033518
CONCRETE CURE-SEALER-HARDENER

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Single application cure-sealer-hardener for new concrete floors.
2. Single application sealer-hardener for cured concrete floors.
3. Precautions for avoiding staining concrete before and after application.

B. Related Sections:

1. Division 03 Section “Cast-In-Place Concrete.”

1.3 REFERENCES

A. ASTM International (ASTM):

1. ASTM C39 Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
2. ASTM C779 Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces.
3. ASTM C805 Standard Test Method for Rebound Number of Hardened Concrete.
4. ASTM C1028 Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method.
5. ASTM D3359 Standard Test Methods for Measuring Adhesion by Tape Test.
6. ASTM G23 Practice for Operating Light-Exposure Apparatus (Carbon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials (Withdrawn 2000).

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Qualification Data: For qualified installer.

C. Maintenance Data: Maintenance instructions, including precautions for avoiding staining after application.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who is certified in writing by manufacturer as qualified to install manufacturer's products.

B. VOC Content: Provide materials that comply with VOC limits of the Division of the State Architect.

1.6 DELIVERY, STORAGE & HANDLING

A. Delivery: Deliver materials in manufacturer’s original, unopened, undamaged containers with identification labels intact.

B. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.

C. Handling: Protect materials from dirt, corrosion, oil, grease and other contaminants.

PART 2 - PRODUCTS

2.1 CURE-SEAL-HARDENER

A. Basis of Design: Drawings and Specifications are based on the following:

1. Curecrete Distribution, Inc.; Ashford Formula.

a. Subject to compliance with requirements, submit specified product or a comparable product subject to request for substitution.

B. Cure-Seal-Hardener: Water-based chemically reactive penetrating sealer and hardener that seals by densifying concrete so that water molecules cannot pass through but air and water vapor can, and allows concrete to achieve full compressive strength, minimizing surface crazing and eliminating dusting.

1. Abrasion Resistance to Revolving Disks: At least a 32.5% improvement over untreated samples when tested in accordance with ASTM C779.
2. Surface Adhesion: At least a 22% increase in adhesion for epoxy when tested in accordance with ASTM D3359.
3. Hardening: As follows when tested in accordance with ASTM C39:

a. After 7 Days: An increase of at least 40% over untreated samples.
b. After 28 Days: An increase of at least 38% over untreated samples.

4. Coefficient of Friction: 0.86 dry, 0.69 wet when tested in accordance with ASTM C1028.
5. Rebound Number: An increase of at least 13.3% over untreated samples when tested in accordance with ASTM C805.

6. Light Exposure Degradation: No evidence of adverse effects on treated samples when tested in accordance with ASTM G23.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for conditions affecting performance of the Work of this Section.

B. Proceed with application only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Do not use frozen material. Thaw and agitate prior to use.

D. If construction equipment must be used for application, diaper all components that might drip oil, hydraulic fluid or other liquids.

3.3 INSTALLATION

A. General: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product carton instructions for installation.

1. Apply cure-seal-hardener to exposed interior concrete floor slabs indicated to have a sealed concrete finish.

B. New Concrete: Apply cure-seal-hardener to new concrete as soon as the concrete is firm enough to work on after troweling.

1. Spray on at rate of 200 ft^2/gal (5 m^2/L).

2. Keep surface wet with cure-seal-hardener for a minimum soak-in period of 30 minutes without allowing it to dry out or become slippery. In hot weather, slipperiness may appear before the 30 minute time period has elapsed, if slipperiness occurs, apply additional cure-seal-hardener as needed to keep the entire surface in a non-slippery state for the first 15 minutes. For the remaining 15 minutes, mist the surface as needed with water to keep the material in a non-slippery state. In hot weather conditions, follow manufacturer's special application procedures.
3. When the treated surface becomes slippery after this period, lightly mist with water until slipperiness disappears.
4. Wait for surface to become slippery again, and then flush entire surface with water to remove all cure-seal-hardener residue.
5. Squeegee surface completely dry, flushing any remaining slippery areas until no residue remains.
6. Wet vacuum or scrubbing machines may be used in accordance with manufacturer's instructions to remove residue.

C. Existing or Cured Concrete: Apply cure-seal-hardener only to clean bare concrete.

1. Thoroughly remove previous treatments, laitance, oil and other contaminants.
2. Saturate surface with cure-seal-hardener; re-spray or broom excess onto dry spots.
3. Keep surface wet with cure-seal-hardener for a minimum soak-in period of 30 to 40 minutes.
4. If most of the material has been absorbed after the 30 minute soak-in period, remove all excess material, especially from low spots, using broom or squeegee.
5. If most of the material remains on the surface after the 30 minute soak-in period, wait until the surface becomes slippery and then flush with water, removing all cure-seal-hardener residue. Squeegee completely dry, flushing any remaining slippery areas until no residue remains.
6. If water is not available, remove residue using squeegee.

3.4 PROTECTION

A. Protect installed floors for at least 3 months until chemical reaction process is complete.

1. Do not allow traffic on floors for 3 hours after application.
2. Do not allow parking of vehicles on concrete slab.
3. If vehicles must be temporarily parked on slab, place dropcloths under vehicles during entire time parked.
4. Do not allow pipe cutting using pipe cutting machinery on concrete slab.
5. Do not allow temporary placement and storage of steel members on concrete slabs.
6. Clean up spills immediately and spot-treat stains with degreaser or oil emulsifier.
7. Clean floor regularly in accordance with manufacturer's recommendations.

END OF SECTION

SECTION 054000
COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes:

1. Exterior non-load-bearing wall framing.

B. Related Sections include the following:

1. Division 07 Section “Formed Metal Wall Panels” for metal wall panels and trim pieces.

C. California Code of Regulations, Title 24, Part 2, California Building Code, 2022 Edition.

D. American Iron and Steel Institute (AISI) Specifications and Standards. Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" and its "Standard for Cold-Formed Steel Framing - General Provisions."

1. Standard for Cold-formed Steel Framing – Header Design.
2. Standard for Cold-formed Steel Framing – Lateral Design.
3. Standard for Cold-formed Steel Framing – Wall Stud Design.

E. ASTM International (ASTM):

1. ASTM A 653, Steel Sheet, Zinc Coated (galvanized) or zinc-iron alloy-coated by the Hot Dip Process, Physical (Structural) Quality.
2. ASTM A780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
3. ASTM C955 - Standard Specification for Load-Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Board and Metal Plaster Bases.
4. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members.
5. ASTM A 1008, Steel Sheet, Cold-Rolled, Carbon, Structural, High Strength, Low Alloy with improved formability.
6. ASTM A 1011, Sheet & Strip, Hot-Rolled, Carbon, Structural, High Strength, Low Alloy with improved formability.

7. ASTM C 645, Non-Load (Axial) Bearing Steel Studs, Runners (Track), and Rigid Furring Channels for Screw Application of Gypsum Board.
8. ASTM C 754, Installation of Steel Framing Members to Receive Screw Attached Gypsum Board.
9. ASTM C 1007, Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories.
10. ASTM C1513 - Standard Specification for Steel Tapping Screws for Cold-Formed Steel Framing Connections.

F. Federal Specifications:

1. FF-P-395, Pin, Drive, Guided and Pin Drive, Power Actuated (Fasteners for Power Actuated and Hand Actuated Fastening Tools.
2. FF-S-325, Shield, Expansion: Nail, Expansion: and Nail, Drive Screw (Devices, Anchoring Masonry).

G. American Welding Society (AWS) Publication:

1. D1.1, Structural Welding Code, Steel.
2. D1.3, Structural Welding Code, Sheet Steel.

H. Metal Lath/Steel Framing Association (ML/SFA) Publication:

1. ML/SFA 540, Lightweight Steel Framing Systems.
2. ML/SFA 541, Selection Guidelines: Lightweight Steel Framing.
3. ML/SFA 920, Guide Specifications for Metal Lathing and Furring.

I. Steel Stud Manufacturers Association (SSMA):

1. Product Technical Information, ICC ESR-3064P.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated, include manufacturer’s written installation procedures and details.

1. Provide documentation that stud and track members are certified in accordance with the product certification program of the Steel Framing Industry Association (SFIA) or a similar organization that provides a verifiable code compliance program.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Use adequate number of skilled workmen who are thoroughly trained and experienced in the erection of cold formed steel framing and who are completely familiar with the specified requirements and methods needed for proper performance of the work of this Section.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling. Cover stored metal framing with a waterproof covering and ventilate to avoid condensation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide cold-formed metal framing by one of the following:

1. California Expanded Metal Products Company (CEMCO).
2. ClarkDietrich.
3. MarinoWare; a Division of Ware Industries.
4. SCAFCO Corp.

2.2 PERFORMANCE REQUIREMENTS

A. Cold-Formed Steel Framing Standards: Unless more stringent requirements are indicated, comply with AISI S100, AISI S240, and AISI S400.

1. Floor and Roof Systems: AISI S210.
2. Wall Studs: AISI S211.
3. Headers: AISI S212.
4. Lateral Design: AISI S213.

2.3 COLD FORMED METAL FRAMING MEMBERS

A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

B. Identification of Metal Framing Members: Load bearing cold formed steel framing members shall be identified as required by CBC Section 2202 or CBC 2202A for projects governed by the Division of the State Architect.

C. Framing Members General: Comply with AISI S200, AISI S240, and ASTM C 955, Section 8 for conditions indicated.

D. Framing Members, General: Comply with ASTM C 955 for conditions indicated.

E. Steel Studs: Manufacturer's standard C-shaped steel studs of web depths indicated, stiffened flanges, and as follows:

1. Studs: Punched openings regularly spaced along webs.
2. Minimum Base-Metal Thickness: As indicated on Drawings.
3. Flange Width: As indicated on Drawings, 1-5/8 inches minimum.

4. Section Properties: As indicated on Drawings.

F. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with straight flanges, and as follows:

1. Minimum Base-Metal Thickness: Matching steel studs.
2. Flange Width: 1-1/4 inches unless otherwise indicated.

G. Steel Headers: Manufacturer's standard C-shapes or L-shapes, matching studs, used to form header beams, of web depths indicated, punched, with stiffened flanges, and as indicated on the Drawings.

H. Deflection Track: Single or double deflection track as indicated on Drawings.

1. Single Deflection Track: Manufacturer's deflection track as indicated on Drawings; single, deep-leg, U-shaped steel track; unpunched, with unstiffened flanges, of web depth to contain studs while allowing free vertical movement, with flanges designed to support horizontal and lateral loads and transfer them to the primary structure, minimum base metal thickness matching studs.

I. Vertical Deflection Clips: Manufacturer's standard bypass or head clips as indicated on Drawings, capable of accommodating upward and downward vertical displacement of primary structure through positive mechanical attachment to stud web.

J. Drift Clips: Manufacturer's standard bypass or head clips, capable of isolating wall stud from upward and downward vertical displacement and lateral drift of primary structure.

2.4 FRAMING ACCESSORIES

A. Fabricate steel-framing accessories from steel sheet, ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of same grade and coating weight used for framing members.

B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated.

2.5 ANCHORS, CLIPS, AND FASTENERS

A. Steel Shapes and Clips: ASTM A 36/A 36M, zinc coated by hot-dip process according to ASTM A 123/A 123M.

B. Anchor Bolts: Conform to ASTM F1554 Grade 36, Class 2A, unless noted otherwise.

C. Post Installed Concrete Anchors: Fabricated from corrosion-resistant materials; manufacturer, size, and type as indicated on Drawings, and as specified in Division 03 Section “Post Installed Concrete Anchors.”

D. Power-Actuated Fasteners: Fastener of manufacturer, size, and type as indicated on Drawings and as follows:

1. Concrete Attachment: Hilti X-U (ICC ESR-2269) pins unless otherwise indicated on Drawings; 0.157 inch diameter steel pins with steel washers; embedment of steel pins into concrete shall not be less than 1-1/4 inch.
2. Steel Attachment: Hilti X-U 15 (ICC ESR-2269) unless otherwise indicated on Drawings; 0.145 inch diameter steel pins with steel washers; protrusion of steel pins through steel members shall not be less than 1/4 inch.

E. Screw Fasteners: ASTM C 1513, corrosion-resistant-coated, self-drilling, self-tapping steel drill screws.

1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.

2.6 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: ASTM A 780.

B. Nonmetallic, Nonshrink Grout: Factory packaged, nonmetallic, noncorrosive, nonstaining grout complying with ASTM C 1107, with fluid consistency and 30-minute working time.

C. Shims: Load-bearing, high-density, multimonomer, nonleaching plastic; or cold-formed steel of same grade and metallic coating as framing members supported by shims.

D. Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members.

2.7 FABRICATION

A. Fabricate cold-formed metal framing and assemblies plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.

1. Fabricate framing assemblies using jigs or templates.
2. Cut framing members by sawing or shearing; do not torch cut.
3. Fasten cold-formed metal framing members by welding, screw fastening, clinch fastening, or riveting as standard with fabricator. Wire tying of framing members is not permitted.

    a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
    b. Locate mechanical fasteners and install according to Shop Drawings, with screws penetrating joined members by not less than three exposed screw threads.

B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.

C. Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:

1. Spacing: Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
2. Squareness: Fabricate each cold-formed metal framing assembly to a maximum out-of-square tolerance of 1/8 inch.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Install load bearing shims or grout between the underside of wall bottom track or rim track and the top of foundation wall or slab at stud or joist locations to ensure a uniform bearing surface on supporting concrete or masonry construction.

B. Install sealer gaskets to isolate the underside of wall bottom track or rim track and the top of foundation wall or slab at stud or joist locations.

3.3 INSTALLATION OF FRAMING, GENERAL

A. Cold-formed metal framing may be shop or field fabricated for installation, or it may be field assembled.

B. Install cold-formed metal framing according to AISI S200, AISI S202, and manufacturer's written instructions unless more stringent requirements are indicated.

C. Install shop or field-fabricated cold-formed framing assemblies and securely anchor to supporting structure. Screw, bolt, or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch.

D. Install cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened.

1. Cut framing members by sawing or shearing; do not torch cut.
2. Fasten cold-formed metal framing members by welding or screw fastening. Wire tying of framing members is not permitted.

a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
b. Locate mechanical fasteners and install according to Drawings and complying with requirements for spacing, edge distances, and screw penetration.

E. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.

F. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.

G. Do not bridge building expansion and control joints with cold-formed metal framing. Independently frame both sides of joints.

H. Fasten hole-reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.

I. Erection Tolerances: Install cold-formed metal framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:

1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.4 WALL FRAMING

A. Install continuous top and bottom tracks sized to match studs. Align tracks accurately and securely anchor at corners and ends, and at spacings indicated on Drawings.

B. Squarely seat studs against top and bottom tracks with gap not exceeding of 1/8 inch between the end of wall framing member and the web of track. Fasten both flanges of studs to top and bottom tracks. Space studs as indicated on Drawings, spacing shall not to exceed 24 inches on center.

C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar configurations.

D. Align studs vertically where floor framing interrupts wall-framing continuity. Where studs cannot be aligned, continuously reinforce track to transfer loads.

E. Anchor studs abutting structural columns or walls, including masonry walls, to supporting structure as indicated.

F. Install supplementary framing, blocking, and bracing in stud framing indicated to support fixtures, equipment, services, trim, and similar work requiring attachment to framing.

1. If type of supplementary support is not indicated, comply with stud manufacturer's written recommendations and industry standards in each case, considering weight or load resulting from item supported.

G. Isolate non-load-bearing steel wall framing from building structure to prevent transfer of vertical loads while providing lateral support.

1. Install top of wall deflection tracks of type indicated on Drawings and anchor to building structure.
2. Connect vertical deflection clips to studs and anchor deflection clips to building structure as indicated on Drawings.
3. Connect drift clips to cold formed metal framing and anchor drift clips to building structure as indicated on Drawings.

H. Install horizontal bridging in stud system, spaced 48 inches on center maximum, fasten bridging to stud at each stud intersection. Install bridging as indicated on Drawings, or if not indicated, install one of the following:

1. Bridging: Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs with a minimum of 2 screws into each flange of the clip angle for framing members up to 6 inches deep.
2. Bridging: Combination of flat, taut, steel sheet straps, 1-1/2 by 0.0329 inch, and stud-track solid blocking of matching studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.
3. Bridging: Proprietary bridging bars installed according to manufacturer's written instructions.

I. Install miscellaneous framing and connections, including supplementary framing, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.

3.5 FIELD QUALITY CONTROL

A. The Architect and the Division of the State Architect shall have the right to order the testing of any materials used in the steel construction to determine if they are of the quality specified.

B. Contractor Duties and Responsibilities:

1. Contractor shall maintain control of the quality of materials and workmanship to conform to the drawings and specifications.
2. Facilitate testing and inspection as follows:

a. Schedule tests and inspections with the Testing and Inspection Agency sufficiently in advance of operations to allow for the assignment of personnel and for the completion of testing and inspecting responsibilities.
b. Provide access to the Work for the designated Testing and Inspection Agency.

c. Furnish all necessary materials and labor to assist the designated testing and inspecting agency in obtaining and handling samples at the project or other sources of materials.

3. Contractor shall correct deficiencies in the Work where tests and inspections indicate the Work does not comply with the Contract Documents.

3.6 REPAIRS AND PROTECTION

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings cold-formed metal framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer ensuring cold-formed metal framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 055000
METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Steel framing and supports for applications where framing and supports are not specified in other Sections.
2. Steel weld plates and angles for casting into concrete not specified in other Sections.

B. Related Sections:

1. Division 03 Section “Post Installed Concrete Anchors” for post installed anchors in concrete and/or masonry.
2. Division 03 Section "Cast-in-Place Concrete" for installing anchor bolts, steel pipe sleeves, wedge-type inserts and other items indicated to be cast into concrete.

1.3 SUBMITTALS

A. Product Data: For the following:

1. Paint products.
2. Grout.

B. Shop Drawings: Show fabrication and installation details for metal fabrications.

1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
2. Provide templates for anchors and bolts specified for installation under other Sections.

C. Mill Certificates: Signed by manufacturers of stainless-steel sheet certifying that products furnished comply with requirements.

D. Welding certificates.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of products.

B. Welding: Qualify procedures and personnel according to the following:

1. AWS D1.1, "Structural Welding Code--Steel."
2. AWS D1.3, "Structural Welding Code--Sheet Steel."

1.5 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication and indicate measurements on Shop Drawings.

1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating metal fabrications without field measurements. Coordinate wall and other contiguous construction to ensure that actual dimensions correspond to established dimensions.
2. Provide allowance for trimming and fitting at site.

1.6 COORDINATION

A. Coordinate installation of anchorages for metal fabrications. 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. Deliver such items to Project site in time for installation.

B. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.

2.2 METAL PRODUCTS

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces, unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

C. Steel Tubing: ASTM A 500, cold-formed steel tubing.

D. Steel Pipe: ASTM A 53/A 53M, standard weight (Schedule 40), unless another weight is indicated or required by structural loads.

1. Provide galvanized finish for exterior installations where indicated.

E. Slotted Steel Channel Framing: Cold-formed metal box channels (struts) complying with MFMA-4.

1. Basis of Design: Unistrut Corporation; P1000 Channel Framing System.
2. Size of Channels: 1-5/8 by 1-5/8 inches.
3. Channel Material: Galvanized steel, ASTM A 653/A 653M, structural steel, Grade 33, with G90 coating; 0.108-inch (12 gage) nominal thickness.
4. Material for Fittings: Steel conforming to ASTM A 575, A 576, A 36, or A635; with finish matching channels.

F. Cast Iron: ASTM A 48/A 48M, Class 30, unless another class is indicated or required by structural loads.

G. Iron Castings: Either gray or malleable iron, unless otherwise indicated.

H. Galvanized Steel Sheet: ASTM A 653/A 653M, G90 coating, structural steel, Grade 33, unless another grade is required by design loads.

I. Aluminum Plate and Sheet: ASTM B 209, Alloy 6061-T6.

J. Aluminum Extrusions: ASTM B 221, Alloy 6063-T6.

K. Aluminum-Alloy Rolled Tread Plate: ASTM B 632/B 632M, Alloy 6061-T6.

L. Aluminum Castings: ASTM B 26/B 26M, Alloy 443.0-F.

M. Wire Rod for Grating Crossbars: ASTM A 510.

2.3 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, at exterior walls. Provide stainless-steel fasteners for fastening aluminum. Select fasteners for type, grade, and class required.

B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A; with hex nuts, ASTM A 563; and, where indicated, flat washers.

C. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, ASTM F 593; with hex nuts, ASTM F 594; and, where indicated, flat washers; Alloy Group 1.

D. Anchor Bolts and Unheaded Rods: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A 563; and, where indicated, flat washers.

1. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.

E. Post Installed Concrete Anchors: Fabricated from corrosion-resistant materials; manufacturer, size, and type as indicated on Drawings and specified in Division 03 Section “Post Installed Concrete Anchors.”

2.4 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Shop Primers: Provide primers that comply with Division 09 painting Sections**.**

C. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in steel, complying with SSPC-Paint 20.

D. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

E. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

F. Concrete Materials and Properties: Comply with requirements in Division 03 Section "Cast-in-Place Concrete" for normal-weight, air-entrained, ready-mix concrete with a minimum 28-day compressive strength of 3000 psi, unless otherwise indicated.

2.5 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch, unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work true to line and level with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts, unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

I. Provide for anchorage of type indicated on Drawings.

J. Weld connections to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.

4. Weld exposed corners and seams continuously, unless otherwise indicated.
5. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

2.6 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction, unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction retained by framing and supports. Cut, drill, and tap units to receive hardware, hangers, and similar items.

1. Fabricate units from slotted channel framing where indicated.
2. Furnish inserts if units are installed after concrete is placed.

C. Galvanize miscellaneous framing and supports where indicated.

2.7 STEEL WELD PLATES AND ANGLES

A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each unit with not less than two integrally welded steel strap anchors for embedding in concrete.

2.8 METAL BOLLARDS

A. Removable Bollards: See Drawings.

2.9 HAND RAILINGS AND GUARDS

A. General: Fabricate railings and guards to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage.

1. Regulatory Requirements: Handrails, guards, and infill rails or panels shall comply with the California Building Code.
2. Material: Fabricate handrails and guards from Schedule 40 steel pipe or round steel tubing of sizes indicated on Drawings.

    a. Finish: Exterior handrails and guards shall be galvanized after fabrication.

3. Handrails:

    a. Diameter: 1-1/4 inch minimum, 2 inch maximum outside diameter.
    b. Height: 34 inches minimum, 38 inches maximum vertically above the walking surface of ramps and/or walks, and the nosing of stair treads to the top of handrail gripping surfaces. Design height shall be 36 inches.
    c. Handrail Extensions: Handrail extensions shall be in the direction of the stair or ramp run, and as follows:

        1) Stair Handrails: At upper landings, handrails shall extend a minimum 12 inches horizontally beyond the top nosing. At lower landings, handrails shall continue to slope for a distance equal to one tread depth beyond the bottom tread nosing; the remainder of the extension shall be horizontal for a minimum distance of 12 inches.
        2) Ramp Handrails: Handrails shall extend horizontally for 12 inches minimum beyond the upper and lower limits of the ramp surface.

4. Guards: At open sided floor or walking surfaces that are more than 30 inches above the adjacent grade, guards shall be not less than 42 inches above the upper floor or ground surface.

a. Openings between intermediate rails or in panels shall be such that a 4 inch diameter sphere shall not pass through any openings.

B. Fabricate connections that are exposed to weather in a manner that excludes water. Provide weep holes where water may accumulate.

C. Connections: Fabricate railings with welded connections unless otherwise indicated. Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.

D. Form Changes in Direction by bending or by inserting prefabricated elbow fittings.

1. For changes in direction made by bending, use jigs to produce uniform curvature for each repetitive configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

E. Close exposed ends of railing members with prefabricated end fittings.

F. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.

G. Handrail Surfaces: Grind and finish handrails and welds smooth to be free of sharp, rough, or abrasive surfaces.

H. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.

1. At brackets and fittings fastened to plaster or gypsum board partitions, provide crush-resistant fillers or other means to transfer loads through wall finishes to structural supports and prevent bracket or fitting rotation and crushing of substrate.

I. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.

J. For railing posts set in concrete, provide steel sleeves as detailed on Drawings.

2.10 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish metal fabrications after assembly.

2.11 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with applicable standard listed below:

1. ASTM A 123/A 123M, for galvanizing steel and iron products.
2. ASTM A 153/A 153M, for galvanizing steel and iron hardware.

B. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications.

C. Shop Priming: Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finishes and those to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. 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 surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag bolts, wood screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint.

3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

B. Anchor supports for operable partitions securely to and rigidly brace from building structure.

3.3 HAND RAILINGS AND GUARDS

A. Pipe Railing and Post Connections, General: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in Part 2 Articles "Fabrication, General" and “Hand Railings and Guards” whether welding is performed in the shop or in the field.

1. Expansion Joints: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve extending 2 inches beyond joint on either side, fasten internal sleeve securely to one side, and locate joint within 6 inches of post.

B. Anchoring Posts in Concrete: Anchor posts as indicated on Drawings and as follows:

1. Core-drill holes not less than 6 inches deep and 3/4 inch larger than OD of post for installing posts in concrete, or use metal sleeves of equivalent size, preset and anchored into concrete. Clean holes of loose material, insert posts, and fill annular space between post and sleeve or concrete with nonshrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.
2. Cover anchorage joint with flange of same metal as post, [welded to post after placing anchoring material] [attached to post with set screws].

C. Attaching Handrails to Walls: Attach handrails to walls with wall brackets as indicated on Drawings and as follows:

1. Brackets with 1-1/2-inch minimum clearance between inside face of handrail and finished wall surface.

a. Use type of bracket with flange tapped for concealed anchorage to threaded hanger bolt.

2. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.
3. For wood stud partitions, use hanger or lag bolts set into studs or wood backing between studs. Coordinate blocking with carpentry work to locate backing members.
4. For steel-framed partitions, use self-tapping screws fastened to steel framing or to concealed steel reinforcements. Coordinate backing with steel framed partition work.
5. Use crush sleeves where fastening brackets to walls through gypsum board.

3.4 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0-mil (0.05-mm) dry film thickness.

B. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Division 09 painting Sections.

C. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION

SECTION 055213
PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Steel pipe and tube railings.

1.3 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorages for railings. 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. Deliver such items to Project site in time for installation.

C. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

1.4 ACTION SUBMITTALS

A. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

1.6 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Handrails and Top Rails:

a. Uniform load of 50 lbf/ ft. (0.73 kN/m) applied in any direction.
b. Concentrated load of 200 lbf (0.89 kN) applied in any direction.
c. Uniform and concentrated loads need not be assumed to act concurrently.

2.2 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.

B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.

1. Provide type of bracket with predrilled hole for exposed bolt anchorage and that provides 1-1/2-inch (38-mm) clearance from inside face of handrail to finished wall surface.

2.3 STEEL AND IRON

A. Tubing: ASTM A 500 (cold formed).

B. Pipe: ASTM A 53/A 53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.

1. Provide galvanized finish for exterior installations and where indicated.

C. Plates, Shapes, and Bars: ASTM A 36/A 36M.

D. Cast Iron: Either gray iron, ASTM A 48/A 48M, or malleable iron, ASTM A 47/A 47M, unless otherwise indicated.

2.4 FASTENERS

A. General: Provide the following:
   1. Hot-Dip Galvanized Railings: Type 304 stainless-steel or hot-dip zinc-coated steel fasteners complying with ASTM A 153/A 153M or ASTM F 2329 for zinc coating.
   2. Provide exposed fasteners with finish matching appearance, including color and texture, of railings.

B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.

C. Fasteners for Interconnecting Railing Components:

   1. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless otherwise indicated.
   2. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless exposed fasteners are unavoidable or are the standard fastening method for railings indicated.
   3. Provide square or hex socket flat-head machine screws for exposed fasteners unless otherwise indicated.

2.5 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Etching Cleaner for Galvanized Metal: Complying with MPI#25.

C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

D. Shop Primers: Provide primers that comply with Section 099000 " Painting”.

E. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.

   1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

F. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.

G. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.

H. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

I. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

J. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.

1. Water-Resistant Product: At exterior locations provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

2.6 FABRICATION

A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.

B. Shop assemble railings to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.

C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

D. Form work true to line and level with accurate angles and surfaces.

E. Fabricate connections that are exposed to weather in a manner that excludes water. Provide weep holes where water may accumulate.

F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.

G. Connections: Fabricate railings with welded connections unless otherwise indicated.

H. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove flux immediately.
4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.

I. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.

1. Fabricate splice joints for field connection using an epoxy structural adhesive if this is manufacturer's standard splicing method.

J. Form Changes in Direction as Follows:

1. As detailed.

K. For changes in direction made by bending, use jigs to produce uniform curvature for each repetitive configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

L. Close exposed ends of railing members with prefabricated end fittings.

M. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch (6 mm) or less.

N. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.

1. At brackets and fittings fastened to plaster or gypsum board partitions, provide crush-resistant fillers or other means to transfer loads through wall finishes to structural supports and prevent bracket or fitting rotation and crushing of substrate.

O. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.

P. For railing posts set in concrete, provide steel sleeves not less than 6 inches (150 mm) long with inside dimensions not less than 1/2 inch (13 mm) greater than outside dimensions of post, with metal plate forming bottom closure.

Q. Toe Boards and Wheelchair Guides: Where indicated, provide toe boards and wheelchair guards at railings around openings and at edge of open-sided floors, platforms and ramps. Fabricate to dimensions and details indicated.

2.7 STEEL AND IRON FINISHES

A. Galvanized Railings:

1. Hot-dip galvanize exterior steel railings, including hardware, after fabrication.
2. Comply with ASTM A 123/A 123M for hot-dip galvanized railings.
3. Comply with ASTM A 153/A 153M for hot-dip galvanized hardware.
4. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
5. Fill vent and drain holes that are exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.

B. For galvanized railings, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.

C. Preparing Galvanized Railings for Shop Priming: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner.

D. For nongalvanized-steel railings, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves; however, galvanize anchors to be embedded in exterior concrete or masonry.

E. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning".

1. Exterior Railings: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
2. Railings Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
3. Other Railings: SSPC-SP 3, "Power Tool Cleaning."

F. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1, "Shop, Field, and Maintenance Painting of Steel," for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.

1. Shop prime uncoated railings with universal shop primer as indicated.
2. Do not apply primer to galvanized surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine plaster and gypsum board assemblies, where reinforced to receive anchors, to verify that locations of concealed reinforcements are clearly marked for Installer. Locate reinforcements and mark locations if not already done.

3.2 INSTALLATION, GENERAL

A. Fit exposed connections together to form tight, hairline joints.

B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.

1. Do not weld, cut, or abrade surfaces of railing components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
2. Set posts plumb within a tolerance of 1/16 inch in 3 feet (2 mm in 1 m).

3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet (6 mm in 3.5 m).

C. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1. Coat, with a heavy coat of bituminous paint, concealed surfaces of aluminum that are in contact with grout, concrete, masonry, wood, or dissimilar metals.

D. Adjust railings before anchoring to ensure matching alignment at abutting joints.

E. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.3 RAILING CONNECTIONS

A. Nonwelded Connections: Use mechanical or adhesive joints for permanently connecting railing components. Seal recessed holes of exposed locking screws using plastic cement filler colored to match finish of railings.

B. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.

3.4 ANCHORING POSTS

A. Use metal sleeves preset and anchored into concrete for installing posts. After posts are inserted into sleeves, fill annular space between post and sleeve with nonshrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.

B. Form or core-drill holes not less than 5 inches (125 mm) deep and 3/4 inch (20 mm) larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.

C. Cover anchorage joint with flange of same metal as post, welded to post after placing attached to post with set screws.

D. Leave anchorage joint exposed with 1/8-inch (3-mm) buildup, sloped away from post.

E. Anchor posts to metal surfaces with oval flanges, angle type, or floor type as required by conditions, connected to posts and to metal supporting members as follows:

1. For aluminum pipe railings, attach posts using fittings designed and engineered for this purpose.

2. For stainless-steel pipe railings, weld flanges to post and bolt to supporting surfaces.
3. For steel pipe railings, weld flanges to post and bolt to metal supporting surfaces.

F. Install removable railing sections, where indicated, in slip-fit metal sockets cast in concrete.

3.5 ATTACHING RAILINGS

A. Anchor railing ends at walls with round flanges anchored to wall construction and connected to railing ends using nonwelded connections.

B. Anchor railing ends to metal surfaces with flanges bolted to metal surfaces and connected to railing ends using nonwelded connections.

C. Attach railings to wall with wall brackets, except where end flanges are used. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.

D. Secure wall brackets and railing end flanges to building construction as follows:

1. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
2. For steel-framed partitions, use self-tapping screws fastened to steel framing or to concealed steel reinforcements.
3. For steel-framed partitions, use toggle bolts installed through flanges of steel framing or through concealed steel reinforcements.

3.6 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with SSPC-PA 1 requirements for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0-mil (0.05-mm) dry film thickness.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas, and repair galvanizing to comply with ASTM A 780/A 780M.

3.7 PROTECTION

A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

END OF SECTION

SECTION 074213
FORMED METAL WALL PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Wall Panels: Exposed fastener, lap seam metal wall panels including associated trim and flashings.

B. Related Sections:

1. Division 07 Section "Sheet Metal Flashing and Trim" for additional requirements for sheet metal flashing and trim.
2. Division 07 Section "Joint Sealants" for field-applied sealants not otherwise specified in this Section.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

B. Shop Drawings: Show fabrication and installation layouts of metal panels; details of edge conditions, side-seam and endlap joints, panel profiles, corners, anchorages, trim, flashings, closures, and accessories; and special details. Distinguish between factory and field-assembled work.

C. Samples for Initial Selection: For each type of metal panel indicated with factory-applied color finishes.

1. Include similar Samples of trim and accessories involving color selection.

D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:

1. Metal Wall Panels: 8 inch square sample for each color selected on same material of panels.

E. Qualification Data: For Installer.

F. Field quality-control reports.

G. Warranties: Samples of special warranties.

H. Maintenance Data: For metal panels to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by panel manufacturer.

B. Mockups At Both The Elevator Hoistway And Of The Machine Room And At The Existing Southern Metal Grandstand: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

1. Build mockups of typical area including trim, flashing, and accessories as directed by Architect.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Meet with Owner, Owner’s Project Inspector, Architect, metal panel Installer, metal panel manufacturer's representative, structural-support Installer, and installers whose work interfaces with or affects metal panels, including installers of accessories.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
5. Review loading limitations of supporting structure.
6. Review flashings, special details, drainage, penetrations, equipment curbs, and condition of other construction that affect metal panels.
7. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
8. Review temporary protection requirements for metal panel systems during and after installation.
9. Review procedures for repair of metal panels damaged after installation.

10. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, sheets, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Retain strippable protective covering on metal panels during installation.

1.7 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit metal panel work to be performed according to manufacturer's written instructions and warranty requirements.

1.8 COORDINATION

A. Coordinate metal panel installation with rain drainage work, flashing, trim, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.9 WARRANTY

A. Special Warranty, Materials and Workmanship, and Finishes: A single warranty, or warranty from a single entity, shall be provided for steel substrate material, Zincalume base, and factory finishing. Warranties shall apply to, but not be limited to, panels, flashing, and trim.

1. Special Warranty, Material and Workmanship: Manufacturer's standard form in which manufacturer agrees to repair or replace metal panel systems that fail in materials or workmanship within specified warranty period.

a. Failures include, but are not limited to, the following:

1) Structural failures including rupturing, cracking, or puncturing.
2) Deterioration of metals, metal finishes, and other materials beyond normal weathering.

b. Warranty Period: 2 years from date of Substantial Completion.

2. Special Warranty, Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period. Warranty shall include finishes for exposed fasteners.

    a. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

        1) Color fading more than 5 Hunter units when tested according to ASTM D 2244.
        2) Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
        3) Cracking, checking, peeling, or failure of paint to adhere to bare metal.

    b. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E 1592:

1. Wind Loads: As indicated on Drawings.
2. Other Design Loads: As indicated on Drawings.

B. Air Infiltration, Wall Panels: Air leakage through assembly of not more than 0.06 cfm/sq. ft. of area when tested according to ASTM E 283 at the following test-pressure difference:

1. Test-Pressure Difference: 1.57 lbf/sq. ft., positive pressure.

C. Water Penetration, Wall Panels: No uncontrolled water penetration when tested according to ASTM E 331 at the following test-pressure difference:

1. Test-Pressure Difference: 6.4 lbf/sq. ft., positive pressure.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

2.2 EXPOSED-FASTENER, LAP-SEAM METAL WALL PANELS

A. General: Provide factory-formed metal panels designed to be field assembled by lapping side edges of adjacent panels and mechanically attaching panels to supports using exposed fasteners in side laps. Include accessories required for weathertight installation.

B. Large Tapered-Rib Profile, Exposed Fastener Metal Panels: Structural metal panel consisting of formed metal sheet with trapezoidal major ribs with intermediate stiffening ribs symmetrically place between major ribs, installed by lapping edges of adjacent panels.

1. Basis of Design: MBCI, PBR Panel, www.mbic.com/pbr.html.
2. Coverage Width: 36 inches (914 mm).
3. Major Rib Spacing: 12 inches (305 mm) on center.
4. Rib Height: 1-1/4 inch (31.8 mm).
5. Nominal Coated Thickness:

    a. At elevator hoistway and machine room: 24 gage.
    b. At existing southern metal grandstands: 22 gage.

6. Panel Surface: Smooth
7. Exterior Finish:

    a. At elevator hoistway and machine room: Fluoropolymer two coat system.
    b. At existing southern metal grandstands: Unpainted exposed galvalume plus coating.

8. Color:

    a. At elevator hoistway and machine room: Customer blue color to match Press Box wall panel.
    b. At existing southern metal grandstands: Unpainted exposed galvalume plus coating.

2.3 MISCELLANEOUS MATERIALS

A. Miscellaneous Metal Subframing and Furring: ASTM C645, cold-formed, metallic-coated steel sheet, ASTM A653/A653M, G90 coating designation or ASTM A792/A792M, Class AZ50 aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.

B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fascia, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.

1. Closures: Provide closures fabricated of same metal as metal panels.

2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

C. Flashing and Trim: Flashing and trim formed from same material and thickness as panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, bases, drips, sills, jambs, corners, endwalls, framed openings, rakes, fascia, parapet caps, reveals, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.

D. Panel Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads.

1. Exposed Fasteners: Provide exposed fasteners by panel manufacturer with heads finished to match color of metal panels by means of plastic caps or factory-applied coating. Provide EPDM, PVC, or neoprene sealing washers.

E. Panel Sealants: Provide sealant type recommended by panel manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.

1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
2. Joint Sealant: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.

2.4 FABRICATION

A. Fabricate and finish metal panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes and as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.

B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

C. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a tight seal and prevent metal-to-metal contact, in a manner that will seal weathertight and minimize noise from movements within panel assembly.

D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
2. End Seams for Coil Coated Finished Material: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
3. End Seams for Field Finished Material: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
4. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.
5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
6. Fabricate cleats and attachment devices of size and metal thickness recommended by SMACNA's "Architectural Sheet Metal Manual" or by metal panel manufacturer for application, but not less than thickness of metal being secured.

2.5 FINISHES

A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are unacceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Steel Panels and Accessories:

1. Exposed Surfaces: Two-coat fluoropolymer AAMA 621 finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.

1. Examine wall framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by metal wall panel manufacturer.
2. Examine wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal wall panel manufacturer.

    a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before metal panel installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C754 and metal panel manufacturer's written recommendations.

3.3 METAL WALL PANEL INSTALLATION

A. General: Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated on Drawings. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Shim or otherwise plumb substrates receiving metal panels.
2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until weather barrier and flashings that will be concealed by metal wall panels are installed.
3. Install screw fasteners in predrilled holes.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Install flashing and trim as metal panel work proceeds.
6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
7. Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete and elsewhere as indicated or, if not indicated, as necessary for waterproofing.
8. Align bottom of metal wall panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
9. Provide weathertight escutcheons for pipe and conduit penetrating panels.

B. Fasteners: Use stainless-steel fasteners for surfaces exposed to the exterior; use galvanized steel fasteners for surfaces exposed to the interior.

C. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action as recommended by metal wall panel manufacturer.

D. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weathertight performance of metal wall panel assemblies. Provide types of gaskets, fillers, and sealants indicated or, if not indicated, types recommended by metal wall panel manufacturer.

E. Lap-Seam Metal Wall Panels: Fasten metal panels to supports with fasteners at each lapped joint at location and spacing recommended by manufacturer.

1. Lap ribbed or fluted sheets one full rib. Apply panels and associated items true to line for neat and weathertight enclosure.
2. Provide metal-backed washers under heads of exposed fasteners bearing on weather side of metal panels.
3. Locate and space exposed fasteners in uniform vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of washer.
4. Install screw fasteners with power tools having controlled torque adjusted to compress washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes.
5. Flash and seal panels with weather closures at perimeter of all openings.

F. Watertight Installation:

1. Apply a continuous ribbon of sealant or tape to seal lapped joints of metal panels, using sealant or tape as recommend by manufacturer on side laps of nesting-type panels; and elsewhere as needed to make panels watertight.
2. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
3. At panel splices, nest panels with minimum 6-inch end lap, sealed with sealant and fastened together by interlocking clamping plates.

3.4 ACCESSORY INSTALLATION

A. General: Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel system including trim, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal panel manufacturer; or, if not indicated, provide types recommended by metal panel manufacturer.

B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

1. Install exposed flashing and trim that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

3.5 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect completed metal wall panel installation, including accessories.

B. Remove and replace metal wall panels where tests and inspections indicate that they do not comply with specified requirements.

C. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.

D. Prepare test and inspection reports.

3.6 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

B. After metal panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

C. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

SECTION 076200
SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Manufactured Sheet Metal Flashing Products:

    a. Manufactured reglets and counter flashing.

2. Formed sheet metal fabrications:

    a. Flashing and trim.
    b. Copings.
    c. Miscellaneous sheet metal fabrications.
    d. Downspouts, gutters, and scupper boxes.

B. Related Sections include the following:

1. Division 07 Sections as applicable to metal roof and wall panels for sheet metal flashing and trim integral with metal roof and wall panel systems.
2. Division 07 Sections as applicable to roofing for sheet metal flashing and trim integral with roofing systems.
3. Division 07 Section "Joint Sealants" for field-applied sheet metal flashing and trim sealants.

1.3 COORDINATION

A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.

B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

1.4 SUBMITTALS

A. Product Data: For each type of manufactured product. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.

B. Shop Drawings: For fabricated sheet metal items. Show fabrication and installation layouts including plans, elevations, expansion-joint locations, and keyed details. Distinguish between shop and field-assembled work. Include the following:

1. Identification of material, thickness, weight, and finish for each item and location in Project.
2. Details for forming sheet metal flashing and trim, including profiles, shapes, seams, and dimensions.
3. Details for joining, supporting, and securing sheet metal flashing and trim, including layout of fasteners, cleats, clips, and other attachments. Include pattern of seams.
4. Details of termination points and assemblies, including fixed points.
5. Details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction.
6. Details of edge conditions, including eaves, ridges, valleys, rakes, crickets, and counterflashings as applicable.
7. Details of special conditions.
8. Details of connections to adjoining work.
9. Detail formed flashing and trim at a scale of not less than 3 inches per 12 inches.

C. Qualification Data: For fabricator.

D. Sample Warranty:

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: Entity that employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

1.6 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Installer, and installers whose work interfaces with or affects sheet metal flashing and trim.
2. Review construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review special roof details, roof drainage, roof-penetration flashing, equipment curbs, and condition of other construction that affect sheet metal flashing and trim.
4. Review requirements for insurance and certificates if applicable.
5. Review sheet metal flashing observation and repair procedures after flashing installation.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.

B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to the extent necessary for the period of sheet metal flashing and trim installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA’s “The Roofing and Waterproofing Manual” and SMACNA's "Architectural Sheet Metal Manual" requirements as applicable for dimensions and profiles shown unless more stringent requirements are indicated.

C. SPRI Wind Design Standard: Manufacture and install copings and roof edge flashings tested according to SPRI ES-1 and capable of resisting the following design pressures:

1. Horizontal Outward Pressure: 24 psf.
2. Vertical Upward Pressure: 75 psf.

D. Thermal Movements: Sheet metal flashing and trim shall allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of sheet metal and trim thermal movements.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 SHEET METALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying a strippable, temporary protective film before shipping.

B. Metallic-Coated Steel Sheet: Provide zinc-coated (galvanized) steel sheet according to ASTM A 653/A 653M, G90 coating designation or aluminum-zinc alloy-coated steel sheet according to ASTM A 792/A 792M, Class AZ50 coating designation, Grade 40.

1. Surface: Pre finished, smooth and flat.

2.3 UNDERLAYMENT MATERIALS

A. Polyethylene Sheet: 6-mil thick polyethylene sheet complying with ASTM D 4397.

B. Felt: ASTM D 226, Type II (No. 30), asphalt-saturated organic felt, nonperforated.

C. Self-Adhering, High-Temperature Sheet: Minimum 30 mils thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.

1. Thermal Stability: ASTM D 1970; stable after testing at 240 deg F.
2. Low-Temperature Flexibility: ASTM D 1970; passes after testing at minus 20 deg F.
3. Products: Subject to compliance with requirements, provide one of the following:

a. Carlisle Coatings & Waterproofing Inc.; CCW WIP 300HT.
b. Grace Construction Products, a unit of W. R. Grace & Co.; Ultra.
c. Henry Company; Blueskin PE200 HT.
d. Metal-Fab Manufacturing, LLC; MetShield.
e. Owens Corning; WeatherLock Metal High Temperature Underlayment.

2.4 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.

1. Self-drilling screws, gasketed, with hex-washer head.
2. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
3. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
4. Fasteners for Zinc-Coated (Galvanized) or Aluminum-Zinc Alloy-Coated Steel Sheet: Hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329 or Series 300 stainless steel.

C. Solder for Zinc-Coated (Galvanized) Steel: ASTM B 32, Grade Sn50, 50 percent tin and 50 percent lead or Grade Sn60, 60 percent tin and 40 percent lead.

D. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.

E. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane, polysulfide, or silicone polymer sealant; low modulus; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

F. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.

G. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.

H. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187.

I. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

2.5 MANUFACTURED SHEET METAL FLASHING AND TRIM

A. Reglets: Units of type, material, and profile indicated, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated with factory-mitered and welded corners and junctions.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Fry Reglet Corporation.
    b. Heckmann Building Products Inc.
    c. Hickman, W. P. Company.

2. Material: Galvanized steel, 0.0217 inch thick.
3. Surface-Mounted Type: Provide with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers and with channel for sealant at top edge.
4. Flexible Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where Drawings show reglet without metal counterflashing.
5. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing lower edge.

2.6 FABRICATION, GENERAL

A. General: Custom fabricate sheet metal flashing and trim as indicated on Drawings and to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, geometry, metal thickness, and other characteristics of item indicated. Fabricate items at the shop to greatest extent possible.

1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
2. Obtain field measurements for accurate fit before shop fabrication.
3. Form sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form hems.
4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces exposed to view.

B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

C. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant.

D. Expansion Provisions: Where lapped expansion provisions cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.

E. Fabricate cleats and attachment devices from same material as accessory being anchored and of sizes as recommended by SMACNA's "Architectural Sheet Metal Manual" for application, but not less than thickness of metal being secured.

F. Seams: Fabricate nonmoving seams with flat-lock seams and as follows:

1. Seams for Pre-Finished Metal: Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use. Rivet joints where necessary for strength.
2. Seams for Unfinished Sheet Steel: Tin edges to be seamed, form seams, and solder.
3. Seams for Unfinished Aluminum: Form seams and seal with epoxy seam sealer. Rivet joints where necessary for strength.

G. Do not use graphite pencils to mark metal surfaces.

H. Conceal fasteners and expansion provisions where possible on exposed-to-view sheet metal flashing and trim, unless otherwise indicated.

2.7 ROOF DRAINAGE SHEET METAL FABRICATIONS

A. Hanging Gutters: Fabricate to cross section indicated, complete with end pieces, outlet tubes, and other accessories as required. Fabricate in **[minimum 96-inch long] [continuous]** sections. Furnish flat-stock gutter spacers and gutter brackets fabricated from same metal as gutters, of size recommended by SMACNA but not less than twice the gutter thickness. Fabricate expansion joints, expansion-joint covers, gutter bead reinforcing bars, and gutter accessories from same metal as gutters.

1. Expansion Joints: Butt type with cover plate. Space expansion joints not more than 40 feet on center.
2. Accessories [**Wire ball downspout strainer**]
3. Gutters: Fabricate from (22 gage) thick galvanized steel.
4. Gutters: Fabricate from (22 gage) thick aluminum-zinc alloy-coated steel.

B. Downspouts: Fabricate downspouts of size and profile indicated on Drawings complete with mitered elbows. Furnish with metal hangers, from same material as downspouts, and anchors. Fabricate from same material and thickness as gutters.

C. Parapet Wall Scuppers: Fabricate scuppers of dimensions required with closure flange trim to exterior, 4-inch wide wall flanges to interior, and base extending 4 inches beyond cant or tapered strip into field of roof. Fabricate from (22 gage) thick galvanized steel.

D. Conductor Heads /Scupper Boxes: Fabricate conductor heads with flanged back and stiffened top edge and of dimensions and shape indicated complete with outlet tubes**,** Fabricate from (22 gage) thick galvanized steel.

2.8 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

A. Roof Edge Flashing and Fascia Caps: Fabricate in minimum 96-inch long, but not exceeding 10 foot long, sections. Furnish with 6-inch wide joint cover plates. Fabricate from 0.028 inch (24 gage) thick galvanized steel.

1. Joint Style: Lap, 4 inches wide.

B. Copings: Fabricate to cross section indicated in minimum 96-inch long, but not exceeding 10 foot long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and drill elongated holes for fasteners on interior leg. Miter corners, seal, and solder or weld watertight. Fabricate from 0.028 inch (24 gage) thick galvanized steel.

1. Joint Style: Butt, with 12-inch wide, concealed backup plate and 6-inch wide, exposed cover plates

C. Counterflashing: Fabricate from 0.028 inch (24 gage) thick galvanized steel.

D. Roof-Penetration Flashing: Fabricate from 0.028 inch (24 gage) thick galvanized steel.

E. Roof-Drain Flashing: Fabricate from zinc-tin alloy-coated stainless steel, 0.015 inch thick.

2.9 WALL SHEET METAL FABRICATIONS

A. Through-Wall Flashing: Fabricate continuous flashings in minimum 96-inch long, but not exceeding 12 foot long, sections, under copings, at shelf angles, and where indicated. Fabricate discontinuous lintel, sill, and similar flashings to extend 6 inches beyond each side of wall openings. Form with 2-inch high end dams. Fabricate from 0.028 inch (24 gage) thick galvanized steel.

B. Wall Expansion-Joint Cover: Fabricate from 0.028 inch (24 gage) thick galvanized steel.

2.10 MISCELLANEOUS SHEET METAL FABRICATIONS

A. Miscellaneous Sheet Metal Fabrications: Fabricate from 0.028 inch (24 gage) thick galvanized steel unless otherwise indicated.

2.11 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions and other conditions affecting performance of work.

1. Verify compliance with requirements for installation tolerances of substrates.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 UNDERLAYMENT INSTALLATION

A. Polyethylene Sheet: Install polyethylene sheet with adhesive for anchorage to minimize use of mechanical fasteners under sheet metal flashing and trim. Apply in shingle fashion to shed water, with lapped and taped joints of not less than 2 inches.

B. Felt Underlayment: Install felt underlayment with adhesive for temporary anchorage to minimize use of mechanical fasteners under sheet metal flashing and trim. Apply in shingle fashion to shed water, with lapped joints of not less than 2 inches.

C. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment wrinkle free. Apply primer if required by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer rather than nails for installing underlayment at low temperatures. Apply in shingle fashion to shed water, with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. Roll laps with roller. Cover underlayment within 14 days.

3.3 INSTALLATION, GENERAL

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

1. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
3. Space cleats not more than 12 inches apart. Anchor each cleat with two fasteners. Bend tabs over fasteners.
4. Install exposed sheet metal flashing and trim without excessive oil canning, buckling, and tool marks.
5. Install sealant tape where indicated.
6. Torch cutting of sheet metal flashing and trim is not permitted.
7. Do not use graphite pencils to mark metal surfaces.

B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by SMACNA.

1. Coat back side of uncoated aluminum sheet metal flashing and trim with bituminous coating where flashing and trim will contact wood, ferrous metal, or cementitious construction.
2. Underlayment: Where installing metal flashing directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip sheet or install a course of polyethylene sheet.

C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corners or intersections. Where lapped expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.

D. Fastener Sizes:

1. Wood Framing, Blocking, and Sheathing: Use fasteners of sizes that will penetrate [wood sheathing not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws.
2. Metal Framing, Backing, and Decking: Use fasteners of sizes that will penetrate metal framing, backing, and decking not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.

E. Seal joints as shown and as required for watertight construction.

1. Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1 inch into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is moderate, between 40 and 70 deg F, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F.
2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."

F. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets to be soldered to a width of 1-1/2 inches, except reduce pre-tinning where pre-tinned surface would show in completed Work.

1. Do not solder coil-coated steel and aluminum sheet.
2. Do not use torches for soldering. Heat surfaces to receive solder and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.

G. Rivets: Rivet joints in uncoated aluminum where indicated and where necessary for strength.

3.4 ROOF DRAINAGE SYSTEM INSTALLATION

A. General: Install sheet metal roof drainage items to produce complete roof drainage system according to SMACNA recommendations and as indicated. Coordinate installation of roof perimeter flashing with installation of roof drainage system.

B. Hanging Gutters: Join sections with riveted and soldered joints or with lapped joints sealed with elastomeric sealant. Provide for thermal expansion. Attach gutters at eave or fascia to firmly anchored gutter brackets or straps spaced not more than 36 inches apart. Provide end closures and seal watertight with sealant.

1. Fasten gutter spacers to front and back of gutter.
2. Loosely lock straps to front gutter bead and anchor to roof deck.
3. Anchor and loosely lock back edge of gutter to continuous eave or apron flashing.
4. Anchor back of gutter that extends onto roof deck with cleats spaced not more than 24 inches apart.

5. Install gutter with expansion joints at locations indicated but not exceeding 50 feet apart. Install expansion joint caps.

C. Downspouts: Join sections with 1-1/2-inch telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches on center in between.

1. Provide elbows at base of downspout to direct water away from building.

D. Parapet Scuppers: Install scuppers where indicated through parapet. Continuously support scupper, set to correct elevation, and seal flanges to interior wall face, over cants or tapered edge strips, and under roofing membrane.

1. Anchor scupper closure trim flange to exterior wall and seal or solder to scupper.
2. Loosely lock front edge of scupper with conductor head.
3. Seal or solder exterior wall scupper flanges into back of conductor head.

E. Conductor Heads/ Scupper Boxes: Anchor securely to wall with elevation of conductor head rim 1 inch below scupper discharge.

F. Expansion-Joint Covers: Install expansion-joint covers at locations and of configuration indicated. Lap joints a minimum of 4 inches (100 mm) in direction of water flow.

3.5 ROOF FLASHING INSTALLATION

A. General: Install sheet metal flashing and trim to comply with performance requirements, SMACNA's "Architectural Sheet Metal Manual," and NRCA’s Roofing and Waterproofing Manuals as applicable to project conditions Provide concealed fasteners where possible, set units true to line, and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

B. Roof Edge Flashing: Anchor to resist uplift and outward forces according to referenced requirements and as indicated. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate at **[staggered 3-inch centers.]**

C. Copings: Anchor to resist uplift and outward forces according to recommendations in SMACNA's "Architectural Sheet Metal Manual" and as indicated.

1. Interlock exterior bottom edge of coping with continuous cleat anchored to substrate at 16-inch centers.
2. Anchor interior leg of coping with washers and screw fasteners through slotted holes at 24-inch centers.

D. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending a minimum of 4 inches over base flashing. Install stainless-steel draw band and tighten.

E. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing 4 inches over base flashing. Lap counterflashing joints a minimum of 4 inches and bed with sealant. Secure in a waterproof manner by means of [**interlocking folded seam or blind rivets and sealant**].

F. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with [**elastomeric**] [**butyl**] sealant and clamp flashing to pipes that penetrate roof.

3.6 WALL FLASHING INSTALLATION

A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to SMACNA recommendations and as indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

B. Reglets and Counterflashing: Install in accordance with manufacturer's written installation instructions.

C. Openings Flashings in Frame Construction: Install continuous head, sill, jamb, and similar flashings to extend 4 inches beyond wall openings, unless shown otherwise on the drawings.

3.7 MISCELLANEOUS FLASHING INSTALLATION

A. Equipment Support Flashing: Coordinate installation of equipment support flashing with installation of roofing and equipment. Weld or seal flashing with elastomeric sealant to equipment support member.

3.8 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.9 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder and sealants.

C. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain in a clean condition during construction.

D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

SECTION 079200
JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Silicone joint sealants.
2. Urethane joint sealants.
3. Joint sealant Backings

1.3 QUALITY ASSURANCE

A. Installer Qualifications: An entity employing installers trained and experienced in installing joint sealants similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful performance.

B. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.

C. Product Testing: Test joint sealants using a qualified testing agency.

1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.

1.4 FIELD CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.5 WARRANTY

A. Special Installer's Warranty: Manufacturer's standard form in which Contractor and Installer agree to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special warranties specified in this article shall warrant that all exposed sealants will be guaranteed against any crazing developing on the surfaces of the material, any staining of adjacent surfaces by sealant or by primer (yellowing, etc.), chalking, or color changes on surface of cured sealant.

C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:

1. Movement of the structure caused by structural settlement or errors attributable to design or construction resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from natural causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. VOC Content: Sealants and primers applied at the Project site shall comply with VOC limits of authorities having jurisdiction; VOC limits, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24); and VOC limits of the California Green Building Standards Code (CGBSC), Section 5.504.4.1 and Table 504.4.2 as follows:

1. Architectural Sealants: 250 g/L.
2. Sealant Primers for Nonporous Substrates: 250 g/L.
3. Sealant Primers for Porous Substrates: 775 g/L.

C. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

D. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

E. Suitability for Contact with Food: Where sealants are used in areas of food preparation, use products that comply with 21 CFR 177.2600 and are USDA approved.

F. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 SILICONE JOINT SEALANTS

A. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 100/50, for Use NT.

1. Products: Subject to compliance with requirements, provide one of the following:

   a. Dow Corning Corporation; 790.
   b. GE Advanced Materials - Silicones; SilPruf LM SCS2700.
   c. Tremco Incorporated; Spectrem 1.

2. Joint Sealant Application: Exterior joints where one or both joint faces are masonry, stone, concrete or other porous materials.

B. Single-Component, Nonsag, Acid-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.

1. Products: Subject to compliance with requirements, provide one of the following:

   a. Dow Corning Corporation; 999-A.
   b. GE Advanced Materials - Silicones; Contractors SCS1000.
   c. Tremco Incorporated; Proglaze.

2. Joint Sealant Application: Exterior joints where both joint faces are metal, glass, plastic, or other non-porous material.

C. Mildew-Resistant, Single-Component, Acid-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.

1. Products: Subject to compliance with requirements, provide one of the following:

   a. Dow Corning Corporation; 786 Mildew Resistant.
   b. GE Advanced Materials - Silicones; Sanitary SCS1700.
   c. Tremco Incorporated; Tremsil 200 Sanitary.

2. Joint Sealant Application: Interior joints between plumbing fixtures and floor or wall surfaces of non-porous materials.

2.3 URETHANE JOINT SEALANTS

A. Single-Component, Nonsag, Urethane Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.

1. Products: Subject to compliance with requirements, provide one of the following:

   a. BASF Building Systems; Sonolastic NP1.
   b. Pecora Corporation; Dynatrol I-XL.
   c. Sika Corporation, Construction Products Division; Sikaflex - 1a.

2. Joint Sealant Application: Exterior joints of hollow metal frames, exterior joints in concrete and masonry walls, and interior and exterior joints requiring painting.

B. Single-Component, Pourable, Traffic-Grade, Urethane Joint Sealant: ASTM C 920, Type S, Grade P, Class 25, for Use T.

1. Products: Subject to compliance with requirements, provide one of the following:

   a. BASF Building Systems; Sonolastic SL 1.
   b. Pecora Corporation; Urexpan NR-201.
   c. Sika Corporation. Construction Products Division; Sikaflex - 1CSL.

2. Joint Sealant Application: Interior concrete slab floor joints and exterior paving joints.

2.4 JOINT SEALANT BACKING

A. General: Provide sealant backings of material that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) or Type B (bicellular material with a surface skin), as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.5 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove laitance and form-release agents from concrete.
2. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
3. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:

    a. Concrete.
    b. Masonry.
    c. Unglazed surfaces of ceramic tile.
    d. Exterior insulation and finish systems.

4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:

    a. Metal.
    b. Glass.
    c. Porcelain enamel.

d. Glazed surfaces of ceramic tile.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Etch concrete and masonry joint surfaces as recommended by manufacturer to remove excess alkalinity, unless sealant manufacturer's printed instructions indicate that alkalinity does not interfere with sealant bond and performance. Etch with 5% solution of muriatic acid; neutralize with diluted ammonia solution, rinse thoroughly with water and allow to dry before sealant installation.

D. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Do not allow sealants or compounds to overflow or spill onto adjoining surfaces, or to migrate into voids of adjoining surfaces.

C. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

D. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

E. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

F. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

G. Install sealant to depths as shown or, if not shown, as recommended by sealant manufacturer but within the following general limitations, measured at center (thin) section of bead:

1. For sidewalks, pavements and similar joints sealed with elastomeric sealants and subject to traffic and other abrasion and indentation exposures, fill joints to a depth equal to 75 percent of joint width, but neither more than 5/8 inch deep nor less than 3/8 inch deep.
2. For normal moving joints sealed with elastomeric sealants but not subject to traffic, fill joints to a depth equal to 50 percent of joint width, but neither more than 1/2 inch deep nor less than 1/4 inch deep.
3. For joints sealed with non-elastomeric sealants and caulking compounds, fill joints to a depth in range of 75 to 125 percent of joint width.

H. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.

3.4 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION

SECTION 087100
DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions of Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Commercial door hardware for swinging doors.

1.3 REFERENCES AND ABBREVIATIONS

A. Industry standard references and abbreviations shall be as follows:

1. ADA: Americans with Disabilities Act (ADA), 2010 ADA Standards for Accessible Design.
2. BHMA: Builders' Hardware Manufacturers Association.
3. CCR: California Code of Regulations, Title 24, Part 2, California Building Code.
4. DHI: Door and Hardware Institute.
5. NFPA: National Fire Protection Association.

    a. NFPA 80: Fire Doors and Windows.
    b. NFPA 101: Life Safety Code.
    c. NFPA 105: Smoke and Draft Control Door Assemblies
    d. NFPA 252: Fire Tests of Door Assemblies.

6. UL - Underwriters Laboratories.

    a. UL 10C: Positive Pressure Fire Tests of Door Assemblies.
    b. UL 305: Panic Hardware.

7. WHI: Warnock Hersey Incorporated.
8. SDI: Steel Door Institute.
9. NAAMM: National Association of Architectural Metal Manufacturers.

1.4 SUBSTITUTIONS

A. Substitutions: Substitutions will only be allowed by substitution requests submitted in accordance with Division 01 Section “Substitution Procedures” prior to the bid date.

1. In Part 2 Articles where manufacturers are listed for various product types and only one manufacturer is listed with no alternate manufacturers indicated, manufacturer listed is an established Owner standard and substitutions will not be allowed.

1.5 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Door Hardware Schedule: Prepared by or under the supervision of Installer, detailing fabrication and assembly of door hardware, as well as installation procedures and diagrams. Coordinate final door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in Project construction schedule. Organize schedule vertically into “Hardware Sets” with index of doors and headings, indicating complete designations of every item required for each door or opening. Include the following information:

1. Type, style, function, size and finish of each hardware item.
2. Name, part number and manufacturer of each item.
3. Fastenings and other pertinent information.
4. Location of hardware set coordinated with floor plans and door schedule.
5. Explanation of all abbreviations, symbols and codes contained in schedule.
6. Mounting locations for hardware.
7. Door and frame sizes and materials.
8. List of manufacturers used and their nearest representative with address and phone number.
9. Keying information.
10. Manufacturer’s catalog cut sheets.

C. Maintenance Data: For each type of door hardware to include in maintenance manuals. Include “as installed” final hardware and keying schedule.

D. As-Built Schedule: As-built/as-installed schedule with closeout documents, including keying schedule, wiring diagrams, manufacturers’ installation, adjustment and maintenance information, and supplier’s final inspection report.

E. Warranty: Special warranty specified in this Section.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in the installation of commercial door hardware with five years documented experience.

B. Supplier Qualifications: A recognized architectural door hardware supplier with warehousing facilities in the Project's vicinity that has a record of successful in-service performance for supplying door hardware that is similar in quantity, type, and quality to that specified for this Project, and who employs an experienced architectural hardware consultant (AHC) who is available to Owner, Architect, and Contractor, at reasonable times during the course of the Work, for consultation.

1. Architectural Hardware Consultant Qualifications: A person who is currently certified by DHI as an Architectural Hardware Consultant and who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project.

a. Architectural Hardware Consultant Responsibilities:

1) Detailing, scheduling and ordering of finish hardware.
2) Meeting with Owner to finalize keying requirements and to obtain final instructions in writing.
3) Stock parts for products supplied and be capable of repairing and replacing hardware items found defective within warranty periods.

C. Source Limitations: Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.

D. Exit Doors: Operable from inside with single motion without the use of a key or special knowledge or effort.

E. Keying Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Conference participants shall include Owner’s lock system representative, Supplier’s Architectural Hardware Consultant Contractor, and Architect. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system.

F. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Attendees shall include Owner, Contractor, Architect, Project Inspector, Installer, and Supplier’s Architectural Hardware Consultant. Review methods and procedures related to door hardware including, but not limited to, the following:

1. Hardware products and schedule.
2. Installation procedures and coordination required with related work.
3. Review Owner’s keying standards.

1.7 DELIVERY, STORAGE AND HANDLING

A. Coordinate delivery of packaged hardware items to the appropriate locations (shop or field) for installation.

B. Hardware items shall be individually packaged in manufacturers' original containers, complete with proper fasteners. Clearly mark packages on outside to indicate contents and locations in hardware schedule and in work.

C. Provide locked storage area for hardware, protect from moisture, sunlight, paint, and chemicals.

D. Inventory door hardware jointly with representatives of hardware supplier and hardware installer until each is satisfied that count is correct.

E. Deliver permanent keys and cores directly from lock manufacturer to Owner's designated representative by secured delivery.

1.8 COORDINATION

A. Templates: Distribute door hardware templates for doors, frames, and other work specified to be factory prepared for installing door hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

B. Where exact types of hardware specified are not adaptable to finished shape or size of members requiring hardware, provide suitable types having as nearly as practical the same operation and quality as type specified, subject to Architect's approval.

C. Review, compare, and coordinate scheduled hardware with doors, frames, and adjacent floor and wall conditions for non-compatible mounting and/or operating conditions; notify Architect in writing of any conflicts.

1.9 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

   a. Structural failures including excessive deflection, cracking, or breakage.
   b. Faulty operation of operators and door hardware.
   c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.

2. Warranty Period: Established from date of Substantial Completion as follows:

   a. Closers: Ten (10) years.
   b. Locksets: Three (3) years
   c. All other hardware: Two (2) years.

1.10 MAINTENANCE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

B. Maintenance Service: Beginning at Substantial Completion, provide six months' full maintenance by skilled employees of door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door hardware operation. Provide parts and supplies same as those used in the manufacture and installation of original products.

PART 2 - PRODUCTS

2.1 PERFORMANCE AND REGULATORY REQUIREMENTS

A. Regulatory Requirements: Comply with the 2010 ADA Standards for Accessible Design, ANSI A117.1, and the 2022 California Building Code.

1. Opening Hardware, Mounting Height and Operation: Operable parts of door hardware shall be 34 inches minimum and 44 inches above the floor. Hand activated door opening hardware shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist to operate; the force required to activate operable parts shall not exceed 5 lbs. Egress doors shall be readily openable from the egress side without the use of a key or special knowledge or effort. The unlatching of any door or leaf shall not require more than one operation (2022 CBC 11B-309.4 & 11B-404.2.7, 1010.1.9, 1010.1.9.5).
2. Closers, Opening Force: The opening force shall be the push/pull effort applied perpendicular to the face of the door at the operating hardware; other than required fire rated doors, the effort to operate doors shall not exceed 5 pounds; required fire rated doors may have the opening force increased to the minimum amount necessary to close and latch the door, but shall not exceed 15 pounds (2022 CBC 11B-404.2.9).
3. Closers, Closing Sweep Period: The closing sweep period for doors shall be such that from an open position of 90 degrees, the door will take at least 5 seconds to move to a position of 12 degrees from the latch (2022 CBC 11B-404.2.8.1).
4. Thresholds: The height differential between the tops of thresholds and adjacent floor or landing surfaces shall not be more than 1/2 inch; offsets exceeding 1/4 inch shall be beveled with a 2:1 (horizontal to vertical) maximum slope (2022 CBC 11B-404.2.5).
5. Smooth Door Surface: The bottom 10 inches of doors shall have a smooth, uninterrupted surface to allow the door to be opened by a wheel chair footrest without creating a trap or hazardous condition (2022 CBC 11B-404.2.10).

2.2 SCHEDULED DOOR HARDWARE

A. Basis of Design Products: Provide door hardware for each door to comply with requirements in this Section and door hardware sets indicated in Part 3 "Door Hardware Sets" Article. Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Subject to compliance with requirements, provide products indicated or comparable products by manufactures listed below:

HARDWARE TYPE	BASIS OF DESIGN MANUFACTURER	MANUFACTURERS OF COMPARABLE PRODUCTS
Butt Hinges	Ives	Hager, Stanley
Locksets, Latchsets, Cylinders, and key system	Schlage	
Closers	LCN	
Door Trim (Pulls, Plates, Bolts, Coordinators, Stops)	Trimco	Ives
Thresholds and Seals	Pemko	National Guard Products

2.3 DOOR HARDWARE PRODUCTS

A. General: Door hardware products shall comply with referenced Accessibility Requirements.

B. Butt Hinges: Full mortise, 3 or 5 knuckle ball bearing hinges with flat button tips, weight as indicated.

1. Size: As indicated in schedule, not less than 4.5 x 4.5 inches.
2. Material:

    a. Interior Fire Rated Openings: Steel with steel pin.
    b. Interior Non-Fire Rated Openings: Brass with stainless steel pin.
    c. Exterior Doors: Stainless steel with stainless steel pin, and with non-removable pins.

3. Quantity per Door Leaf:

    a. 2 hinges for doors with heights up to 60 inches.
    b. 3 hinges for doors with heights of 61 to 90 inches.
    c. 4 hinges for doors with heights of 91 to 120 inches.

C. Continuous Gear Hinges: Full mortise, heavy duty aluminum continuous gear hinge.

D. Lock and Latch Sets: Cylindrical or mortise latch/lock sets as scheduled with lever handled trim and as follows:

1. Mortise Locksets:

a. Chassis: Cold-rolled steel, handing field-changeable without disassembly.
b. Latchbolts: 3/4 inch throw, stainless steel anti-friction type.
c. Lever Trim: through-bolted, accessible design, cast lever or solid extruded bar type levers as scheduled. Filled hollow tube design unacceptable.

1) Spindles: Security design with independent breakaway. Breakage of outside lever does not allow access to inside lever's hubworks to gain wrongful entry.

d. Furnish solid cylinder collars with wave springs. Wall of collar to cover rim of mortise cylinder.
e. Strikes: 16 gage curved steel, bronze or brass with 1 inch deep box construction and lips of sufficient length to clear trim and protect clothing.
f. Certifications:

1) ANSI A156.13, 1994, Grade 1 Operational, Grade 1 Security.
2) ANSI/ASTM F476-84 Grade 31 UL listed.

2. Cylindrical Locksets: Extra Heavy Duty and as follows:

a. Chassis: Cylindrical design; corrosion-resistant plated cold-rolled steel, through-bolted.
b. Locking Spindle: Stainless steel, integrated spring and spindle design.
c. Latch Retractors: Forged steel; balance of inner parts corrosion-resistant plated steel or stainless steel.
d. Latchbolt: Solid steel.
e. Backset: 2-3/4 inches unless otherwise indicated.
f. Lever Trim: Accessible design, independent operation, spring-cage supported, minimum 2 inch clearance from lever mid-point to door face.
g. Strikes: 16 gage curved steel, bronze or brass with 1 inch deep box construction and lips of sufficient length to clear trim and protect clothing.
h. Certifications:

1) ANSI A156.2, 1994, Series 4000, Grade 1.
2) UL listed for A label and lesser class single doors up to 4ft x 8ft.

E. Exit Devices: Surface mounted rim type exit devices as scheduled.

1. Certifiable by independent testing laboratory that device has completed over 1,000,000 cycles and can still meet ANSI/BHMA A156.3 - 1994 standards.
2. Handing: Non-handed basic device design with center case interchangeable with all functions.
3. Fluid Damper Return: Devices shall have quiet return fluid dampeners.
4. Latchbolts: Latchbolts shall be deadlocking with ¾" throw and have a self-lubricating coating to reduce friction and wear.

5. Outside Trim: As scheduled; where operating levers are provided, provide manufacturer's standard "breakaway" feature for lever trim.
6. Strikes: All surface strikes shall be roller type and utilize a plate underneath to prevent movement.
7. Fasteners: Exit Devices to be sex-bolted through doors.
8. Glazing Bead Kits: Furnish glass bead kits where required for doors with glazing.
9. Removable Mullions: Provide keyed removable mullions where indicated for pairs of doors with rim style exit devices.

F. Surface Closers: Fully adjustable full rack-and-pinion type cylinder with cast iron body and non-ferrous cover, heat-treated pinion shaft, single piece forged piston, chrome-silicon steel spring, and as follows:

1. ISO 2000 certified; units stamped with date-of-manufacture code.
2. Certifiable by independent testing laboratory that device has completed over 10,000,000 cycles and can still meet ANSI/BHMA A156.4
3. Non-sized, non-handed, and fully adjustable with separate adjusting valves for closing speed, latching speed, and backcheck; and with a fourth valve for delayed action where scheduled.
4. Arms and Mounting: Provide type of arm required for closer to be located on non-public side of door, unless otherwise indicated:

    a. Regular Arm: Pull side, door mounted, for doors swinging into rooms.
    b. Parallel Arm: Push side, door mounted, for doors swinging out of rooms.
    c. Provide extra-duty arms (EDA) at exterior doors scheduled with parallel arm units.
    d. Supplemental Brackets: Coordinate closer mounting requirements with other hardware items and provide supplemental mounting brackets where required for a complete installation.

5. Fluid: Closers shall utilize a stable fluid withstanding a temperature range of 120 degrees F to -30 degrees F without requiring seasonal adjustment of closer speed to properly close the door. Fluid shall be non-flaming and shall not fuel door or floor covering fires.
6. Fasteners: Closers to be sex-bolted through doors.

G. Door Bolts: For pairs of doors utilizing cylindrical or mortise locksets; provide bolts as scheduled and as follows:

1. Automatic Flush Bolts: Provide automatic flush bolts at pairs of doors from occupiable spaces. Utilize top bolt only models for interior doors where applicable and as permitted by testing procedures.
2. Manual Flush bolts: Provide manual flush bolts only when permitted on storage or mechanical room openings as scheduled.
3. Dust Proof Strikes: Provide dust proof strikes at openings using bottom bolts.
4. Coordinators: Provide coordinators at openings using automatic flush bolts.

H. Stops, Holders, and Bumpers: Provide units as scheduled; all doors shall be provided with a stop or bumper; stops and bumpers shall be mounted within 8 inches of the outside (strike) edge of the door and shall be not more than 4 inches from walls.

1. Overhead Stops: Provide surface mounted overhead stops where floor or wall stops, or closers with stops cannot be utilized.
2. Flip down door mounted stops shall not be allowed.

I. Protection Plates: Kick, armor, or mop plates, 0.050 inch thick stainless steel with four edges beveled, 2 inches less than door width; kick plates to be 10 inches high, mop and armor plate heights shall be as indicated.

J. Lock Protectors: Fabricated from stainless steel with internally threaded fasteners for flat head machine screws through bolted to door; hex head or carriage bolt fasteners will be permitted.

K. Thresholds: Aluminum and as detailed or scheduled; provide at all exterior doors.

L. Door Bottoms: Provide sweep seals at out swinging exterior doors unless other types are scheduled.

M. Rain Drips: Provide rain drips at the heads of all exterior doors where there is not enough overhang to protect the opening.

N. Seals: Provide continuous weather-strip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated, scheduled, or required for smoke rated openings.

1. Intumescent Seals: Provide intumescent seals at fire rated openings where required by Code; comply with UL 10C.
2. Resilient Seal Material: Polyurethane, polypropylene, nylon brush, silicone rubber or solid high-grade neoprene as scheduled. Vinyl seal material shall not be acceptable.

O. Silencers: Furnish silencers for interior hollow metal frames, 3 for single doors, 2 for pairs of doors. Omit where sound or light seals occurs, or for fire-resistive-rated door assemblies.

2.4 KEYING

A. Existing System: Confirm lock cylinders and keying with Owner and provide system as directed by the Owner.

B. Key Blanks: Standard "6" pin bow key blank; tag to identify.

C. Supply keys and blanks as follows:

1. Supply 2 cut change keys for each different change key code.
2. Supply 1 uncut key blank for each change key code.
3. Supply 6 cut master keys for each different master key set.
4. Supply 3 uncut key blanks for each master key set.

2.5 FINISHES

A. Generally to be satin chromium US26D (626) unless otherwise noted.

B. Furnish push plates, pull plates and kick or armor plates in satin stainless steel US32D (630) unless otherwise noted.

C. Door closers shall be powder-coated to match other hardware, unless otherwise noted.

D. Aluminum items to be finished clear anodized aluminum US28 (628), except thresholds which can be furnished as standard mill finish.

2.6 FASTENERS

A. Screws for strikes, face plates and similar items shall be flat head, countersunk type, provide machine screws for metal and standard wood screws for wood.

B. Screws for butt hinges shall be flathead, countersunk, full-thread type.

C. Fastening of closer bases or closer shoes to doors shall be by means of sex bolts and spray painted to match closer finish.

D. Provide stainless steel expansion anchors for attaching hardware items to concrete or masonry.

E. All exposed fasteners shall have a phillips head.

F. Finish of exposed screws to match surface finish of hardware or other adjacent work.

G. All exit devices and lock protectors shall be fastened to the door by the means of sex bolts or through bolts.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Verify that doors and frames are square and plumb and ready to receive work and dimensions are as instructed by the manufacturer.

C. Proceed with installation only after unsatisfactory conditions have been corrected. Beginning of installation means acceptance of existing conditions.

3.2 INSTALLATION

A. Install each door hardware item to comply with manufacturer's written instructions and requirements of the Door Hardware Institute. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 09 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

B. Use the templates provided by hardware item manufacturer.

C. Mounting heights for hardware shall be as recommended by the Door and Hardware Institute.

1. Operating hardware shall be located between 34 and 44 inches above the floor to comply with requirements of the 2016 California Building Code and the 2010 ADA Standards for Accessible Design.

D. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

E. Drill and countersink units that are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

F. Thresholds: Set thresholds for exterior doors in a full bed of butyl-rubber sealant, secure to concrete substrates with 1/4 inch diameter stainless steel flat head sleeve anchors equally spaced not more than 12 inches on center and not more than 3 inches from ends.

G. If hand of door is changed during construction, make necessary changes in hardware at no additional cost to the owner.

3.3 FIELD QUALITY CONTROL

A. Supplier’s Architectural Hardware Consultant (AHC), with installer present, shall inspect and test installed door hardware operation with the building’s climate control system at rest and in full operation. Architectural Hardware Consultant shall certify that hardware has been furnished and installed in accordance with the Contract Documents, manufacturer's instructions, as specified herein, and that door hardware operates as intended.

3.4 ADJUSTING

A. General: Adjust door latches and closers with heating and ventilating equipment fans in operation in order to compensate for room-to-room or room-to-exterior air pressure differences.

B. Door Closers: Adjust door closers so that the effort to operate doors shall not exceed 5 pounds for non-fire rated doors and 15 pounds maximum for fire rated doors; the force shall be the push/pull effort applied at right angles to hinged doors. (2016 CBC 11B-404.2.9). Adjust the sweep period for closers so that from an open position of 90 degrees, the door will take at least 5 seconds to move to a position of 12 degrees from the latch (2016 CBC 11B-404.2.8.1).

C. Initial Adjustment: Approximately 2 weeks prior to completion or occupancy, adjust and check each operating item of door hardware and each door to ensure proper operation and function of every unit. Replace units that cannot be adjusted to operate freely and smoothly as intended for the application installed.

D. Occupancy Adjustment and Service: Approximately six months after the completion of the project, the Contractor, accompanied by the Architectural Hardware Consultant, shall return to the project and re-adjust every item of hardware to restore proper functions of doors and hardware. Consult with and instruct Owner's personnel in recommended additions to the maintenance procedures. Replace hardware items which have deteriorated or failed due to faulty design, materials or installation of hardware units. Prepare a written report of current and predictable problems (of substantial nature) in the performance of the hardware.

3.5 CLEANING AND PROTECTION

A. Clean adjacent surface soiled by hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.6 DEMONSTRATION AND TRAINING

A. Instruct Owner's Personnel to adjust, operate, and maintain door hardware and door hardware finishes during the final adjustment of hardware.

3.7 DOOR HARDWARE SETS

A. The items listed in the following Hardware Sets shall conform to the requirements of the foregoing specifications.

B. The Door Schedule on the Drawings indicates hardware sets for each door.

C. Abbreviations for Manufacturers:

MK = McKinney
RF = Rixson
NO = Norton
PEM = Pemko
SCH = Schlage Lock Company
RO = Rockwood
NGP = National Guard Products
GL = Glynn-Johnson

D. Door Hardware Sets:

HW SET 01: Pre-Engineered Elevator Machine Room
Each door to have the following:

3	Ea	Hinge (heavy weight)	T4a3386 x NRP 4.5 x 4.5	US32D	MK
1	Ea	Cylindrical Lock	ND94 R SPA 1246	626	SCH
1	Ea	Door Closer	PR7500	689	NO
1	Ea	Kick Plate	K1062 10X1.5LDW BEV CSK	US32D	RO
1	Ea	Overhead Stop	704S	626	GL
1	Set	Threshold	2 A FHSL14 as detailed		PEM
1	Ea	Rain Guard	346C		PEM
1	Ea	Gasketing	S44GR		PEM
1	Ea	Sweep	315CN		PEM
1	Ea	Latch Protector	325	US26D	RO

HW SET 02: Press Box
Press Box to Exterior, outswing
Each door to have the following:

See Press Box Drawings. (Hardware to be provided by Press Box Contractor.)

*Confirm lockset and core format with Owner

HW SET: 03

1	EA	PANIC HARDWARE	AXCD99DT X 990DT-PA-WH	626	VON
1	EA	PANIC HARDWARE	AXCD99NL X 990NL-PA-WH	626	VON
1	EA	RIM CYLINDER	20-057-ICX (SPECIFY A, B OR C)	626	SCH
2	EA	MORTISE CYLINDER	20-061 ICX XQ11-948 (DOGGING)	626	SCH
3	EA	CORE ONLY	23-030	626	SCH

BALANCE OF HARDWARE BY GATE MANUFACTURER

ALL HARDWARE BY GATE MANUFACTURER

END OF SECTION

SECTION 099100
PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specifications Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes surface preparation and field painting, staining or refinishing of the following:

1. Exposed exterior items and surfaces.
2. Designated exposed interior items and surfaces.
3. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.

B. Related Sections include but are not limited to the following:

1. Division 05 Sections for shop priming of metal substrates with primers specified in this Section.
2. Division 08 Sections for shop priming of metal doors and frames with primers specified in this Section.
3. Division 26 through 28 Sections for additional requirements for painting of electrical items.

1.3 SPECIAL REQUIREMENTS

A. Unauthorized removal or disconnecting of electrical fixtures, switches, or control devices may result in additional electrical work to comply with energy regulations of governing agencies. Contractor shall be financially responsible with no additional cost to the Owner for additional electrical work due to unauthorized removal or disconnecting of electrical fixtures, swithes, or control devices.

1.4 DEFINITIONS

A. Definitions of gloss levels below are from "MPI Architectural Painting Specification Manual" (hereafter, "MPI Manual").

1. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.

2. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
3. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
4. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.
5. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.
6. Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.5 SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

B. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for each type of finish-coat material indicated.

C. Samples for Verification: For each type of paint system and each color and gloss of topcoat.

1. Submit Samples on 8 inch square samples of actual material to be painted or stained. For masonry surfaces, include a mortar joint.
2. Step coats on Samples to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

D. Product List: For each product indicated, include the following:

1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
2. VOC content.

1.6 QUALITY ASSURANCE

A. Applicator Qualifications: Engage an experienced applicator who has completed painting system applications similar in material and extent to that indicated for this Project with a record of successful in-service performance.

B. Source Limitations: Obtain primers, and undercoat materials for each coating system from the same manufacturer as the finish coats or as recommended by the manufacturer.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the Project Site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following information:

1. Product name or title of material.
2. Product description (generic classification or binder type).
3. Manufacturer's stock number and date of manufacture.

4. Contents by volume, for pigment and vehicle constituents.
5. Thinning instructions.
6. Application instructions.
7. Color name and number.
8. VOC content.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F.

1. Maintain containers used in storage in a clean condition, free of foreign materials and residue.
2. Keep storage area neat and orderly. Remove oily rags and waste daily.
3. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.8 PROJECT CONDITIONS

A. Apply paints only when the temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

C. Protection:

1. Cover or otherwise protect finished work of other trades, work not to be painted concurrently, landscaping, and adjacent property from damage.
2. When not in use, store paints in designated areas. Keep containers closed. At end of day's work, remove empty containers, paint soaked rags, and debris. Vent fumes. Take precautions to prevent fire.

D. Sequencing, Scheduling:

1. Coordinate removal and replacement of hardware, electrical fixtures and trim, and related work of other Sections.
2. Stain, prime, back paint, and pre-finish items before installation as required.

E. Cleaning and Disposal:

1. Do not use Project plumbing fixtures or piping systems for:

a. Cleaning painting equipment and utensils.
b. Disposal of waste from cleaning or disposal of paints.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Scheduled Paint Systems: Provide paint systems as scheduled on the Drawings and listed in Part 3 Article “Paint Systems” to comply with requirements in this Section.

1. Named Manufacturers' Products: Manufacturer and product designations indicated in the scheduled paint systems are for the purpose of establishing minimum requirements; unless otherwise indicated, paint products are based on products manufactured by the following:

a. Sherwin Williams Paints.

1) Subject to compliance with requirements, provide the named products or comparable products by one of the following:

a) Dunn-Edwards Paints.
b) Glidden Professional.
c) PPG Paints.
d) Tnemec.

2.2 PAINT MATERIALS, GENERAL

A. Material Compatibility: Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.

1. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified. Paint-material containers not displaying manufacturer's product identification will not be acceptable.

C. VOC Content: Paints and coatings applied at the Project site shall comply with VOC limits of authorities having jurisdiction; VOC limits, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24); and VOC limits of the California Green Building Standards Code (CGBSC), Section 5.504.4.3 and Table 504.4.3 as follows:

1. Flat Paints and Coatings: VOC not more than 50 g/L.
2. Nonflat Paints and Coatings: VOC not more than 100 g/L.
3. Nonflat High-Gloss Paints and Coatings: VOC not more than 150 g/L.
4. Dry-Fog Coatings: VOC not more than 150 g/L.
5. Floor Coatings: VOC not more than 100 g/L.
6. Pretreatment Wash Primers: VOC not more than 420 g/L.
7. Primers, Sealers, and Undercoaters: VOC not more than 100 g/L.

8. Rust Preventative Coatings Applied to Ferrous Metals: VOC not more than 250 g/L.
9. Shellacs, Clear: VOC not more than 730 g/L.
10. Shellacs, Pigmented: VOC not more than 550 g/L.
11. Stains: VOC not more than 250 g/L.
12. Clear Wood Finishes, Varnishes: VOC not more than 275 g/L.
13. Clear Wood Finishes, Lacquers: VOC not more than 275 g/L.
14. Zinc-Rich Industrial Maintenance Primers: VOC not more than 340 g/L.

D. Low-Emitting Materials: Interior paints and coatings shall comply with the testing and product requirements of the California Department of Public Health' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

E. Colors: Provide color selections to match existing adjacent surfaces unless otherwise approved by the Architect. Colors shall be factory mixed and match approved samples.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Concrete: 12 percent.
2. Masonry (Clay and CMU): 12 percent.
3. Wood: 15 percent.
4. Portland Cement Plaster: 12 percent.
5. Gypsum Board: 12 percent.

C. Portland Cement Plaster Substrates: Verify that plaster is fully cured.

D. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.

E. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

F. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

G. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

1. Notify the Architect of anticipated problems using the materials specified over substrates primed by others.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. Electrical Items: Remove only switch and outlet cover plates and similar items that do not require disconnecting wiring. Do not disconnect wiring or remove electrical fixtures, swithes, or control devices unless otherwise indicated on Electrical Drawings.

a. Contractor may be subject to additional costs due to unautorized removal of items, refer to Part 1 Article “Special Requierments.”

2. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
2. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

D. Concrete and Masonry Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Perform appropriate tests to determine alkalinity and moisture content of surfaces; testing shall be performed or witnessed by a certified representative of the paint manufacturer. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.

1. Cracks and defects at concrete and masonry surfaces shall be filled with cement grout; match surface texture.

E. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:

1. Steel Structures Painting Council's (SSPC), SSPC-SP 3, "Power Tool Cleaning."

2. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."

F. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

G. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

H. Aluminum Substrates: Remove loose surface oxidation.

I. Wood Substrates: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required.

1. Scrape and clean knots. Before applying primer, apply coat of knot sealer recommended in writing by topcoat manufacturer for exterior use in paint system indicated.
2. Sand surfaces that will be exposed to view, and dust off.
3. Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and backsides of wood.

    a. When transparent finish is required, backprime with spar varnish.
    b. Backprime paneling on interior partitions where masonry, plaster, or other wet wall construction occurs on backside.
    c. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.

4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

J. Plastic Trim Fabrication Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

K. Materials Preparation: Mix and prepare paint materials according to manufacturer's written instructions.

1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
3. Use only thinners approved by paint manufacturer and only within recommended limits.

L. Drywall: Fill any cracks or defects with drywall joint compound. Sand any rough spots smooth. Do not raise nap on paper covering.

3.3 APPLICATION

A. General: Apply paints according to manufacturer's written instructions and recommendations in "MPI Manual." Paint/stain exposed surfaces, except where schedules indicate that a surface or material is not to be painted/stained or is to remain natural. If schedules do not specifically mention an item or surface to be painted, paint the item or surface the same as similar adjacent materials or surfaces whether or not schedules indicate colors. If the schedules do not indicate color or finish, the Architect will select from standard colors and finishes available.

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
4. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
5. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
6. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
7. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
8. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convector covers, covers for finned-tube radiation, grilles, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.
9. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.

    a. Prefinished items include the following factory-finished components:

        1) Aluminum storefronts and entrances.
        2) Anodized aluminum gypsum board and plaster trim.
        3) Acoustical wall panels.
        4) Toilet and urinal partitions.
        5) Stainless steel items.
        6) Finished mechanical and electrical equipment.
        7) Light fixtures.
        8) Distribution cabinets.

    b. Labels: Do not paint over Underwriters Laboratories (UL), Factory Mutual (FM), or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

B. Tint undercoats same color as topcoat, but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

E. Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

1. The number of coats and the film thickness required are the same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
2. Omit primer on metal surfaces that have been shop primed and touchup painted.
3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.

F. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions and recommendations in "MPI Manual."

1. Brushes: Use brushes best suited for the type of material applied. Use brush of appropriate size for the surface or item being painted.
2. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.
3. Spray Equipment: Use airless spray equipment with orifice size as recommended by the manufacturer for the material and texture required.

G. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.

H. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn through or other defects due to insufficient sealing.

I. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

J. Stipple Enamel Finish: Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling, such as laps, irregularity in texture, skid marks, or other surface imperfections.

K. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

L. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work: Paint the following work where exposed to view at applications indicated:

1. Occupied areas:

a. Equipment, including panelboards.
b. Uninsulated metal piping.
c. Uninsulated plastic piping.
d. Pipe hangers and supports.
e. Metal conduit.
f. Plastic conduit.
g. Ducts, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
h. Interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
i. Other items as directed by Architect.

2. Exterior locations:

a. Equipment, including panelboards.
b. Uninsulated metal piping.
c. Uninsulated plastic piping.
d. Pipe hangers and supports.
e. Metal conduit.
f. Plastic conduit.

3.4 CLEANING AND PROTECTION

A. At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from the site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.

E. Correction of Defective Work:

1. Repair abraded, damaged or incomplete paint surfaces by methods acceptable to Architect. Spot repairs to be well-blended into adjacent work. For large repairs, re-coat entire plane or building element in which damaged area occurs.
2. Defaced surfaces of work not to be painted shall be cleaned and their original finish restored.

F. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.5 PAINT SYSTEMS

(Interior and exterior paint systems are on the following pages)

A. Interior Paint Systems:

SURFACE		PAINT SYSTEM		COATS	MANUFACTURER'S DESIGNATION	
(1)	Gypsum Drywall	P12.B	Semi-Gloss Latex	First Coat Second Coat Third Coat	B28 B31 B31	ProMar 200 Zero Primer ProMar 200 Zero SG ProMar 200 Zero SG
(2)	Wood	P13.A	Semi-Gloss Latex	First Coat Second Coat Third Coat	B28 B31 B31	Premium Wall & Wood ProMar 200 Zero SG ProMar 200 Zero SG
(3)	Ferrous Metal	P14.A	Flat Latex	First Coat Second Coat Third Coat	B66310 A74 A74	ProCryl Metal Primer Solo Flat SoloFlat
(4)	Galvanized Metal/ Aluminum	P15.A	Flat Latex	First Coat Second Coat Third Coat	B66310 A74 A74	ProCryl Metal Primer Solo Flat Solo Flat
(5)	Plaster, Concrete, Brick	P16.A	Flat Latex	First Coat Second Coat Third Coat	LX02 B30 B30	Loxon ProMar 200 Zero Flat ProMar 200 ZeroFlat
		P16.B	Semi-Gloss Latex	First Coat Second Coat Third Coat	LX02 B31 B31	Loxon ProMar 200 Zero SG ProMar 200 Zero SG
		P16.C	Eggshell Latex	First Coat Second Coat Third Coat	LX02 B20 B20	Loxon ProMar 200 Zero EG ProMar 200 Zero EG

B. Exterior Paint Systems:

SURFACE		PAINT SYSTEM		COATS	MANUFACTURER'S DESIGNATION	
(1)	Plaster, Concrete	P50.A	Flat, Acrylic	First Coat Second Coat Third Coat	LX02 A6 A6	Loxon A-100 A-100
(2)	Wood	P53.A	Flat Acrylic Emulsion	First Coat Second Coat Third Coat	B42 A6 A6	Exterior Wood Primer A-100 A-100
(3)	Ferrous Metal	P55.E	Semi-Gloss High Perform.	First Coat Second Coat Third Coat	B66-310 B66 B66	ProCryl Primer Pro Ind DTM Acrylic Pro Ind DTM Acrylic
(4)	Galv. Metal & Aluminum	P56.C	Semi-Gloss Enamel Acrylic	First Coat Second Coat Third Coat	B66-310 B53 B53	ProCryl Primer PI WB Urethan Enamel PI WB Urethan Enamel

END OF SECTION

SECTION 101400
SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Exterior panel signs for room or space identification and identification signage.

B. Related Sections:

1. Division 01 Section “Temporary Facilities and Controls” for Project identification signage.
2. Division 10 Section “Dimensional Sign Characters” for individual character signs.

1.3 SUBMITTALS

A. Product Data: Manufacturer’s product data including construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of sign.

B. Shop Drawings: Include plans, elevations, and full-scale template layout of characters and other components. Show mounting methods, grounds, mounting heights, layout, spacing, reinforcement, accessories, and installation details.

1. Provide message list for each sign, including large-scale details of wording, lettering, and Braille layout.

C. Schedule: Schedule indicating sign locations, type, other pertinent data, and referenced to rooms or doors with the same referencing as used on the Drawings.

D. Braille Text Certification: Provide certification from the sign manufacturer that Braille text complies with regulatory requirements indicated (Contracted (Grade 2) per 2022 CBC Section 11B-703.3).

E. Braille Text Translation Confirmation: Provide confirmation of Braille text translations.

F. Samples for Initial Selection: Manufacturer's color charts consisting of actual units or sections of units showing the full range of colors available for each type of sign and material indicated.

G. Samples for Verification: Provide 2 full size sample signs showing edge and corner condition, border, text characters of height specified, Braille text, and selected colors, of each type of sign indicated. Sample will be retained by Architect.

H. Maintenance Data: For signage cleaning and maintenance requirements to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain each sign type through one source from a single manufacturer.

B. Inspection: Tactile signs shall be field inspected for compliance after installation (11B-703.1.1.2)

1.5 FIELD CONDITIONS

A. Field Measurements: Where sizes of signs are determined by dimensions of surfaces on which they are installed, verify dimensions by field measurement before fabrication and indicate measurements on Shop Drawings.

1.6 WARRANTY

A. Warranty: Manufacturer's standard form in which manufacturer agrees to replace signs that fail in materials or workmanship within specified warranty period.

1. Damage from deliberate destruction and vandalism is excluded.
2. Warranty Period for Interior Signs: Building lifetime.
3. Warranty Period for Exterior Signs: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 REGULATORY REQUIREMENTS FOR SIGNS

A. Regulatory Requirements: Comply with requirements of the following:

1. 2010 ADA Standards for Accessible Design.
2. ANSI A117.1.
3. 2022 California Building Code, Sections 11B-216 and 11B-703.

B. Room or Space Identification Signs, CBC 11B-216.2: Where provided, signs identifying permanent rooms and spaces shall comply with CBC Sections 11B-703.1, 11B-703.2, 11B-703.3, and 11B-703.5. Where pictograms are provided as designations of permanent rooms and spaces, the pictograms shall comply with CBC Section 11B-703.6 and shall have text descriptors complying with CBC Sections 11B-703.2 and 11B-703.4. Exterior signs that are not located at the door to the space they serve shall not be required to comply with CBC Section 11B-703.2.

C. Directional and Informational Signs, CBC 11B-216.3: Signs that provide direction to or information about spaces and facilities shall comply with CBC Section 11B-703.5.

D. Means of Egress Signs, CBC 11B-216.4: Tactile exit signs required by CBC Section 1013.4 at doors to exit passageways, exit discharge, and exit stairways shall comply with CBC Sections 11B-703.1, 11B-703.2, 11B-703.3, and 11B-703.5.

E. Inspection, CBC 11B-703.1.1.2: Signs and identification devices shall be field inspected after installation and approved by the enforcing agency prior to the issuance of a final certificate of occupancy per Chapter 1, Division II, Section 111, or final approval where no certificate of occupancy is issued. The inspection shall include, but not be limited to, verification that Braille dots and cells are properly spaced and the size, proportion and type of raised characters are in compliance with the regulations of CBC Section 11B-703.

F. Raised Characters, CBC 11B-703.2: Raised characters shall comply with CBC Section 11B-703.2 and shall be duplicated in Braille complying with CBC Section 11B-703.3. Raised characters shall be installed in accordance with CBC 11B-703.4.

1. Depth: Raised characters shall be raised 1/32-inch minimum above their background.
2. Case: Raised characters shall be upper case.
3. Style: Raised characters shall be sans serif. Characters shall not be italic, oblique, script, highly decorative, or other unusual forms.
4. Character Proportions: Raised characters (Text) on signs 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 letter “I”.
5. Character Height: Character height measured vertically from the baseline of the character shall be of 5/8-inch minimum and 2-inches maximum based on the height of the uppercase letter “I”.
6. Stroke Thickness: Stroke thickness of the uppercase letter “I” shall be 15 percent maximum of the height of the character.

7. Character Spacing: Character spacing shall be measured between the two closest points of adjacent raised characters within a message, excluding word spaces. Where characters have rectangular cross sections, spacing between individual raised characters shall be 1/8 inch minimum and 4 times the raised character stroke width maximum. Where characters have other cross sections, spacing between individual raised characters shall be 1/16 inch minimum and 4 times the raised character stroke width maximum at the base of the cross sections, and 1/8 inch minimum and 4 times the raised character ma stroke width maximum at the top of the cross sections. Characters shall be separated from raised borders and decorative elements 3/8 inch minimum.
8. Line Spacing: Spacing between the baselines of separate lines of raised characters within a message shall be 135 percent minimum and 170 percent maximum of the raised character height.
9. Format: Text shall be in a horizontal format.

G. Braille, CBC 11B-703.3: Braille shall be contracted (Grade 2) and shall comply with CBC Sections 11B-703.3 and 11B-703.4.

1. Dimensions and Capitalization (CBC 11B-703.3.1): 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. Braille dot physical requirements per CBC Table 11B-703.3.1 as follows:

    a. Dot Base Diameter: 0.059 inch minimum, 0.063 inch maximum.
    b. Distance between Two Dots in the same Cell: 0.100 inches.
    c. Distance between corresponding Dots in adjacent Cells: 0.300 inches.
    d. Dot Height: 0.025 inch minimum, 0.037 inch maximum.
    e. Distance between corresponding Dots from one cell directly below: 0.395 inch minimum, 0.400 inch maximum.

2. Position (CBC 11B-703.3.2): 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 text. Braille shall be separated 3/8 inch minimum and 1/2 inch maximum from any other tactile characters and 3/8 inch minimum and from raised borders and decorative elements.

H. Sign Installation Height and Location, CBC 11B-703.4:

1. Height Above Ground or Floor: 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 form the baseline of the highest line of raised characters.

2. Location: Where a tactile sign is provided at a door, the sign shall be located alongside the door at the latch side. Where a tactile sign is provided at double doors with one active leaf, the sign shall be located on the inactive leaf. Where a tactile sign is provided at double doors with two active leafs, the sign shall be located to the right of the right hand door. 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. Signs containing tactile characters shall be located so that a clear floor space of 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 degree open position. Where provided, signs identifying permanent rooms and spaces shall be located at the entrance to, and outside of the room or space. Where provided, signs identifying exits shall be located at the exit door when approached in the direction of egress travel.

I. Visual Characters, CBC 11B-703.5: Visual characters are considered to be intended for signage that is not accompanied by Braille. (The requirements of this Section do not apply to room identification signage).

1. Finish and Contrast: 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. Requirement applies to all signs.
2. Case: Characters shall be upper case or lower case or a combination of both.
3. Style: Characters shall be conventional in style. Characters shall not be italic, oblique, script, highly decorative, or other unusual forms.
4. 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 letter “I”.
5. Character Height: Minimum character height shall be based on the uppercase letter “I” and shall comply with CBC Table 11B-703.5.5 as follows:

    a. Height of baseline of character from finish floor:

        1) 40 inches minimum to less than or equal to 70 inches with a horizontal viewing distance of:

            a) Less than 72 inches: Minimum character height to be 5/8 inch.
            b) 72 inches and Greater: Minimum character height to be 5/8 inch plus 1/8 inch for each foot of viewing distance beyond 72 inches.

        2) Greater than 70 inches to less than or equal to 120 inches with a horizontal viewing distance of:

            a) Less than 180 inches: Minimum character height to be 2 inches.
            b) 180 inches and Greater: Minimum character height to be 2 inches plus 1/8 inch for each foot of viewing distance beyond 180 inches.

3) Greater than 120 inches, with a horizontal viewing distance of:

a) Less than 21 feet: Minimum character height to be 3 inches.
b) 21 feet and Greater: Minimum character height to be 3 inches plus 1/8 inch for each foot of viewing distance beyond 21 feet.

6. Height from Finish Floor or Ground: Visual characters shall be 40 inches minimum above the finish floor or ground measured to the baseline of the character.
7. Stroke Thickness: Stroke thickness of the uppercase letter “I” shall be 10 percent minimum and 20 percent maximum of the height of the character.
8. Character Spacing: Character spacing shall be measured between the two closest points of adjacent raised characters, excluding word spaces. Spaces between individual characters shall be 10 percent minimum and 35 percent maximum of character height.
9. Line Spacing: Spacing between the baselines of separate lines of characters within a message shall be 135 percent minimum and 170 percent maximum of the raised character height.
10. Format: Text shall be in a horizontal format.

J. Pictograms, CBC 11B-703.6:

1. Pictogram Field: Pictograms shall have a field height of 6 inches minimum. Characters and Braille shall not be located in the pictogram field.
2. 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.
3. Text Descriptors: Pictograms shall have text descriptors located directly below the pictogram field. Text descriptors shall comply with CBC Sections 11B-703.2, 11B-703.3, and 11B-703.4.

K. Symbols of Accessibility, CBC 11B-703.7:

1. Finish and Contrast: Symbols of accessibility and their background shall have a non-glare finish. Symbols of accessibility shall contrast with their background with either a light symbol on a dark background or a dark symbol on a light background.
2. Symbols:

a. International Symbol of Accessibility (ISA): ISA symbols shall comply with CBC Figure 11B-703.7.2.1. The symbol shall consist of a white figure on a blue background. The blue shall be Color No. 15090 in Federal Standard 595B.
b. International Symbol of Teletypewriter (TTY): The International Symbol of Teletypewriter (TTY) shall comply with CBC Figure 11B-703.7.2.2.
c. Volume Control Telephones: Telephones with a volume control shall be identified with a pictogram complying with CBC Figure 11B-703.7.2.3.
d. Assistive Listening Systems: Assistive listening systems shall be identified by the International Symbol of Access for Hearing loss complying with CBC Figure 11B-703.7.2.4.

e. Toilet and Bathing Facilities, Geometric Symbols: Doorways leading to toilet and bathing rooms shall be identified by a geometric symbol complying with CBC Section 11B-703.7.2.6. The symbol shall be mounted at 58 inches minimum and 60 inches maximum above the finish floor measured from the centerline of the symbol. Where a door is provided, the symbol shall be mounted within 1 inch of the vertical centerline of the door.

1) Men's Toilet and Bathing Facilities: Men's toilet and bathing facilities shall be identified by an equilateral triangle, 1/4 inch thick, with edges 12 inches long and a vertex pointing upward. The triangle symbol shall contrast with the door, either light on dark background or dark on a light background.
2) Women's Toilet and Bathing Facilities: Women's toilet and bathing facilities shall be identified by a circle, 1/4 inch thick and 12 inches in diameter. The circle symbol shall contrast with the door, either light on dark background or dark on a light background.
3) Unisex Toilet and Bathing Facilities: Unisex toilet and bathing facilities shall be identified by a circle, 1/4 inch thick and 12 inches in diameter with a 1/4 inch thick triangle with a vertex pointing upward superimposed on the circle and within the 12 inch diameter. The triangle symbol shall contrast with the circle symbol, either light on dark background or dark on a light background, the circle symbol shall contrast with the door, either light on dark background or dark on a light background.
4) Edges and Corners: Edges of geometric symbols shall be rounded, chamfered, or eased. Corners of geometric symbols shall have a minimum radius of 1/8 inch.

2.2 MANUFACTURERS

A. Manufacturers, Basis-of-Design Products: In other Articles where named manufacturer's products are indicated, Drawings and Specifications are based on products manufactured by:

1. Best Sign Systems Inc.

a. Subject to compliance with requirements, provide the product indicated or a comparable products by one of the following:

1) ASI-Modulex, Inc.
2) Gemini Incorporated.

2.3 PANEL SIGNS

A. General: Provide smooth panel sign surfaces constructed to remain flat under installed conditions within tolerance of plus or minus 1/16 inch measured diagonally from corner to corner complying with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.

B. Design Requirements: Panel signs shall comply with Part 2 Article “Regulatory Requirements for Signs.”

C. Scheduled Signs: Provide signs as indicated on Drawings and as scheduled in Part 3 Article “Sign Schedule.”

D. Interior Panel Signs: Basis of Design: Best Sign Systems, Inc., HC 300 Series signs complying with the following requirements:

1. Material: Best Sign Systems Inc., MP Plastic, phenolic-backed melamine plastic laminate faced sheet, 0.25-inch thick.
2. Material: Best Sign Systems Inc., fiberglass Sheet, 0.25-inch thick.
3. Edge Condition: Beveled.
4. Corner Condition: Rounded to radius of 1/2 inch.
5. Border: 3/8-inch wide.
6. Text Font: Standard Medium.
7. Text Height: As indicated on Drawings.
8. Mounting: Unframed, wall mounted.
9. Color: As selected by Architect from manufacturer's full range, text and border shall contrast with background.

E. Exterior Panel Signs: Basis of Design: Best Sign Systems, Inc., HC 300 Series signs complying with the following requirements:

1. Material: Fiberglass Sheet, 0.25-inch thick.
2. Edge Condition: Beveled.
3. Corner Condition: Rounded to radius of 1/2 inch.
4. Border: 3/8-inch wide.
5. Text Font: Standard Medium
6. Text Height: As indicated on Drawings.
7. Mounting: Unframed, wall mounted.
8. Color: As selected by Architect from manufacturer's full range, text and border shall contrast with background.

2.4 ACCESSORIES

A. Mechanical Fasteners: Use tamper resistant fasteners fabricated from materials that are not corrosive to sign material and mounting surface.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Locate signs and accessories where indicated, using mounting methods of types described and in compliance with manufacturer's written instructions.

1. Install signs level, plumb, and at heights indicated on Drawings, with sign surfaces free from distortion and other defects in appearance.
2. Install signs at locations and heights required by regulatory requirements and as indicated on the Drawings and in this Specification section.

B. Wall-Mounted Panel Signs: Attach panel signs to wall surfaces using methods indicated below:

1. Mechanical Fasteners: Use non-removable mechanical fasteners placed through predrilled holes. Attach signs with fasteners and anchors suitable for secure attachment to substrate as recommended in writing by sign manufacturer.

3.3 CLEANING AND PROTECTION

A. After installation, clean soiled sign surfaces according to manufacturer's written instructions. Protect signs from damage until acceptance by Owner.

B. Clean per manufacturer’s recommendation prior to final inspection.

3.4 SIGN SCHEDULE

A. Tactile Exit Signs: Provide tactile exit signs at locations indicated on Drawings, as required to comply with regulatory requirements, and as follows:

1. Exterior Doors: Each grade level exterior exit door from a room or space having an illuminated exit sign shall be identified by a tactile exit sign with the word “EXIT”.

B. Toilet Room Identification Signs: Signage shall consist of door mounted geometric symbols and wall mounted identification signs to comply with regulatory requirements and as indicated on the Drawings.

C. Exterior Room/Space Identification Signs: Provide exterior identification signage at exterior public access doors to each usable or occupied space of the building.

1. Text Content:

a. Text to identify the following building/ Press Box areas:

1) VISITING TEAM
2) HOME TEAM
3) LIVE STREAM / STATISTICIANS
4) MEDIA / ANNOUNCER
5) GAME MANAGEMENT / FILM

b. Verify installation locations prior to signage installation.

2. Text Height: As indicated on Drawings and in compliance with referenced CBC and ADA requirements.
3. Sign Size: 8”x10”

D. Exterior Directional Sign: Provide exterior directional signage at the designated location on the drawings.

1. Text Content: Text content shall include the following text and directional arrows:

a. WOMENS RESTROOM
b. MENS RESTROOM
c. CONCESSION STAND
d. EXIT

2. Text Height: 2” and in compliance with referenced CBC and ADA requirements.
3. Sign Size: 36”W x 18”H

E. Exterior International Symbol of Accessibility (ISA) Signs: Provide ISA signage at exterior public access entrances to each building.

1. Signs shall include an international symbol of accessibility with a field of not less than 6 inches.

END OF SECTION

SECTION 101419
DIMENSIONAL CHARACTER SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes formed plastic (non-illuminated) and LIT acrylic dimensional sign characters.

1.3 SUBMITTALS

A. Product Data: Manufacturer’s product data including construction details, material descriptions, dimensions of individual components and profiles, finishes, and full range of manufacturers standard colors for each type of sign.

B. Shop Drawings: Include plans, elevations, and large-scale layout of characters and other components. Show mounting methods, layout, spacing, reinforcement, accessories, and installation details.

C. Samples for Verification: Dimensional characters, one (1) full-size sample of each type of dimensional character for material, finish, color, size, and mounting indicated.

D. Maintenance Data: For signage cleaning and maintenance requirements to include in maintenance manuals.

1.4 FIELD CONDITIONS

A. Field Measurements: Where sizes of signs are determined by dimensions of surfaces on which they are installed, verify dimensions by field measurement before fabrication and indicate measurements on Shop Drawings.

1.5 COORDINATION

A. Coordinate location of backing for dimensional character anchorage with wall framing.

PART 2 - PRODUCTS

2.1 DIMENSIONAL CHARACTERS

A. Source Limitations: Obtain characters from a single source from a single manufacturer.

B. Cast Characters: Cast characters with smooth uniform faces, sharp corners, and precisely formed lines and profiles. Comply with the following requirements.

1. Manufacturer: Subject to compliance with requirements, provide products manufactured by one of the following:
    a. Gemini Incorporated.
    b. Or approved equal.
2. Sign Type: Formed Plastic (non-illuminated)
    a. Location: At face of Press Box.
    b. Character Material: Formed plastic.
    c. Font: Custom font per District's standards.
    d. Depth (flat face styles): 1.5"
    e. Size/ Height: 2'-6" high.
    f. Color/ Finish: Pigmented
    g. Mounting: Threaded stud with sleeve spacer if required for the substrate.
3. Sign Type: LIT Acrylic, Face & Halo LIT with vinyl.
    a. Location: At Elevator Tower, two (2) locations.
    b. Character Material: Acrylic
    c. Font: Custom font per District standards.
    d. Depth: 1.5"
    e. Size/ Height: 2'-6" high
    f. Finishes: Painted
    g. LED Colors: White 6500K
    h. Mounting: Threaded stud with sleeve spacer if required for the substrate.
4. Character Material: Cast Aluminum, ASTM B 26/B 26M, of alloy and temper recommended by sign manufacturer for casting process used and for use and finish indicated.
5. Character Height: 2'-6" high x appropriate letter width.
6. Thickness: Manufacturer's standard for size of character.
7. Finish: Clear anodized.
8. Typeface: As selected by Owner from manufacturer's standard font styles.
9. Text/Message: As indicated on Drawings.
10. Mounting: Concealed studs, lugs cast into back of characters and tapped to receive threaded mounting studs.

2.2 ACCESSORIES

A. Fastening Hardware: Manufacturer's standard as required for secure anchorage of characters, noncorrosive and compatible with each material joined.

B. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

2.3 FABRICATION

A. General: Provide manufacturer's standard cast characters as follows:

1. Fabricate castings free of warp, cracks, blowholes, pits, scale, sand holes, and other defects that impair appearance or strength. Grind, wire brush, sandblast, and buff castings to remove seams, gate marks, casting flash, and other casting marks before finishing.
2. Provide cast characters with rabbets, lugs, and tabs necessary to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners.

B. Brackets: Fabricate brackets, fittings, and hardware for bracket-mounted signs to suit sign construction and mounting conditions indicated. Modify manufacturer's standard brackets as required.

1. Aluminum Brackets: Factory finish brackets with baked-enamel or powder-coat finish to match character finish unless otherwise indicated.
2. Stainless-Steel Brackets: Factory finish to match character finish unless otherwise indicated.

2.4 FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Directional Finishes: Run grain with long dimension of each piece and perpendicular to long dimension of finished trim or border surface unless otherwise indicated.

D. Organic, Anodic, and Chemically Produced Finishes: Apply to formed metal after fabrication but before applying contrasting polished finishes on raised features unless otherwise indicated.

E. Clear Anodic Finish: AAMA 611, Class I, 0.018 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.

B. Verify that character support surfaces are within tolerances to accommodate characters without gaps or irregularities between backs of characters and support surfaces unless otherwise indicated.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Locate characters where indicated on Drawings, install characters using mounting methods indicated and according to manufacturer's written instructions.

1. Install characters level, plumb, true to line, and at locations and heights indicated, with character surfaces free of distortion and other defects in appearance.
2. Before installation, verify that wall surfaces are clean and free of materials or debris that would impair installation.
3. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

B. Provide paper template showing proper character layout spacing and connection points for installation.

C. Projecting Stud Mounting: Using a template, drill holes in substrate aligning with studs on back of corresponding character. Remove loose debris from hole and substrate surface.

1. Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place spacers on studs, place sign in position, and push until spacers are pinched between sign and substrate, embedding the stud ends in holes. Temporarily support sign in position until adhesive fully sets.

3.3 CLEANING AND PROTECTION

A. Remove and replace damaged or deformed characters that do not comply with specified requirements. Replace characters with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.

B. Remove temporary protective coverings and strippable films as signs are installed.

C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION

SECTION 131601
ASSOCIATED SITE WORK FOR: PREFABRICATED STRUCTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General Conditions and Division 01 specification sections apply to work of this Section.

1. Division 01 Section ‘Summary of Work’
2. Division 03 Section ‘Cast-In-place Concrete’
3. Appendix A: Geotechnical Investigative Report

1.2 SUMMARY

A. Requirements and Qualifications for the coordination and construction of associated site work improvements for Prefabricated Elevator and Machine Room.

1. Extent of associated site work and Prefabricated Elevator and Machine Room is shown on drawings and specified herein.

1.3 DEFINITIONS

A. Owner: Yosemite Community College District

B. Architect: The entity contracted with the Owner to provide the design and specifications of the Prefabricated Elevator and Machine Room and Press Box as well as design of the low voltage, fire alarm and data systems serving both.

C. Site Work Contractor: The entity contracted with the Owner to coordinate and construct the following:

1. Work included in Section 011100 “Summary of Work”.
2. Associated Site work for the installation of the Prefabricated Elevator and Machine Room, including but not limited to the following:

a. Utilities Services:

1) Water
2) Sewer
3) Electrical

b. Low voltage:

1) Fire alarm devices
2) Data devices

3) Cabling

c. Foundation system:

1) Preparation of prefinished elevator, recessed hoist way walls and slab and machine room pad.

a) Over excavation
b) Fill compaction
c) Finish grading

2) Excavation of prefinished elevator's recessed hoist way and machine room footings
3) Granular/sand base
4) Vapor Barrier
5) Treatment and soil
6) Removal and disposal of excavated soil material from footing and hoist way excavations.
7) Steel reinforcement
8) Installation of prefabricated elevator anchor embedment plates.
9) Cast-in-place concrete

D. Prefabricated elevator and machine room (Phoenix Modular Elevator – PME): The entity contracted with the Owner to provide the final structural design and calculations for the prefabricated elevator and machine room as well as factory manufacturer of the elevator.

1. Installation of the prefabricated elevator and machine room are to be included in the Site Work Contractors' scope of work.

E. Prefabricated Press Box Contractor (Southern Bleacher Company): The entity contracted with the Owner to provide final structural design of the prefabricated Press Box structure, covered filming flatforms, stairs, and guardrails/handrails as well as factory-manufacture of the Press Box and installation on Owner's site.

1.4 QUALITY ASSURANCE

A. Qualifications: Construction entity shall have successfully completed at least five installations of similar size and complexity within the past five years. Employees shall be skilled and qualified for the work which they perform. There shall be one competent and fully experienced person designated as the responsible person in charge of all associated construction work and shall be on-site at all times as work is performed.

B. Prefabricated Elevator Manufacturer (Phoenix Modular Elevator) and Press Box Manufacturer (Southern Bleacher Company) shall be an entity who is regularly engaged with determining the accuracy and completeness of type and quality required for this Project.

C. Prior to the pour of the cast-in-place concrete slabs on grade, verification and coordination with the Prefabricated Elevator Manufacturer (Phoenix Modular Elevator) shall occur to ensure that the associated site work and anchor embedment plates are acceptable for receiving the fabricated elevator and machine room.

D. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

E. Testing and Inspecting: Comply with California Building Code and Division of the State Architect testing and inspecting requirements for associated on-site work. Owner shall engage and pay for inspecting and testing entities. Retesting of Work that does not meet project requirements shall be paid for by the Owner and deducted from the contract sum.

F. Coordination: Refer to Division 01 sections for requirements on coordination of elevator and machine room work with site improvements by Site Work Contractor.

1.5 WARRANTY

A. Site Work Contractor unconditionally guarantees that work will be done in accordance with requirements of contract and remain free of defects in workmanship. Site work Contractor agrees to repair or replace any and all work that may prove to be not in accordance with requirements or contract or that may be defective in workmanship or material within guarantee period, without any expense whatsoever to the district, ordinary wear and tear and abuse or neglect accepted.

B. Site Work Contractor agrees that within fourteen (14) calendar days after being notified in writing by the Owner or the Prefabricated Elevator Contractor or the Press Box Contractor of any work requiring repair or replacement under warranty, they will commence and prosecute with due diligence all work necessary to fulfill terms of this warranty, and to complete the work within a reasonable period of time.

1.6 PERFORMANCE REQUIREMENTS

A. Governing Codes: All work and materials shall comply with the requirements of California Code of Regulations Title 24, 2016 Editions (including supplements) of Parts 1-6, Part 11 – California Green Building Standards Code (CGBSC), regulations of the State Fire Marshal, and any other applicable state or local laws, ordinances and regulations (as required for permanent construction).

B. Prefabricated Modular Structures:

1. Extent of associated site work and Prefabricated Elevator foundation system is shown on drawings.

1.7 See DIVISION 26 – ELECTRICAL

1.8 DIVISION 31 – EARTHWORK (See Drawings)

A. Site Clearing: Site clearing will be performed by the Site Work Contractor.

B. Earthwork:

1. Earthwork, General: Earthwork shall comply with requirements and recommendations in Geotechnical Investigative Report included in the appendix of the project manual. A representative from the Owner's Geotechnical testing agency shall be present during earthwork operations.

a. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
b. Excavate/over-excavate, fill, and compact soil in accordance with Geotechnical Investigative Report and as directed by Owner's Geotechnical Engineer.
c. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

PART 2 - EXECUTION

2.1 COORDINATION AND EXAMINATION

A. It is the Site Work Contractor's responsibility to make all necessary prior arrangements with the Owner's authorized representative for access to building site and removal of obstructions, if necessary.

B. Notify Architect, Owner and Owners Prefabricated Elevator Contractor of the time frame and schedule for the construction, associated site work and foundation system verification, and completion of the concrete slab of Prefabricated Elevator hoist way.

C. Report any unacceptable conditions to the Architect. Do not schedule delivery of any building modules until unacceptable conditions have been corrected.

D. Coordinate and cooperate with the Prefabricated Elevator Contractor and Press Box Contractor to prevent conflicts between the separate portions of work.

E. Contractor shall provide pad certification test to confirm slab flatness and levelness.

2.2 PROTECTION

A. Protect Owner's property, facilities and utilities from damage during transportation and erection of building modules. Repair or replace any damage to satisfaction of Owner.

2.3 INSTALLATION AT SITE

A. Site Construction: Once the concrete slab on grade and foundations have been constructed, all modules called for at that site shall be scheduled for delivery and erection in one continuous time frame.

B. Construction Progress: The Site Work Contractor shall furnish materials, articles and equipment in ample quantities and at such times as to assure uninterrupted progress of the work. Failure to provide adequate working force, or material of proper quality, or failure in any other respect to prosecute the work with diligence and force specified herein are grounds for declaring a default on the contract.

C. Site Work Contractor shall ensure that the foundation and recessed hoist way for the Prefabricated Elevator Structure is plumb, level and square; straight and true to line with foundation.

D. Site Security: Security of the buildings against vandalism is the sole responsibility of the Site Work Contractor until completion and structures have been accepted by the Owner.

E. On-Site Inspection: Coordinate and Schedule inspections of work on-site by DSA as required by that agency. Submit copies of inspection reports to Architect and Owner.

2.4 CLEAN UP AND ADJUSTING

A. The adjacent site and the structures shall be cleaned and made ready for occupancy prior to acceptance by the Owners.

B. Test and adjust controls and operating functions. Repair or replace any damaged or malfunctioning fire alarm and data devices, equipment or controls.

2.5 UTILITY HOOK-UPS

A. Utility Connections: Final utility connections are by the Site Work Contractor. All utility connection points shall be located per the approved drawings to accommodate hook-ups provided at the site. Unless otherwise indicated on drawings, stub utility connections 8 inches stubbed up from building concrete slab at designated locations and terminate with appropriate temporary closures.

2.6 OWNER INSTRUCTION AND DOCUMENTATION

A. Provide Owner with final certificate of occupancy from authorities having jurisdiction.

END OF SECTION

SECTION 131613
PREFABRICATED PRESS BOX

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General Conditions and Division 01 specification sections apply to work of this Section.

1.2 SUMMARY

A. Section includes prefabricated press box. The prefabricated press box shall be erected at the designated site within the State of California, complete and ready for use by Owner. All costs for regulatory approvals, including governing agency delegated design submittal, transportation to and installation at the site are to be included in the Bid Amount.

1. Extent of Prefabricated Press Box is shown on drawings and specified herein.

1.3 DEFINITIONS

A. Site Contractor: The entity contracted with the Owner to construct the site improvements including the press box foundation and slab, site utilities and installation of the low voltage, fire alarm and data devices and cabling for modular buildings and press box.

B. Press Box Contractor: The entity contracted to provide final structural design of the prefabricated press box as well as factory-manufacture the buildings and install them on Owner’s site.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for prefabricated press box.

B. Delegated-Design Submittal/Governing Agency Approval: Project is under the jurisdiction of the California Division of the State Architect (DSA), Press Box Contractor shall submit a delegated design submittal which must be approved by DSA prior to the start of construction.

1. The bid documents include a DSA approved Press box. Should the contractor delegate the design to another manufacturer, DSA approval will be required.

a. Delegated Design Submittal shall be acceptable to the Architect and shall comply with all applicable the provisions of the California Code of Regulations.
b. Press Box Contractor shall bear all costs for production of drawings and associated structural calculations.
c. Submittal shall include necessary drawings, plans, elevations, sections, details of press box, fabrication and installation requirements, anchorage details, and structural calculations prepared, stamped, and signed by a structural engineer licensed in the State of California. The Press Box Contractor shall be responsible for the design and engineering calculations, the drawings, and for responding to and resolving any comments or issues generated by DSA.
d. The Press Box Contractor shall submit a complete Delegated Design Submittal to the Architect within 4 weeks after receiving a Notice to Proceed.
e. The Delegated Design Submittal shall be submitted to the Architect, and the Architect will transmit the submittal to the Division of the State Architect.
f. Press Box Contractor shall make all revisions and corrections to documents and resubmit as required in order to obtain DSA approval.
g. Press Box Contractor's structural engineer shall accompany Architect for final DSA review and approval stamping at designated office of DSA.

C. Division of the State Architect Approved Drawings: Drawings and calculations prepared under the responsibility of the Bleacher Contractor bearing an original stamp of approval from DSA shall be submitted to the Architect and they shall become the Architect's property.

D. Division of the State Architect Forms:

1. Form DSA 1-DEL, Delegation of Responsibility.
2. Form DSA 6-AE, Architect/Engineer Verified Report.
3. Form DSA 6-C, Contractor Verified Report.

E. Qualification Data: For the following:

1. Professional engineer responsible for preparing delegated design submittal.
2. Installer.

F. Mill Certificates: Signed by manufacturers, certifying that products furnished comply with requirements.

G. Welding Certificates.

H. Certified mill test reports for structural steel, including chemical and physical properties.

I. Source quality control reports.

J. Product Liability: Certify liability insurance coverage for the life of the product.

1.5 QUALITY ASSURANCE

A. Governing Codes: All work and materials shall comply with the requirements of California Code of Regulations Title 24, 2016 Editions (including supplements) of Parts 1-6, Part 11 - California Green Building Standards Code (CGBSC), regulations of the State Fire Marshal, and any other applicable state or local laws, ordinances and regulations (as required for permanent construction).

B. Engineer Qualifications: Press Box plans and structural calculations shall be stamped by a structural engineer registered in the State of California, or as otherwise required by governing agency.

C. Installer Qualifications: The legal entity that manufactures the press box structure shall also be the installer; no subcontracting of final installation allowed.

D. The Architect's decisions regarding design aesthetics shall be binding on the Press Box Contractor.

E. Factory Inspection: Inspection of in-plant work or an approved quality control program conducted by an independent agency shall be provided as required by DSA and other agencies having jurisdiction.

F. Press Box Structure Identification: On each building module, affix a permanent metal tag, 3 inches x 1.5 inches minimum size, with the following information:

1. Manufacturer's Name.
2. Manufacturer's Address.
3. DSA Application Number.
4. Design Roof Loads.
5. Design Wind Load.

1.6 COORDINATION

A. Coordination: Refer to Division 1 sections for requirements on coordination of Press Box Structure work with site improvements by Site Contractor.

1.7 WARRANTY

A. Press Box Contractor unconditionally guarantees that work will be done in accordance with requirements of contract and remain free of defects in workmanship and materials for a period of one (1) year from date of acceptance. Press Box Contractor agrees to repair or replace any and all work that may prove to be not in accordance with requirements or contract or that may be defective in workmanship or material within guarantee period, without any expense whatsoever to the Owner, ordinary wear and tear and abuse or neglect excepted.

B. Press Box Contractor agrees that within fourteen (14) calendar days after being notified in writing by the Owner of any work requiring repair or replacement under warranty, they will commence and prosecute with due diligence all work necessary to

fulfill terms of this warranty, and to complete the work within a reasonable period of time.

1.8 DESIGN REQUIREMENTS

A. Building Type:

1. Extent of work is shown on drawings.
2. Prefabricated press box shall consist of all new materials, including roof, walls, floor, windows, cabinetry, finishes, lighting, and electrical services.
3. Components must conform to architectural design appearance shown on plans and requirements specified hereinafter.
4. Provide drawings and calculations acceptable to the Architect, meeting the provisions of the California Code of Regulations. Press Box Contractor shall bear all costs for production of drawings and associated structural calculations. Contractor shall make all revisions and corrections to those documents required by DSA, and shall resubmit as required to obtain approvals.
5. Press Box Contractor will deliver to Architect all original reproducible approved drawings and calculations. Original drawings cited here (as submitted by Press Box Contractor) shall be the original drawings, bearing the original DSA stamp of approval.
6. Prefabricated press box shall be designed and constructed to comply with requirements of the 2016 California Energy Code.

    a. Final HVAC system design and construction shall be the responsibility of the Site work Contractor.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Performance: Press box structure shall withstand the following loads and stresses within limits and under conditions indicated according to ASCE/SEI 7:

1. Wind Load: Exterior walls shall be designed to withstand wind loads perpendicular to wall plane equivalent to “Exposure C, 115 mph”. This requirement applies to all exterior walls of building section even though configuration of building may be such that some walls are not exposed to wind.
2. Roof Live Load: Design live load of 100 psf (Roof to be designed as a platform). All roofs shall be designed as diaphragms for resisting applied horizontal loads. Building roof shall be sloped for drainage as indicated on plans. Roof framing shall be designed to withstand wind loads equivalent to “Exposure C; 115 mph”.
3. Design each member to withstand stresses resulting from combinations of loads that produce maximum percentage of actual to allowable stress in that member.

B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

C. Energy Performance Requirements:

1. Building Envelope: Press box structure shall be designed and constructed to comply with the applicable prescriptive design requirements of the 2016 California Energy Code.
2. Lighting: Press box structure shall be designed and constructed to comply with the applicable prescriptive design requirements of the 2016 California Energy Code and the 2016 California Electrical Code.

D. Weathertightness: Press box shall be designed and fabricated to be weathertight.

E. Disabled Access: Floor surfaces, doors, counter tops, lighting switches, power outlets, and similar features used by occupants or affecting use shall comply with the accessibility requirements of the 2016 California Building Code.

2.2 FABRICATED PRESS BOXES

A. General: Fabricate press boxes from an integrated set of mutually dependent components to form a completed assembly, ready for installation on Project site.

B. Structural Framework: Manufacturer's standard fabricated from structural steel or mechanical tubing members. Connect framework by welding. Steel materials to comply with the following:

1. W-Shapes: ASTM A992
2. Plate, Bar, Channels and Angles: ASTM A36.
3. Cold-Formed Hollow Structural Sections: ASTM A500, Grade B, structural tubing.
4. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade B
5. Sheet Steel: ASTM A-570 (Grade 33 or 40).

C. Base/Floor Assembly:

1. Sub-Floor Framing: Steel framing members as designed by press box manufacturer. Subfloor framing members shall be galvanized. The bottom of framing members shall be enclosed by a galvanized sheet metal cover (belly pan), 26 gauge minimum thickness
2. Floor: Interlocking extruded aluminum planking, ASTM B 221, Alloy 6063-T5 or T6, manufacturer's standard, mill finish.
3. Insulation: Fiberglass batt/blanket insulation, formaldehyde free, vapor barrier membrane faced, 3-1/2 inch/R13 minimum thickness.

D. Wall Panel Assembly:

1. Framing:

a. Exterior Walls: Steel framing members as designed by press box manufacturer.

b. Interior Walls: Light gauge metal studs or steel framing members as designed by press box manufacturer.

2. Exterior Wall Finish: Prefinished metal siding panels installed over plywood substrate.

   a. Metal Panels:

      1) Profile and Thickness: Panel profile as standard with press box manufacturer, 26 gauge minimum panel material thickness.
      2) Finish and Color: Panel manufacturer's standard baked enamel finish, color as selected by Architect from panel manufacturer's standard colors.
      3) Trim and Flashing: Of material, thickness, and finish matching metal panels.

   b. Plywood Substrate: 5/8 inch minimum thickness exterior grade plywood sheathing.

3. Interior Wall Finish: 5/8 inch thick pre-decorated gypsum board with vinyl wall covering surfacing, color as selected by Architect.
4. Insulation: Fiberglass batt/blanket insulation, formaldehyde free, vapor barrier membrane faced, 3-1/2 inch/R11 minimum thickness. Insulation to be provided for exterior and interior walls.

E. Roof/Observation Deck:

1. Framing: Steel framing members as designed by press box manufacturer.
2. Deck: 1/8 inch thick steel decking as standard with press box manufacturer with continuously welded seams.
3. Deck Finish: Non-slip elastomeric or acrylic weatherproof coating as standard with press box manufacturer.
4. Insulation: Fiberglass batt/blanket insulation, formaldehyde free, vapor barrier membrane faced, 6 inch/R19 minimum thickness.

F. Doors and Frames: Hollow metal steel frames and doors as follows:

1. Door Size: 3'-0" by 6'-8" minimum, 1-3/4" minimum thickness.
2. Exterior Doors: Flush panel hollow metal doors, insulated core, 18 gauge face thickness.
3. Interior Doors: Flush panel hollow core wood doors.
4. Exterior Frames: Hollow metal frame, 16 gauge minimum thickness.
5. Interior Frames: Hollow metal frame, 18 gauge minimum thickness.
6. Finish: Prefinished or primed for field painting, finish color to be selected by Architect.

7. Door Hardware:

a. Abbreviations for door hardware manufacturers:

GJ	=	Glyyn-Johnson	Overhead stops
IVE	=	Ives	Hinges, door trim, wall stops
NGP	=	National Guard Products	Thresholds & Gasketing
SCH	=	Schlage Lock Company	Locks, Latches & Cylinders

b. Door hardware as follows:

HW SET: 01
Press Box to Exterior, outswing
Each door to have:

1	EA	CONTINUOUS GEAR HINGE	112HD	CL	IVE
1	EA	CLASSROOM LOCK	ND94BD RHO (Vandlgard)**	626	SCH
1	EA	PRIMUS CORE ONLY	20-740**	626	SCH
1	EA	OVERHEAD STOP	704S	626	GJ
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
2	EA	JAMB SEALS	700ES	CL	NGP
1	EA	HEAD SEAL	700SA	CL	NGP
1	EA	DOOR SWEEP	200NA	CL	NGP
1	EA	THRESHOLD	613 MS/LA	AL	NGP

**Confirm lockset and core format with Owner

HW SET: 02
Press Box to Exterior, inswing
Each door to have:

3	EA	BUTT HINGE	5BB1 4.5 X 4.5	626	IVE
1	EA	CLASSROOM LOCK	ND94BD RHO (Vandlgard)**	626	SCH
1	EA	PRIMUS CORE ONLY	20-740**	626	SCH
1	EA	WALL BUMPER	WS401CCV	626	IVE
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
2	EA	JAMB SEALS	700ES	CL	NGP
1	EA	HEAD SEAL	700SA	CL	NGP
1	EA	DOOR SWEEP	200NA	CL	NGP
1	EA	THRESHOLD	613 MS/LA	AL	NGP

**Confirm lockset and core format with Owner

HW SET: 03
Interior (With Wall Bumper)
Each door to have:

3	EA	BUTT HINGE	5BB1 4.5 X 4.5	626	IVE
1	EA	PASSAGE LATCHSET	ND 10S RHO	626	SCH
1	EA	WALL BUMPER	WS401CCV	626	IVE
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
2	EA	JAMB SEALS	700ES	CL	NGP
1	EA	HEAD SEAL	700SA	CL	NGP

HW SET: 04
Interior (With Overhead Stop)
Each door to have:

3	EA	BUTT HINGE	5BB1 4.5 X 4.5	626	IVE
1	EA	PASSAGE LATCHSET	ND 10S RHO	626	SCH
1	EA	OVERHEAD STOP	704S	626	GJ
1	EA	KICK PLATE	8400 10" X 2" LDW	630	IVE
2	EA	JAMB SEALS	700ES	CL	NGP
1	EA	HEAD SEAL	700SA	CL	NGP

G. Windows: Pre-glazed windows with extruded aluminum frames, of type and operation as indicated on drawings.

1. Glazing: Insulated glass units of clear tempered glass.
2. Frame Finish: Window manufacturer's standard powder coat or backed enamel finish, color as selected by Architect.

H. Coiling Counter Doors: Manufacturer's standard manual push-up operated, between jamb mounted, flat slat, aluminum coiling counter doors with slide bolt locking from inside at each jamb.

1. Basis of Design Manufacturer: The Cookson Company.

a. Alternate manufacturers: One of the following:

1) Overhead Door Corporation.
2) McKeon Rolling Steel Door Company.

I. Ceilings: Suspended metal grid, heavy duty classification, 24 x 24 or 24 x 48 grid, with acoustic panels, press box manufacturer's standard, comply with Division of the State Architect Requirements.

J. Painting: Prime and finish coat paint materials as standard with press box manufacturer; where painting is required, provide one coat of primer and two finish coats, prime coat not required at factory primed surfaces provided factory prime coats are compatible with finish coats, color as selected by Architect.

K. Heating, Ventilation, and Air Conditioning: HVAC equipment to be provided by others; coordinate installation requirements for support and anchorage.

1. Work by Others: Split HVAC system consisting of wall mounted indoor units, roof curb/platform mounted outdoor units, and thermostats will be furnished and installed under a separate contract by others.

L. Electrical: Refer to separate Division 26 and 27 Specification Sections for requirements.

M. Accessories:

1. Roof Access Panel: Roof hatch with provisions for interior padlock as standard with press box manufacturer; 30” x 36” minimum opening size.

    a. Provide OSHA compliant guard with gate around at hatch to protect against accidental fall through.

2. Roof Access Ladder: OSHA compliant ladder as standard with press box manufacturer.

    a. Provide ladder with telescoping safety post.

3. Roof Edge Guards/Railing: Chain link fencing and framing as standard with press box manufacturer; 42 inch minimum height above roof deck; posts, top and bottom rails as required to comply with structural requirements; 9 gauge galvanized chain link fencing.
4. Counter Tops: Plastic laminate finish, minimum 3/4 inch thick plywood core, 1-1/2 inch high front edge, 20 inch minimum depth; 27 inch minimum knee clearance, 34 inch maximum height above the floor; steel supports as required to support a minimum 50 psf load.
5. Wall Base: Topset rubber base, 4 inches high.
6. Joint Sealants: Paintable polyurethane sealant as required for project conditions and as selected by press box manufacturer.

2.3 FABRICATION

A. Factory fabricate press boxes completely.

B. Factory prewire press boxes, ready for connection to service at Project site.

PART 3 - EXECUTION

3.1 COORDINATION AND EXAMINATION

A. It is the Contractor’s responsibility to make all necessary prior arrangements with the Owner’s authorized representative for access to building site and removal of obstructions, if necessary. Provide Owner with a plan of proposed property entry point and path of travel to the building site for approval at least two weeks prior to delivery.

B. Notify Architect and Owner at least 48 hours prior to delivery of modules on site.

C. Report any unacceptable conditions to the Architect. Do not deliver any building modules until unacceptable conditions have been corrected.

D. Coordinate and cooperate with the Site Contractor to prevent conflicts between the separate portions of work.

3.2 PROTECTION

A. Protect Owner's property, facilities and utilities from damage during transportation and erection of building modules. Repair or replace any damage to satisfaction of Owner.

3.3 INSTALLATION AT SITE

A. Site Construction: Once delivery of press box is made, installation shall commence immediately and be pursued in a timely and continuous manner until complete.

B. Construction Progress: The Contractor shall furnish materials, articles and equipment in ample quantities and at such times as to assure uninterrupted progress of the work. Failure to provide adequate working force, or material of proper quality, or failure in any other respect to prosecute the work with diligence and force specified herein are grounds for declaring a default on the contract.

C. Set press box plumb, level and square; straight and true to line with foundation.

D. On-site Inspection: Arrange for inspections of work on-site by DSA as required by that agency. Submit copies of inspection reports to Architect and Owner.

3.4 UTILITY CONNECTIONS

A. Utility Connections: All utility connection points shall be located per the approved drawings to accommodate hook-ups provided at the site. Unless otherwise indicated on drawings, extend utility connections (five) 5 feet from building and terminate with appropriate temporary closures. Final utility connections are by the Sitework Contractor.

END OF SECTION

SECTION 133416
PERMANENT BLEACHERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Permanent raised bleachers including the following:

   a. Bleacher substructure, decking, seating, ramping, railings, and guards.
   b. Concrete footings.
   c. Removal, relocation, and reinstallation of existing press box.
   d. Delegated design submittal.

B. Related Sections:

1. Division 01 Section “Quality and Testing Requirements” for quality assurance and testing requirements not specified in this Section.
2. Division 02 Section “Selective Demolition for removal of existing bleachers.
3. Division 03 Section “Cast-in-Place Concrete” for concrete for footings.
4. Division 26 Sections as applicable to electrical power and lighting.
5. Division 31 Section “Earthwork” for excavation for footings.
6. Division 32 Section “Concrete Paving and Walks” for concrete walkways.
7. Division 32 Section “Chain Link Fencing and Gates” for chain link fencing and related accessories.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for telescoping stands.

B. Delegated-Design Submittal/Governing Agency Approval: Project is under the jurisdiction of the California Division of the State Architect (DSA), manufacturer shall submit a delegated design submittal which must be approved by DSA prior to the start of construction.

1. The DSA approved plans include Home and Visitor Bleachers.

2. For Proprietary reason, the bid documents will not include the DSA approved Home and Visitor Bleachers.

3. The bid documents include Home and Visitor Bleacher Schematic Design. Should the contractor delegate the design to another manufacturer, DSA approval will be required.
   a. No time extensions to the schedule will be granted awaiting DSA approval of submittals, and liquidated damages apply.
   b. Submittal shall include necessary drawings, plans, elevations, sections, details of bleacher components and connections, fabrication and installation requirements, anchorage details, and structural calculations prepared, stamped, and signed by a structural engineer licensed in the State of California. The manufacturer shall be responsible for the design and engineering calculations, the drawings, and for responding to and resolving any comments or issues generated by DSA.
   c. The Delegated Design Submittal shall be submitted to the Architect, and the Architect will transmit the submittal to the Division of the State Architect.
   d. Manufacturer’s structural engineer shall accompany Architect for final DSA review and approval stamping at designated office of DSA.

C. Division of the State Architect Forms:

1. Form DSA 1-DEL, Delegation of Responsibility.
2. Form DSA 6-AE, Architect/Engineer Verified Report.
3. Form DSA 6-C, Contractor Verified Report.

D. Qualification Data: For the following:

1. Professional engineer responsible for preparing delegated design submittal.
2. Installer.

E. Mill Certificates: Signed by manufacturers, certifying that products furnished comply with requirements.

F. Welding certificates.

G. Research/Evaluation Reports: For post-installed anchors, from ICC-ES.

H. Certified mill test reports for structural steel, including chemical and physical properties.

I. Source quality-control reports.

J. Product Liability: Certify liability insurance coverage for the life of the product.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer of bleacher system or manufacturer's authorized representative who is trained and approved for installation of units required for this

Project who has completed successfully at least five installations of similar size and complexity within the past three years.

B. Manufacturer Qualifications: Manufacturer must have ten years of experience in the manufacture of bleachers and grandstands.

C. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."

D. Identification of Structural Steel: The fabricator shall maintain the identity of the material and shall maintain suitable procedures and records attesting that the specified grade has been furnished, in compliance with CBC Section 2203A.1.

1. Where structural steel is furnished to a specified minimum yield strength greater than 36,000 psi, the ASTM designation shall be included near the erection mark on each shipping assembly, in compliance with CBC Section 2203A .2.

E. Preinstallation Conference: Conduct conference at Project site.

1.5 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of construction contiguous with bleachers by field measurements before fabrication. Verify locations of walls, columns, and other construction that will interface with bleachers.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design of bleachers including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Disabled Access Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines, the 2010 ADA Standards for Accessible Design, ICC/ANSI A117.1, and the California Building Code.

C. Structural Performance: Bleachers shall withstand the effects of gravity loads and loads and stresses within limits and under conditions indicated according to ICC 300, NFPA 102, and the California Building Code, and as follows:

1. Dead Load: As determined by the manufacturer.
2. Live Load: 100 psf gross horizontal projection to be transmitted to structural members. All stringers and girders shall be limited to L/200 for maximum vertical live load deflection.
3. Seat and Tread Board Planks, Live Load: 120 plf.

4. Design Wind Speed: Per local requirements according to the California Building Code.
5. Lateral Sway Load: 24 plf per lineal foot of seat, parallel to seat run.
6. Perpendicular Sway Load: 10 plf per lineal foot of seat, perpendicular to seat.
7. Railings and Guards: Uniform load of 50 plf applied in any direction to the top rail, concentrated load of 200 lb in any direction applied at any point along the top rail.

D. Deflection: Structural elements shall be sized to limit the live load deflections to L/200 of the span. Calculation shall be submitted with shop details confirming deflection criteria.

E. Structural Bracing: All bracing shall be structural steel angle. Rod or cable bracing is not acceptable.

F. Foundations: Design and provide concrete foundations to satisfy the geotechnical requirements of the geotechnical report provided by the owner and included in the Appendix of the Project Manual.

1. Geotechnical report prepared by Krazan & Asscoiates, Inc., Moddesto, CA, report file number 072-22066, dated October 20, 2022.

G. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

H. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

2.2 MATERIALS

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Steel W-Shapes: ASTM A 992.

C. Steel Plate, Shapes, and Bars: ASTM A 36/A 36M.

D. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B, structural tubing.

E. Steel Pipe: ASTM A 53/A 53M, Standard Weight (Schedule 40).

F. Aluminum Plate and Sheet: ASTM B 209, Alloy 6061-T6.

G. Aluminum Extrusions: ASTM B 221, Alloy 6063-T6.

H. Extruded Structural Pipe and Round Tubing: ASTM B 429/B 429M, Alloy 6063-T6, Provide Standard Weight (Schedule 40) pipe, unless otherwise indicated.

I. Aluminum-Alloy Rolled Tread Plate: ASTM B 632/B 632M, Alloy 6061-T6.

J. Aluminum Castings: ASTM B 26/B 26M, Alloy 443.0-F.

2.3 FASTENERS

A. General: Unless otherwise indicated, provide zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5. Select fasteners for type, grade, and class required.

B. Steel Bolts and Nuts, 3/8 inch Diameter and Smaller: Regular hexagon-head bolts, ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with hex nuts, ASTM A 563 (ASTM A 563M); and, where indicated, flat washers.

C. Steel Bolts and Nuts, Larger than 3/8 inch Diameter: Regular hexagon-head bolts, ASTM A 325, Type 3 (ASTM A 325M, Type 3); with hex nuts, ASTM A 563, Grade C3 (ASTM A 563M, Class 8S3); and, where indicated, flat washers.

D. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A 563 (ASTM A 563M); and, where indicated, flat washers.

1. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.

E. Cast-in-Place Anchors in Concrete: Either threaded type or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F 2329.

F. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors.

1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 5, unless otherwise indicated.

2.4 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

B. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

C. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

D. Chain Link Fencing: 9 gauge by 2 inch galvanized chain link fencing, selvage knuckled both edges.

2.5 MANUFACTURERS

A. Basis of Design: Subject to compliance with requirements, provide products by the following:

Southern Bleacher Company; Horizontal-Beam Permanent Grandstand

a. Other manufacturers seeking acceptance to bid must submit request to the Architect for review and approval not less than fourteen (14) calendar days prior to bid date and must include product literature and references (with contact names/numbers) to the Owner for five similar size DSA approved projects completed within the past two years.

b. No time extensions to the schedule will be granted awaiting DSA approval of submittals, and liquidated damages apply.

c. Contractors submitting plans and calculations from alternate manufacturers are responsible for all costs incurred of re-obtaining DSA approval.

2.6 BLEACHERS

A. Bleachers, General: Fixed, permanent, raised bleachers as indicated on the Drawings. Bleacher system comprised of steel substructure and manufacturer's standard aluminum components for decking, benches, and railings.

B. Substructure: Primary framing of wide flange structural steel shapes or hollow structural sections (HSS) with steel angle bracing of sizes as determined by delegated design submittal.

C. Bench Seating: Manufacturer's standard continuous extruded aluminum bench planks meeting performance requirements indicated; clear anodized finish.

1. Seat Width: As indicated on the Drawings
2. Horizontal Seat Spacing: As indicated on the Drawings.
3. Vertical Seat Spacing: As indicated on the Drawings.
4. Seat Height: As indicated on the Drawings (17 to 18 inches).

D. Decking, Steps, Aisles, and Ramps: Manufacturer's standard continuous extruded aluminum interlocking planks meeting performance requirements indicated; mill finish.

1. Ramp surfaces and stair treads shall have a slip resistant finish as provided by standard mill finish extrusions.

E. End Caps: Manufacturer's standard extruded aluminum end caps for planks and benches; clear anodized finish; mechanically fastened; provide at open ends of deck planks and benches.

F. Ramps: Ramps shall be as indicated on the Drawings and shall have a slip resistant mill finish.

1. Slope: As indicated on Drawings, 1 inch vertical to 12.5 inch horizontal maximum slope.
2. Guide Rails: Ramps shall be provided with continuous guide rails each side centered 3 inches (+/- 1 inch) above the surface of the ramp to prevent wheel entrapment.

G. Stairs: Stairs shall be as indicated on the Drawings and designed to not accumulate water on walking surfaces, walking surfaces shall be slip resistant, risers shall be closed

1. Rise/Run: As indicated on drawings, 7 inch maximum rise, 11 inch minimum run.
2. Width: As indicated on Drawings.
3. Tread Profile: Treads shall have smooth, rounded, or beveled exposed edges.
4. Striping for the Visually Impaired: Provide a stripe providing clear visual contrast with the adjacent deck surface at the edge of the top landing and at the nose of all stair treads. Stripe shall be 2 inches wide minimum, 4 inches wide maximum, be the full width of the tread, be parallel to and not more than one inch from the nose of the step or landing, and be at least as slip resistant as the stair tread.

H. Guards:

1. Provide guards at the following locations:

   a. Bleachers: Provide guards at open sides/ends/back/front of bleachers. Home bleachers to have Dur-kyn finish riser board enclosures forming both the front and back sides of side and rear guard rails.
   b. Ramps and Stairs: Provide guards at sides of all ramps and stairs with the exception of aisle stairs.

2. Height: 42 inches from the walking surface or line parallel with nosing of stairs to the top of the guard; 36 inches where located in front of seating where a 42 inch high guard will interfere with line of sight.
3. Top Rail: Aluminum pipe, 1-1/4 inch nominal diameter schedule 40, 1.66 inch actual outside diameter, 0.140 inch wall thickness, clear anodized finish.
4. Vertical Supports: Manufacturer's standard aluminum angle supports meeting performance requirements indicated, mill finish.
5. Infill: Openings between posts and rails of guards shall be protected with chain link fence fabric.

I. Handrails: Aluminum pipe, 1-1/4 inch nominal diameter schedule 40, 1.66 inch actual outside diameter, 0.140 inch wall thickness, clear anodized finish.

1. Handrail Supports and Brackets: Manufacturer's standard complying with applicable codes.

2. Handrail Locations: Provide handrails at the following locations:

    a. Ramps and Stairs: Provide handrails at both sides of ramps and stairs.
    b. Aisle Stairs: Aisle stairs shall have handrails located at the center of aisle widths; handrails shall be discontinuous with openings at intervals not exceeding five rows of seats, openings shall be 22 inch minimum, 36 inch maximum in clear width measured horizontally; aisle handrails shall have intermediate rails located 12 inches below the handrail; aisle handrails shall have rounded terminations or bends, level extensions are not required.

3. Height: 36 inches from the walking surface or line parallel with nosing of stairs to the top of the handrail.
4. Extensions: Handrails shall extend in the direction of the stair or ramp run as follows:

    a. Ramps: 12 inch minimum horizontal extension beyond the end of the ramp at the top and bottom landings.
    b. Stairs:

        1) Upper Landings: 12 inch minimum horizontal extension beyond the nosing of the top landing.
        2) Bottom Landings: Sloped extension at the slope of the stair for a horizontal distance equal to one tread depth beyond the bottom riser nosing with an additional horizontal extension of 12 inches minimum.

    c. Handrail extensions shall return to a wall, guard, the landing surface, or shall be continuous to the handrail at an adjacent stair or ramp.
    d. Extensions are not required for continuous handrails at the inside turn of switchback or dogleg stairs or ramps.
    e. Open ends of handrails shall be capped.

5. Continuity: Handrails shall be continuous within the full length of each stair flight or ramp run. Inside handrails on switchback or dogleg stairs and ramps shall be continuous between flights or runs. In assembly areas, ramp handrails adjacent to seating or within the aisle width shall not be required to be continuous in aisles serving seating.

J. Guide Rails: Guide rails or curbs shall be provided at edges of elevated walkway surfaces, at ramps, and at guide rail and/or hand rail posts to prevent entrapment of a person using a wheelchair. Guide rails shall be a continuous pipe rail or metal plate.

K. Signage: Provide accessible signage to identify wheelchair and companion seating as required by ADA Standards, the California Building Code, and as indicated on Drawings, comply with the following requirements:

1. Material: Aluminum sheet, ASTM B 209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with at least the strength and durability properties of Alloy 5005-H32, 0.080 inch minimum thickness.
2. Corner Condition: Rounded to radius of not less than 1/2 inch.
3. Finish: manufacturer’s standard powder coat or baked enamel finish.

4. Color: White figure on blue background.
5. Size: As required to accommodate text and graphics.
6. Text and Graphics: International symbol of accessibility (ISA) with text as indicated on Drawings.
7. International Symbol of Accessibility Height: 6 inches minimum.
   a. Text Height: 5/8 inches minimum, 1 inch maximum.

L. Front Facades: Dur-Kyn finish riser board façade and exposed front of exit stairs for home and visitor grandstand. Color: Ash Grey.

2.7 FABRICATION

A. Fabricate understructure from structural-steel members in size, spacing, and form required to support design loads specified in “PERFORMANCE REQUIREMENTS” Article.

B. Weld understructure to comply with applicable AWS standards.

C. Round corners and edges of exposed components and fasteners to reduce snagging and cutting hazards.

D. Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

E. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

F. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

G. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.

H. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

I. Seat Board Mounting: Seat boards shall be supported by aluminum "L" brackets having a positive bolted connection through the riser boards to the steel substructure (Structural attachment to the riser board or decking shall not be allowed). The seat boards shall align with the intermediate steps at the aisle.

2.8 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products.

1. Galvanize items after fabrication.

2.9 ALUMINUM FINISHES

A. As-Fabricated Finish (Mill Finish): AA-M12.

B. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

2.10 SOURCE QUALITY CONTROL

A. Testing Agency: Owner will engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports.

1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.

B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

C. Welded Connections: In addition to visual inspection, shop-welded connections will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

1. Liquid Penetrant Inspection: ASTM E 165.
2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
3. Ultrasonic Inspection: ASTM E 164.
4. Radiographic Inspection: ASTM E 94.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas where bleachers are to be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Prepare written report, endorsed by installer, listing conditions detrimental to performance of the work.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Install bleachers in accordance with delegated design submittal drawings approved by DSA and manufacturer's written instructions.

B. Cutting, Fitting, and Placement: Perform field cutting, drilling, and fitting required for installing bleacher components. Set components 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 surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

D. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

E. Corrosion Protection: Coat concealed surfaces of aluminum that come into contact with grout, concrete, masonry, or dissimilar metals with the following:

1. Cast Aluminum: Heavy coat of bituminous paint.
2. Extruded Aluminum: Two coats of clear lacquer.

3.3 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to inspect field welds and high-strength bolted connections.

1. Testing and inspection agency shall be acceptable to the Architect and the Division of the State Architect.

B. The Architect and the Division of the State Architect shall have the right to order the testing of any materials used in the steel construction to determine if they are of the quality specified.

C. Responsibilities and Duties of Contractor:

1. The Contractor shall maintain control of the quality of materials and workmanship in order to conform to the drawings and specifications.
2. To facilitate testing and inspection, the contractor shall:

   a. Notify the designated testing laboratory sufficiently in advance of operations to allow for completion of quality tests and for the assignment of personnel.
   b. Provide access to the Work for the designated testing laboratory.
   c. Furnish all necessary materials and labor to assist the designated testing agency in obtaining and handling samples at the project or other sources of materials.
   d. Provide and maintain for the sole use of the testing laboratory adequate facilities for safe storage and proper curing of the test specimens on the project site.

3. The Contractor shall correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

D. Testing and Inspection Services: The following tests and inspections shall be performed by the designated laboratory.

1. Steel Testing:

   a. All steel used for structural purposes shall be identified as required by CBC Section 2203A. Manufacturer's mill analyses and test reports are acceptable for properly identified steel, but the enforcement agency may require additional testing to determine the quality of the steel if there is any doubt as to its acceptability. Any steel not properly identified shall be tested to meet the minimum chemical and mechanical requirements of the ASTM standard appropriate for the steel specified for the structure.
   b. Fabrication shall not commence until steel members designated on the Structural Testing and Inspection Schedule have been tested. Tests shall be made by an independent testing laboratory approved by the Architect. Reports certifying that the materials and workmanship conform to the contract documents shall be submitted to the Architect and the Office of the State Architect.

2. Inspection of Field Erection:

   a. Verify qualifications of field procedures and personnel.
   b. Inspect erection of structural steel work for conformance with the drawings and specifications.

3. Inspection of Welding: Field welding operations including the installation of automatic end-welded stud shear connectors shall be inspected by a certified Welding Inspector meeting the requirements of AWS QC1. The Contractor shall schedule his operations to provide a minimum of 24 hours notice to the welding inspector so that all welding operations may be inspected.

    a. The Welding Inspector shall make a systematic record of all welds; recording shall include the following:

        1) Names and identification marks of welders.
        2) List of defective welds.
        3) Manner of correction of defects.

    b. The Welding Inspector shall check the material, equipment, procedure, welds, and the ability of each welder.
    c. Upon detection of a rejectable weld, the inspector shall notify the Contractor, and observe removal of defects and repairs.
    d. The welding inspector shall tag or stamp accepted weldments with the inspector's identification stamp.
    e. A report stating that the welding he is required to inspect, is proper and has been done in conformity with approved drawings and specifications shall be furnished to the Architect.
    f. The Welding Inspector shall use all means necessary to determine the quality of the welds. However, the following tests and inspections shall be performed as a minimum:

        1) Visual Inspection of Welding:

            a) Observe multi-pass and full penetration welds continuously (i.e. the welding inspector shall be present at all times).
            b) Observe single pass fillet welds periodically. The inspector shall check the qualifications of the welders at the start of the work and then make final inspection of all welds for compliance prior to completion of welding.
            c) After the welding is completed, Contractor shall hand or power nylon brush welds, and thoroughly clean them before inspection.
            d) Inspect welds with magnifiers under strong, adequate light for surface cracking, porosity, and slag inclusions; excessive roughness; unfilled craters; gas pockets; undercuts; overlaps; size; and insufficient throat and concavity.
            e) Inspect the preparation of groove welds for adequate throat opening and for snug positioning of back-up bars.
            f) Check the type and size of electrodes to be used for the various joints and positions. Check the storage facilities to see if they are adequate to keep the electrodes dry.
            g) Verify the use of proper pre-heat and interpass temperatures.
            h) Observe the technique of each welder periodically with the use of a welding inspection shield.

        2) Nondestructive Testing of Welding:

a) Welds shall be non-destructive tested by one of the following methods in accordance with AWS D1.1 at the frequency noted below:

Test Method	Frequency
Liquid Dye Penetrant Testing	When requested by Architect.
Magnetic Particle Testing	10% of all fillet welds and 100% of all full penetration welds on members thinner than 5/16".
Ultrasonic Testing	100% of all full penetration welds on members thicker than 5/16"
Radiographic Testing	When requested by Architect or as substitute for magnetic particles testing or ultrasonic testing.

b) Reduced Frequency of Testing: Initially, all welds requiring 100% testing shall be tested at the rate of 100% in order to establish the qualifications of each individual welder. If the reject rate is demonstrated to be less than 5% of the welds tested for each welder, then the frequency of testing for that welder may be reduced to 25%. If the reject rate increases to 5% or more, 100% testing shall be re-established until the rate is reduced to less than 5%. The percentage of rejects shall be calculated for each welder independently. A sample of at least 40 completed welds shall be made for such reduction evaluation. Reject rate is defined as the number of welds containing rejectable defects divided by the number of welds completed. For evaluating the reject rate of continuous welds over 3 feet in length, each 12 linear inch increment of welds, one inch or less in thickness, shall be considered one weld. For evaluating the reject rate of continuous welds greater than 2 inch thickness, each 6 linear inches shall be considered one weld.

g. Correction of Defective Welds: Weld areas containing defects exceeding the standards of acceptance in AWS D1.1 shall be corrected in accordance with AWS D1.1, Section 3.7. Additional testing of the repaired areas shall be required.

4. Testing High Strength Bolts, Nuts and Washers:

a. Materials: If the manufacturer's certification is not available, sample and test bolts, nuts and washers in accordance with ASTM A325 or A490, shipping lot method.
b. Installation:

1) Inspect slip critical connections and connections subject to direct tension in accordance with RCSC Specification for Structural Joints Using ASTM A325 or A490 Bolts.
2) Tests shall be performed by an approved testing laboratory specifically approved for that purpose.
3) The inspector shall check the materials, equipment, details of construction and installation procedure.
4) The inspector shall furnish the Architect with a report that the work has been completed in every material respect in compliance with the approved drawings and specifications.

3.4 CLEANING

A. Clean all surfaces according to manufacturer's recommendations. Use cleaning solutions and methods that do not damage finishes or the adjacent surfaces.

B. Remove all metal burrs, sharp edges or other cutting, unsafe, conditions.

C. Touch up finishes as recommended by manufacturer to the satisfaction of the architect.

D. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780/A 780M.

END OF SECTION

SECTION 230000
HEATING, VENTILATING AND AIR CONDITIONING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This section includes:

1. Sidewall propeller fans
2. Metal Ductwork

1.3 SUBMITTALS

A. Product Data: Submit manufacturers' standard published data identifying applicable products, models, options, accessories and other data.

B. Performance Data: Include fan curves with specific operating point clearly plotted, sound power levels for both fan inlet and fan outlet at rated capacity.

1.4 COORDINATION

A. Coordinate layout of spaces, chases, slots, and openings in building structure during progress of construction, to allow for installation of fans.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by Greenheck or equivalent.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include but are not limited to, the manufacturers specified.

a. Greenheck
b. Cook

2.2 DUCTWORK MATERIALS

A. General Material Requirements: Metal ductwork shall be galvanized sheet steel, lock forming quality, ASTM A-653, with gage and construction to match SMACNA Standard for pressure required (26 gage minimum). Sheet metal materials shall be of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

B. All ductwork materials shall have fire and smoke hazard ratings as tested under ASTM E-84 and UL 723 not exceeding a flame spread of 25 and smoke developed of 50. Shall comply with 1994 UMC Standard 6-1.

C. Flexible Ductwork: Insulated flexible ductwork. R-6 Insulation. Seamless vapor barrier jacket. Duct shall comply with NFPA 90A. Genflex, Wiremold. Duct Static Pressures of 1.0" W.C. and less: Continuous internal liner bonded to galvanized steel wire helix. Duct shall be capable of continuous operation at 1-1/2" of water static pressure and 4,000 ft/min air velocity.

D. Duct Sealants: All Joints Exposed to Weather: Sealant shall be G.E. SCS1701 silicone or Hardcast CCWI-181. Joints Not Exposed to Weather (Except Spiral Wound and Greater than 2" Pressure Class): Water-based duct sealant, without substitution. 'Uni-Mastic 181' by McGill Airseal or Design Polymetrics DP-1010.

E. Flange Gaskets: Butyl rubber, neoprene, or EPDM polymer with polyisobutylene plasticizer.

2.3 EQUIPMENT

A. General Requirements: Manufacturer and model numbers scheduled on the drawings shall establish the minimum standard for performance, efficiency, capacity, features and quality of construction.

B. Exhaust Fan:

1. General: All exhaust fans shall be tested according to AMCA Standard 210 in an AMCA registered laboratory. Fans exposed to weather shall have ventilated weatherproof housing over motor and drive assembly. All fractional horsepower direct drive fans shall be provided with ECM motors.
2. Wall Fan: Propeller fan. Direct Drive. Ball Bearings. Galvanized or aluminum construction. Wall Housing with housing guard. Backdraft damper with damper guard. Cook, Greenheck, Penn.

PART 3 - EXECUTION

3.1 HVAC DEMOLITION

A. Refer to Division 01 Section "Cutting and Patching" and Division 02 Section "Selective Structure Demolition" for general demolition requirements and procedures.

B. Disconnect, demolish, and remove HVAC systems, equipment, and components indicated to be removed.

1. Ducts to be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
2. Ducts to be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material.
3. Equipment to be Removed: Disconnect and cap services and remove equipment.

3.2 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

A. Install equipment to allow maximum possible headroom unless specific mounting heights are not indicated.

B. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.

C. Install HVAC equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.

3.3 DUCTWORK INSTALLATION

A. General:

1. Standards: Unless otherwise noted, all ductwork shall be constructed and installed in accordance with current SMACNA Standards. Ductwork shall be built to a pressure classification equal to or greater than the maximum operating pressure at that point in the ductwork. A copy of these standards shall be maintained at the job site at all times. Duct work and accessories shall be installed in a manner to prevent vibration and rattling.
2. Access: Provide duct access doors as required to adjust equipment and dampers. Provide wall or ceiling access panels, or remote actuators as required where equipment and dampers are not otherwise accessible.

3. Flexible Connections: Connection of ductwork to any vibrating equipment shall be with 3" (min.) flexible connection. Install with ample slack and uniform gap. There shall be no metal-to-metal contact across flexible connection. Flexible connections exposed to weather shall have a protective sheet metal cover.
4. Flanges and Escutcheon: Where ductwork penetrates walls, ceilings, or floors, furnish and install flange or escutcheon of same material as duct.

B. Low Velocity-Low Pressure (up to 2,000 ft/min and up to 2.0 in water):

1. Sheet Metal Ductwork:

a. General: Unless otherwise noted, all duct fittings shall be installed in accordance with current SMACNA Standards and shall be installed in a manner to prevent vibration and rattling.
b. Ells: Ells with less than standard radius and square ells shall be fitted with turning vanes.
c. Duct Joints and Seams: All joints and seams, including spiral wound metal ductwork, shall be sealed airtight with duct sealants per part 2 of this specification section.

3.4 EQUIPMENT INSTALLATION

A. General: It shall be the responsibility of the equipment installer to ensure that no work done under other specification sections shall in any way block or otherwise hinder the equipment. All equipment shall be securely anchored in place. All equipment shall be installed level.

B. HVAC Equipment:

1. Complete all wiring to load center.
2. Install units and thermostats/switches complete with all accessories and controls per manufacturer’s written instructions.
3. Disconnect switch shall be located on or adjacent to the unit served and labeled with unit served.
4. Mount units providing watertight enclosure to protect ductwork and utility services.

3.5 ACCESS TO VALVES AND EQUIPMENT

A. Access shall be possible where valves, expansion joints, fire dampers, motors, filters, control devices, and any other equipment requiring access for servicing, repairs, or maintenance are located in walls, soffits, chases, and/or above ceilings.

B. Definition of Accessible:

1. Valves and dampers may be operated.
2. Control devices may be adjusted.

3. Equipment access panels may be opened.
4. Normal maintenance work such as replacement of filters, lubrication of bearings, etc., may be performed readily within arm's reach of access opening.
5. It shall not be necessary to crawl through furred ceiling space to perform such operations.

C. Relocate equipment and accessories as required, at no extra cost to afford proper maintenance access.

D. Coordinate location of access panels with applicable trades installing walls or ceiling.

1. Coordinate panel locations with lights and other architectural features.
2. Submit proposed panel locations to Architect for review

3.6 SYSTEM IDENTIFICATION

A. Equipment:

1. All equipment shall be identified with a plastic laminated, engraved nameplate which bears the unit mark number as indicated on the drawings (e.g. EF-1).
2. Provide1/2" high lettering - white on black background. Nameplates shall be permanently secured to the exterior of the unit.

3.7 SYSTEM ENERGY BALANCE

A. Scope: Provide the services of an independent test and balance agency to test, adjust and balance, retest and record performance of the system to obtain design quantities as specified. The agency must prove that they have no affiliation with any equipment manufacturer, design engineer, installing contractor, or any other party which might lead to a conflict of interest, in order to provide an unbiased, third party system balance and report.

B. Qualifications: Prior to commencing work, the agency shall be reviewed by the Engineer and shall be certified by the Associated Air Balance Council or National Environmental Balancing Bureau. The agency shall provide documentation of having successfully completed at least five projects of similar size and scope.

C. Instruments: All instruments shall be accurately calibrated; calibration histories shall be available for examination. Application of instrumentation shall be in accordance with AABC or NEBB standards.

D. Submittals: Include copies of forms to be used for testing and balancing showing all data which is to be recorded. Three copies of completed balance report shall be submitted for review.

E. Procedure - General: Procedure shall be in accordance with Associated Air Balance Council's "National Standards for Field Measurements and Instrumentation - Total System Balance", Volume Two, No. 12173, or equivalent NEBB standards. System shall be in full, continuous operation during test. Balanced quantities shall be plus 10%, minus 0% of design quantities. All nameplate data, manufacturer, model and serial numbers shall be recorded for each item tested.

F. Extended Warranty: The test and balance agency shall include an extended warranty of 90 days after completion of test and balance work, during which time the Engineer, at his discretion, may request a recheck or resetting of any item or items in test report. The agency shall provide technicians to assist the Engineer in making any tests he may require during this period of time.

G. Air Balance Procedure (For Each Air Handling System):

1. All air filters shall be clean when air balance is performed.
2. Adjust fan RPM to design requirements.
3. Record motor full load amperes.
4. Make pitot tube traverse of main exhaust ducts and adjust CFM at all exhaust fans (high and low speed, where applicable).
5. Record system static pressures, inlet and discharge.
6. Each grille, diffuser and register shall be identified as to location.
7. As a part of the work of this contract, THE AIR CONDITIONING CONTRACTOR shall make any changes in pulleys, belts and dampers or the addition of dampers required for correct balance as recommended by air balance agency, at no additional cost to Owner.

3.8 HVAC SYSTEM ACCEPTANCE

A. The completed job shall be demonstrated by the Heating and Ventilating Contractor to the Owner’s maintenance representative so as to function in accordance with the manufacturer’s design, and to the complete satisfaction of the Owner.

B. All control systems and thermostats shall be fully programmed and demonstrated to the owner as indicated in the previous section above.

C. The Contractor shall complete all T24 required acceptance testing as outlined in the 2025 T24 Nonresidential Compliance Manual and submit completed documentation to the Authority Having Jurisdiction.

END OF SECTION

SECTION 260000
SUMMARY OF ELECTRICAL WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections shall form a part of this Section, with the same force and effect as though repeated here.

1.2 SUMMARY

A. In general, the Electrical Work described herein consists of the modification of the existing electrical system in place, and the installation of new electrical system equipment. All work shall be completed as directed by the Owner's authorized representative, in accordance with the Contract, Specifications and Construction Documents listed below.

1. General Conditions of Contract

2. Specifications:

Section	Title
111136	Electric Vehicle Supply Equipment (EVSE)
260000	Summary of Electrical Work
260100	General Conditions for Electrical Work
260500	Basic Electrical Materials and Methods
260526	Grounding
262213	Dry Type Transformers (600V or Less)
262416	Panelboards
269500	Electrical Acceptance Tests
272000	Telecommunications System
274100	Audio-Video System
284600	Fire Alarm System

3. Electrical Construction Drawings as listed on the Drawing Index of the Construction Drawing set.

B. This Section includes all necessary and required work to complete the construction as indicated in the Drawings, called for by notes or schedules, or specified herein. This work includes the furnishing of all permits, labor, supervision, services, materials, tools, equipment, testing, transportation and miscellaneous expenses, and the performance of all operations necessary to or incidental to completion of lawful and operating electrical power, lighting and signal systems, whether or not specifically mentioned.

C. All work not shown in complete detail shall be installed per the 2022 California Electrical Code and in conformance with the best standard practice for the trade. Any deviation from the approved Drawings shall be submitted in writing to the Engineer and Owner for approval prior to the installation of the work in question.

D. This work shall include, but not necessarily be limited to, the following elements:

1. Demolition and Phasing:
    a. De-energize, disconnect and remove electrical feeds to devices and equipment being removed or relocated.
    b. Disconnect and remove existing electrical facilities in areas of remodel and demolition that are not to be reused.
    c. Make temporary feeds and connections to areas and equipment to allow phased construction and continuing operation.
2. Electrical Distribution
    a. Power distribution system, as shown, complete with transformers, panelboards, conduits, feeders, pull boxes, fittings and related equipment and equipment pads.
    b. Trenching, conduits and feeders for electrical power and data.
3. Grounding
    a. Testing of grounding system as outlined in Section 269500.
4. Data Distribution System
    a. Extension of existing Data system per Section 272000.
5. Audio-Video System
    a. Modifications to existing Audio-Video System per Section 274100.
6. Fire Alarm System
    a. Installation of new Fire Alarm System at the for the press box and elevator.
7. Each system shall be terminated, tested and calibrated by a factory-authorized installer. This same installer shall terminate and test any peripheral equipment required for the operation of the system.
8. Equipment Connections
    a. Provide equipment connections and coordination in accordance with manufacturer’s recommendations and product submittals.

E. Products supplied by Owner (or others, as noted) and installed by Contractor under this Section.

1. See Section 274100 for list of Audio-Video equipment supplied by owner and installed by Contractor..

F. Products supplied by Contractor but not installed under this Section.

1. None.

G. It shall be understood that the existing conduit with its wiring is presently active (hot), in operation with its pertinent equipment.

H. It shall be noted that this construction work will be planned and executed during ongoing operation of the facility. Any modifications to the existing equipment currently in operation shall be done during scheduled shutdowns and coordinated with the Owner's authorized representative and facility operating personnel to assure minimum downtime.

I. In order to avoid disruption to facility operations, certain items of work must be completed before other items of work can be started. Contractor shall coordinate with the Owner's authorized representative as to the sequence of construction activities.

J. Drawings showing equipment layout, conduit runs, conduit sizes, number of wires, wire types, wire groupings and size will not be furnished. It shall be the Contractor's responsibility to prepare such drawings in accordance with specifications, project requirements and code to facilitate the installation.

K. Furnish, install and connect all above grade grounding materials and make aboveground connections of underground cables to equipment and/or structural steel as shown on the construction drawings and as required by code.

L. Size, furnish, install and connect new conduit, conduit fittings, and seal fittings, expansion fittings and supports. This includes above grade as well as underground.

M. Size, furnish, and install junction and pull boxes, in accordance to code requirements and as shown on the construction drawings.

N. Size, furnish and install all supports required for conduit installation, supports required for the installation of the equipment furnished by this Contractor and equipment furnished by others but installed by this Contractor.

O. Size and field cut the openings for conduits passing through building walls and/or floors. Close and seal all openings after conduits have been installed and/or removed. Closing shall be compatible with, or of the same material as wall and/or floor.

P. Furnish and install permanent "DANGER - HIGH VOLTAGE" warning signs for the outdoor and indoor switchgear, all unit substations, motor control centers, power distribution panels, and on all doors of all electrical equipment rooms, fenced yards, etc.

Q. Furnish and install markers indicating voltage levels (e.g., 12.47 KV, 277/480V, 120/208V, etc.) transformers, power panels, etc.

R. Furnish and install wire tags in accordance with the specifications indicating wire number as shown on electrical schematics, one line, three line diagrams and specifications.

S. Furnish, install and connect all power, control and instrumentation cable, including all necessary cable lugs, connectors and terminations.

T. Perform all testing per the Specifications and report to Owner's field representative in a timely manner so as not to impede the scheduled completion of the Contract.

U. Prime paint all uncoated carbon steel items furnished by Contractor.

V. Energize low voltage services after testing equipment and wiring in accordance with manufacturer instructions and specifications.

PART 2 - NOT USED

PART 3 - NOT USED

END OF SECTION 260000

SECTION 260100
GENERAL CONDITIONS FOR ELECTRICAL WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections shall form a part of this Section, with the same force and effect as though repeated here.

1.2 SUMMARY

A. The provisions of this Section shall apply to all of the following Sections of Divisions 26-28 of these Specifications and shall be considered a part of these Sections.

1.3 QUALITY ASSURANCE

A. All work and materials shall fully comply with current rules and regulations of all applicable codes. Nothing in these Drawings or Specifications shall be interpreted as to permit any work not in compliance with these codes. Where work is detailed and/or specified to a more restrictive standard or higher requirement, that standard or requirement shall govern such work. Applicable codes include, but are not limited to, the following:

1. California Code of Regulations (CCR)
    a. Title 8, Industrial Relations
    b. Title 17, Public Health
    c. Title 24, Building Standards
2. 2022 California Building Code.
3. 2022 California Fire Code.
4. 2022 California Electrical Code.
5. Local Codes.

B. All electrical components, devices and accessories shall be listed with Underwriters Laboratories, Inc. (or other testing agency acceptable to authorities having jurisdiction), shall meet their requirements, shall bear their label wherever standards have been established and label service is regularly furnished by that agency, and shall be marked for intended use.

1.4 PERMITS, FEES AND TAXES

A. The Contractor shall secure all necessary permits and pay all required fees and taxes. He shall notify the proper authorities and have the work inspected and tested as required by jurisdictional requirements, pay all charges in connection therewith, and shall present to the Owner properly signed certificates of inspection. Acceptance of the work will not be considered until such certificates have been delivered.

1.5 EXISTING CONDITIONS

A. The Contractor shall carefully examine the site and existing buildings, compare them with Drawings and Specifications, and shall have satisfied himself as to the conditions to be encountered during the performance of the work. No subsequent allowance shall be made on his behalf for any additional expense he may incur due to failure or neglect of Contractor to examine site and to include existing conditions in bid.

B. Any work done as an addition, expansion, or remodel of an existing system shall be compatible with that system.

C. The Contractor shall examine all record drawings made available by the Owner to locate existing underground systems, utilities, conduits, and pipes prior to installing the electrical distribution system. The Contractor shall also examine the site for possible locations of sprinkler pipes. Any damage done to the existing systems during the course of the electrical work, whose locations could be reasonably determined, shall be repaired to the satisfaction of the Owner and the utility or agency involved, at the expense of the Contractor.

1.6 CONDUCT OF THE WORK

A. The Contractor shall maintain on the job a competent foreman or a superintendent at all times to superintend the Work.

1.7 INTERPRETATION OF DRAWINGS AND SPECIFICATIONS

A. The Engineer’s decision will be final on interpretation of the Drawings and Specifications. Whenever the words “AS MAY BE DIRECTED”, “SUITABLE”, or “APPROVED EQUAL”, or other words of similar intent and meaning are used, implying that judgment is to be exercised, it is understood that it is in reference to the judgement of the Engineer.

1.8 SUBMITTALS

A. See Specification Section 013300, SUBMITTAL PROCEDURES, for additional information and requirements.

B. Shop Drawings and Product Data

1. In addition to the provisions of Specification Section 013300, SUBMITTAL PROCEDURES, all **Shop Drawings and Product Data** shall comply with the following requirements:

   a. The Contractor shall submit for review, complete sets of Shop Drawings and Product Data brochures for materials and equipment as required by each section of the Specifications.

   b. All Shop Drawings and Product Data shall be submitted at one time in a neat and orderly fashion in a suitable binder with a Title Sheet including Project, Engineer and Contractor, Table of Contents, and indexed tabs dividing each group of materials or item of equipment. The Specification paragraph number for which they are proposed shall identify all items. The mark number as indicated on Drawings shall also identify all equipment and fixtures.

   c. Shop Drawings and Product Data submittal shall include manufacturer's name and catalog numbers, dimensions, loads, and all other characteristics and accessories as listed in the Specifications or on the Drawings. All loads, characteristics, and accessories called for in the Specifications or on the Drawings shall be highlighted, circled or underlined on the Shop Drawings and Product Data. Descriptive literature shall be current factory brochures and submittal sheets.

   d. FAX submittals are not acceptable.

   e. Material or equipment shall not be ordered or installed until the Engineer processes the written review. Any item omitted from the submittal shall be provided as specified without substitution.

   f. Prior to submission of the Shop Drawings and Project Data, Contractor shall review and certify that they meet the requirements of the Contract Documents.

   g. A minimum period of two weeks, exclusive of transmittal time, will be required each time Shop Drawings and/or Product Data are submitted or resubmitted for review. The Contractor shall consider this time when scheduling a submittal date.

C. Submittal Review

1. Submittals will be reviewed for general conformance with the design concept, but this review does not guarantee quantity shown, nor does it supersede the responsibility of the Contractor to provide all materials, equipment and installation in accordance with the Drawings and Specifications.

2. The Contractor shall agree that Shop Drawings and Product Data submittals processed by the Engineer are not Change Orders and that the purpose of Shop Drawings and Product Data submittals by the Contractor is to demonstrate to the Engineer that the Contractor understands the design concept. The Contractor demonstrates his understanding by indicating which equipment and material he intends to furnish and install and by detailing the fabrication and installation methods he intends to use.

3. It shall be clearly understood that the noting of some errors, but the overlooking of others, **does not** grant the Contractor permission to proceed in error or in conflict with Contract Documents. The Contractor shall agree that if deviations, discrepancies or conflicts between Shop Drawings and Design Drawings and Specifications are discovered either prior to or after Shop Drawing submittals are processed by the Engineer, the Design Drawings and Specifications shall control and shall be followed.

4. If a resubmittal is required, submit a complete copy of the Engineer's review letter requiring such with the resubmittal.

D. Substitutions

1. See Specification Section 012500, SUBSTITUTION PROCEDURES, for additional information and requirements.

2. In addition to the provisions of Specification Section 012500, SUBSTITUTION PROCEDURES, **Substitutions** shall comply with the following requirements:

a. Manufacturers, model numbers and other pertinent information listed in the Specifications or on the Drawings are intended to establish minimum standards of performance, function and quality. Unless otherwise noted, the Contractor may submit equivalent compatible UL-listed equipment from other manufacturers for review, as long as the minimum standards are met.

b. Calculations and other detailed data indicating how the item was selected shall be included for items that are not specified. Data must be complete enough to permit detailed comparison of every significant feature, function, performance, and quality characteristic that is specified, scheduled or detailed. The comparison must prove that the substituted item equals or exceeds the requirements of the specified item.

c. The Contractor shall assume full responsibility that substituted items or procedures will meet the Specification and job requirements and shall be responsible for the cost of redesign and modifications to the work caused by these items.

d. At the Engineer's request, the Contractor shall furnish locations where equipment similar to the substituted equipment is installed and operating along with the user's phone numbers and contact person. Satisfactory operation and service history will be considered in the acceptance or rejection of the proposed substitution.

E. Record Drawings

1. See Specification Section 017839, PROJECT RECORD DOCUMENTS, for additional information and requirements.

2. In addition to the provisions of Specification Section 017839, PROJECT RECORD DOCUMENTS, **Record Drawings** shall comply with the following requirements:

a. At the beginning of the Project, one print of each applicable Drawing will be issued to the Contractor specifically for use in preparing Record Drawings.

As the work progresses, the Contractor shall maintain a record of all deviations in the work from that indicated on the Drawings. Final locations of all underground work shall be recorded by depth from finished grade and by offset distance from permanent surface structures, e.g. building, curbs, walks. The original Drawings will be made available to the Contractor, from which he shall have made, a set of reproducible Drawings. The Contractor shall then transfer the changes, notations, etc. from the marked-up prints to the reproducible Drawings. The Record Drawings (marked-up prints and reproducibles) shall be submitted to the Engineer for review, after first securing the Inspector's verification by signature.

F. Operations and Maintenance Instructions

1. See Specification Section 017823, OPERATION AND MAINTENANCE DATA, for additional information and requirements.

2. In addition to the provisions of Specification Section 017823, OPERATION AND MAINTENANCE DATA **Operations and Maintenance Instructions** shall comply with the following requirements:

a. Three copies of Operation and Maintenance Instructions and Wiring Diagrams for all equipment shall be submitted to the Engineer. All instructions shall be clearly identified by marking them with the same designation as the equipment item to which they apply (e.g. UPS-1). All Wiring Diagrams shall agree with reviewed Shop Drawings and indicate the exact field installation.

b. All instructions shall be submitted at the same time and shall be bound in a suitable binder with tabs dividing each type of equipment (e.g. MCC, UPS, etc.). Each binder shall be labeled indicating "Operating and Maintenance Instructions, Project Title, Contractor, Date" and shall have a Table of Contents listing all items included.

c. The Contractor shall verbally instruct the Owner's maintenance staff in the operation and maintenance of all equipment and systems. The Engineer's office shall be notified 48 hours prior to this meeting.

d. The Contractor shall prepare a letter indicating that all Operation and Maintenance Instructions (printed and verbal) have been given to the Owner, to the Owner's satisfaction. This letter shall be acknowledged (signed) by the Owner and submitted to the Engineer.

1.9 COORDINATION

A. See Specification Section 013113, PROJECT MANAGEMENT AND COORDINATION, for additional information and requirements.

B. Electrical Drawings are essentially diagrammatic, unless specifically dimensioned. Some work may be shown offset for clarity. The actual locations of all materials, conduits, fixtures, supports, etc. shall be carefully planned prior to installation of any work in order to avoid all interferences with each other, or with architectural, civil, mechanical, plumbing, structural or other elements.

C. While the size and location of equipment are shown to scale wherever possible, all dimensions and conduit/conductor data shall be verified in the field.

D. Where the work requires connections to be made to equipment furnished and set in place by others, the Contractor shall obtain exact rough-in dimensions from the manufacturer of such equipment and he shall install the connections in a neat and workmanlike manner.

E. If discrepancies are discovered between Drawings and Specifications requirements, the more stringent requirement shall apply.

F. All conflicts shall be called to the attention of the Architect and the Engineer prior to the installation of any work or the ordering of any equipment.

G. No work shall be prefabricated or installed prior to this coordination. No additional compensation will be considered to the Contractor for any prefabrication or installation performed prior to this coordination.

1.10 SCHEDULING

A. All work shall be scheduled subject to the review of the Architect, Engineer and the Owner. No work shall interfere with the operation of the existing facilities on or adjacent to the site. The Contractor shall have at all times, as conditions permit, a sufficient force of workmen and quantity of materials to install the work for which contracted, as rapidly as possible consistent with good work, and shall cause no delay to other Contractors engaged upon this project or to the Owner.

1.11 WARRANTY

A. See Specification Section 017836, WARRANTIES, for additional information and requirements.

B. Guarantee shall be in accordance with the General Conditions. These Specifications may extend the period of the guarantee for certain items. Where such extension are called for, or where items are normally provided with guarantee periods in excess of that called for in the General Conditions, the Certificate of Guarantee shall be furnished to the Owner through the Engineer.

C. Contractor shall deliver to the Owner a written guarantee on all workmanship, materials and equipment for a period of one (1) year from the date of acceptance by the Owner. Any work found to be faulty during that period of time shall be corrected at once, upon written notification, at the expense of the Contractor. This shall include repair or replacement of the premises that may be damaged as a result of faulty work and materials furnished.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. Materials and equipment shall be new unless otherwise noted.

B. Materials and equipment of a given type shall be by the same manufacturer.

C. Materials and equipment shall be covered or otherwise protected during construction as required to maintain the material and equipment in new factory condition until project acceptance. Upon completion of work and prior to final inspection, Contractor shall thoroughly clean all exposed fixtures, trim and equipment, and shall leave the entire installation in neat, clean, and useable condition. Materials and equipment shall be free of dents, scratches, marks, shipping tags, and all defacing features at time of project acceptance.

D. The Contractor shall order materials and equipment in a timely manner to prevent any delay in the construction schedule, and he shall bear any penalty by vendors to meet schedules.

E. Verify all dimensional information to ensure proper clearance for installation of equipment. Check all materials and equipment after arrival on the jobsite and verify compliance with the Contract Documents.

PART 3 - EXECUTION

3.1 DEMOLITION

A. The Contractor shall protect existing electrical equipment and installations that are not indicated to be removed. If damaged or disturbed in the course of the Work, remove damaged portions and install new products of equal capacity, quality, and functionality.

B. Exposed electrical equipment and installations, indicated to be demolished, shall be removed in their entirety.

C. Buried raceway and wiring, indicated to be abandoned in place, shall be cut 2 inches below the surface of adjacent construction and removed in its entirety. Raceways abandoned in place shall be capped and disturbed surfaces shall be patched to match existing finish.

D. Demolished material shall be removed from Project site.

E. Components indicated for relocation shall be removed, stored, cleaned, reinstalled, reconnected, and made operational.

3.2 CUTTING AND PATCHING

A. The Contractor shall perform all cutting and drilling, or other work, required to provide openings in walls, ceilings, floors, footings, foundations or other structures necessary to accomplish work under this Specification Division. The cutting shall be performed by skilled mechanics of the trades involved.

B. Cutting or coring shall not impair the strength of the structure. Any damage resulting from this work shall be repaired at the Contractor's expense to the satisfaction of the Architect.

C. Wherever possible, work shall be done in a concealed and neat workmanlike manner requiring the least amount of cutting of studs, plates and woodwork. Such cutting or notching is allowed only after consultation with and by permission of the Engineer.

D. The Contractor shall repair and refinish disturbed finish materials and other surfaces to accurately match adjacent undisturbed new or existing structures and surfaces and shall install new fireproofing where existing fire-stopping has been disturbed. The repair and refinishing of materials and other surfaces shall be by skilled mechanics of the trades involved.

E. All cuts are to be clean with no chipping. Where chipping occurs as a result of work in a cut area, a new clean cut shall be made immediately prior to patching.

3.3 EXCAVATION AND BACKFILL

A. The Contractor shall provide excavation and backfilling required to complete work detailed in the Drawings and Specifications. Unless otherwise noted, minimum earth cover above top of conduit outside building walls shall be 24", not including base and paving in paved areas.

B. The location of all underground facilities shall be verified with the Owner and utility companies prior to the commencement of any excavation.

C. The Contractor shall contact Underground Service Alert (USA), at 1-800-642-2444, ten (10) days prior to doing any excavation or trenching, and shall advise USA of the work schedule and comply with their requirements.

D. The Contractor shall notify the owner 72 hours prior to any excavation.

E. Provide all shoring required by site conditions. Where over-excavation occurs, provide compacted sand backfill. Where groundwater is encountered, remove to keep excavation dry, using well points and pumps as required.

F. The conduit shall be laid on firm soil cut true and even to afford bearing for the full length of the barrel of the conduit.

G. When the bottom uncovered at sub-grade is soft and, in the opinion of the Engineer, cannot support the conduit, a further depth shall be excavated and refilled to conduit foundation grade as required by the Engineer.

H. Backfill (where concrete encasement is not required):

1. Material 3” below, 3” around, and to 6” above conduit shall be sand. Place carefully around and on top of conduit, taking care not to disturb conduit. Consolidate with vibrator.

2. Material from 6” Above Conduit to Grade shall be sandy or silty loam, free of lumps, laid in 6” layers, uniformly mixed to proper moisture and compacted to required density. If backfill is determined to be suitable and required compaction is demonstrated by laboratory test, water compaction in 6” layers may be used, subject to review by Engineer.

I. No excavation below the level of, or adjacent to, foundations of footings shall be made except in a manner approved by the Structural Engineer.

J. Compaction

1. Prior to compaction, moisten or aerate each layer as necessary to provide optimum moisture content. Compact each layer to required percentage of maximum dry density or relative dry density for each area classification. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

2. In **Lawns and Unpaved Areas**, compact top 6” of sub-grade material to 85% relative compaction.

3. Under **Pavement**, compact top 8” of sub-grade immediately beneath the base course at 95% minimum relative compaction.

3.4 CONCRETE EQUIPMENT BASES

A. The Contractor shall provide a concrete equipment base for each piece of electrical equipment required to have a base as shown in the Drawings, Notes and Details.

B. Concrete equipment bases shall be 6” high concrete, 3500PSI strength, unless otherwise noted. Base shall extend 6” beyond the largest dimensions of the equipment, unless otherwise noted. The top edge of the base shall have a ¾” chamfer. The base shall have #4 reinforcing bars at 12” on center, each way, located at the mid-depth of the base.

C. Concrete anchors shall be steel bolts with expansion anchors requiring a drilled hole. Powder-driven anchors are not acceptable. Minimum concrete embedment shall be 4.5 diameters but not less than manufacturer’s requirements for minimum strength. Minimum spacing shall be 10 diameters center-to-center and 5 diameters center to edge of concrete but not less than manufacturer’s requirements for minimum strength. Maximum allowable stresses for tension and shear shall be 80% of the ICC-ES test report values.

D. Where applicable, concrete structures shall be submitted to the serving utility for their approval prior to installation.

3.5 SEISMIC ANCHORAGE AND BRACING

A. Equipment Anchorage

1. All electrical equipment and components shall be anchored and installed per the details on the DSA approved construction documents. Where no detail is indicated, the following components shall be anchored or braced to meet the force and displacements requirements prescribed in the 2022 CBC, Sections 1617A.1.18 through 1617A.1.26. and ASCE 7-16 Chapter 13, 26, and 30:

   a. All permanent equipment and components

   b. Temporary or movable equipment that is permanently attached (e.g. hard wired) to building utility electrical service.

   c. Movable equipment which is stationed in one place for more than 8 hours and heavier than 400 pounds are required to be anchored with temporary attachments.

2. The attachment of the following electrical components shall be positively attached to the structure, but need not be detailed on the plans. These components shall have flexible connections provided between the components and associated conduit.

   a. Components weighting less than 400 pounds and have a center of mass located 4 feet or less above the adjacent floor or roof level that directly support the components.

   b. Components weighting less than 20 pounds, or in the case of distributed systems, less than 5 pounds per foot, which are suspended from a roof or floor or hung from a wall.

      1) For those elements that do not require details on the approved drawings, the installation shall be subject to the approval of the Structural Engineer of Record and the DSA Structural Engineer. The project inspector will verify that all components and equipment have been anchored in accordance with above requirements.

B. Electrical Distribution System Bracing

1. Electrical distribution systems shall be braced to comply with the forces and displacements prescribed in ASCE 7-16 Section 13.3 as defined in ASCE 7-16 Section 13.6.7, 13.6.6, 13.6.5, and 2022 CBC, Sections 1617A.1.23, 1617A.1.24, 1617A.1.25, and 1617A.1.26.

2. The bracing and attachments to the structure shall be detailed on the approved drawings or they shall comply with one of the OSHPD Pre-Approvals (OPM#) as modified to satisfy anchorage requirements of ACI 318, Chapter 17.

3. Copies of the manual shall be available on the jobsite prior to the start of hanging and bracing of the electrical distribution systems.

4. The Structural Engineer of Record shall verify the adequacy of the structure to support the hanger and brace loads.

3.6 CLEANING AND PROTECTION

A. The Contractor shall, progressively and at completion of the job, thoroughly clean all of his work including outlets, fittings, and devices, and inspect exposed finishes. The Contractor shall remove all burrs, dirt, grease, paint spots, stains, labels, tags, rust, foreign material, and construction debris resulting from his work.

B. The Contractor shall protect equipment and installations and maintain conditions to ensure that coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.

END OF SECTION 260100

SECTION 260500
BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections shall form a part of this Section, with the same force and effect as though repeated here.

1.2 SUMMARY

A. See Section 260000

1.3 STANDARDS

A. NEMA 250 Standard for Enclosures for Electrical Equipment (1000 Volts Maximum)

PART 2 - PRODUCTS

2.1 CONCRETE PADS, AND PULL BOXES

A. At the Contractor’s option, he shall provide cast-in-place or pre-cast structures.

B. Concrete Forms and Reinforcement Materials shall be as specified in Division 03 Section “Cast-in-Place Concrete”.

C. Concrete shall be 3500-psi, 28-day compressive strength as specified in Division 03 Section “Cast-in-Place concrete”.

D. Weatherproof concrete pull boxes shall be manufactured by Christy Concrete Products or equal. All boxes shall have lids marked “Power”, etc. and be traffic-rated per CalTrans drawing ES-8 minimum where pull box occurs in vehicular traffic areas.

2.2 RACEWAYS AND FITTINGS

A. Galvanized rigid steel conduit (GRC) shall meet ANSI C80.1, and be heavy wall, hot dipped galvanized inside and out, with threaded ends, for use with threaded type fittings.

B. Galvanized intermediate metallic conduit (IMC) shall meet ANSI C80.6, be zinc-coated steel and have threaded fittings.

C. Galvanized electrical metallic tubing (EMT) shall meet ANSI C80.3, and be continuous, seamless steel tubing, galvanized or sherardized on exterior, coated on interior with smooth hard finish of lacquer, varnish or enamel, with steel set-screw, steel compression or die-cast compression type fittings. Provide concrete-tight type compression fittings where required and rain-tight wet location listed compression fittings for outdoor locations.

D. Rigid non-metallic conduit (RNC) shall meet NEMA TC 2, be Schedule 40 PVC, suitable for 90°C, with solvent cemented type NEMA TC3 fittings.

E. All raceway fittings shall be specifically designed for the raceway type with which used.

2.3 CONDUCTORS

A. All conductors shall be delivered to the site in their original unbroken packages, plainly marked or tagged with UL labels, size, type of wire, type of insulation, name of the manufacturing company and trade name of the wire.

B. All conductors shall be minimum of 98% conductivity soft drawn copper. Conductors #8 AWG and larger shall be stranded type “THHN/THWN”, 600 Volt insulation. Conductors #10 AWG and smaller shall be solid copper “THHN/THWN”, 600 Volt insulation.

C. Insulation shall be Thermoplastic Type rated at 75 degrees C. minimum.

2.4 PULL BOXES AND WIREWAYS

A. Pullboxes and Enclosures for outdoor use shall be NEMA 250, Type 3R or Type 4, unless otherwise noted.

B. Pullboxes and Enclosures for indoor use shall be NEMA 250, Type 1, unless otherwise noted.

C. Wireways shall be constructed in accordance with UL 870 for wireways, auxiliary gutters and associated fittings. Every component including lengths, connectors and fittings shall be UL Listed.

D. Wireways and auxiliary gutters shall have continuous removable cover secured with screws and keyhole slots. Hinged cover shall be provided where installed above suspended ceiling.

E. Fabricated sheet steel pull boxes shall be installed only in dry, protected locations and shall be furnished with knockouts and removable screw cover. Box shall be finished with one coat of zinc chromate and a coat of primer sealer and where exposed to public view shall be painted to match the surrounding surface.

F. Weatherproof sheet steel pull boxes shall be fabricated of code gauge galvanized sheet steel with two coats of rust resistant finish and shall be furnished with gasket and made completely weathertight.

2.5 PANELBOARDS

A. Furnish panelboards shown on plans and described herein. All cans shall be a minimum of 20” wide and 5.75” deep unless otherwise shown. They shall be totally flat or equal with flush keyed locks.

B. Fronts shall be cold rolled sheet steel painted with ANSI 61 gray enamel over a rust inhibitor. They shall be equipped with door, flush hinges, and flush proper cylinder tumbler lock, metal circuit card holder, and quarter turn adjustable trim clamps. Panel locks shall be keyed alike.

C. Panel shall consist of reinforced corrosion resistant galvanized sheet steel frame with silver plated copper bus bars and circuit breakers properly supported to prevent vibration breakage in handling. All terminals shall be solderless type suitable for specified conductors of size indicated.

D. Neutral bus shall be full size. Neutral bus shall be 200% rated when supplied from a double neutral feeder. Provide an equipment ground bus in each panelboard. In addition to the equipment ground bus, provide an isolated ground bus when supplied from a feeder which includes an isolated grounding conductor.

E. Branch circuit breakers shall be molded case, bolt-on, and fully interchangeable without disturbing adjacent units. All 2-pole and 3-pole breakers shall have common trips. Circuit breakers supplying Class 1 transformers shall be lockable in the off position.

F. Branch panelboards and overcurrent protection devices shall have a minimum short circuit rating of 10,000 RMS symmetrical AIC (120/208V).

G. All Panelboards shall be fully rated as shown on Drawings; series-rating shall not be allowed.

H. Panelboards shall bear an Arc-Flash Hazard Warning label in accordance with CEC Article 110.16.

I. All spaces shall have hardware.

2.6 SUPPORTING DEVICES

A. Supporting devices shall be constructed of cold-formed steel, with a corrosion-resistant coating acceptable to authorities having jurisdiction.

B. Metal items for use outdoors or in damp locations shall be hot-dipped galvanized steel.

C. Slotted-steel channel supports shall have flanged edges turned toward the web, and 9/16-inch diameter slotted holes at a maximum of 2 inches on center, in the web.

1. Channel thickness shall be selected to suit structural loading.

2. Fittings and accessories shall be products of the same manufacturer as the channel supports.

D. Raceway and cable supports shall be manufactured clevis hangers, riser clamps, straps, threaded C-clamps with retainers, ceiling trapeze hangers, wall brackets, and spring-steel clamps or click-type hangers.

E. Pipe sleeves shall be ASTM A 53, Type E, Grade A, Schedule 40, galvanized steel, with plain ends.

F. Cable supports for vertical conduit shall be a factory-fabricated assembly consisting of threaded body and insulating wedging plug for non-armored electrical cables in riser conduits. Plugs shall have number and size of conductor gripping holes as required to suit individual risers. Body shall be constructed of malleable-iron casting with hot-dip galvanized finish.

G. Concrete anchors shall be steel bolts with expansion anchors requiring a drilled hole. Powder driven anchors are not acceptable.

H. Toggle bolts shall be all-steel springhead type.

2.7 ELECTRICAL IDENTIFICATION

A. Identification devices shall be a single type of product for each application category. Colors shall be as prescribed by ANSI A13.1, CEC, and these Specifications.

B. Raceway and cable labels shall comply with ANSI A13.1, Table 3, for minimum size of letters for legend and minimum length of color field for each raceway and cable size.

1. Pre-tensioned, wraparound plastic sleeves shall be a flexible, preprinted, color-coded, acrylic band sized to suit the diameter of the item it identifies.

2. Preprinted, flexible, self-adhesive, vinyl labels shall have a legend, over-laminated with a clear, weather- and chemical-resistant coating.

3. Color shall be black letters on orange background.

4. Legend shall indicate voltage.

C. Self-adhesive colored marking tape for raceways, wires and cables shall be vinyl tape, not less than 1 inch wide by 3 mils thick.

D. Underground Warning Tape shall be vinyl tape, compounded for permanent direct-burial service, not less than 6 inches wide by 4 mils thick, embedded with a continuous metallic strip or core, brightly-colored, continuously-printed with a legend that indicates the type of underground line.

E. Tape markers for wire shall be vinyl or vinyl-cloth, self-adhesive, wraparound type with preprinted numbers and letters.

F. Color-coding cable ties shall be made of Type 6/6 nylon, be self-locking type and of colors to suit coding scheme.

G. Engraved plastic labels, signs and instruction plates shall be made from black (or red as noted) Bakelite laminate engraving stock with a white core, punched or drilled for mechanical fasteners. It shall have a minimum thickness of 1/16-inch for signs up to 20 sq. in. and a minimum thickness of 1/8-inch for larger sizes.

H. Interior Warning and Caution signs shall comply with 29 CFR, Chapter XVII, Part 1910.145 and shall be preprinted, aluminum, baked-enamel-finish signs, punched or drilled for mechanical fasteners, with colors, legend, and size appropriate to the application.

I. Exterior Warning and Caution signs shall comply with 29 CFR, Chapter XVII, Part 1910.145 and shall be weather-resistant, non-fading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch, galvanized-steel backing, with colors, legend, and size appropriate to the application. They shall be equipped with 1/4-inch grommets in each corner for mounting.

J. Fasteners for nameplates and signs shall be self-tapping, stainless-steel screws or No. 10/32 stainless-steel machine screws with nuts and flat and lock washers.

K. Arc-Flash Hazard Warning labels shall be provided at electrical equipment such as switchboards and panelboards in accordance with CEC 110.16.

L. Circuit Identification – A typewritten circuit directory shall be provided at each panelboard and switchboard in accordance with CEC Article 408.4(A). The Contractor shall develop and prepare the circuit identification description based on the as-built condition.

M. Source of Supply Identification – All switchboards, panelboards and transformers shall have a typewritten label applied indicating the device or equipment where the power supply originates per CEC Article 408.4(B).

2.8 TOUCHUP PAINT

A. Touch-up paint shall be equipment manufacturer's paint selected to match installed equipment finish.

B. Touch-up paint on galvanized surfaces shall be zinc-rich paint recommended by item manufacturer.

PART 3 - EXECUTION

3.1 ELECTRICAL INSTALLATION

A. All material, equipment, devices, etc., shall be installed in accordance with the recommendations of the manufacturer of the particular item. The Contractor shall be responsible for all installations contrary to the manufacturer's recommendations. The Contractor shall make all necessary changes and revisions to achieve such compliance. Manufacturer's installation instructions shall be delivered to and maintained at the job site throughout the construction of the project.

B. The layout and installation of electrical work shall be coordinated with the overall construction schedule to prevent delay in completion of the project.

C. Dimensions and information regarding accurate locations of equipment and structural limitations and finish shall be verified with other sections.

D. The drawings do not show all raceway, wiring, offsets, bends, special fittings, junction or pull boxes necessary to meet job conditions. Items not shown as indicated, where are clearly necessary for proper operation or installation of systems shown, shall be provided as required, at no increase in contract price.

E. Materials and Components shall be installed level, plumb, and parallel and perpendicular to other building systems and components, unless otherwise indicated.

F. Electrical equipment, junctions and pull boxes shall be installed in accessible locations, avoiding obstructions, preserving maximum headroom, and keeping openings and passageways clear.

G. Equipment shall be installed to facilitate service, maintenance, and repair or replacement of components. It shall be connected for ease of disconnecting, with minimum interference with other installations. Minor adjustments in the locations of equipment shall be made where necessary providing such adjustments do not adversely affect function of the equipment. Major adjustments for the location of equipment shall be previously approved and detailed on the Record Drawings.

H. Right of Way shall be given to raceways and piping systems installed at a required slope.

3.2 PRECAST CONCRETE PULL BOXES

A. Contractor shall provide a minimum of 3-6” of sand base material suitable to receive the pullbox or manhole. The base material shall be compacted and graded level at proper elevation to receive the pullbox in relation to the conduit grade or ground cover requirements as designated in the plans.

B. Sealants used between the joints of the pullbox are at the Contractor’s discretion unless otherwise specified. If grout is used, it should consist of two parts plaster sand to one part cement with sufficient water added to make the grout flow under its own weight. The grout should be poured into a water soaked groove and filled to the top of the groove unless a double amount is to be used as a further precaution against leakage. In this case, the mastic sealant should be placed on the two shoulders of the groove. The next section of pullbox should be placed while the foaming action is in process. Contractor shall verify grades with the Engineer and shall set holes and boxes level at proper grades.

C. All conduits penetrating the pull box shall have seals to prevent water from entering the raceway.

3.3 RACEWAY APPLICATION

A. Galvanized Rigid Steel Conduit (GRC) **may** be used in all locations. Where installed in direct contact with earth, conduit shall be wrapped with two layers of half-lapped 10-mil PVC tape for a total thickness of 40-mil or have a factory applied 40-mil PVC coating.

B. Galvanized Rigid Steel Conduit (GRC) **shall** be used where exposed to physical damage, indoors where exposed to moisture, in exposed outdoor installations, in systems higher than 600 volts, and where required by code.

C. Galvanized Intermediate Metallic Conduit (IMC) **may** be used in indoor locations not in direct contact with earth.

D. Galvanized Electrical Metallic Tubing (EMT) may be used in dry indoor locations according to the following criteria:

1. It is not subject to physical damage.
2. It is not in direct contact with earth.
3. It is not in concrete slabs.
4. It is not in a hazardous area.

E. Rigid Non-Metallic Conduit (RNC) Schedule 40 PVC **may** be used underground or below concrete slabs on grade. Rigid Non-Metallic Conduit (RNC) Schedule 80 PVC **may** be used to pass through concrete slabs. Rigid Non-Metallic Conduit (RNC) **may** be used in compliance with utility company requirements for utility service conduits.

Rigid Non-Metallic Conduit (RNC) **shall not** be installed above grade or above finished floor level.

3.4 RACEWAY INSTALLATION

A. General

1. Expansion joints shall be provided at building expansion joints or as required due to length of run or difference in temperatures.

2. All fittings that are exposed or in damp areas shall have sealing glands and proper gasket.

3. In general, all conduits shall be sloping to drain. Bends that place a trap in a conduit shall be avoided. Provided drip fitting as required. Dux-Seal high ends of all underground raceways.

4. All conduit runs shall be mechanically and electrically continuous from outlet to outlet. Conduit size or type shall not be changed between outlets.

5. All empty raceways shall be equipped with pull lines, capped and labeled. Pull lines shall be 3/16” polypropylene, No. 14 AWG zinc-coated steel or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 24 inches of slack with identification tag at each end of the pull wire.

6. Minimum size of any conduit for lighting, power and signal shall be ¾” conduit unless shown otherwise.

7. Use temporary raceway caps to prevent foreign matter from entering. Immediately prior to installation of conductors, conduit shall be blown and swept free of foreign materials. All conduit stubs for future, both above and below grade, shall be capped. Run conduits for spare panelboard circuits to attic or accessible spaces.

8. Make conduit bends and offsets so ID is not reduced. Keep legs of bends in the same plane and straight legs of offsets parallel, unless otherwise indicated.

9. Make bends in exposed parallel or banked runs from same centerline to make bends parallel. Use factory elbows only where elbows can be installed parallel; otherwise, provide field bends for exposed parallel raceways.

10. There shall be no more than the equivalent of four quarter bends (360-degrees total) between pull points such as pull boxes, outlet boxes or conduit bodies, in one run of conduit.

11. Install raceways and cables at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Locate horizontal raceway runs above water and steam piping.

12. Conduits shall be securely fastened to building structure at intervals not greater than ten feet.

13. Conduit shall be square cut and reamed if required to full size, with thread full cut and true.

14. Conduits shall be jointed by approved couplings with ends of conduits tightly butted. Non-insulating compound shall be used in making up joints below grade or inside on grade to insure a watertight system.

15. Conduit connections to outlet boxes or cabinets shall be made with approved connectors, using locknuts and insulated throat bushings.

16. Complete raceway installation before starting conductor installation.

17. Contractor shall provide rubber grommets to fasten galvanized conduit to exterior structures made of dissimilar metals at all exterior locations to prevent galvanic corrosion.

18. Contractor shall provide rubber grommets to fasten galvanized conduit to supports which are also used by other systems utilizing piping of dissimilar metals to prevent galvanic corrosion.

B. Interior

1. Conceal raceways and cables, unless otherwise indicated, within finished walls, ceilings, and floors.

2. All concealed conduits shall be installed in as direct a line as possible between outlets. No more than four quarter bends, or their equivalent, will be allowed between outlets. Feeder conduits shall follow arrangement shown on plans unless a change is authorized. Branch circuit conduits shall, in general, follow arrangement as shown as far as structural conditions permit. All exposed runs shall parallel buildings, walls, or partitions, and be supported on Kindorf Hangers to meet Title 24, Part 3, CEC.

C. Exterior

1. Exterior conduit including the sweep below grade and the vertical riser shall be galvanized rigid steel conduit, except where rigid non-metallic conduit is required for utility service conduits by the serving utility company.

2. No rigid non-metallic conduit (RNC) shall be installed above grade.

D. Underground

1. Two or more conduit runs installed in a common trench shall be separated horizontally by a minimum of four inches (4”).

2. Two or more conduit runs installed in a common trench shall be separated horizontally by a minimum of twelve inches (12”).

3. Conduits installed underground and not under buildings shall have a minimum of 24” of cover over the top of the conduit.

4. Rigid non-metallic conduit shall be laid on excavated firm bed, sealed watertight and unless with 24 inch earth cover, shall have 3 inch minimum concrete encasement unless under concrete. Plastic conduit without encasement shall be random lay, “snaked”, not pulled tight. Plastic conduit laid in areas of reinforcing steel shall be supported independently at each threaded fitting. Plastic conduit joints shall be full solvent welded.

5. Rigid non-metallic conduit installed underground and not below a building slab shall have a galvanized rigid steel long radius elbow installed at the terminating end where the transition from horizontal to vertical occurs.

3.5 CONDUCTOR APPLICATION

A. Feeders and branch circuits shall be Type THHN/THWN insulated conductors in raceway.

B. Underground feeders and branch circuits shall be Type THWN or single-wire, Type UF insulated conductors in raceway.

C. Branch circuits shall be Type THW or THHN/THWN insulated conductors in raceway.

D. Minimum conductor size shall be #12 for power, #14 for 120V control circuits and #18 for 24V control circuits.

3.6 CONDUCTOR INSTALLATION

A. Wire in panels, cabinets, pull boxes, and wiring gutters shall be squared, labeled, and neatly grouped with cable ties and fanned out to the terminals.

B. All branch circuits, splices, and taps for conductors #10 and smaller shall be made with 3M “Scotchlock” connectors, or approved equal.

C. All branch circuits, splices, and taps for conductors #8 and larger shall be made with two-bolt type solderless connectors or T & B “color keyed” compression lugs.

D. Bolt-type solderless connectors shall be torqued with a torque wrench according to the manufacturer’s recommendations, and then retightened after 24-48 hours before taping. Owners’ inspector shall be informed of this procedure during the waiting period and shall witness the act of retightening.

E. Connectors and lugs for terminating stranded conductors #8 and larger shall be machine crimp compression type.

F. All splices shall be taped with Scotch #88 plastic electrical tape with “Scotch Fill” where necessary for a smooth joint. Scotch #27 or #2520 shall be used for other than normal temperatures or conditions. All connections and splices shall be electrically perfect and in strict accordance with all code requirements.

G. No splices shall be made below grade in a manhole or pullholes without Engineer's written approval, and then shall be encapsulated with 3M potting kits per 3M Specifications. For larger gauge wire where 3M potting kits are prohibited Contractor shall use submersible UL listed Polaris connectors by NSi.

3.7 WIREWAY AND AUXILIARY GUTTER APPLICATION

A. Wireways and auxiliary gutters shall be used above and below panelboards, lighting relay cabinets, and terminal cabinets to accommodate large concentrations of wires.

3.8 PULL BOXES AND WIREWAYS:

A. Boxes shall be installed square and plumb. An engraved nameplate shall be installed on each box indicating its function. Nameplate shall be installed on the exterior of each box in unfinished areas and on the interior of each box in finished areas.

B. Wireways shall be installed with strip-type connectors with self-retained mounting screws. Hangers with two piece, hook together features shall be used to permit preassembly of wireway and hanger bottom plate before hanging on a preinstalled upper bracket.

C. Pull and junction boxes shall be installed as shown to ease the pulling of wire and to comply with CEC requirements.

3.9 PANELBOARDS

A. All panels shall be installed with the top of the trim at 6'-0" above the finished floor, unless otherwise indicated on the drawings.

B. Where space permits, panels shall be surface mounted where they are not visible to the public.

C. A typewritten directory shall be mounted behind plastic in a metal holder welded to the inside of each panel door showing circuit numbers and complete description of all outlets on each circuit and an Arc-Flash Hazard Warning label shall be applied to each panelboard, switchboard and service entrance in accordance with CEC 110.16.

D. Labeling of all circuits at panel boards shall match the exact room names of each of the spaces. Verify exact room names with Owner prior to labeling.

E. Electrical loads shall be disaggregated into separate panelboards per the 2022 California Energy Code Section 130.5(b).

3.10 SUPPORTING DEVICE APPLICATION

A. Hot-dip galvanized materials or nonmetallic channel and angle system components shall be used in damp locations and outdoors.

B. Steel materials shall be used in dry locations.

C. Support clamps for PVC raceways shall be click-type clamp system.

D. Strength of supports shall be adequate to carry present and future loads, times a safety factor of at least four with a minimum of 200-lb design load.

3.11 SUPPORT INSTALLATION

A. Install support devices to securely and permanently fasten and support electrical components.

B. Install individual and multiple raceway hangers and riser clamps to support raceways. Provide U-bolts, clamps, attachments, and other hardware necessary for hanger assemblies and for securing hanger rods and conduits.

C. Support parallel runs of horizontal raceways together on trapeze- or bracket-type hangers.

D. Size supports for multiple raceway installations so capacity can be increased by a 25 percent minimum in the future.

E. Support individual horizontal raceways with separate, malleable-iron pipe hangers or clamps.

F. Install 1/4-inch diameter or larger threaded steel hanger rods, unless otherwise indicated.

G. Spring-steel fasteners specifically designed for supporting single conduits or tubing may be used instead of malleable-iron hangers for 1-1/2-inch and smaller raceways serving lighting and receptacle branch circuits above suspended ceilings and for fastening raceways to slotted channel and angle supports.

H. Arrange supports in vertical runs so the weight of raceways and enclosed conductors is carried entirely by raceway supports, with no weight load on raceway terminals.

I. Simultaneously install vertical conductor supports with conductors.

J. Separately support cast boxes that are threaded to raceways and used for fixture support. Support sheet-metal boxes directly from the building structure or by bar hangers. If bar hangers are used, attach bar to raceways on opposite sides of the box and support the raceway with an approved fastener not more than 24 inches from the box.

K. Install sleeves for cable and raceway penetrations of concrete slabs and walls unless core-drilled holes are used. Install sleeves for cable and raceway penetrations of masonry and fire-rated gypsum walls and of all other fire-rated floor and wall assemblies. Install sleeves during erection of concrete and masonry walls.

L. Securely fasten electrical items and their supports to the building structure, according to the following criteria, unless otherwise noted:

1. Wood – wood screws or screw-type nails.
2. Masonry – toggle bolts on hollow masonry units, expansion bolts on solid masonry units.
3. Existing Concrete – expansion bolts.
4. Steel – welded threaded studs or spring-tension clamps on steel. Field welding shall comply with AWS D1.1. Welding to steel structure may be used only for threaded studs, not for conduits, pipe straps, or other items.
5. Light Steel – sheet-metal screws.
6. Fasteners shall be selected so the load applied to each fastener does not exceed 25 percent of its proof-test load.

3.12 ELECTRICAL IDENTIFICATION

A. Each conductor of every system shall be permanently tagged in each panelboard, pull box, J-box, etc., in compliance with the Occupational Safety and Health Administration (OSHA).

B. Brady labels shall be used to identify terminals and destination of feeders, branch circuits, signal and control circuits, etc., at all terminations, junction boxes and pull boxes, and shall be coordinated with the nameplates in all boxes and equipment.

C. All terminals in the switchboards, panels, relays, switches, devices, starter terminals, etc., shall have Brady labels for identification to identify both ends of all wiring.

D. The Contractor shall furnish and install 1” x 3” x 3/32” thick laminated black Bakelite nameplates with a white core (unless specifically shown as red) engraved to produce white letters on black background for all items of electrical equipment, including 2-pole and 3-pole circuit breakers, panelboards, starters, relays, time switches and disconnect switches.

E. All devices shall have their branch circuit identified on the back side of device plate with a permanent type black marker, i.e. CT A-21. Identify panelboard and circuit number from which receptacles are served. Use machine-printed, pressure-sensitive, abrasion-resistant label tape on face of plate and durable wire markers or tags within outlet boxes.

F. Coordinate names, abbreviations, colors, and other designations used for electrical identification with corresponding designations indicated in the Contract Documents or required by codes and standards. Use consistent designations throughout Project.

G. Panels having single-pole circuit breakers shall be provided with typed schedules mounted in welded metal holders behind plastic.

H. Clean surfaces that are to receive self-adhesive identification products before applying.

I. Tag and label circuits designated to be extended in the future. Identify source and circuit numbers in each cabinet, pull and junction box, and outlet box. Color-coding may be used for voltage and phase identification.

J. Install continuous underground plastic markers during trench backfilling, for exterior underground power, control, signal, and communication lines located directly above power and communication lines. Locate 6 to 8 inches below finished grade. If width of multiple lines installed in a common trench or concrete envelope does not exceed 16 inches, overall, use a single line marker.

K. All power conductors shall be identified in accordance with the following schedule:

1. 120/208V, 3 Phase, 4 Wire System.
   a. Phase A: Black.
   b. Phase B: Red.
   c. Phase C: Blue.
   d. Neutral: White.
   e. Ground: Green
2. 277/480V, 3 Phase, 4 Wire System.
   a. Phase A: Brown.
   b. Phase B: Orange.
   c. Phase C: Yellow.
   d. Neutral: White with a colored stripe or gray.
   e. Ground: Green.

L. Install warning, caution, and instruction signs where required to comply with 29 CFR, Chapter XVII, Part 1910.145, and where needed to ensure safe operation and maintenance of electrical systems and of items to which they connect. Install engraved plastic-laminated instruction signs with approved legend where instructions are needed for system or equipment operation. Install metal-backed butyrate signs for outdoor items.

M. Install engraved-laminated emergency-operating signs with white letters on red background with minimum 3/8-inch high lettering for emergency instructions on power transfer, load shedding, and other emergency operations.

3.13 REFINISHING AND TOUCHUP PAINTING

A. The Contractor shall clean damaged and disturbed areas and apply primer, intermediate, and finish coats to suit the degree of damage at each location. He shall follow paint manufacturer's written instructions for surface preparation and for timing and application of successive coats.

B. Damage to galvanized finishes shall be repaired with zinc-rich paint recommended by manufacturer.

C. Damage to PVC or paint finishes shall be repaired with matching touchup coating recommended by manufacturer.

3.14 SYSTEM TESTING AND STARTUP

A. Refer to Specification Section 26 95 00 "Electrical Acceptance Tests" for minimum required systems testing and startup.

END OF SECTION 260500

SECTION 260526
GROUNDING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections shall form a part of this Section, with the same force and effect as though repeated here.

1.2 SUMMARY

A. This Section includes grounding of electrical systems and equipment and basic requirements for grounding for protection of life, equipment, circuits, and systems. Grounding requirements specified in this Section may be supplemented in other Sections of these Specifications.

1.3 SUBMITTALS

A. Submittals for this Section shall be made according to the Conditions of the Contract, Division 01 Specification Sections and Specification Section 260100.

B. Product Data for grounding rods, connectors and connection materials, and grounding fittings.

C. Qualification data for firms specified in "Quality Assurance" Article to demonstrate their capabilities and experience.

D. Field tests and observation reports certified by the testing organization and indicating and interpreting the test reports for compliance with performance requirements.

1.4 QUALITY ASSURANCE

A. Testing Agency Qualifications: A "Nationally Recognized Testing Laboratory" (NRTL) as defined in OSHA Regulation 1910.7, or a full member company of the InterNational Electrical Testing Association (NETA).

1. Testing Agency Field Supervision: Use persons currently certified by NETA or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.

B. Comply with UL 467.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Chance: A. B. Chance Co.
2. Erico Inc.; Electrical Products Group.
3. Galvan Industries, Inc.
4. Lyncole XIT Grounding.
5. Raco, Inc.
6. Thomas & Betts, Electrical.

2.2 GROUNDING AND BONDING PRODUCTS

A. Where types, sizes, ratings, and quantities indicated are in excess of California Electrical Code (CEC) requirements, the more stringent requirements and the greater size, rating, and quantity indications govern.

2.3 WIRE AND CABLE GROUNDING CONDUCTORS

A. Conform to CEC Table 8, except as otherwise indicated, for conductor properties, including stranding.

1. Material: Copper.

B. Equipment Grounding Conductors: Insulated with green color insulation.

C. Grounding-Electrode Conductors: Stranded cable.

D. Bare Copper Conductors: Conform to the following:

1. Solid Conductors: ASTM B 3.
2. Assembly of Stranded Conductors: ASTM B 8.
3. Tinned Conductors: ASTM B 33.

2.4 MISCELLANEOUS CONDUCTORS

A. Grounding Bus: Bare, annealed-copper bars of rectangular cross section.

B. Braided Bonding Jumpers: Copper tape, braided No. 30 AWG bare copper wire, terminated with copper ferrules.

C. Bonding Straps: Soft copper, 0.05 inch thick and 2 inches wide, except as indicated.

2.5 CONNECTOR PRODUCTS

A. Grounding connections shall be exothermic welded, bolted clamp terminal, or pressure connector type.

B. Exothermic-Welded Connections shall be provided in kit form and selected per manufacturer's written instructions for specific types, sizes, and combinations of conductors and connected items.

C. Bolted Clamp connectors shall be heavy-duty type.

D. Pressure connectors shall be high-conductivity-plated units.

PART 3 - EXECUTION

3.1 GENERAL

A. The conduit system, supports, cabinets, switchboards, etc., and neutral conductors must be permanently and effectively grounded by means of approved ground clamps, in accordance with Title 24 of the California Code of Regulations. The neutral shall only be grounded at the main service location unless specifically noted otherwise on the drawings or required by the California Electrical Code.

B. This Contractor shall exercise every precaution to obtain good contacts at all panel boxes, pull boxes, etc. Where it is not possible to obtain good contacts, the conduits shall be bonded around the boxes with a #6 AWG gauge, THWN wire with ground clamps.

3.2 APPLICATION

A. General

1. All equipment cases, motor frames, etc. shall be completely grounded to satisfy applicable code requirements.

2. Do not use underground gas piping as a grounding electrode.

B. Equipment Grounding Conductor

1. Pull an Equipment Grounding Conductor, insulated green, in **ALL** conduits, both metallic and non-metallic, unless they are designated for telephone or data cables.

2. Feeders and branch circuits shall be provided with an insulated grounding conductor run with the circuit conductors. This grounding conductor shall be in addition to the ground path provided by the continuously grounded metallic raceway system that encloses the phase and neutral conductors.

3. Comply with CEC Article 250 for types, sizes, and quantities of Equipment Grounding Conductors, except where specific types, larger sizes, or more conductors than required by CEC are indicated.

3.3 INSTALLATION

A. General: Ground electrical systems and equipment according to CEC requirements, except where Drawings or Specifications exceed CEC requirements.

B. Grounding Conductors: Route along the shortest and straightest paths possible, except as otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

C. Underground Grounding Conductors: Use bare copper wire. Bury at least 24 inches below grade.

3.4 CONNECTIONS

A. General: Make connections so possibility of galvanic action or electrolysis is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.

1. Use electroplated or hot-tin-coated materials to assure high conductivity and to make contact points closer in order of galvanic series.

2. Make connections with clean, bare metal at points of contact.

3. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.

4. Make aluminum-to-galvanized steel connections with tin-plated copper jumpers and mechanical clamps.

5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

B. Exothermic-Welded Connections: Use for connections to structural steel and for underground connections, except those at test wells. Comply with manufacturer's written instructions. Welds that are puffed up or that show convex surfaces indicating improper cleaning are not acceptable.

C. Equipment Grounding-Wire Terminations: For No. 8 AWG and larger, use pressure-type grounding lugs. No. 10 AWG and smaller grounding conductors may be terminated with winged pressure-type connectors.

D. Non-contact Metal Raceway Terminations: Where metallic raceways or metallic sheathed cables terminate at metal housings without mechanical and electrical connection to the housing, terminate each metallic raceway or metallic sheathed cable with a grounding bushing. Connect grounding bushings with a bare grounding conductor to grounding bus or terminal in housing. Bond electrically non-continuous conduits or sheathed cables at both entrances and exits with grounding bushings and bare grounding conductors, except as otherwise indicated.

E. Tighten screws and bolts for grounding and bonding connectors and terminals according to manufacturer's published torque-tightening values. Where these requirements are not available, use those specified in UL 486A and UL 486B.

F. Compression-Type Connections: Use hydraulic compression tools to provide correct circumferential pressure for compression connectors. Use tools and dies recommended by manufacturer of connectors. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on grounding conductor.

G. Moisture Protection: Where insulated grounding conductors are connected to grounding rods or grounding buses, insulate entire area of connection and seal against moisture penetration of insulation and cable.

3.5 FIELD QUALITY CONTROL

A. Refer to Specification Section 269500 “Electrical Acceptance Tests” for minimum required testing of Grounding System.

3.6 ADJUSTING AND CLEANING

A. Restore surface features, including vegetation, at areas disturbed by work of this Section. Reestablish original grades, except as otherwise indicated. Where sod has been removed, replace it as soon as possible after backfilling is completed. Restore areas disturbed by trenching, storing of dirt, cable laying, and other activities to their original condition. Include topsoiling, fertilizing, liming, seeding, sodding, sprigging, and mulching. Comply with Division 02 Section "Landscaping." Maintain restored surfaces. Restore disturbed paving as indicated.

END OF SECTION 260526

SECTION 262213
DRY-TYPE TRANSFORMERS (600 V AND LESS)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections shall form a part of this Section, with the same force and effect as though repeated here.

1.2 SUMMARY

A. Provide and install dry-type **Energy Efficient** distribution transformers meeting United States Department of Energy DOE 2016 Energy Efficiency standards, with primary and secondary voltages of 600V and less and capacity ratings 15kVA through 1000kVA.

1.3 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

B. Coordinate installation of wall-mounting and structure-hanging supports.

1.4 SUBMITTALS

A. Submittals for this Section shall be made according to the Conditions of the Contract, Division 01 Specification Sections and Specification Section 260100.

B. Product Data

1. Submit rated nameplate data, capacities, weights, dimensions, minimum clearances, installed devices and features, and performance for each type and size of transformer indicated.

C. Shop Drawings

1. Submit wiring and connection diagrams.

D. Manufacturer Seismic Qualification Certification

1. Submit certification that transformer assembly and components will withstand seismic forces defined in Specification Section 260100, "Seismic Anchorage and Bracing". Include the following:

a. Indicate whether withstand certification is based on actual test of assembled components or on calculation.

b. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

2. Submit Dimensioned Outline Drawings of Equipment Unit identifying center of gravity and locating and describing mounting and anchorage provisions.

3. Submit detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

E. Test Reports

1. Submit source quality-control test reports.

2. Submit record of tap adjustments specified in Part 3 of this Section.

F. Operation and Maintenance Data

1. Submit operation and maintenance data for transformers to include in maintenance manuals specified in Division 01 and Specification Section 260100.

1.5 QUALITY ASSURANCE

A. Transformers shall be manufactured and tested in accordance with NEMA ST 20-2014, “Dry-Type Transformers for General Applications”.

B. Transformers and accessories shall be listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Transformers shall comply with IEEE C 57.12.91-2011, “IEEE Standard Test Code for Dry-Type Distribution and Power Transformers”.

D. Transformers shall comply with UL 1561, “Standard for Dry-Type General Purpose and Power Transformers”.

E. Transformers losses for **Energy-Efficient Transformers**, rated 15 kVA and larger, shall be tested in accordance with the United States Code of Federal Regulations 10-CFR-431.196 procedures and shall be certified as meeting United States Department of Energy DOE 2016 Energy Efficiency Standards.

1.6 CODES AND STANDARDS

A. All work and materials shall fully comply with current rules and regulations of all applicable codes. Nothing in these Drawings or Specifications shall be interpreted as to permit any work not in compliance with these codes. Where work is detailed and/or specified to a more restrictive standard or higher requirement, that standard or requirement shall govern such work. Installation shall comply with the following codes and standards:

1. California Code of Regulations (CCR)
    a. Title 8, Industrial Relations
    b. Title 17, Public Health
    c. Title 24, Building Standards
2. 2022 California Building Code
3. 2022 California Fire Code
4. 2022 California Electrical Code
5. 2022 California Energy Code
6. Local Codes
7. NEMA ST 20-2014
8. IEEE C 57.12.91-2011
9. UL 1561
10. United States Department of Energy DOE 2016 Energy Efficiency Standards

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. This design is based on the use of equipment manufactured by Square D Company. Subject to compliance with project requirements, equivalent products by one of the following manufacturers may be considered:

1. Square D Company
2. General Electric Company
3. Eaton
4. Siemens

B. Approved manufacturers shall be registered firms in accordance with ISO 9001:2015 SIC 3612 (US); which is the design and manufacture of low voltage dry type power, distribution, and specialty transformers.

2.2 MATERIALS

A. Description: Factory-assembled and -tested, air-cooled units for 60-Hz service.

B. Transformer cores shall be constructed from high grade, grain-oriented, non-aging silicon steel with high magnetic permeability and low losses.

C. Transformer coils shall be of continuous copper wire-wound construction without splices, except for taps and shall be impregnated with non-hygroscopic, thermosetting varnish.

2.3 ENERGY EFFICIENT DISTRIBUTION TRANSFORMERS

A. Ratings

1. All insulating materials are to exceed NEMA ST 20 standards and be rated for 220°C UL component recognized insulation system.

2. Transformers 15kVA and larger shall be 150°C temperature rise above 40°C ambient. Transformers 25kVA and larger shall have a minimum of 4 - 2.5% full capacity primary taps. Exact voltages and taps to be as designated on the plans or the transformer schedule.

3. The maximum temperature of the top of the enclosure shall not exceed 50°C rise above a 40°C ambient.

4. Transformers shall have minimum efficiencies per DOE 2016 Energy Efficiency Standards when operated at 35% of full load capacity. Efficiency shall be tested in accordance with the United States Code of Federal Regulations 10-CFR-431.196 procedures.

Single Phase	
kVA	Efficiency
15	97.7%
25	98.0%
37.5	98.2%
50	98.3%
75	98.5%
100	98.6%
167	98.7%
250	98.8%
333	98.9%

Three Phase	
kVA	Efficiency
15	97.89%
30	98.23%
45	98.40%
75	98.60%
112.5	98.74%
150	98.83%
225	98.94%
300	99.02%
500	99.23%
750	99.28%

B. Construction

1. Transformer coils shall be of the continuous wound copper construction and shall be impregnated with non-hygroscopic, thermosetting varnish.

2. All cores to be constructed with low hysteresis and eddy current losses. Magnetic flux densities are to be kept well below the saturation point to prevent core overheating. Cores for transformers greater than 500kVA shall be clamped utilizing insulated bolts through the core laminations to ensure proper pressure throughout the length of the core. The completed core and coil shall be bolted to the base of the enclosure but isolated by means of rubber vibration-absorbing mounts. There shall be no metal-to-metal contact between the core and coil and the enclosure except for a flexible safety ground strap. Sound isolation systems requiring the complete removal of all fastening devices will not be acceptable.

3. The core of the transformer shall be visibly grounded to the enclosure by means of a flexible grounding conductor sized in accordance with applicable UL and NEC standards.

4. The transformer enclosures shall be ventilated and fabricated of heavy gauge, sheet steel construction. The entire enclosure shall be finished utilizing a continuous process consisting of degreasing, cleaning, and phosphatizing, followed by electrostatic deposition of polymer polyester powder coating and baking cycle to provide uniform coating of all edges and surfaces. The coating shall be UL recognized for outdoor use. The coating color shall be ANSI 49.

C. Sound levels shall be warranted by the manufacturer not to exceed the following:

1. 15 to 50KVA - 45dB; 51 to 150kVA - 50dB; 151 to 300kVA - 55dB; 301 to 500kVA - 60dB; 501 to 700kVA - 62dB; 701 to 1000kVA - 64dB; 1001 to 1500kVA - 65dB; 1501 to 2000kVA- 66dB

2.4 SOURCE QUALITY CONTROL

A. Test and inspect transformers according to IEEE C57.12.91.

B. Factory Sound-Level Tests: Conduct sound-level tests on equipment for this Project.

2.5 ACCESSORIES

A. Provide weather shields for all transformers located outdoors.

B. Provide a locking mechanism for each circuit breaker a supplying Class 1 transformer that is lockable in the off position. Provide and install a field applied marking on the transformer indicating the location of the remote mounted transformer primary disconnecting means.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions for compliance with enclosure- and ambient-temperature requirements for each transformer.

B. Verify that field measurements are as needed to maintain working clearances required by NFPA 70 and manufacturer's written instructions.

C. Examine walls and floors for suitable mounting conditions where transformers will be installed.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install floor-mounting transformers level on concrete bases. Construct concrete bases of dimensions indicated, but not less than 4 inches (100 mm) larger in both directions than supported unit and 4 inches (100 mm) high.

B. Anchor transformers to concrete bases according to manufacturer's written instructions and seismic codes at Project.

C. Temporary Heating: Apply temporary heat according to manufacturer's written instructions within the enclosure of each ventilated-type unit, throughout periods during which equipment is not energized and when transformer is not in a space that is continuously under normal control of temperature and humidity.

3.3 CONNECTIONS

A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

B. Ground equipment according to Division 26 Section "Grounding".

3.4 ADJUSTING

A. Refer to Specification Section 269500, Electrical Acceptance Testing, for minimum required transformer testing by Contractor.

END OF SECTION 262213

SECTION 262416
PANELBOARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections shall form a part of this Section, with the same force and effect as though repeated here.

1.2 SUMMARY

A. Furnish and install panelboards as herein specified and as shown on Drawings.

1.3 REFERENCES

A. The panelboards and overcurrent protection devices referenced herein shall be designed and manufactured according to the following appropriate specifications.

1. NFPA 70 – 2022 California Electrical Code (CEC).
2. NEMA PB 1 - Panelboards
3. NEMA PB 1.1 – General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.
4. UL 489 - Molded Case Circuit Breakers.
5. UL 67 – Standards for Panelboards.

1.4 SUBMITTALS

A. Submittals for this Section shall be made according to the Conditions of the Contract, Division 01 Specification Sections and Specification Section 260100.

B. Shop Drawings

1. Submit Shop Drawings for each panelboard indicating front and side enclosure elevations with overall dimensions, conduit entrance locations and requirements, nameplate legends, one-line diagrams, equipment schedule and switchboard instrument details.

C. Test Reports

1. Submit certified reports of Independent Tests and Observations indicating and interpreting test results specified in Part 3 of this Section.

2. Submit calibration record for all testing devices used.

3. Submit certificates, signed by Contractor, certifying that Independent Testing Agency complies with requirements specified in Section 260100 / 269500, Article 1.2.

D. Operation and Maintenance Data

1. Submit operation and maintenance data for panelboards to include in “Operations and Maintenance Instructions” manuals specified in Division 01 and Specification Section 260100, Article 1.6, including detailed manufacturer’s written instructions on adjusting overcurrent protective devices.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect, and handle products in conformance with manufacturer's recommended practices as outlined in applicable Installation and Maintenance Manuals.

B. Each panelboard shall be delivered in individual shipping splits for ease of handling. They shall be individually wrapped for protection and mounted on shipping skids.

C. Inspect and report concealed damage to carrier within their required time period.

D. Store in a clean, dry space. Maintain factory protection and/or provide an additional heavy canvas or heavy plastic cover to protect structure from dirt, water, construction debris, and traffic. Where applicable, provide adequate heating within enclosures to prevent condensation.

E. Handle in accordance with NEMA PB 1.1 and manufacturer's written instructions. Lift only by lifting means provided for this express purpose. Handle carefully to avoid damage to panelboard internal components, enclosure, and finish.

1.6 PROJECT CONDITIONS

A. Verify dimensions by field measurements.

B. Determine suitable path for moving switchboard into place considering project conditions.

C. Verify clearance requirements. Locate switchboard to meet installation tolerances.

D. Revise locations and elevations from those indicated as required to suit project conditions.

1.7 WARRANTY

A. Manufacturer shall warrant equipment to be free from defects in materials and workmanship for the lesser of one (1) year from date of installation or eighteen (18) months from date of purchase.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. This design is based on the use of equipment manufactured by Square D Company. Subject to compliance with project requirements, equivalent products by one of the following manufacturers may be considered:

1. Square D Company
2. General Electric Company
3. Eaton
4. Siemens

2.2 PANELBOARDS - GENERAL

A. Panelboards shall be provided as shown on plans and described herein.

B. Panelboard enclosures shall be a minimum of 20” wide and 5.75” deep unless otherwise shown. Panelboards shall be totally flat with flush keyed locks. Enclosures shall be NEMA 1 for panelboards that are installed indoors and NEMA 3R for panelboards that are installed outdoors. Where more stringent panelboard enclosure requirements are specified on the panel schedules, the requirements specified on the panel schedule shall be provided.

C. Fronts shall be cold rolled sheet steel painted with ANSI 61 gray enamel over a rust inhibitor. They shall be equipped with door, flush hinges, and flush proper cylinder tumbler lock, metal circuit card holder, and quarter turn adjustable trim clamps. Panel locks shall be keyed alike.

D. Panel shall consist of reinforced corrosion resistant galvanized sheet steel frame with silver plated copper bus bars and circuit breakers properly supported to prevent vibration breakage in handling. All terminals shall be solderless type suitable for specified conductors of size indicated.

E. Each panelboards shall have a full size neutral bus. The neutral bus shall be 200% rated when supplied from a double neutral feeder. Each panelboards shall also have a full size equipment ground bus. In addition to the equipment ground bus, provide an isolated ground bus when supplied from a feeder which includes an isolated grounding conductor.

F. Branch circuit breakers shall be molded case, bolt-on, and fully interchangeable without disturbing adjacent units. All 2-pole and 3-pole breakers shall have common trips. Circuit breakers supplying Class 1 transformers shall be lockable in the off position.

G. Branch panelboards and overcurrent protection devices shall have a short circuit rating of no less than 10,000 RMS symmetrical AIC (120/208V).

H. All Panelboards shall be fully rated as shown on Drawings; series-rating shall not be allowed.

I. Panelboards shall bear an Arc-Flash Hazard Warning label in accordance with CEC Article 110.16.

J. Breakers for switching lights shall be type SWD, rated for switching duty. Breakers for mechanical equipment shall be HACR type.

K. All spaces shall have hardware.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine area to receive panelboards to provide adequate clearance for panelboard installation.

B. Check that working space is level and free of irregularities.

C. Start work only after unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Panelboards shall be installed with the top of the trim at 6’-0” above the finished floor, unless otherwise indicated on the drawings.

B. Where space permits, panelboards shall be surface mounted where they are not visible to the public.

C. Panelboards shall have a typewritten circuit directory installed mounted behind plastic in a metal holder that is welded to the inside of each panel door. The type written circuit directory shall show circuit numbers and complete description of all outlets on each circuit and

D. An Arc-Flash Hazard Warning label shall be applied to each panelboard in accordance with CEC 110.16.

E. Labeling of all circuits at panelboards shall match the exact room names of each of the spaces. Verify exact room names with Owner prior to labeling.

F. Electrical loads shall be disaggregated into separate panelboards per the 2022 California Energy Code Section 130.5(b).

3.3 CONNECTIONS

A. Connect panelboards and components to wiring systems and to ground as indicated and instructed by manufacturer.

B. Tighten electrical connectors and terminals, including screws and bolts, according to manufacturer's published torque-tightening values. Where manufacturer's torque values are not indicates, use those specified in UL 786A and UL 486B.

3.4 FIELD QUALITY CONTROL

A. Refer to Specification Section 269500, Electrical Acceptance Testing, for minimum required switchboard testing by Contractor and Independent Testing Agency.

3.5 ADJUSTING

A. Adjust all operating mechanisms for free mechanical movement per manufacturer's specifications.

B. Tighten bolted bus connections in accordance with manufacturer's instructions.

C. Adjust any circuit breaker trip and time delay settings to values as instructed by the Engineer.

3.6 CLEANING

A. Upon completion of installation, inspect interior and exterior of switchboards. Remove paint spatters and other spots, dirt, and debris. Touch up scratches and mars of finish to match original finish.

END OF SECTION 262416

SECTION 269500
ELECTRICAL ACCEPTANCE TESTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section defines the Electrical Acceptance Tests and checks that shall be made on all new electrical equipment and wiring to ensure compliance with all applicable Codes and Standards, and with the requirements of the Contract Documents.

B. All electrical equipment testing and related costs shall be included in the Contractor's bid.

1.2 GENERAL REQUIREMENTS

A. The Contractor shall test equipment of all kinds installed on this project to determine whether it fulfills the requirements of these Specifications. The Contractor shall furnish all labor necessary to adjust the operation of the apparatus and make the connections for the tests. After the tests have been completed, the Contractor shall restore all connections, apparatus, etc., to their original condition.

B. The Contractor shall retain the services of a qualified Independent Testing Agency holding a valid current C-10 License to perform **certain** tests and prepare reports, as enumerated in the following Articles. The Independent Testing Agency shall be a company that specializes in electrical equipment testing and shall be NETA or NICET certified.

C. The contractor shall obtain approval from the architect of proposed independent testing agency(s) before any testing is started.

D. Electrical systems, equipment and materials shall be tested prior to final acceptance of the work.

1.3 INDEPENDENT TESTING AGENCY REQUIREMENTS

A. The Independent Testing Agency shall furnish personnel acceptable to Engineer to conduct testing. Supervising engineer shall have a minimum of five years' experience in testing of equipment of the type to be tested on this Project.

B. The Independent Testing Agency shall furnish all labor required for and incidental to testing.

C. The Independent Testing Agency shall provide minor field repairs, adjustments, and wiring modifications at the time of inspection and testing.

D. The Independent Testing Agency shall furnish all necessary test equipment to satisfactorily perform all tests specified herein.

E. The Independent Testing Agency shall check all devices for proper operation - checking for wear, tightness, dirt, etc.

F. The Independent Testing Agency shall check for conformance to published curves.

G. The Independent Testing Agency shall notify and coordinate with the Owner's representative at least 3 working days prior to the commencement of any Electrical Acceptance Testing. Tests shall be witnessed by the Owner's representative unless such witnessing is waived in writing by the Owner's Representative.

1.4 CODES AND STANDARDS

A. 2022 California Electrical Code (CEC).

B. National Electrical Manufacturer's Association (NEMA).

C. Manufacturer's Instructions and Maintenance Manual applicable to each particular apparatus.

D. OSHA Rules and Regulation.

E. National Electrical Testing Association (NETA) "Acceptance Testing Specifications".

F. Procedures as directed by Engineer.

1.5 CARE AND PRECAUTIONS

A. Contractor shall be responsible for any damage to equipment or material due to improper test procedures or test apparatus handling, and shall replace or restore to original condition, any damaged equipment or material.

B. Contractor shall furnish and use safety devices such as rubber gloves and blankets, protective screens, barriers, and danger signs to adequately protect and warn all personnel in the vicinity of the tests.

1.6 EQUIPMENT TO BE TESTED BY CONTRACTOR

A. Perform the visual inspections, manual operations and tests on systems and equipment as described in Part 3, "Execution".

B. Panelboards

C. Molded Case Circuit Breakers Rated Less Than 100A

D. Power Cable

E. Distribution Transformers

F. Communication System

1.7 EQUIPMENT TO BE TESTED BY INDEPENDENT TESTING AGENCY

A. Circuit Breakers Rated 100A and Greater

B. Grounding System

C. Panels

1.8 SUBMITTALS

A. Submittals for this Section shall be made according to the Conditions of the Contract, Division 01 Specification Sections and Specification Section 260100.

B. Test Reports

1. Provide written test reports, signed and dated, for all tests prior to acceptance of the tested equipment by the Owner.

2. Submit certified reports of Independent Tests and Observations indicating and interpreting test results specified in Part 3 of this Section.

a. The Test Report shall include the following:

1) Description of equipment tested.

2) Description of test procedure.

3) Calibration record for all testing devices used.

4) Test results.

5) Recommendations.

6) Appendix, including all field test reports.

b. Furnish six copies of completed report to the Electrical Engineer no later than ten days after test completion unless requested otherwise by Owner.

c. Instrumentation-Traceability: The testing agency shall provide calibration labels for all relays and circuit breakers tested.

d. Labels shall be self-adhesive and placed on covers or frames so as not to obscure nameplate, tap block or time dial. Label shall indicate date tested and firm name.

PART 2 - PRODUCTS

2.1 TESTING EQUIPMENT

A. Furnish suitable electrical instruments including voltmeters, ammeters, wattmeters, tachometers and all other equipment necessary to perform tests specified.

B. Make necessary openings in circuits for testing instruments and place and connect all instruments, equipment and devices necessary for the tests. Upon completion of tests, remove instruments and instrument connections and restore all circuits to permanent condition.

2.2 TESTING COORDINATION

A. Coordinate activities and cooperate with others on the Project to ensure that systems are energized when required, when loads are applied, and that other requirements of this Section of the Specifications are carried out in a timely, coordinated basis.

B. Conduct tests in the presence of the Construction Manager. Notify the Construction Manager seven calendar days or more in advance when any test is to be performed, and do not start tests without the permission of the Construction Manager.

C. Make up no permanent connections until correct phase sequence of all equipment is determined.

PART 3 - EXECUTION

3.1 GENERAL

A. The Contractor shall provide Acceptance Testing on new Electrical System Equipment. Certain of this testing shall be performed by an Independent Testing Agency as indicated.

B. Acceptance Testing shall include Visual Inspections, Manual Operations, Electrical Tests, and Functional Testing.

C. Whenever possible, all Visual Inspections, Manual Operations and Electrical Tests shall be made just prior to energizing the equipment or circuits, and shall be coordinated with the field schedule and field conditions.

D. Test reports on megger, dielectric absorption and high potential tests shall include the ambient temperature and relative humidity existing at the time of the tests.

E. Should any piece of apparatus or any material or work fail during any of these Tests, it shall be immediately removed and be replaced by perfect material by this Contractor at his expense and the portion of the work replaced be again tested by the Contractor.

F. Before testing and energizing a system, all necessary precautions shall be taken to ensure the safety of personnel and equipment. All conductors and all electrical equipment shall be properly insulated and enclosed. All enclosures for conductors and equipment shall be properly grounded. Insulation resistance measurements must have been made and approved on all conductors and energized parts of electrical equipment.

1. During actual testing, the Contractor or Independent Testing Agency shall:

   a. Ensure that temporary power terminations are connected in such a manner that commercial power may be restored in forty-five minutes upon request.

   b. Place temporary power cables out of the way in a safe manner that provides no hazard to personnel or equipment in the area.

   c. Provide all special connections required.

   d. Conduct all tests in presence of the representative except where advised this would not be necessary.

G. The entire installation shall be free from short circuits and improper grounds. Panels and circuits shall be tested for grounds and shorts with mains disconnected from the feeder, branches connected, lamps removed or omitted from the sockets and all wall switches closed. Each individual circuit shall be tested at the panel with the equipment connected for proper operation

H. The following minimum tests are required, but shall not be limited to this list. Tests will be supervised and witnessed by the Construction Manager:

1. Proper phase rotation.

2. Short circuits.

3. Improper grounds.

4. Power and control electrical circuits for circuit continuity and function test.

I. Furnish all personnel, labor, meters, instruments, cable, connections, equipment and apparatus necessary for making all tests.

J. Check and test all new transformers, panelboards, feeders, power and control cables, communication system devices and wiring, and all connections to all equipment.

K. After wires and cables are in place and connected to devices and equipment, the system shall be tested for short circuits, improper grounds, and other faults. If fault condition is present, the trouble shall be rectified and the wiring system shall be retested.

L. A voltage test shall be made at each panel and at the last EV Charging Station on each circuit. If drop in potential exceeds one percent, correct the condition by locating the ground or high resistance splice or connection and retest.

M. Any wiring device, electrical apparatus, grounded or shorted on any integral "live" part, shall be removed and the trouble rectified by replacing the defective parts or materials.

N. All final tests shall be witnessed by the Construction Manager and three copies of the verified test results shall be given to the Architect/Engineer and Construction Manager promptly upon completion of a test.

O. Provide assistance to the various equipment manufacturers' field engineers as required in the testing and adjusting of the electrical power and control equipment. Cooperation shall be such that a minimum of time is required for equipment testing.

P. A log shall be maintained for all tests. This log shall be certified before completion of the project, both as to test value and date of test. All major equipment such as the switchboard and panelboards shall be energized initially in the presence of the Construction Manager.

Q. The Owner reserves the right to operate any system or equipment prior to final completion and acceptance of the work. Such preliminary operation shall not be construed as an acceptance of any work. Each piece of equipment and all of the systems shall be adjusted to insure proper functioning and shall be left in first class operating condition.

3.2 VISUAL INSPECTIONS

A. Prior to Manual Operation and Electrical Testing, perform Visual Inspections to verify the following:

1. The equipment is completely and properly installed.
2. The equipment is free from damage and defects.
3. Shipping blocks and restraints have been removed.
4. Electrical terminations have been properly tightened.
5. The equipment has been properly aligned.
6. The equipment has been properly lubricated.
7. The ventilation louvers are open and unobstructed.
8. Voltages and phases have been properly identified.
9. Terminations in control panels have been properly identified.
10. The equipment is ready to be tested

3.3 MANUAL OPERATION

A. Prior to any Electrical Testing, mechanical devices shall be exercised or rotated manually to verify that they operate properly and freely.

3.4 ELECTRICAL TESTS BY CONTRACTOR

A. Molded Case Circuit Breakers rated less than 100A

1. Circuit breakers will be operated manually several times to ensure smooth operation.
2. Molded case will be inspected for cracks.
3. Rated current will be passed through each phase and millivolt readings taken across contacts.
4. Time current characteristic tests will be performed by passing 300% rated current through each phase and monitoring trip time.
5. Instantaneous pickup current will be determined by finding the current level at which the breaker trips out in less than 2 cycles.
6. Insulation resistance tests will be performed at 1000 Volts DC.
7. Circuit breaker covers will be removed on unsealed units and checked for cracks. Interphase barriers and arc chutes to be inspected. All bolts and lugs will be tightened. All internal auxiliary devices will be inspected.
8. Contacts, shunts, etc., will be visually inspected for wear and alignment.
9. Inverse trip time, instantaneous pickup current and millivolt drop across contacts, insulation resistance values, as well as deficiencies causing breaker to function outside published limits will be recorded. Times will then be compared with manufacturer's or NEMA published values.

B. Power Cable

1. The 600-volt insulated wires and cables shall be factory tested prior to shipment in accordance with ICEA Standards for the insulation specified.
2. Perform a continuity check and a 1,000 volt DC megger test on 600 volt power cables No. 6 AWG and larger.
    a. The megger test shall be performed between each pair of conductors and from each conductor to ground.
    b. The megger test shall be performed for 15 seconds or until the insulation resistance value stabilizes.
    c. The insulation resistance between conductors and from each conductor to ground shall be 100 megohms minimum in one minute or less. In addition, the lowest insulation resistance value shall not differ from the highest value by more than 20 percent.
3. Phase conductors, if shorted, grounded or at fault shall be removed, shall be replaced and the wiring system shall be retested.

C. Distribution Transformers

1. Record transformer secondary voltage at each unit for at least 48 hours of typical occupancy period. Adjust transformer taps to provide optimum voltage conditions at secondary terminals. Optimum is defined as not exceeding nameplate voltage plus 10 percent and not being lower than nameplate voltage minus 2.5 percent. Submit recording and tap settings as test results.

2. Prepare a written Output Settings Report recording output voltages and tap settings.

D. Distribution Equipment

1. Megger tests shall be performed at a DC voltage of 1,000 volts for 600 volt rated equipment, and at 500 volts for 120-300 volt rated equipment.

2. Perform a 1,000-volt megger test on buses. This test may be combined with the feeder cable megger test by testing the devices and terminated cables together.

3. Perform a continuity check and a 1,000-volt DC megger test on 3 phase distribution transformers.

E. Title 24 Acceptance Testing

1. Perform tests as outlined in Part 3 of Specification Section 266100.

3.5 INDEPENDENT AGENCY TESTING

A. Circuit Breakers rated 100A or greater

1. All circuit breakers, 100 amps or more, shall be tested by an independent testing agency in accordance with NETA specifications and a report submitted to the architect. Any circuit breaker that does not pass the test shall be replaced.

2. Circuit breakers will be operated manually several times to ensure smooth operation.

3. Molded case will be inspected for cracks.

4. Rated current will be passed through each phase and millivolt readings taken across contacts.

5. Time current characteristic tests will be performed by passing 300% rated current through each phase and monitoring trip time.

6. Instantaneous pickup current will be determined by finding the current level at which the breaker trips out in less than 2 cycles.

7. Insulation resistance tests will be performed at 1000 Volts DC.

8. Circuit breaker covers will be removed on unsealed units and checked for cracks. Interphase barriers and arc chutes to be inspected. All bolts and lugs will be tightened. All internal auxiliary devices will be inspected.

9. Contacts, shunts, etc., will be visually inspected for wear and alignment.

10. Inverse trip time, instantaneous pickup current and millivolt drop across contacts, insulation resistance values, as well as deficiencies causing breaker to function outside published limits will be recorded. Times will then be compared with manufacturer's or NEMA published values.

11. The testing agency shall provide calibration labels for all relays and circuit breakers tested. Labels shall be self-adhesive and placed on covers or frames so as not to obscure nameplate, tap block or time dial. Label shall indicate date tested and firm name.

B. Grounding System

1. Test shall be performed for every new separately derived AC system.

2. Ground tests shall meet the requirements of the California Electrical Code and comply with UL 467. The grounding electrode system at the main electrical service equipment shall be tested by an Independent Testing Agency in accordance with the three point fall of potential method as specified in IEEE Standard 81-1983. Maximum ground resistance shall be 5 ohms. A copy of the test report shall be submitted to the architect and engineer of record.

3. Tests: Subject the completed grounding system to a megger test at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, and at ground test wells. Measure ground resistance not less than 2 full days after the last trace of precipitation, and without the soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance. Perform tests by the 2-point method according to IEEE 81.

4. The test agency shall remove the test link between the ground and neutral, and test the neutral for any parallel and/or superfluous ground paths. If any are found, a report should be given to the Engineer. No grounds are to be removed unless authorized in writing.

5. Ground electrode resistance shall be taken using a Biddle ground resistance meter and readings given to the report.

6. All ground connections in switchboard as well as that to cold water pipes shall be check for tightness and adequacy.

7. Measure the resistance to ground of the total ground system with all connections completed. The resistance shall not exceed 2 ohms for primary services or 5 ohms for secondary services.

8. Tests of the resistance to ground shall be made using either the three point method or the fall-of-potential method.

9. Perform a continuity check from equipment ground bus bars and ground lugs to the ground system.

10. Excessive Ground Resistance: Where resistance to ground exceeds specified values, notify Owner promptly and include recommendations to reduce ground resistance and to accomplish recommended work.

11. Report: Prepare test reports, certified by the testing organization, of ground resistance at each test location. Include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results.

C. Panels

1. The Independent Testing Agency shall perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification, Sections 7.1, 7.6, 7.9, 7.10, 7.11, and 7.14, as appropriate. Certify compliance with test parameters.

2. After Substantial Completion, but not more than 2 months after Final Acceptance, The Independent Testing Agency shall perform an infrared scan of each switchboard and panel.

a. Remove fronts to make joints and connections accessible to a portable scanner.

b. Use an approved infrared-scanning device designed to measure temperature or detect significant deviations from normal values.

c. Provide calibration record for device used.

d. Prepare a certified report identifying switchboards and panels checked and describing results of infrared scanning. Include notation of deficiencies detected, remedial action taken and observations after remedial action.

3.6 FUNCTIONAL TESTING

A. All automatic and manual functions shall be checked for proper operation.

B. All indicating circuits, lights and alarms shall be tested for correct operation. Burned out indicators shall be re-lamped.

C. Upon completion of the Work, place the entire installation in operation, test for proper function, and show systems and equipment to be free of defects.

END OF SECTION 269500

SECTION 272000
TELECOMMUNICATIONS SYSTEMS

PART 1 - GENERAL

1.1 SCOPE

A. Furnish and install a complete network telecommunications cabling system including equipment cabinets, patch panels, outlet boxes, conduits and raceways, jack modules for terminating both ends of each cable, and coverplates.

B. The Contractor shall provide termination, testing and certification of each cable.

C. The furnishing of network servers and switches is specifically excluded from this section.

PART 2 - PRODUCTS

2.1 TELECOMMUNICATION CABINETS AND RACKS

A. Enclosed NEMA 12 Rack with Integral Air Conditioning

1. Manufacturer: Emcor
2. Size: 40 RU.
3. Model: DC-40U2442-AC12000-D
4. Integral Cooling Capacity: 12,000 btu/hr.
5. NEMA 12 enclosure.
6. QubeLink Ethernet Controller.

2.2 TELECOMMUNICATION BACKBONE CABLING

A. OSP Rated Optical Fiber Innerduct

1. Materials – 1” corrugated PE type Innerduct with ¼” pre-installed pull rope. Color: orange.
2. Manufacturer – Carlon (type Optic-Gard) or equal.

2.3 TELECOMMUNICATION HORIZONTAL CABLING

A. Horizontal Data Cable

1. Materials – 23 AWG solid copper UTP, 4-pair, CMP rated, 10-Gigabit Ethernet Category 6A cable. Color: White.

2. Manufacturer – Berk-Tek

3. Model: 11082058; Description: type LANmark-XTP series.

B. J Hooks

1. J hook cable supports shall provide a bearing surface of sufficient width to comply with required bend radii of high-performance cables; cULus Listed. J hook cable supports shall have flared edges to prevent damage while installing cables. J hook cable supports shall be 1 5/16” minimum and have a cable retainer strap to provide containment of cables within the hanger. The cable retainer strap shall be removable and reusable and be suitable for use in air handling spaces. J hook cable supports shall have an electro-galvanized or G60 finish and shall be rated for indoor use in non-corrosive environments.

2. Manufacturer – Erico (Caddy Cablecat Series Non-continuous Support Cable System).

2.4 TELECOMMUNICATION BACKBONE CABLE TERMINATIONS

A. OSP Rated Optical Fiber Cable Termination Hardware (Data Backbone)

1. Materials – 19” Rack-mountable patch panels, 2U high, with built-in cable management, and smoked Plexiglass removable doors. Complete with universal adapter strips, fully loaded with duplex SC (SC568) type couplings. Panels are to be located at both terminal ends of cabling (MDF and IDF).

2. Manufacturer – The Siemon Company (RIC3 type).

3. Quantity – Provide one (1) fiber optic cable patch panel in each IDF and one (1) in the MDF.

B. Fiber Optic Connectors

1. Materials – SC-type, with ceramic ferrule, ANSI/TIA/EIA 604-3 compliant

2. Manufacturer – The Siemon Company.

2.5 TELECOMMUNICATION HORIZONTAL CABLE TERMINATIONS

A. Horizontal Voice Cable Termination Blocks (Interconnection to Voice Backbone)

1. Materials –66 type punch down block w/50 pair capacity (66M1-50), wall mounted, with 400 pair capacity backboards (Allen Tel P/N 183B2) complete with brackets and cross-connect spools (Allen Tel P/N 187B1). Punch down blocks shall be of high impact flame-retardant thermoplastic, which secure and organize groups of 25 UTP pairs of 22-26 gauge each.

2. Manufacturer – Siemon or equal.

B. Horizontal Data Cable Patch Panels

1. Materials – 48-port, 2U Category 6 patch panel, fully loaded with jack modules. Rack mountable (19”) w/ integrated rear cable management bar. Color: Black.

2. Manufacturer – Siemon or equal

C. Data Outlets

1. Station Jack Modules – Materials – Two (2) 8-position RJ45, Category 6A rated jack modules. Color: Blue.

2. Outlet Box and Faceplate - Materials – 2, 4 or 6-port, single-gang faceplate shall be mounted to a two-gang outlet box fitted with a single-gang reducer. Blanks shall be installed in each unused port.

D. Wireless Access Points

1. Wireless Access Point Connectors – Materials – 8-position RJ45, Category 6A rated plug connector module. Quantity – One at location of wireless access point.

2.6 LABELS

A. Materials: Vinyl plastic type that meet UL 969 requirements, preprinted or laser printed type, and easily distinguishable.

B. Manufacturers – Panduit, W.H. Brady, Ideal.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. The Contractor shall install all cables, trays, supports, racks, cabinets, frames, backboards, blocks, cable management, connectors, manhole cable rack hardware, and all appropriate termination and mounting hardware.

B. The Contractor shall utilize conduits and cable trays for the placement of voice and data backbone cables.

C. The Contractor shall utilize conduits and cable trays for the placement of horizontal voice and data cables. Cables which exit cable trays shall be supported by J-hooks that are attached to the structure independently from ceiling or lighting fixture supports.

D. Where penetrations through fire rated walls, acoustical or other walls are made for cable pass-thru, such penetrations shall be sealed by the Contractor in compliance with code requirements.

3.2 BONDING AND GROUNDING

A. The Contractor shall provide ground continuity by properly bonding all appropriate cabling, closures, cabinets, service boxes, conduit, cable trays, and framework. All grounds shall consist of #6 AWG stranded copper wire and shall be attached to an approved building ground, which is bonded to the main electrical ground. Grounding shall be in accordance with J-STD-607-A, NEC, NFPA and all local codes and practices.

3.3 IDENTIFICATION & LABELING

A. The Contractor shall obtain the room numbers that will appear on door signage prior to assigning origin and destination identification for labels.

1. Backbone cables shall be labeled at each endpoint and at all pull boxes, access points or junction boxes. Labels shall indicate origination and destination identification, sheath identification, and strand or pair count.

2. Horizontal cables shall be labeled at each endpoint. Labels shall indicate origination and destination identification.

3. All label printing will be machine generated by system software using indelible ink ribbons or cartridges. Self-laminating labels will be used on cable jackets, appropriately sized to the OD of the cable, and placed within view at the termination point on each end

3.4 ACCEPTANCE TESTING AND CERTIFICATION

A. All distribution cables shall meet or exceed all performance specifications designated by ANSI/EIA/TIA-568-B.1, and IEEE for telephone and data communications.

B. No later than five days after testing, Contractor shall furnish the Owner with a documentation binder and electronic disks of all test results from OTDR and power meter test equipment. Electronic copies of test results must be presented in format acceptable to the Owner (runtime software application included if

necessary). The content requirements for these forms are described in the following sections.

C. Copper Cables: Testing of all copper wiring shall be performed prior to system cut-over. 100 percent of the OSP and horizontal wiring pairs shall be tested for opens, shorts, polarity reversals, transposition and presence of AC voltage. Test shall include length, mutual capacitance, characteristic impedance, attenuation, and near-end and far end cross-talk. The Contractor, at no charge shall bring any pairs not meeting the requirements of the standard into compliance with the standards and specifications. Complete, end to end test results must be submitted to the Owner. Test results for each of the above tests and associated cable lengths shall be generated by an automated testing device. Test results must be permanently recorded and presented for review in both hardcopy and in a computer-readable format.

D. Fiber Optic Cables - No later than five days after testing, Contractor shall furnish the Owner with a documentation binder and electronic disks of all test results from OTDR and power meter test equipment. Electronic copies of test results must be presented in a readable format (runtime software application included in necessary). The content requirements for these forms are described in the following sections.

1. OTDR Test Results

a. Contractor shall furnish on disc with application software, electronic strip charts and/or tracer recordings on each and every fiber strand in each and every cable in one direction at both 850 and 1300 nanometer wavelengths for multimode fiber, 1310 and 1550 for singlemode, with the following information:

1) Date of test

2) Name of test personnel

3) Test wavelength

4) Pulse duration(s) and scale range(s)

5) Index of refraction

6) Fiber cable type and part number

7) Fiber tube and/or fiber strand number

8) Direction of test

9) Overall distance in meters

10) Attenuation in dB or dBm

2. Power Meter Test Results

a. Contractor shall furnish attenuation assessments for both 850 and 1300 nanometer wavelengths for multimode fiber and 1310 and 1550 for singlemode on each and every fiber in each and every cable, in both directions with the following information:

1) Date of test
2) Name of test personnel
3) Fiber cable type and part number
4) Fiber number
5) TX wavelength
6) TX location
7) RX location
8) TX model and serial number
9) RX model and serial number
10) Attenuation dB or dBm

3. Contractor may be required to perform additional testing as required by Owner to ensure compliance with mated pair connection loss, splice loss and overall link loss. Any cables failing to meet above indicated standards must be removed and replaced, at no cost to the Owner, with cables, which prove, in testing, to meet the standards. The installation will not be accepted until testing has reported that all pairs meet the appropriate standards.

3.5 PROJECT RECORD DOCUMENTATION

A. The Contractor shall provide a database of cable records, both hard copy and on floppy disk, using Owner approved format (Excel spreadsheet or otherwise specified) for use by the Owner for cable and facilities management. The cable records format must include, at a minimum, the following information about each cable:

1. Distribution Cable Pair Assignments.

2. Test Results.

B. Three (3) sets of reproducible as-built floor plans plus vertical rack elevations and wall mounted termination field details in digital format showing all installed cables, pair and strand assignments, routing, terminal and outlet locations, patch panels and labeling conventions.

C. These documents shall be delivered to the Owner no more than 20 working days after completion and acceptance of the Contractor’s work.

END OF SECTION 272000

SECTION 274100
AUDIO-VIDEO SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections shall form a part of this Section, with the same force and effect as though repeated here.

1.2 SECTION INCLUDES:

A. Provisioning of all labor, materials, equipment, accessories, services, and tests necessary to complete and make ready for operation, by the owner, the audiovisual system for the in accordance with this specification and the electrical drawings.

B. Installation of Owner-furnished audio-video system equipment in accordance with this specification and the electrical drawings.

C. Removal, relocation and reinstallation of existing speakers and rerouting of existing speaker cabling to new termination location in accordance with the electrical drawings.

D. Removal, relocation and reinstallation of existing scoreboard video equipment and rerouting of existing scoreboard video cabling to new termination location in accordance with the electrical drawings.

E. Owner-furnished, Contractor-installed equipment:

1. Power Amplifiers
2. Power Conditioners
3. Audio Mixer
4. Wireless Microphone system antennas, antenna amplifiers, transmitters, and accessories

F. Contractor-furnished, Contractor-installed items:

1. Self-conditioned, sealed audio equipment rack
2. Speaker cabling

G. Existing items to be removed, relocated and reinstalled by the Contractor:

1. Audio system speakers as indicated on the electrical drawings
2. Scoreboard video headend equipment

H. Notwithstanding the detailed information in this specification, it is the responsibility of the contractor for installing a fully working system meeting these specifications.

1.3 QUALITY ASSURANCE

A. All equipment rooms shall be installed in a neat and workmanlike manner. All methods of construction that are not specifically described or indicated in the Contract Documents shall be subject to the control and approval of the Owners representative. Equipment and materials shall be of the quality and manufacturer indicated. The equipment specified is based on the acceptable manufacturers listed. Where "approved equal" is stated, equipment shall be equivalent in every way to that of the equipment specified, and subject to approval.

B. Materials and work specified herein shall comply with the applicable requirements of:

1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for the intended use.

2. Comply with NFPA 70.

3. Comply with UL 50.

1.4 SUBSTITUTIONS

A. Substitutions: Substitutions will only be allowed by substitution requests submitted in accordance with Division 01 Section “Substitution Procedures” before the bid date.

1.5 SUBMITTALS

A. Qualifications: To be considered technically qualified for this project, the contractor shall submit proof of the following:

1. C10 Contractors License with a focus in low voltage.

2. Provide proof that you are a certified dealer for the specified products and support manufacturer’s warranty period.

B. Pre-installation:

1. Equipment List: Submissions shall include a list of major equipment and a specification sheet for each major component that differs from those specified, showing it’s the satisfaction of specified requirements.

a. The list of major equipment shall include; Manufacturer, Model, Quantity.

b. Alternative equipment and methods will be reviewed; however, it is the responsibility of the contractor to demonstrate the alternate meets or exceeds the performance specified. Product details for any voluntary alternates or product substitutions.

2. Network Coordination: A list of all devices required to be connected to the YCCD network will need to be provided to YCCD IT. Details to include: Descriptive Equipment Name, Serial Number, MAC Address.

3. Shop Drawings: Comprehensive wiring diagram showing all devices, cable types, connectors, and labels.

C. Post-installation:

1. O&M Manual: Provide an electronic copy of all equipment specification sheets, owner's manuals.

2. As-Built Drawings: The contractor shall provide the Owner with as-built drawings reflecting the layout and labeled wiring diagrams of the completed system. Drawings to be submitted in PDF format.

3. Programming / Configuration: At the completion of the project, the contractor will provide final versions (including uncompiled versions and custom modules) of all software code to be owned & used by YCCD for future support needs of all systems.

4. Warranty Statement: Provide the terms and conditions of the one-year warranty covering all parts and labor starting upon system acceptance.

1.6 COORDINATION

A. Coordinate layout and installation of system components with other construction trades.

PART 2 - PRODUCTS

2.1 EQUIPMENT AND MATERIALS

A. General: Major equipment is specified in this section. Note the following:

1. Any substituted equipment shall have an equal or better performance to units described as "Design Make".

2. Minor material not specified below shall be of professional quality.

3. All cabling run through ceiling shall include a plenum rated jacket.

4. All speaker cabling shall be a minimum of 12AWG.

B. Coordinate features to form an integrated system. Match components and interconnections for optimum performance of specified functions.

2.2 POWER AMPLIFIER (OWNER FURNISHED, CONTRACTOR INSTALLED)

A. Biamp ALC-3202D. Quantity - 4

2.3 POWER CONDITIONER (OWNER FURNISHED, CONTRACTOR INSTALLED)

A. Atlas ECS-204. Quantity - 2

2.4 AUDIO MIXER

A. Allen & Heath WZ4-14:4:2. Quantity - 1

2.5 WIRELESS MICROPHONE EQUIPMENT (OWNER FURNISHED, CONTRACTOR INSTALLED)

A. Shure ULDX4 Quad 4-channel wireless mic receiver. Quantity - 2

B. Shure UA834WB Antenna Amplifier. Quantity - 2

C. Shure UA8100 Antenna Cable. Quantity - 2

D. Shure UA860SWB Antenna. Quantity - 2

E. Shure UA505 Antenna Bracket Mounting Kit. Quantity - 2

F. Shure SBC220-US 2-bay Networked Docking Charger. Quantity - 1

G. Shure SBC220 2-bay Docking Charger. Quantity - 3

H. Shure SB900B Rechargeable Battery. Quantity - 12

I. Shure ULXD1 Digital Bodypack Transmitter. Quantity - 1

J. Shure WA360 In-line Mute Switch. Quantity - 1

K. Galaxy H207-BK-SHU Waterproof Headset Microphone with Cable for Shure. Quantity - 2

L. Galaxy CBL2OSHUBK Cable. Quantity - 2

M. Shure ULXD2/B58 Digital Handheld Transmitter with B58 Capsule. Quantity - 6

2.6 AUDIO EQUIPMENT RACK ACCESSORIES (OWNER FURNISHED, CONTRACTOR INSTALLED)

A. Atlas AP-GNL18 Flexible Rack Lamp. Quantity - 1

B. Atlas Rack Shelf, Rack Drawer, and Rack Panel

2.7 SELF CONDITIONED, SEALED AUDIO EQUIPMENT RACK (CONTRACTOR FURNISHED, CONTRACTOR INSTALLED)

A. Enclosed NEMA 12 Rack with Integral Air Conditioning

1. Manufacturer: Emcor
2. Size: 40 RU.
3. Model: DC-40U2442-AC12000-D
4. Integral Cooling Capacity: 12,000 btu/hr.
5. NEMA 12 enclosure.
6. QubeLink Ethernet Controller.

B. Rack shall be Contractor-furnished, Contractor-installed.

PART 3 - EXECUTION

3.1 COORDINATION

A. Coordinate final mounting requirements for AV equipment with architect and owner.

3.2 INSTALLATION OF EQUIPMENT

A. Use hook and loops fasteners to secure all cabling. Provide 6’ cable coil to allow for equipment rack to be fully removed from the cabinet for service.

B. Install shielded twisted pair cabling to each of the remote video transmitters and receivers. Terminate with shielded jacks on both ends per T568B. Cabling runs through ceiling shall be properly supported every 48”. Provide a 6’ service loop in the ceiling.

C. Relocated Loudspeakers

1. Speakers shall be aimed and tuned using SMAART or equivalent.
2. Speakers shall be time aligned.

D. Spares

1. Any unused parts and cables shall be turned over to the owner at the completion of the project.

3.3 LABELING AND IDENTIFICATION

A. Labeling requirements shall comply with INFOCOMM F501.01:2015 Cable Labeling for Audiovisual Systems.

B. Provide pre-printed labels at all faceplates and equipment clearly indicating connection and function.

C. Labels shall meet the legibility, defacement, exposure, and adhesion requirements of UL 969.

D. All labels shall be preprinted, or laser printed type.

E. All cables shall be labeled at both ends. Provide a vinyl substrate with a white printing area and a clear “tail” that self laminates the printed area when wrapped around the cable. If cable jacket is white, provide cable label with printing area that is any other color than white, preferably orange or yellow – so that the labels are easily distinguishable.

F. At project closeout provide as-built drawings showing all connections using the same labeling convention as the installed system..

3.4 TESTING AND COMMISSIONING

A. The contractor shall inspect and test the entire audio, video, and control system. The system check shall include verifying the proper operation of all electronic components.

B. Adjustments of all components shall be completed by the contractor to provide optimum performance. All EDID settings throughout each component must be programmed to ensure proper operation for all devices.

C. The commissioning process will be performed in conformance with ANSI/INFOCOMM 10:2013 – Audiovisual Systems Performance Verification. Verification reports will be issued at the end of the pre-integration, integration, post-integration, and closeout verification phases.

3.5 TRAINING

A. Instruction and training for operation and routine maintenance of the system shall be provided at the site, within twenty-five business days of final completion acceptance of the system, at a time mutually satisfactory to the contractor and owner.

B. Training shall include system(s) and circuit functional description and the proper adjustment procedure for every adjustment in the system.

C. The equipment will be made available by the owner, after delivery and acceptance, for use in the instruction and training program. The owner will provide space for instruction and training. The contractor shall provide the instructor(s) and all training material.

D. The instruction and training shall be scheduled not to exceed 7.5 hours each working day. Instructor(s) compensation, travel, living, and all other expenses incurred as the result of fulfilling these requirements shall be the responsibility of the contractor.

3.6 WARRANTY

A. Provide a minimum 1-year parts and labor warranty on the system and wiring for contractor-furnished, contractor-installed items.

B. Provide a minimum 1-year labor warranty on the owner-furnished, contractor-installed items.

C. The warranty will not begin until the equipment has been tested and accepted by the owner.

END OF SECTION 274100

SECTION 284600
FIRE ALARM SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections shall form a part of this Section, with the same force and effect as though repeated here.

1.2 DESCRIPTION:

A. This section of the specifications includes the furnishing, installation, connection and programming of new microprocessor controlled, networked addressable reporting fire alarm equipment to form a complete coordinated system ready for operation. It shall include, but not be limited to fire alarm control panels, auxiliary power supplies, alarm initiating devices, alarm notification appliances, auxiliary monitoring and control devices.

B. This Section includes the furnishing of all labor, equipment, materials, and performance of all operations associated with the installation of the Fire Alarm System as required by the drawings and specified herein.

1.3 SCOPE:

A. The Contractor shall furnish and install control panels, annunciators, booster power panels, initiation devices and circuits, notification appliances and circuits, control relays, monitor modules and supervisory devices, as required to accomplish this intent whether or not specifically shown or specified.

B. The complete installation shall conform to the applicable sections of NFPA 72, 2022 California Fire Code and 2022 California Electrical Code.

C. The work specified herein shall be coordinated with the related work as specified elsewhere under the project specifications.

1.4 SUBMITTALS

A. Submittals for this Section shall be made according to the Conditions of the Contract, Division 01 Specification Sections and Specification Section 260100.

B. General:

1. Submittals shall be electronically submitted to the Architect/Engineer for review.

2. For equipment other than that specified, the contractor shall supply proof that such substitute equipment equals or exceeds the features, functions, performance, and quality of the specified equipment.

C. Shop Drawings:

1. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications.

2. Include manufacturer's name(s), model numbers, ratings, power requirements, equipment layout, device arrangement, complete wiring point-to-point diagrams, and conduit layouts.

3. Show remote annunciator(s) layout, configurations, and terminations.

4. Shop drawings shall show valid Contractor’s C-10 license, wet-signed by C-10 license holder.

D. Manuals:

1. Submit simultaneously with the shop drawings, complete operating and maintenance manual listing the manufacturer's name(s) including technical data sheets.

2. Wiring diagrams shall indicate internal wiring for each item of equipment and the interconnections between the items of equipment.

3. Provide a clear and concise description of operation that gives, in detail, the information required to properly operate the equipment and system.

E. Certifications:

1. Together with the shop drawing submittal, submit a certification from the major equipment manufacturer indicating that the proposed supervisor of installation and the proposed performer of contract maintenance is an authorized representative of the major equipment manufacturer. Include names and addresses in the certification.

1.5 WARRANTY

A. All work performed and all material and equipment furnished under this Contract shall be free from defects and shall remain so for a period of at least one (1) year from the date of acceptance. The full cost of maintenance, labor and materials required to correct any defect during this one-year period shall be included in the submittal bid and is part of this Contract.

1.6 APPLICABLE STANDARDS:

A. The specifications and standards listed below form a part of this specification. The system shall fully comply with these standards.

1. 2022 NFPA 72 National Fire Alarm Code
2. 2022 California Electrical Code (CEC)
3. 2022 California Fire Code (CFC)
4. 2022 California Mechanical Code (CMC)
5. 2022 California Building Code (CBC)
6. Underwriters Laboratories Inc. (UL) - USA
7. California State Fire Marshal
8. All requirements of the Authority Having Jurisdiction (AHJ).

1.7 APPROVALS:

A. The system shall have proper listing and/or approval from the following nationally recognized agencies:

1. UL Underwriters Laboratories Inc.
2. CSFM California State Fire Marshal

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

A. This fire alarm system design is based on the use of microprocessor-based addressable fire alarm control equipment, initiation devices and notification appliances equipment manufactured by Fire-Lite.

2.2 FIRE ALARM CONTROL PANEL (FACP):

A. The Fire Alarm Control Panel shall be the Fire-Lite MS-9600ULDS. The Fire Alarm Control Panel shall have the capacity to support single addressable signal loop circuits. The fire alarm control panel shall be complete with cabinets, batteries, battery charger and all miscellaneous components required for a complete and fully functional networked fire alarm system. In addition the fire alarm control panel shall include the following:

1. IP-based Digital Alarm Communicator Transmitter
   a. Listed and labeled under UL 864 and NFPA 72.
   b. Functional Performance: Unit receives an alarm, supervisory, or trouble signal from the FACP panel, and automatically captures one or two IP-based telephone lines and dials a preset number for a remote central station. When contact is made with the central

station(s), the signal is transmitted. The unit supervises up to two telephone lines. Where supervising two lines, if service on either line is interrupted for longer than 45 seconds, the unit initiates a local trouble signal and transmits a signal indicating loss of telephone line to the remote alarm receiving station over the remaining line. When telephone service is restored, unit automatically reports that event to the central station. If service is lost on both telephone lines, the local trouble signal is initiated.

c. Self Test: Conducted automatically every 24 hours with report transmitted to central station.

B. Batteries:

1. Shall be maintenance free, VRLA AGM lead-acid type.

2. Batteries shall have sufficient capacity to power the fire alarm system for not less than twenty-four hours plus 15 minutes of alarm upon a normal AC power failure.

3. The batteries are to be completely maintenance free. No liquids are required. Fluid level checks refilling, spills and leakage shall not be required.

2.3 INITIATION DEVICES

A. Manual Pull Stations

1. Manual Pull Station

a. Manual Pull Stations shall be the type that are acceptable to the DSA and that meet the DSA interpretation of ADA requirements for manual pull stations.

1) Manual Pull Stations shall not require tight grasping, pinching or twisting of the wrist, per CBC 11B-309.4.

2) Manual Pull Stations shall have Braille text operating instructions molded into the case.

b. Manual Pull Stations may be addressable devices or conventional non-addressable devices that are individually monitored through an addressable monitor module.

c. Manual Pull Stations shall use a key operated test-reset lock, and shall be designed so that after actual emergency operation, they cannot be restored to normal use except by the use of a key.

d. All operated stations shall have a positive, visual indication of operation that cannot be reset without the use of a key.

e. Manual Stations shall be constructed of LEXAN (or polycarbonate equivalent) with clearly visible operating instructions provided on

the cover. The word FIRE shall appear on the front of the stations in raised letters, 1.75 inches or larger.

f. Stations shall be suitable for surface mounting or semi-flush mounting.

B. Smoke Detectors

1. Addressable Photoelectric Smoke Detectors

a. Smoke detectors shall be addressable and shall connect with two wires to the Fire Alarm Control Panel Signaling Line Circuit.

b. The detectors shall use the photoelectric (light-scattering) principal to measure smoke density.

c. The detectors shall be low profile ceiling-mount and shall include a twist-lock base.

d. The detectors shall provide a test means whereby they will simulate an alarm condition and report that condition to the control panel. Such a test may be initiated at the detector itself (by activating a switch) or initiated remotely on command from the control panel.

e. The detectors shall store an internal identifying code that the control panel shall use to identify the type of detector.

f. The detectors shall provide an alarm and power LED. The LED shall flash under normal conditions, indicating that the detector is operational and in regular communication with the control panel. The LED is placed into steady illumination by the control panel indicating that an alarm condition has been detected. An output connection shall also be provided in the base to connect an external remote alarm LED.

2.4 AUXILIARY DEVICES

A. Auxiliary Relays

1. Auxiliary relay coils shall be rated at 120V and contacts shall be rated for 120V, 20A, and shall conform to UL 864.

2. Auxiliary relays shall be listed with the California State Fire Marshal (CSFM).

2.5 NOTIFICATION APPLIANCES

A. Horn/Strobes

1. Complies with OSHA 29 Part 1910.165

2. Ceiling mount horn/strobe models are available with field selectable candela settings of 15/30/75/95/115/150cd or 177cd (Multi-candela models)

3. Wall mount horn/strobe models are available with field selectable candela settings of 15/30/75/95/110/135cd or 185cd (Multi-candela models)

4. Strobes produce 1 flash per second over the regulated voltage range

5. 24 VDC with wide UL “Regulated Voltage” using filtered DC or unfiltered VRMS input voltage

6. High efficiency design for maximum output at minimum wattage across a frequency range of 400 to 4000 HZ

7. Fast installation with IN/OUT screw terminals using #12 to #18 AWG wires

8. Optional Extender (E60 Ext) is for mounting to 4” backboxes with no extension ring.

9. Weatherproof with extended temperature range of –40°F to 150°F (-40°C to 66°C)

B. Strobes

1. Strobes are visual notification appliances for the hearing impaired.

2. Strobes shall operate on 24 VDC nominal.

3. Strobes shall meet the requirements of the ADA (Americans with Disabilities Act) as well as UL Standard 1971 and CBC.

4. Strobes shall be flush mounted in an electrical box in accordance with the manufacturer’s installation instructions.

2.6 EQUIPMENT INSTALLATION

A. Installation shall be in accordance with the NEC, NFPA 72, local and state codes, as shown on the drawings, and as recommended by the equipment manufacturer.

B. All fire detection and alarm system devices, control panels and remote annunciators shall be flush mounted when located in finished areas and may be surface mounted when located in unfinished areas.

2.7 WIRING INSTALLATION

A. Fire Alarm System initiation device circuits and notification appliance circuits shall be installed in conduit. The minimum conduit size shall be ¾”.

B. All conduit, junction boxes, conduit supports and hangers shall be concealed in finished areas and may be exposed in unfinished areas. Smoke detectors shall not be installed prior to the system programming and test period. If construction is ongoing during this period, measures shall be taken to protect smoke detectors from contamination and physical damage.

C. Power-Limited Circuits: NFPA 70, Types FPL, FPLR, or FPLP, as recommended by manufacturer.

D. Each Fire Alarm Control Panel and Fire Alarm Booster Power Panel shall be connected to a separate dedicated 120V, 20A branch circuit with a dedicated neutral conductor and an equipment grounding conductor. The circuit breakers shall be painted red and shall be labeled at the panelboard as “FIRE ALARM CIRCUIT”. Fire Alarm Booster Power Panel Primary Power wiring shall be 12 AWG. The Fire Alarm Panel cabinet shall be grounded.

E. Where the new fire alarm control panel is tied to an existing fire alarm control panel, the Contractor shall provide, install and connect all wiring, addressable control relays and addressable monitor modules at both the new and existing control panels to allow the existing fire alarm panel to accept and respond to alarm and trouble initiation signals from the new fire alarm control panel.

2.8 GROUNDING

A. Ground cable shields and equipment according to system manufacturer's written instructions to eliminate shock hazard and to minimize, to the greatest extent possible, ground loops, common-mode returns, noise pickup, cross talk, and other impairments.

B. Signal Ground Terminal: Locate at main equipment rack or cabinet. Isolate from power system and equipment grounding.

2.9 PROGRAMMING

A. The Contractor shall provide all programming of the Fire Alarm System to result in a complete and functional Fire Alarm System in accordance with all applicable codes and standards, and as specified herein.

B. Zone Programming:

1. The Contractor shall provide zone programming for the Fire Alarm System as follows:

   a. Each building shall be programmed as a separate zone.

   b. Each floor of a multi-story building shall be programmed as a separate zone.

c. Each section of a floor in a building that is separated by area separation walls or by horizontal exits shall be programmed as a separate zone.

d. Additional zones shall be programmed where deemed necessary by the authority having jurisdiction.

2. Zone programming for the Fire Alarm System shall match the zone map (refer to Article titled, IDENTIFICATION AND DOCUMENTATION, for zone map requirements.)

C. LCD Annunciation

1. The Contractor shall program the LCD annunciator at the Fire Alarm Control Panel and remote LCD annunciators to annunicate the following information:

a. The zone that is in alarm.

b. The type of alarm initiating device:

1) Smoke Detector.

2) Other.

c. The location of the device that is in alarm (refer to Article titled, IDENTIFICATION AND DOCUMENTATION, for device map location requirements.)

D. Controls

1. The Contractor shall utilize addressable control relays and auxiliary relays and shall program the fire alarm system control panel to cause the closure of fire/smoke dampers and provide a signal for HVAC units to shut down.

E. Central Monitoring Station

1. Contractor shall coordinate with the Central Monitoring Station and program the system to report the number of points required by the Owner. Prior to the start of programming, Contractor shall verify how many point signals, above and beyond minimum code requirements, shall be transmitted to the monitoring station with Owner.

2. Where the new fire alarm control panel is tied to an existing fire alarm control panel, the Contractor shall program the existing fire alarm panel to accept and respond to alarm and trouble initiation signals from the new fire alarm control panel.

2.10 IDENTIFICATION AND DOCUMENTATION

A. Zone Map – The Contractor shall create an 11”x17” site plan identifying each building and identifying the zones. The zone map shall be created by a CAD

program and shall be posted under plastic cover at the location of the fire alarm control panel.

B. Device Location Map – For each building the Contractor shall create an 11”x17” floor plan of the building showing the location of each device and the device address as it is annunciated at the control panel and remote annunciator. The device location map shall be created by a CAD program and shall be posted under plastic cover at the location of the fire alarm control panel or fire alarm booster power supply within each building.

C. Provide and install a red label at each branch circuit breaker that supplies power to the Fire Alarm Control Panel and Fire Alarm Booster Power Panels that reads: "FIRE ALARM / ECS”.

2.11 FIRE WATCH

A. The Contractor shall provide a fire watch during the course of construction where any portion of the campus is rendered unprotected by the fire alarm system. The Contractor shall provide a 24-hour fire watch each day that the campus is occupied until the fire alarm system is fully operational. All costs of the fire watch shall be borne by the Contractor.

2.12 ACCEPTANCE TESTING AND CERTIFICATION

A. Prior to the final acceptance test provide the service of a competent, factory-trained engineer or technician authorized by the manufacturer of the fire alarm equipment to technically supervise and participate during all of the adjustments and tests for the system:

1. Before energizing the cables and wires, check for correct connections and test for short circuits, ground faults, continuity, and insulation.

2. Open initiating device circuits and verify that the trouble signal actuates.

3. Open and short signaling line circuits and verify that the trouble signal actuates.

4. Open and short Notification Appliance Circuits and verify that trouble signal actuates.

5. Ground all circuits and verify response of trouble signals.

6. Check presence and audibility of tone at all alarm notification devices.

7. Check installation, supervision, and operation of all addressable smoke detectors using the Walk Test.

8. Each of the alarm conditions that the system is required to detect should 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.

9. When the system is equipped with optional features, the manufacturer's manual should be consulted to determine the proper testing procedures. This is intended to address such items as verifying the controls performance by individually addressed or grouped devices, sensitivity monitoring, verification functionality and similar.

B. At the final inspection a manufacturer-trained representative shall demonstrate that the system functions properly in every respect.

C. Upon completion of the installation, a test of the entire system shall be performed in the presence of the Inspector of Record and the local authority having jurisdiction. The local Fire Marshal shall be notified and invited to witness the test a minimum of 72 hours prior to the test. Components and functions of the system shall be tested and an Inspection and Testing Record Form shall be generated in accordance with NFPA 72 indicating the proper functioning of each component of the system.

D. If devices or other components of the system fail during testing the defective devices or components shall be removed and immediately replaced with functional units and the test shall be repeated.

E. Complete the NFPA 72 Record of Completion, testing all devices and appliances. Provide a copy of the completed Record of Completion to the Owner (School District), Architect, Local Fire Authority and DSA via the Project Inspector.

2.13 INSTRUCTION

A. Provide instruction as required for operating the system. "Hands-on" demonstrations of the operation of all system components and the entire system including program changes and functions shall be provided. The Contractor and/or the Systems Manufacturer's representatives shall provide a typewritten "Sequence of Operation" to the Owner.

B. The Contractor shall furnish a reduced set of “as-built” record drawings on 11”x17” bond paper in a plastic cover showing locations of all devices and the proper address of the device as it is displayed on the LCD annunciator at the fire alarm control panels and/or remote annunciators. This reduced set shall be located adjacent to the fire alarm control panel for the reference of the Authority Having Jurisdiction.

2.14 CLOSEOUT SUBMITTAL

A. The Contractor shall submit closeout submittal documentation consisting of the following items:

1. Full size fire alarm “as-built” record drawings; drawings shall show valid Contractor’s C-10 license, wet-signed by C-10 license holder.

2. Device cut sheets and CSFM listing services;

3. A copy of the Fire Alarm System Record of Completion signed by the Installer and the Inspector of Record;

4. Owner’s Manuals and Operating Instructions.

END OF SECTION 284600

SECTION 323113
CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Chain-link fences and associated fence framing.
2. Swinging pedestrian gates complying with accessibility requirements.

1.3 SUBMITTALS

A. Shop Drawings of fences and gates.

B. Data Sheets for product and materials used in the work.

C. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. Show accessories, hardware, gate operation, and operational clearances.

1.4 FIELD CONDITIONS

A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

1.5 QUALITY ASSURANCE

A. Qualifications of Installer

1. Throughout the progress of installation of the work of this Section, provide at least one person who shall be thoroughly familiar with the specified requirements, completely trained and experienced in the necessary skills, and who shall be present at the site and shall direct all work performed under this Section.
2. In actual installation of the work of this Section, use adequate numbers of skilled workmen to insure installation in strict accordance with the contract documents.
3. In acceptance or rejection of work performed under this Section, the Engineer will make no allowance for lack of skill on the part of the workmen.

1.6 PRODUCT HANDLING

A. Protection

1. Use all means necessary to protect the materials of this Section before, during and after installation, and to protect the work of other trades.

B. Replacements

1. In the event of damage, immediately make all repairs and replacements necessary to the satisfaction of the Engineer and at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 REGULATORY REQUIREMENTS

A. Accessible Pedestrian Gates: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines, ICC/ANSI A117.1, and the accessibility requirements of Chapter 11B of the California Building Code.

2.2 CHAIN-LINK FENCE FABRIC

A. General: Provide chain link fence fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist according to “CLFMI Product Manual” and requirements indicated below:

1. Fabric Height: As indicated on Drawings. (to match existing)
2. Wire diameter: 0.148 inches (9 gage).
3. Mesh Size: 1-1/2 inches.(to match existing)
4. Zinc-Coating: ASTM A 392, Type II, Class 1, 1.2 oz./sq. ft. with zinc coating applied after weaving.
5. Selvage: Knuckled at both selvages.

2.3 FENCE FRAMEWORK

A. Posts and Rails: ASTM F 1043 for framework, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F1043 or ASTM F1083 based on the following:

1. Fence Height: As indicated on Drawings. (to match existing)
2. Heavy industrial strength round steel pipe, material Group IA, schedule 40, galvanized; pipe coated inside and outside by hot-dipped method, 1.8 oz. per square foot of outside and inside surfaces; provide members with minimum dimensions and wall thickness according to ASTM F 1083 based on the following:

a. Line Posts:

1) Fence height to 6 feet: As indicated on the drawings.

b. End, Corner and Pull Posts:

1) Fence height to 6 feet: As indicated on the drawings.

c. Gate Posts: Posts for individual gate leaf widths as follows:

1) Gate leaf width to 6 feet: As indicated on the drawings.

d. Horizontal and Brace Rails: 1.66 inches outside diameter, 2.27 plf.

2.4 TENSION WIRE

A. Tension Wire: 0.177-inch diameter, marcelled steel tension wire complying with ASTM A 817 and ASTM A 824; Type II, zinc coated (galvanized), Class 4, not less than 1.2 oz./sq. ft. of uncoated wire surface.

2.5 SWING GATES

A. General: Comply with ASTM F 900 for gate posts and swing gate types.

1. Gate Height: Match fence height.
2. Gate Leaf Width: As indicated on Drawings.

a. Pedestrian gates shall provide not less than 32 inches in clear width with the gate in a 90 degree open position; gate leaf width shall not exceed 48 inches.
b. Service Gates: Width as indicated on Drawings.

B. Gate Framing: Steel pipe matching fence framing and as follows:

1. Gate leaf width up to 6 feet: Perimeter and intermediate framing of 1.90 inches outside diameter, 2.72 plf.
2. Gate leaf width over 6 feet to 12 feet: Perimeter framing of 2.375 inches outside diameter, 3.65 plf., and intermediate framing and bracing of 1.90 inches outside diameter, 2.72 plf.

C. Gate Construction:

1. Joints and Connections: Weld all joints and connections.
2. Bracing: Provide adjustable truss rod bracing for all gates and between intermediate framing members for gate leaves over 8 feet in width.
3. Intermediate Framing: Provide intermediate vertical framing for gates exceeding 8 feet in width; equally space intermediate framing and space not more than 8 feet on center; weld connections.
4. Kick Plates for Accessible Pedestrian Gates: Provide 1/8 inch thick by 10 inch high galvanized steel plates at the bottom of each side of gates to provide a smooth

and unobstructed surface for persons in a wheel chair. Kick plates shall be without sharp edges or corners. Plates shall not interfere with the ability to adjust truss rod bracing.

D. Gate Hardware:

1. Hinges: 180-degree swing in direction indicated on Drawings.
2. Latches permitting operation from both sides of gate with provision for padlocking from both sides of gate.

a. Accessible Pedestrian Gates: Lever handle or exit device operating hardware as indicated on Drawings; hardware operation shall not require tight grasping, pinching, or twisting of the wrist; the force required to activate operable parts shall be 5 lbs. maximum.

1) Operating hardware for accessible pedestrian gates is specified in Division 08 Section “Door Hardware.”

3. Paired Gates: The inactive leaf of paired gates shall be provided with a drop rod and be capable of being locked with a padlock.
4. Gate Stops: Provide gates stops for each leaf of paired gates.
5. Gate Keepers: Provide gate keepers for each gate leaf 5 feet or more in width.

2.6 FITTINGS

A. Fittings, General: Comply with ASTM F 626.

B. Post Caps: Caps shall be weatherproof to prevent moisture intrusion into posts. Provide line post caps with loop to receive top rail; provide post cap for each post.

C. Rail and Brace Ends: Designed to provide secure connection of top rails to terminal post and brace or other rails to terminal and intermediate posts; provide for each gate, corner, pull, and end post.

D. Rail Fittings: Provide the following:

1. Top Rail Sleeves: Pressed-steel or round-steel tubing not less than 6 inches long.
2. Rail Clamps: Line and corner boulevard clamps for connecting intermediate rails in the fence line-to-line posts.

E. Tension and Brace Bands: Pressed steel for posts up to 4 inches in outside diameter.

F. Tension Bars: Steel, length not less than 2 inches shorter than full height of chain-link fabric. Provide one bar for each gate and end post, and two for each corner and pull post.

G. Truss Rod Assemblies: Steel, hot-dip galvanized after threading rod and turnbuckle or other means of adjustment; 5/16 inch minimum rod diameter.

H. Tie-Wire: Standard round wire ties for attaching chain-link fabric to posts, rails, and frames; hot-dip galvanized steel, 0.148-inch (9 gage) diameter wire; galvanized coating thickness matching coating thickness of chain-link fence fabric.

I. Hog Rings: Round wire ties for attaching chain-link fabric to bottom tension wire; 0.12-inch diameter of same material and finish as fabric wire.

J. Finish: Metallic coating for pressed steel or cast iron fittings, not less than 1.2 oz. /sq. ft. zinc.

2.7 SETTING MATERIALS

A. Cementitious Material: Portland cement, ASTM C 150, Type II, gray.

B. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information. Proportion normal-weight concrete mixture as indicated below for strength, slump, water/cement ratio, and maximum aggregate size.

1. Strength: 3000 psi at 28 days.
2. Aggregate Size: 1-1/2 inch maximum.
3. Slump: 4 inches.
4. Water Cement Ratio: 0.53 Maximum.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, and other conditions affecting performance of the Work.

1. Do not begin installation before final grading is completed unless otherwise permitted by Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 200 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.3 INSTALLATION, GENERAL

A. Install chain-link fencing according to ASTM F 567 and more stringent requirements specified.

1. Install fencing at locations indicated on Drawings; for fencing located at property lines, install fencing inside property line.

3.4 FENCE FRAMING INSTALLATION

A. Post Excavation and Footings: Drill or hand-excavate holes for posts to diameters, depths, and spacings indicated on Drawings in firm undisturbed soil.

1. If footing diameters and depths are not indicated on Drawings, footings shall be as follows:

a. Tops of footings shall be established as 4 inches below finish grade.
b. Fences to 6 Feet in Height:

1) Line Posts: 10 inches diameter by 30 inches deep.
2) End, Corner, and Pull Posts: 10 inches diameter by 36 inches deep.
3) Gate Posts, Gate leaf to 6 Feet Wide: 12 inches diameter by 42 inches deep.
4) Gate Posts, Gate leaf over 6 Feet to 12 Feet Wide: 16 inches diameter by 48 inches deep.

B. Post Setting: Set posts with concrete footings at indicated spacing.

1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
2. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.

a. Comply with the following for posts in paved areas installed prior to paving:

1) Posts in Concrete Paved Areas, Curbs, and Mow Strips: Coordinate top of paving elevation and pour concrete fill to approximately 6 inches below finish grade.
2) Posts in Asphalt Concrete Paved areas: Concrete fill to be flush with adjacent paving and crowned to shed water away from posts. Coordinate top of paving elevation and form top 6 inches of footing with round concrete form of diameter matching post footing; pour concrete fill prior to paving operations.

b. Posts in Unpaved Areas: Concrete fill to be 2 inches above finish grade and crowned to shed water away from posts. Coordinate finish grade elevation and form top 6 inches of footing with round concrete form of diameter matching post footing.

C. Terminal Posts: Install terminal end, corner, and gate posts per ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of 15 degrees or more. For runs exceeding 500 feet, space pull posts an equal distance between corner or end posts.

D. Line Posts: Space line posts uniformly at 10 feet o.c. unless otherwise indicated.

E. Post Bracing and Intermediate Rails: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Diagonally brace terminal posts to adjacent line posts with truss rods and turnbuckles. Install braces at end and gate posts and at both sides of corner and pull posts.

1. Locate horizontal braces at midheight of fabric on fences with top rail. Install so posts are plumb when diagonal rod is under proper tension.

F. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fence posts. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.

G. Intermediate and Bottom Rails: Where indicated or required, install and secure to posts with fittings.

H. Bottom Tension Wire: Install according to ASTM F 567 extended along and within 6 inches of bottom of fabric maintaining plumb position and alignment of fencing. Pull wire taut, without sags; install tension wire before stretching fabric; tie to each post with not less than same diameter and type of wire.

3.5 CHAIN-LINK FABRIC INSTALLATION

A. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 1 inch bottom clearance between finish grade or surface and bottom selvage unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.

B. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts with tension bands spaced not more than 15 inches o.c.

1. Fasteners: Install nuts for tension bands and carriage bolts on the side of the fence opposite the fabric side. Peen ends of bolts or score threads to prevent removal of nuts.

C. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric per ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing. Tie fabric to line posts at 12 inches o.c. and to braces at 24 inches o.c.

D. Fasten fabric to bottom tension wire with 0.120 inch diameter hog rings spaced a maximum of 24 inches o.c.

3.6 GATE INSTALLATION

A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

3.7 ADJUSTING

A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

B. Lubricate hardware and other moving parts.

END OF SECTION

APPENDIX

APPENDIX NO. 1

CONSTRUCTION SCHEDULE

APPENDIX No. 01
CONSTRUCTION SCHEDULE

NOTE: Schedule is subject to modifications.

	Start Date	End Date	Duration
CONSTRUCTION ADMINISTRATION PHASE			
Press Box – YCCD To Enter Into Omnia Purchase Agreement With Southern Bleachers.	8/25/2026	8/25/2026	1 day
Press Box Fabrication and Shipping To Site	9/7/2026	2/19/2027	24 weeks
Press Box/Walk Ways & Stair Installation	2/22/2027	5/7/2027	11 weeks
Site Work Contractor - Bid Opening	10/21/2026	10/21/2026	1 day
Site Work Contractor – Notice of Award Issuance	10/21/2026	10/28/2026	1 week
Site Work Contractor – Notice to Proceed	10/28/2026	11/11/2026	2 weeks
Site Work Contractor – Issuance and return of subcontractor agreements	11/11/2026	11/23/2026	2 weeks
Site Work Contractor – Mobilizes Site (see the following critical milestone dates)	11/16/2026	6/23/2027	32 weeks
Site Work Contractor – Commences Site Work/Construction of the Elevator Pit & Bleacher Demolition Work (Preparation for Press Box)	11/16/2026	5/14/2027	26 weeks
Site Work Contractor – Elevator Exterior Finish Installation and Utility Connections	4/19/2027	6/11/2027	8 weeks
Site Work Contractor – Punchlist and Project Completion	6/14/2027	6/23/2027	2 weeks
Elevator – Subcontractor Agreements	11/23/2026	12/11/2026	3 weeks
Elevator - Fabrication and Shipping to Site	12/14/2026	3/19/2027	14 weeks
Elevator - Installation	3/22/2027	4/2/2027	2 weeks
Elevator – Final Connections and Terminations	4/5/2027	4/16/2027	2 weeks
Elevator – State Inspection	4/19/2026	4/19/2026	1 day

END OF SECTION

APPENDIX NO. 2

GEOTECHNICAL ENGINEERING INVESTIGATION

PROPOSED SOLAR ARRAYS

Stoddard Ave. & Tully Road

Project No. 072-22066

DATED: OCTOBER 20, 2022

NOTICE TO CONTRACTORS:

This Appendix is included in the Contract Documents as a convenience to the Owner. The information contained herein has been prepared by:

Krazan & Associates, Inc.
Geotechnical Engineering Division
448 Mitchell Road, Suite C
Modesto, CA 95354
Phone: (209) 572-2200

Teter Architects and Engineers has no responsibility related to the work identified in this Appendix, all questions connected to the work indicated herein should be directed to Krazan & Associates, Inc.

GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED SOLAR ARRAYS
STODDARD AVENUE & TULLY ROAD
MODESTO, CALIFORNIA

PROJECT NO. 072-22066
OCTOBER 20, 2022

Prepared for:

MS. YOLANDA PERREGIL
YOSEMITE COMMUNITY COLLEGE DISTRICT
2201 BLUE GUM AVENUE
MODESTO, CALIFORNIA 95358

Prepared by:

KRAZAN & ASSOCIATES, INC.
GEOTECHNICAL ENGINEERING DIVISION
448 MITCHELL ROAD, SUITE C
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(209) 572-2200

Krazan & ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

October 20, 2022 Project No. 072-22066

Ms. Yolanda Perregil
Yosemite Community College District
2201 Blue Gum Avenue
Modesto, California 95358

RE: Geotechnical Engineering Investigation
Proposed Solar Arrays
Stoddard Avenue and Tully Road
Modesto, California

Dear Ms. Perregil:

In accordance with your request, we have completed a Geotechnical Engineering Investigation for the above-referenced site. The results of our investigation are presented in the attached report.

If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office at (209) 572-2200.



Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

David R. Jarosz, II
Managing Engineer
RGE No. 2698/RCE No. 60185

DRJ:ht

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October 20, 2022 Project No. 072-22066

GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED SOLAR ARRAYS
NEC OF STODDARD AVENUE & TULLY ROAD
MODESTO, CALIFORNIA

INTRODUCTION

This report presents the results of our Geotechnical Engineering Investigation for the proposed Solar Arrays to be located at northeast corner of Stoddard Avenue and Tully Road in Modesto, California. Discussions regarding site conditions are presented herein, together with conclusions and recommendations pertaining to site preparation, Engineered Fill, utility trench backfill, drainage and landscaping, foundations, concrete floor slabs and exterior flatwork, retaining walls, and soil cement reactivity.

A site plan showing the approximate boring locations is presented following the text of this report. A description of the field investigation, boring logs, and the boring log legend are presented in Appendix A. Appendix A also contains a description of the laboratory testing phase of this study, along with the laboratory test results. Appendix B contains a guide to earthwork specifications. When conflicts in the text of the report occur with the general specifications in the appendices, the recommendations in the text of the report have precedence.

PURPOSE AND SCOPE

This investigation was conducted to evaluate the soil and groundwater conditions at the site, to make geotechnical engineering recommendations for use in design of specific construction elements, and to provide criteria for site preparation and Engineered Fill construction.

Our scope of services was outlined in our proposal dated July 29, 2022 (KA Proposal No. P512-22) and included the following:

- A site reconnaissance by a member of our engineering staff to evaluate the surface conditions at the project site.
- A field investigation consisting of drilling 2 borings to depths ranging from approximately 20 to 50 feet for evaluation of the subsurface conditions at the project site.
- Performing laboratory tests on representative soil samples obtained from the borings to evaluate the physical and index properties of the subsurface soils.

- Evaluation of the data obtained from the investigation and an engineering analysis to provide recommendations for use in the project design and preparation of construction specifications.

- Preparation of this report summarizing the results, conclusions, recommendations, and findings of our investigation.

PROPOSED CONSTRUCTION

We understand that design of the proposed development is currently underway; structural load information and other final details pertaining to the structure are unavailable. On a preliminary basis, it is understood that the proposed development will include the construction of new solar carports. Foundation loads are anticipated to be light to moderate. Modifications to on-site paved areas are also planned.

In the event, these structural or grading details are inconsistent with the final design criteria, the Soils Engineer should be notified so that we may update this writing as applicable.

SITE LOCATION AND SITE DESCRIPTION

The site is rectangular in shape and encompasses approximately 33.5 acres. The area of proposed development consists of approximately ⅓ acre in the southwestern portion of the site. The site is located on existing Modesto Junior College East Campus and has an existing address of 435 College Avenue. A campus facility building is located east of the site. A sports track and field is located north of the site. The remainder of the site is predominantly surrounded by parking lots and commercial developments.

Presently, the area of proposed development is utilized as an existing parking lot. Asphaltic concrete pavements cover majority of the site. Several trees are located within the site. Buried utility lines are located along the edges of the site and may extend into portions of the site. The site is relatively level with no major changes in grade.

GEOLOGIC SETTING

The San Joaquin Valley which includes the Modesto area, is a topographic and structural basin that is bounded on the east by the Sierra Nevada Mountains and on the west by the Coast Ranges. The Sierra Nevadas, a fault block dipping gently southwestward, is made up of igneous and metamorphic rocks of pre-Tertiary age that comprise the basement complex beneath the Valley. The Coast Ranges contain folded and faulted sedimentary rocks of Mesozoic and Cenozoic age which are similar to those rocks that underlie the Valley at depth and nonconformably overlie the basement complex; gently dipping to nearly horizontal sedimentary rocks of Tertiary and Quaternary age overlie the older rocks. These younger rocks are mostly of continental origin and in the Modesto area; they were derived from the Sierra Nevadas.

The Coast Ranges evolved as a result of folding, faulting, and accretion of diverse geologic terrains. They are composed chiefly of sedimentary and metamorphic rocks that are sharply deformed into complex structures. They are broken by numerous faults, the San Andreas Fault being the most notable structural feature.

Both the Sierra Nevada and Coast Ranges are geologically young mountain ranges and possess active and potentially active fault zones. Major active faults and fault zones occur at some distance to the east, west, and south of the Modesto area. The Owens Valley Fault Zone bounds the eastern edge of the Sierra Nevada block and contains both active and potentially active faults.

Portions of the Greenville, Calaveras, Hayward, and Rinconada Faults, which are to the west, are considered potentially active. The San Andreas Fault is possibly the best-known fault and is located about 60 to 70 miles to the west.

There are no active fault traces in the project vicinity. Accordingly, the project area is not within an Earthquake Fault Zone (Special Studies Zone) and will not require a special site investigation by an Engineering Geologist.

Modesto residents could feel the effects of a large seismic event on one of the nearby active or potentially active fault zones. Modesto has experienced groundshaking from earthquakes in the historical past. According to the County Seismic Safety Element, groundshaking of VI intensity (Modified Mercali Scale) was felt in Modesto from the 1872 Owens Valley Earthquake. This is the largest known earthquake event affecting the Modesto area.

Secondary hazards from earthquakes include rupture, seiche, landslides, liquefaction, and subsidence. Since there are no known faults within the immediate area, ground rupture from surface faulting should not be a potential problem. Seiche and landslides are not hazards in the area either. Liquefaction potential (sudden loss of shear strength in a saturated cohesionless soil) is addressed in this report. In addition, there are no known occurrences of structural or architectural damage due to deep subsidence in the Modesto area.

FIELD AND LABORATORY INVESTIGATIONS

Subsurface soil conditions were explored by drilling 2 borings to depths ranging from approximately 20 to 50 feet below existing site grade, using a truck-mounted drill rig. The approximate boring locations are shown on the site plan. During drilling operations, penetration tests were performed at regular intervals to evaluate the soil consistency and to obtain information regarding the engineering properties of the subsoils. Soil samples were retained for laboratory testing. The soils encountered were continuously examined and visually classified in accordance with the Unified Soil Classification System. A more detailed description of the field investigation is presented in Appendix A.

Laboratory tests were performed on selected soil samples to evaluate their physical characteristics and engineering properties. The laboratory testing program was formulated with emphasis on the evaluation of natural moisture, density, gradation, shear strength, consolidation potential and moisture-density relationships of the materials encountered. In addition, chemical tests were performed to evaluate the

soil-cement reactivity. Details of the laboratory test program and results of the laboratory tests are summarized in Appendix A. This information, along with the field observations, was used to prepare the final boring logs in Appendix A.

SOIL PROFILE AND SUBSURFACE CONDITIONS

Based on our finding, the subsurface conditions encountered appear typical of those found in the geologic region of the site. In general, the pavement section consisted of approximately 3 inches of asphaltic concrete. Below the pavement section, approximately 2 to 3 feet of silty sand or silty sand/sandy silt fill material was encountered. The thickness and extent of fill material was determined based on limited test borings and visual observation. Thicker fill may be present at the site. Limited testing was performed on the fill soils during the time of our field and laboratory investigations. The limited testing indicates that the fill material had varying strength characteristics ranging from loosely placed to compacted.

Below the fill material, approximately 3 to 4½ feet of loose to medium dense of silty sand or silty sand/sand was encountered. Field laboratory tests suggest that these soils are moderately strong and slightly compressible. Penetration resistance ranged from 15 to 32 blows per foot. Dry densities ranged from 96 to 111 pcf. Representative soil sample consolidated approximately 1½ percent under 2 ksf load when saturated. Representative soil samples had an angle of internal friction of 34 and 37 degrees.

Below approximately 6 to 6½ feet, layers of predominately medium dense to very dense silty sand, sandy silt, silty sand/sand and sand were encountered. Field and laboratory tests suggest that these soils are moderately strong and slightly compressible. Penetration resistance ranged from 19 to 50 blows per foot. Dry densities ranged from 99 to 126 pcf. These soils had similar strength characteristics as the upper soils and extended to the termination depth of our borings.

For additional information about the soils encountered, please refer to the boring logs in Appendix A.

GROUNDWATER

Test boring locations were checked for the presence of groundwater during and immediately following the drilling operations. Free groundwater was not encountered.

It should be recognized that water table elevations may fluctuate with time, being dependent upon seasonal precipitation, irrigation, land use, and climatic conditions, as well as other factors. Therefore, water level observations at the time of the field investigation may vary from those encountered during the construction phase of the project. The evaluation of such factors is beyond the scope of this report.

SOIL LIQUEFACTION

Soil liquefaction is a state of soil particles suspension caused by a complete loss of strength when the effective stress drops to zero. Liquefaction normally occurs under saturated conditions in soils such as sand in which the strength is purely frictional. However, liquefaction has occurred in soils other than clean sand. Liquefaction usually occurs under vibratory conditions such as those induced by seismic event.

To evaluate the liquefaction potential of the site, the following items were evaluated:

1) Soil type

2) Groundwater depth

3) Relative density

4) Initial confining pressure

5) Intensity and duration of groundshaking

The predominant soils within the project site consist of layers of silty sand, sandy silt, silty sand/sandy silt, sand and silty sand/sand. Groundwater was not encountered within a depth of 50 feet. However, groundwater has been historically encountered at depths as shallow as 33 feet below site grade within the project site and vicinity.

The potential for soil liquefaction during a seismic event was evaluated using the LIQUEFYPRO computer program (version 5.8h) developed by CivilTech Software. For the analysis, a maximum earthquake magnitude of 6.27 was used. A peak horizontal ground surface acceleration of 0.38g was considered conservative and appropriate for the liquefaction analysis within the area. A high groundwater depth of 33 feet was used for the analysis. The analysis indicates that soils above a depth of 33 feet are non-liquefiable due to the absence of groundwater. The soils below a depth of 33 feet have a low potential for liquefaction. The analysis indicates that the estimated total seismic induced settlement due to soil liquefaction is less than ¼ inch. The estimated differential seismic settlements were less than ¼ inch over a horizontal distance of 100 feet.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of our field and laboratory investigations, along with previous geotechnical experience in the project area, the following is a summary of our evaluations, conclusions, and recommendations.

Administrative Summary

In brief, the subject site and soil conditions, with the exception of the loose surface soils, fill material and existing development, appear to be conducive to the development of the project. The surface soils have a loose consistency. These soils are disturbed, have low strength characteristics, and are highly

compressible when saturated. Accordingly, it is recommended that the surface soils be recompacted. This compaction effort should stabilize the surface soils and locate any unsuitable or pliant areas not found during our field investigation.

Approximately 2 to 3 feet of fill material was encountered within the borings drilled at the site. The fill material predominately consisted of silty sand and silty sand/sandy silt. The thickness and extent of fill material was determined based on limited test borings and visual observation. Thicker fill may be present at the site. Limited testing was performed on the fill soils during the time of field and laboratory investigations. Preliminary testing on the fill material suggests that the fill soils have varying strength characteristics ranging from loosely placed to compacted. Therefore, in the area of structures to be supported on shallow conventional foundations, it is recommended the fill material and loose surface soils be excavated and stockpiled so that the native soil can be properly prepared. The fill soils will be suitable for reuse as Engineered Fill, provided they are cleansed of excessive organics, debris, and fragments larger than 4 inches in maximum dimension. Prior to backfilling, Krazan & Associates, Inc., should inspect the bottom of the excavation to verify no additional removal is required.

The site is presently utilized a parking lot. In addition, existing structures are located within the project vicinity. Associated with these developments are buried structures, such as utility lines that may extend into the project site. Demolition activities should include proper removal of any buried structures encountered during construction. Any buried structures or utilities encountered during construction should be properly removed and/or relocated. It is suspected that demolition activities of the existing structures will disturb the upper soils. Following demolition activities, the exposed subgrade should be cleaned to firm native ground. The resulting excavation should be backfilled with Engineered Fill, compacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

Trees are located within the site. If not utilized for the proposed development, tree removal operations should include roots greater than 1 inch in diameter. The resulting excavations should be cleaned to firm native ground and backfilled with Engineered Fill compacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

Relatively clean sands were encountered at various locations throughout the site. The possibility exists that site grading operations could expose these soils in areas of proposed buildings, pavements, and/or retaining walls. The Contractor should note that these soils lack the cohesion necessary to stand vertically, even in shallow excavations such as footing trenches. If these conditions are encountered, it will be necessary to over-excavate the affected area(s) to a minimum of 12 inches below the proposed bearing surface. These areas may be backfilled using a mix of the silty sand and sand soils that contains at least 20 percent fines and meeting the requirements for Engineered Fill. This material may be obtained from elsewhere at the site, imported to the site from an approved off-site source, or manufactured through blending of the excavated clean sand with other suitable material containing a higher percentage of fines to result in material meeting the requirements for Engineered Fill.

Sandy soil conditions were encountered at the site. These cohesionless soils have a tendency to cave in trench wall excavations. Shoring or sloping back trench sidewalls may be required within these sandy soils.

After completion of the recommended site preparation, the site should be suitable for shallow footing support. The proposed structure footings may be designed utilizing an allowable bearing pressure of 2,500 psf for dead-plus-live loads. Footings should have a minimum embedment of 18 inches.

Alternatively, the proposed structures may be supported on drilled cast-in-place concrete piers/caissons. If deep foundations will be utilized, over excavation will not be required provided the piers extend to a minimum depth of 8 feet or a minimum of 3 feet into firm undisturbed native soil, whichever is deeper. Recommendations regarding conventional foundations and deep foundations are provided in the Foundations section of this report.

Groundwater Influence on Structures/Construction

Based on our findings and historical records, it is not anticipated that groundwater will rise within the zone of structural influence or affect the construction of foundations and pavements for the project. However, if earthwork is performed during or soon after periods of precipitation, the subgrade soils may become saturated, "pump," or not respond to densification techniques. Typical remedial measures include: discing and aerating the soil during dry weather; mixing the soil with dryer materials; removing and replacing the soil with an approved fill material; or mixing the soil with an approved lime or cement product. Our firm should be consulted prior to implementing remedial measures to observe the unstable subgrade conditions and provide appropriate recommendations.

Site Preparation

General site clearing should include removal of vegetation; asphaltic concrete and concrete pavements; debris; existing utilities; structures including foundations; basement walls and floors; existing stockpiled soil; trees and associated root systems; rubble; rubbish; and any loose and/or saturated materials. Site stripping should extend to a minimum depth of 2 to 4 inches, or until all organics in excess of 3 percent by volume are removed. Deeper stripping may be required in localized areas. These materials will not be suitable for use as Engineered Fill. However, stripped topsoil may be stockpiled and reused in landscape or non-structural areas.

Approximately 2 to 3 feet of fill material was encountered within the borings drilled at the site. The fill material predominately consisted of silty sand and silty sand/sandy silt. The thickness and extent of fill material was determined based on limited test borings and visual observation. Thicker fill may be present at the site. Limited testing was performed on the fill soils during the time of our field and laboratory investigations. Preliminary testing on the fill material suggests that these soils have varying strength characteristics ranging from loosely placed to compacted. Therefore, in the area of structures to be supported on shallow conventional foundations, it is recommended the fill soils be excavated and stockpiled so that the native soil can be properly prepared. Prior to backfilling, Krazan & Associates, Inc., should inspect the bottom of the excavation to verify no additional removal is required.

The site is presently utilized a parking lot. In addition, existing commercial developments are located within the project site vicinity. Associated with these developments are buried structures, such as utility lines that may extend into the project site. Demolition activities should include proper removal of any buried structures. Any surface or buried structures including utilities encountered during construction

should be properly removed and/or relocated. The resulting excavations should be cleaned to firm native ground and backfilled with Engineered Fill, compacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557. Excavations, depressions, or soft and pliant areas extending below planned finish subgrade level should be cleaned to firm undisturbed soil, and backfilled with Engineered Fill. In general, any septic tanks, debris pits, cesspools, or similar structures should be entirely removed. Concrete footings should be removed to an equivalent depth of at least 3 feet below proposed footing elevations or as recommended by the Soils Engineer. Any other buried structures should be removed in accordance with the recommendations of the Soils Engineer. The resulting excavations should be backfilled with Engineered Fill.

Following stripping, fill removal operations, and demolition activities, the exposed subgrade in the areas of shallow conventional foundations, exterior flatwork, and pavement should be excavated/scarified to a depth of at least 12 inches, worked until uniform and free from large clods, moisture-conditioned as necessary, and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557. Limits of recompaction should extend a minimum of 3 feet beyond structural elements. This compaction effort should stabilize the surface soils and locate any unsuitable or pliant areas not found during our field investigation.

It is recommended that any uncertified fill material encountered within pavement areas be removed and/or recompacted. The fill material should be moisture-conditioned to near optimum moisture and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557. As an alternative, the Owner may elect not to recompact the existing fill within paved areas. However, the Owner should be aware that the paved areas may settle which may require annual maintenance. At a minimum, it is recommended that the upper 12 inches of subgrade soil be moisture-conditioned as necessary and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

Trees are located within the project site vicinity. Tree root removal operations should include roots greater than 1 inch in diameter. The resulting excavations should be backfilled with Engineered Fill compacted to a minimum 90 percent of maximum density based on ASTM Test Method D1557.

The upper soils, during wet winter months, become very moist due to the absorptive characteristics of the soil. Earthwork operations performed during winter months may encounter very moist unstable soils, which may require removal to grade a stable building foundation. Project site winterization consisting of placement of aggregate base and protecting exposed soils during the construction phase should be performed.

A representative of our firm should be present during all site clearing and grading operations to test and observe earthwork construction. This testing and observation is an integral part of our service as acceptance of earthwork construction is dependent upon compaction of the material and the stability of the material. The Soils Engineer may reject any material that does not meet compaction and stability requirements. Further recommendations of this report are predicated upon the assumption that earthwork construction will conform to recommendations set forth in this section and the Engineered Fill section.

Engineered Fill

The on-site, upper native soils and fill material are predominately silty sand, silty sand/sandy silt, sandy silt, and sand. These soils will be suitable for reuse as Engineered Fill, provided they are cleansed of excessive organics, debris and fragments greater than 4 inches in maximum dimension.

Relatively clean sands were encountered at various locations throughout the site. The possibility exists that site grading operations could expose these soils in areas of proposed buildings, pavements, and/or retaining walls. The Contractor should note that these soils lack the cohesion necessary to stand vertically, even in shallow excavations such as footing trenches. If these conditions are encountered, it will be necessary to over-excavate the affected area(s) to a minimum of 12 inches below the proposed bearing surface. These areas may be backfilled using a mix of the silty sand and sand soils that contains at least 20 percent fines and meeting the requirements for Engineered Fill. This material may be obtained from elsewhere at the site, imported to the site from an approved off-site source, or manufactured through blending of the excavated clean sand with other suitable material containing a higher percentage of fines to result in material meeting the requirements for Engineered Fill.

The preferred materials specified for Engineered Fill are suitable for most applications with the exception of exposure to erosion. Project site winterization and protection of exposed soils during the construction phase should be the sole responsibility of the Contractor, since he has complete control of the project site at that time.

Imported Fill material should be predominately non-expansive granular material with a plasticity index less than 10 and an expansion index less than 15. Imported Fill should be free from rocks and lumps greater than 4 inches in diameter. All Imported Fill material should be submitted for approval to the Soils Engineer at least 48 hours prior to delivery to the site.

Fill soils should be placed in lifts approximately 6 inches thick, moisture-conditioned as necessary, and compacted to achieve at least 90 percent of maximum density based on ASTM Test Method D1557. Additional lifts should not be placed if the previous lift did not meet the required dry density or if soil conditions are not stable.

Drainage and Landscaping

The ground surface should slope away from building pad and pavement areas toward appropriate drop inlets or other surface drainage devices. In accordance with Section 1804 of the 2019 California Building Code, it is recommended that the ground surface adjacent to foundations be sloped a minimum of 5 percent for a minimum distance of 10 feet away from structures, or to an approved alternative means of drainage conveyance. Swales used for conveyance of drainage and located within 10 feet of foundations should be sloped a minimum of 2 percent. Impervious surfaces, such as pavement and exterior concrete flatwork, within 10 feet of building foundations should be sloped a minimum of 1 percent away from the structure. Drainage gradients should be maintained to carry all surface water to collection facilities and off-site. These grades should be maintained for the life of the project.

Utility Trench Backfill

Utility trenches should be excavated according to accepted engineering practices following OSHA (Occupational Safety and Health Administration) standards by a Contractor experienced in such work. The responsibility for the safety of open trenches should be borne by the Contractor. Traffic and vibration adjacent to trench walls should be minimized; cyclic wetting and drying of excavation side slopes should be avoided. Depending upon the location and depth of some utility trenches, groundwater flow into open excavations could be experienced, especially during or shortly following periods of precipitation.

Sandy soil conditions were encountered at the site. These cohesionless soils have a tendency to cave in trench wall excavations. Shoring or sloping back trench sidewalls may be required within these sandy soils.

Utility trench backfill placed in or adjacent to buildings and exterior slabs should be compacted to at least 90 percent of maximum density based on ASTM Test Method D1557. The utility trench backfill placed in pavement areas should be compacted to at least 90 percent of maximum density based on ASTM Test Method D1557. Pipe bedding should be in accordance with pipe manufacturer's recommendations.

The Contractor is responsible for removing all water-sensitive soils from the trench regardless of the backfill location and compaction requirements. The Contractor should use appropriate equipment and methods to avoid damage to the utilities and/or structures during fill placement and compaction.

Foundations – Conventional

After completion of the recommended site preparation and over-excavation, the site should be suitable for shallow footing support. The proposed structures may be supported on a shallow foundation system bearing on undisturbed native soils or Engineered Fill. Spread and continuous footings can be designed for the following maximum allowable soil bearing pressures:

Load	Allowable Soil Bearing Capacity
Dead Load Only	1,875 psf
Dead-Plus-Live Load	2,500 psf
Total Load, including wind or seismic loads	3,325 psf

Footings should have a minimum depth of 18 inches below pad subgrade (soil grade) or adjacent exterior grade, whichever is lower. Footings should have a minimum width of 12 inches, regardless of load. Ultimate design of foundations and reinforcement should be performed by the project Structural Engineer.

The total settlement is not expected to exceed 1 inch. Differential settlement should be less than ½ inch. Most of the settlement is expected to occur during construction, as the loads are applied. However, additional post-construction settlement may occur if the foundation soils are flooded or saturated.

Resistance to lateral footing displacement can be computed using an allowable friction factor of 0.4 acting between the base of foundations and the supporting subgrade. Lateral resistance for footings can alternatively be developed using an allowable equivalent fluid passive pressure of 350 pounds per cubic foot acting against the appropriate vertical footing faces. The frictional and passive resistance of the soil may be combined without reduction in determining the total lateral resistance. A ⅓ increase in the value above may be used for short duration, wind, or seismic loads.

Foundations - Drilled Caissons

The proposed structures can be supported on drilled caissons, using an allowable sidewall friction of 400 psf. This value is for dead-plus-live loads. This value may be increased ⅓ for short duration loads, such as wind or seismic. The upper 2 feet should be neglected from friction calculations. Uplift loads can be resisted by caissons using an allowable sidewall friction of 225 psf of the surface area plus the weight of the pier. Caissons should have a minimum embedment depth of 8 feet and extend into undisturbed native soils. The total and differential settlements of the piers are not expected to exceed 1 inch. Most of the settlement is expected to occur during construction as the loads are applied.

Caissons may be designed using a lateral bearing capacity of 175 psf/ft using the applicable formula for unconstrained or constrained conditions in the 2019 California Building Code. This value can be doubled if a lateral deflection of ½-inch is acceptable. Unconstrained or flexible cap conditions apply to isolated piers, and constrained or rigid cap (fixed against rotation) conditions apply to piers with a rigid connection to the structure.

Sandy soils were encountered at the site. These sandy soils may be subject to caving during drilling operations. Accordingly, cased caissons may be required. The drilled holes should be left open for as short of time as possible and should be protected from run-off.

Excavation Stability

Temporary excavations planned for the construction of the building and other associated structures may be excavated, according to the accepted engineering practices following Occupational Safety and Health Administration (OSHA) standards by a Contractor experienced in such work. Open, unbraced excavations in undisturbed soils should be made according to the table below.

Recommended Excavation Slopes	
Depth of Excavation (ft)	**Slope (Horizontal:Vertical)**
	Temporary
0-5	1:1
5-10	1½:1
10-15	1¾:1
15+	2:1

If, due to space limitation, excavation near existing structures or roads is performed in a vertical position, braced shorings or shields may be used for supporting vertical excavations. Therefore, in order to comply with the local and state safety regulations, a properly designed and installed shoring system would be required to accomplish planned excavation and installation. A specialty Shoring Contractor should be responsible for the design and installation of such a shoring system during construction. The lateral pressures provided below may be used in the design of a braced-type shoring system.

Recommended Lateral Earth Pressure for Braced Shoring	
Depth of Excavation Below Ground Surface (feet)	**Lateral Soil Pressure (psf)**
0	31 H
0.25 H	31 H
H	31 H
Where H is the total depth of the excavation in feet.	

The foregoing does not include excess hydrostatic pressure or surcharge loading. Fifty percent of any surcharge load, such as construction equipment weight, should be added to the lateral load given above.

Since the Contractor has the ultimate responsibility for excavation stability, he may design a different shoring system for the excavation.

The excavation/shoring recommendations provided herein are based on soil characteristics derived from limited test borings within the site. Variations in soil conditions will likely be encountered during the excavations. Krazan & Associates, Inc. should be afforded the opportunity to provide field review to evaluate the actual conditions and account for field condition variations not otherwise anticipated in the preparation of this recommendation.

Lateral Earth Pressures and Retaining Walls

Walls retaining horizontal backfill and capable of deflecting a minimum of 0.1 percent of its height at the top may be designed using an equivalent fluid active pressure of 31 pounds per square foot per foot of depth. Walls that are incapable of this deflection or walls that are fully constrained against deflection may be designed for an equivalent fluid at-rest pressure of 52 pounds per square foot per foot per depth. Expansive soils should not be used for backfill against walls. The wedge of non-expansive backfill

material should extend from the bottom of each retaining wall outward and upward at a slope of 2:1 (horizontal to vertical) or flatter. The stated lateral earth pressures do not include the effects of hydrostatic water pressures generated by infiltrating surface water that may accumulate behind the retaining walls; or loads imposed by construction equipment, foundations, or roadways.

During grading and backfilling operations adjacent to any walls, heavy equipment should not be allowed to operate within a lateral distance of 5 feet from the wall or within a lateral distance equal to the wall height, whichever is greater, to avoid developing excessive lateral pressures. Within this zone, only hand operated equipment ("whackers," vibratory plates, or pneumatic compactors) should be used to compact the backfill soils.

Seismic Parameters – 2019 California Building Code

The Site Class per Section 1613 of the 2019 California Building Code (2019 CBC) and ASCE 7-16, Chapter 20 is based upon the site soil conditions. It is our opinion that a Site Class D is most consistent with the subject site soil conditions. For seismic design of the structures based on the seismic provisions of the 2019 CBC, we recommend the following parameters:

Seismic Item	Value	CBC Reference
Site Class	D	Section 1613.2.2
Site Coefficient F_a	1.237	Table 1613.2.3 (1)
S_s	0.704	Section 1613.2.1
S_{MS}	0.871	Section 1613.2.3
S_{DS}	0.581	Section 1613.2.4
Site Coefficient F_v	2.050	Table 1613.2.3 (2)
S_1	0.275	Section 1613.2.1
S_{M1}	0.564	Section 1613.2.3
S_{D1}	0.376	Section 1613.2.4
T_S	0.647	Section 1613.2

* Based on Equivalent Lateral Force (ELF) Design Procedure being used.

Soil Cement Reactivity

Excessive sulfate in either the soil or native water may result in an adverse reaction between the cement in concrete (or stucco) and the soil. HUD/FHA and CBC have developed criteria for evaluation of sulfate levels and how they relate to cement reactivity with soil and/or water.

Soil samples were obtained from the site and tested in accordance with State of California Materials Manual Test Designation 417. The sulfate concentrations detected from these soil samples were less than 150 ppm and are below the maximum allowable values established by HUD/FHA and CBC. Therefore, no special design requirements are necessary to compensate for sulfate reactivity with the cement.

Compacted Material Acceptance

Compaction specifications are not the only criteria for acceptance of the site grading or other such activities. However, the compaction test is the most universally recognized test method for assessing the performance of the Grading Contractor. The numerical test results from the compaction test cannot be used to predict the engineering performance of the compacted material. Therefore, the acceptance of compacted materials will also be dependent on the stability of that material. The Soils Engineer has the option of rejecting any compacted material regardless of the degree of compaction if that material is considered to be unstable or if future instability is suspected. A specific example of rejection of fill material passing the required percent compaction is a fill which has been compacted with an in-situ moisture content significantly less than optimum moisture. This type of dry fill (brittle fill) is susceptible to future settlement if it becomes saturated or flooded.

Testing and Inspection

A representative of Krazan & Associates, Inc. should be present at the site during the earthwork activities to confirm that actual subsurface conditions are consistent with the exploratory fieldwork. This activity is an integral part of our service, as acceptance of earthwork construction is dependent upon compaction testing and stability of the material. This representative can also verify that the intent of these recommendations is incorporated into the project design and construction. Krazan & Associates, Inc. will not be responsible for grades or staking, since this is the responsibility of the Prime Contractor.

LIMITATIONS

Soils Engineering is one of the newest divisions of Civil Engineering. This branch of Civil Engineering is constantly improving as new technologies and understanding of earth sciences advance. Although your site was analyzed using the most appropriate and most current techniques and methods, undoubtedly there will be substantial future improvements in this branch of engineering. In addition to advancements in the field of Soils Engineering, physical changes in the site, either due to excavation or fill placement, new agency regulations, or possible changes in the proposed structure after the soils report is completed may require the soils report to be professionally reviewed. In light of this, the Owner should be aware that there is a practical limit to the usefulness of this report without critical review. Although the time limit for this review is strictly arbitrary, it is suggested that 2 years be considered a reasonable time for the usefulness of this report.

Foundation and earthwork construction is characterized by the presence of a calculated risk that soil and groundwater conditions have been fully revealed by the original foundation investigation. This risk is derived from the practical necessity of basing interpretations and design conclusions on limited sampling of the earth. The recommendations made in this report are based on the assumption that soil conditions do not vary significantly from those disclosed during our field investigation. If any variations or undesirable conditions are encountered during construction, the Soils Engineer should be notified so that supplemental recommendations may be made.

The conclusions of this report are based on the information provided regarding the proposed construction. If the proposed construction is relocated or redesigned, the conclusions in this report may not be valid. The Soils Engineer should be notified of any changes so the recommendations may be reviewed and re-evaluated.

This report is a Geotechnical Engineering Investigation with the purpose of evaluating the soil conditions in terms of foundation design. The scope of our services did not include any Environmental Site Assessment for the presence or absence of hazardous and/or toxic materials in the soil, groundwater, or atmosphere; or the presence of wetlands. Any statements, or absence of statements, in this report or on any boring log regarding odors, unusual or suspicious items, or conditions observed, are strictly for descriptive purposes and are not intended to convey engineering judgment regarding potential hazardous and/or toxic assessment.

The geotechnical engineering information presented herein is based upon professional interpretation utilizing standard engineering practices and a degree of conservatism deemed proper for this project. It is not warranted that such information and interpretation cannot be superseded by future geotechnical engineering developments. We emphasize that this report is valid for the project outlined above and should not be used for any other sites.

If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office at (209) 572-2200.

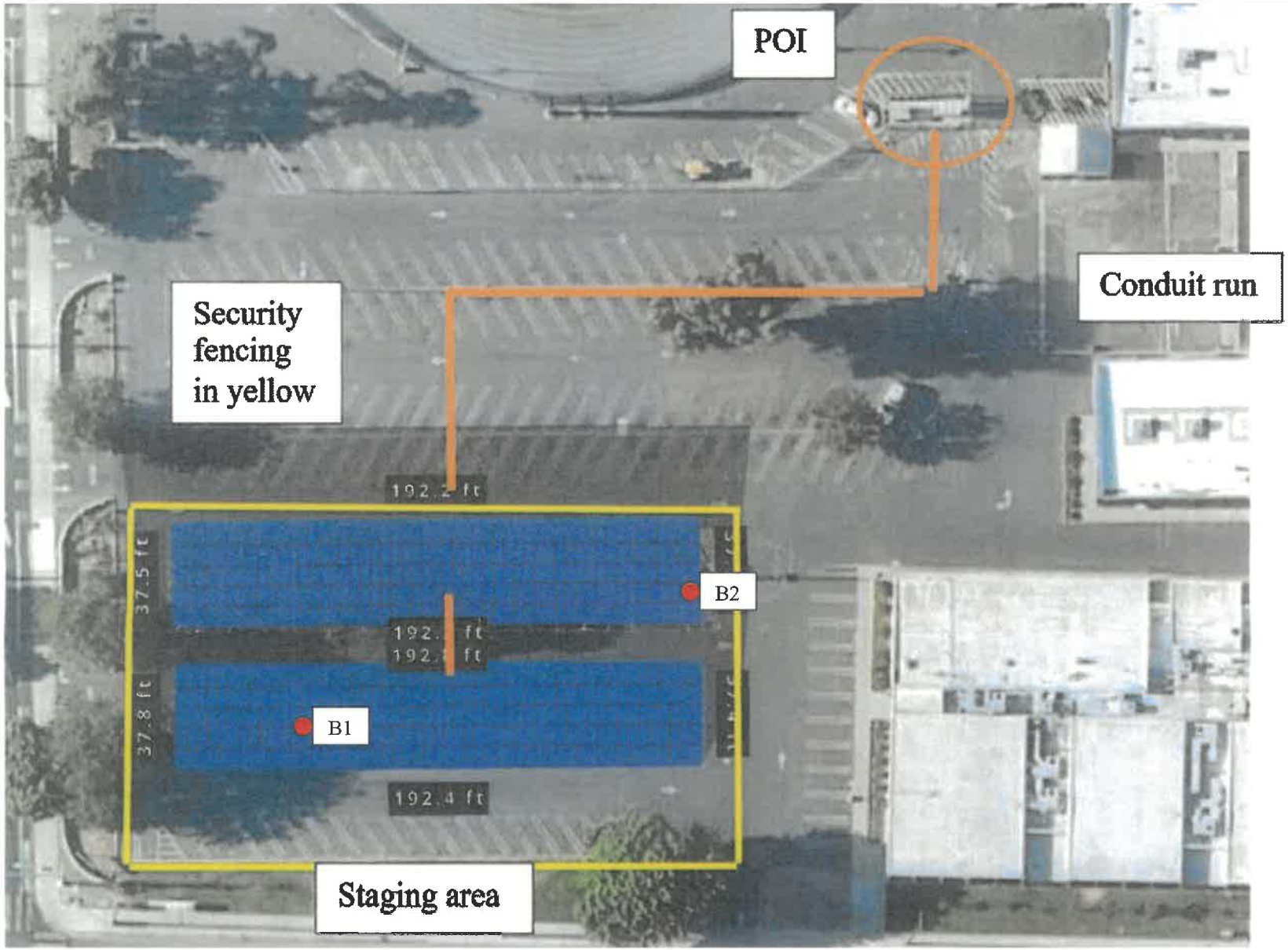
Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

Remington Alexander
Project Engineer
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REGISTERED PROFESSIONAL ENGINEER
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RA/DRJ:ht



APPROXIMATE BORING LOCATION

SITE MAP	Scale: NTS	Date: October 2022	Krazan GEOTECHNICAL ENGINEERING
Solar Arrays Stoddard Avenue and Tully Road Modesto, California	Drawn by: HT	Approved by: DJ	
	Project No. 072-22066	Figure No. 1	

APPENDIX A

FIELD AND LABORATORY INVESTIGATIONS

Field Investigation

The field investigation consisted of a surface reconnaissance and a subsurface exploratory program. Two 4½-inch to 6½-inch exploratory borings were advanced. The boring locations are shown on the site plan.

The soils encountered were logged in the field during the exploration and, with supplementary laboratory test data, are described in accordance with the Unified Soil Classification System.

Modified standard penetration tests and standard penetration tests were performed at selected depths. These tests represent the resistance to driving a 2½-inch and 1½-inch diameter split barrel sampler, respectively. The driving energy was provided by a hammer weighing 140 pounds falling 30 inches. Relatively undisturbed soil samples were obtained while performing this test. Bag samples of the disturbed soil were obtained from the auger cuttings. The modified standard penetration tests are identified in the sample type on the boring logs with a full shaded in block. The standard penetration tests are identified in the sample type on the boring logs with half of the block shaded. All samples were returned to our Clovis laboratory for evaluation.

Laboratory Investigation

The laboratory investigation was programmed to determine the physical and mechanical properties of the foundation soil underlying the site. Test results were used as criteria for determining the engineering suitability of the surface and subsurface materials encountered.

In-situ moisture content, dry density, consolidation, direct shear, and sieve analysis tests were completed for the undisturbed samples representative of the subsurface material. These tests, supplemented by visual observation, comprised the basis for our evaluation of the site material.

The logs of the exploratory borings and laboratory determinations are presented in this Appendix.

UNIFIED SOIL CLASSIFICATION SYSTEM

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

COARSE-GRAINED SOILS (more than 50% of material is larger than No. 200 sieve size.)			
GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size	Clean Gravels (Less than 5% fines)		
		GW	Well-graded gravels, gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravels with fines (More than 12% fines)		
		GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
SANDS 50% or more of coarse fraction smaller than No. 4 sieve size	Clean Sands (Less than 5% fines)		
		SW	Well-graded sands, gravelly sands, little or no fines
		SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with fines (More than 12% fines)		
		SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size.)			
SILTS AND CLAYS Liquid limit less than 50%		ML	Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS		PT	Peat and other highly organic soils

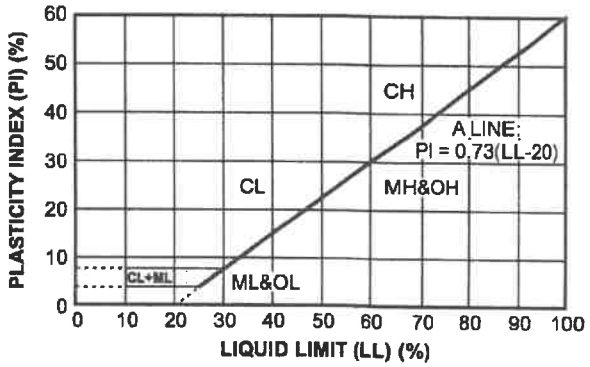
CONSISTENCY CLASSIFICATION

Description	Blows per Foot
Granular Soils	
Very Loose	< 5
Loose	5 – 15
Medium Dense	16 – 40
Dense	41 – 65
Very Dense	> 65
Cohesive Soils	
Very Soft	< 3
Soft	3 – 5
Firm	6 – 10
Stiff	11 – 20
Very Stiff	21 – 40
Hard	> 40

GRAIN SIZE CLASSIFICATION

Grain Type	*Standard Sieve Size*	*Grain Size in Millimeters*
Boulders	Above 12 inches	Above 305
Cobbles	12 to 13 inches	305 to 76.2
Gravel	3 inches to No. 4	76.2 to 4.76
Coarse-grained	3 to ¾ inches	76.2 to 19.1
Fine-grained	¾ inches to No. 4	19.1 to 4.76
Sand	No. 4 to No. 200	4.76 to 0.074
Coarse-grained	No. 4 to No. 10	4.76 to 2.00
Medium-grained	No. 10 to No. 40	2.00 to 0.42
Fine-grained	No. 40 to No. 200	0.42 to 0.074
Silt and Clay	Below No. 200	Below 0.074

PLASTICITY CHART



Log of Boring B1

Project: Solar Arrays

Project No: 072-22066

Client: Yosemite Community College

Figure No.: A-1

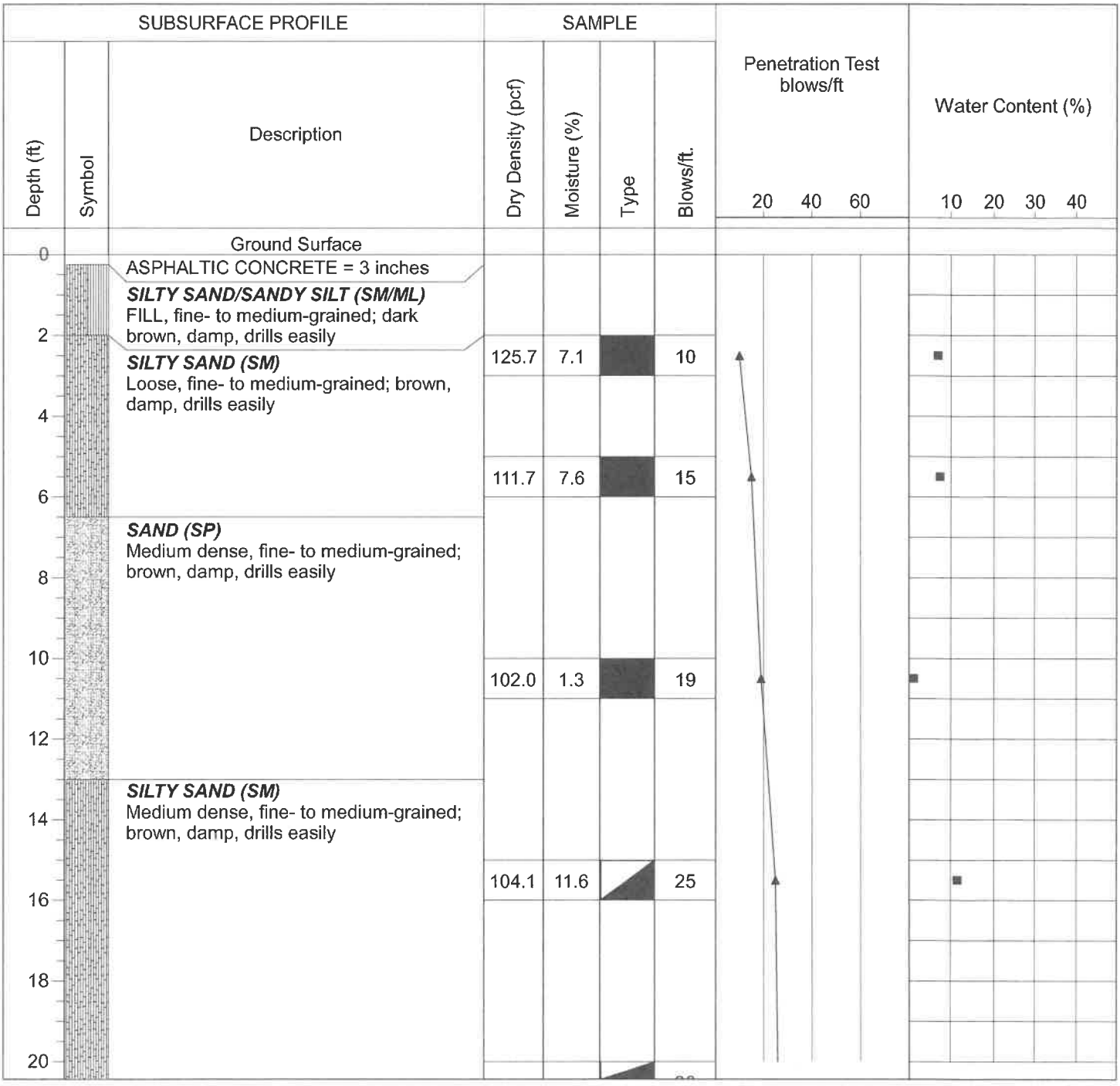
Location: Stoddard Avenue and Tully Road, Modesto, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None



Drill Method: Hollow Stem

Drill Date: 9-13-22

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 6½ Inches

Driller: Jim Watts

Elevation: 50 Feet

Log of Boring B1

Project: Solar Arrays | **Project No:** 072-22066

Client: Yosemite Community College | **Figure No.:** A-1

Location: Stoddard Avenue and Tully Road, Modesto, California | **Logged By:** Dave Adams

Depth to Water> | **Initial:** None | **At Completion:** None

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
22			107.4	10.9		26
24		***SANDY SILT (ML)*** Very dense, fine-grained; brown, damp, drills firmly				
26			100.0	23.3		50
28						
30		***SILTY SAND (SM)*** Medium dense, fine- to medium-grained; brown, moist, drills easily	125.9	8.9		20
32						
34						
36			112.4	8.6		24
38		***SANDY SILT (ML)*** Dense, fine- to medium-grained with trace CLAY; brown, moist, drills firmly				
40						

Penetration Test blows/ft: 20 40 60

Water Content (%): 10 20 30 40

Drill Method: Hollow Stem | **Drill Date:** 9-13-22

Drill Rig: CME 45C-4 | **Krazan and Associates** | **Hole Size:** 6½ Inches

Driller: Jim Watts | **Elevation:** 50 Feet

Log of Boring B1

Project: Solar Arrays

Project No: 072-22066

Client: Yosemite Community College

Figure No.: A-1

Location: Stoddard Avenue and Tully Road, Modesto, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
42			98.8	26.1		38		
44								
46			100.4	24.5		43		
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 9-13-22

Hole Size: 6½ Inches

Elevation: 50 Feet

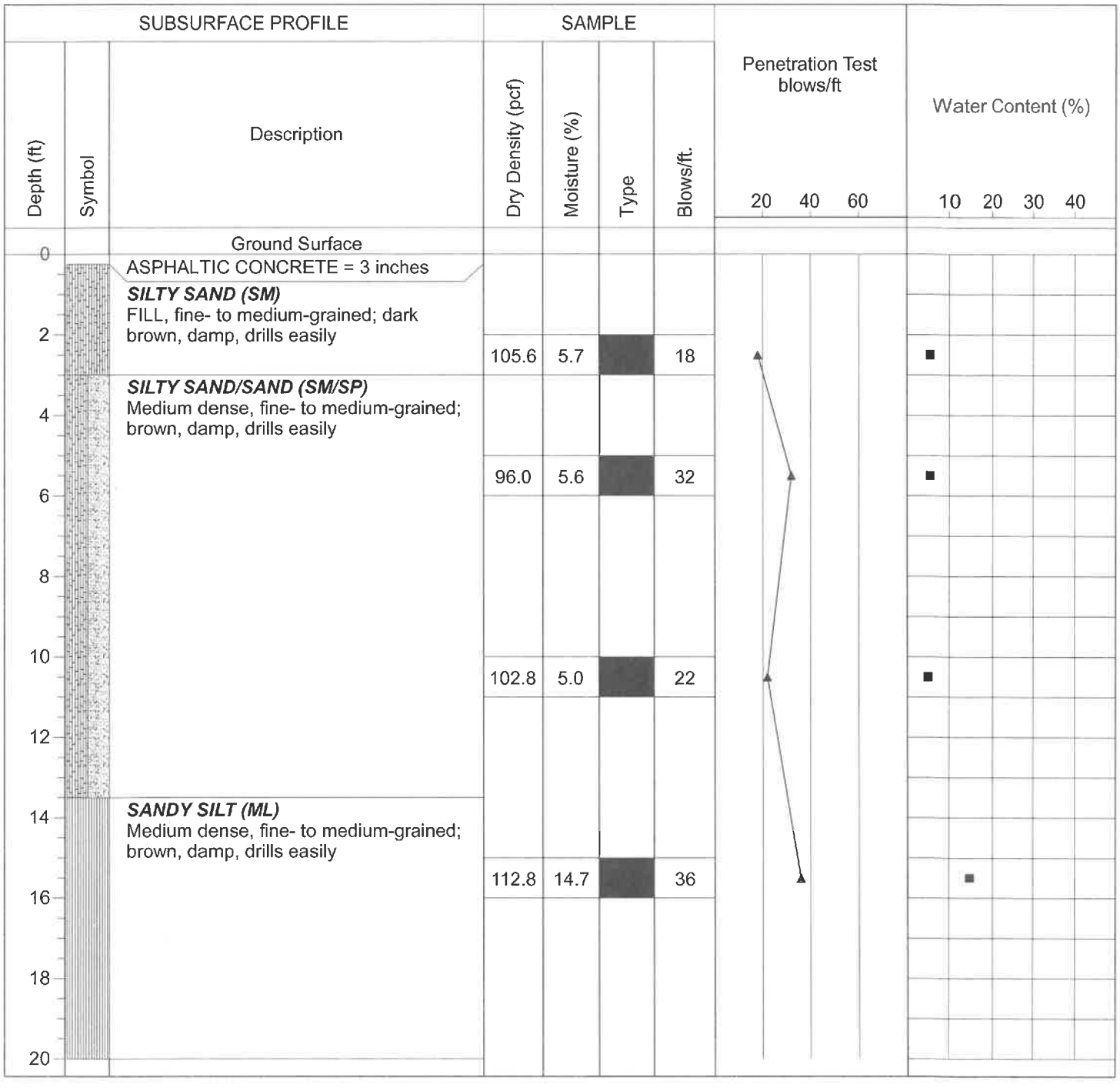
Log of Boring B2

Project: Solar Arrays | **Project No:** 072-22066

Client: Yosemite Community College | **Figure No.:** A-2

Location: Stoddard Avenue and Tully Road, Modesto, California | **Logged By:** Dave Adams

Depth to Water> | **Initial:** None | **At Completion:** None



Drill Method: Solid Flight | **Drill Date:** 9-13-22

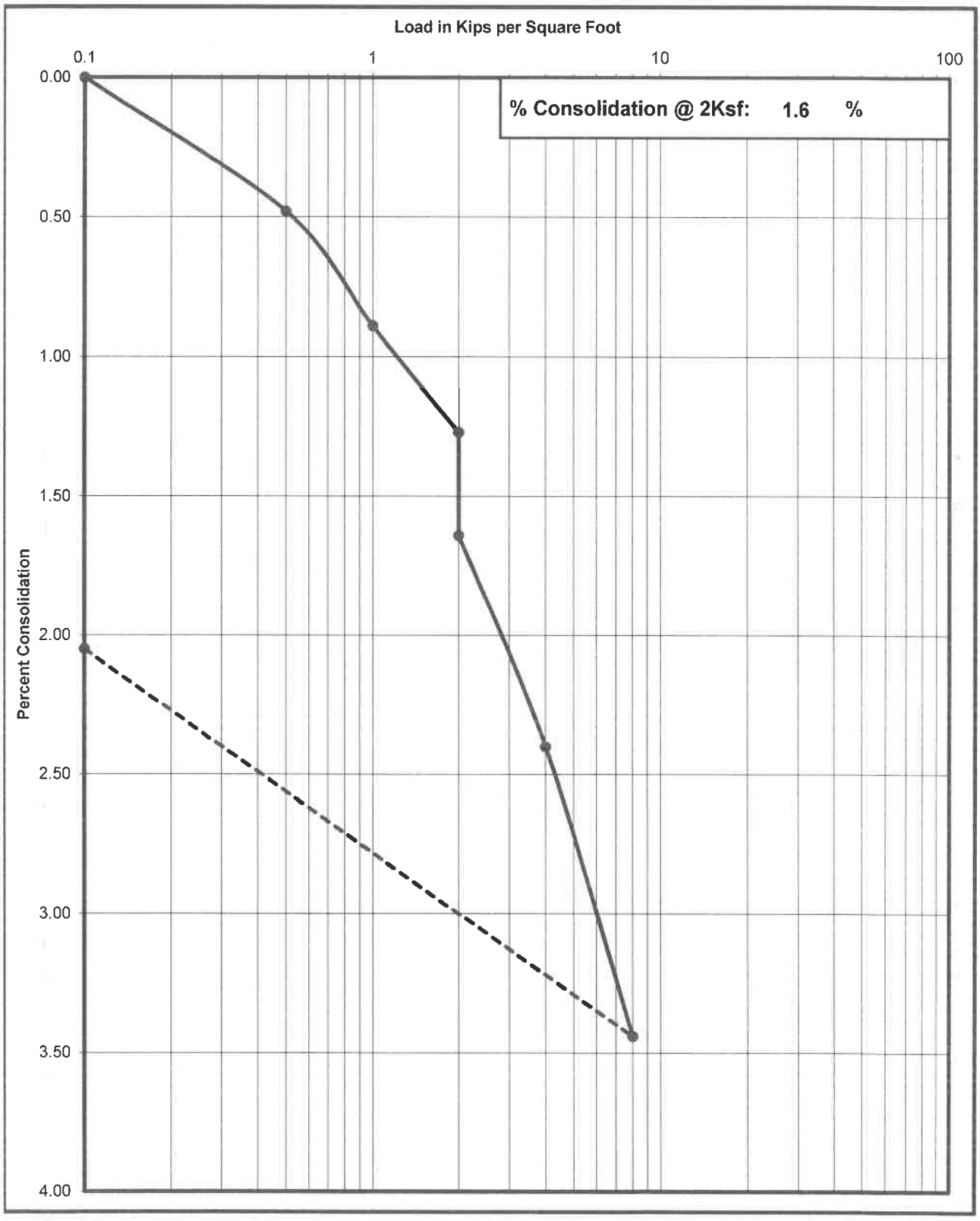
Drill Rig: CME 45C-4 | **Hole Size:** 4½ Inches

Driller: Jim Watts | **Elevation:** 20 Feet

Krazan and Associates

Consolidation Test

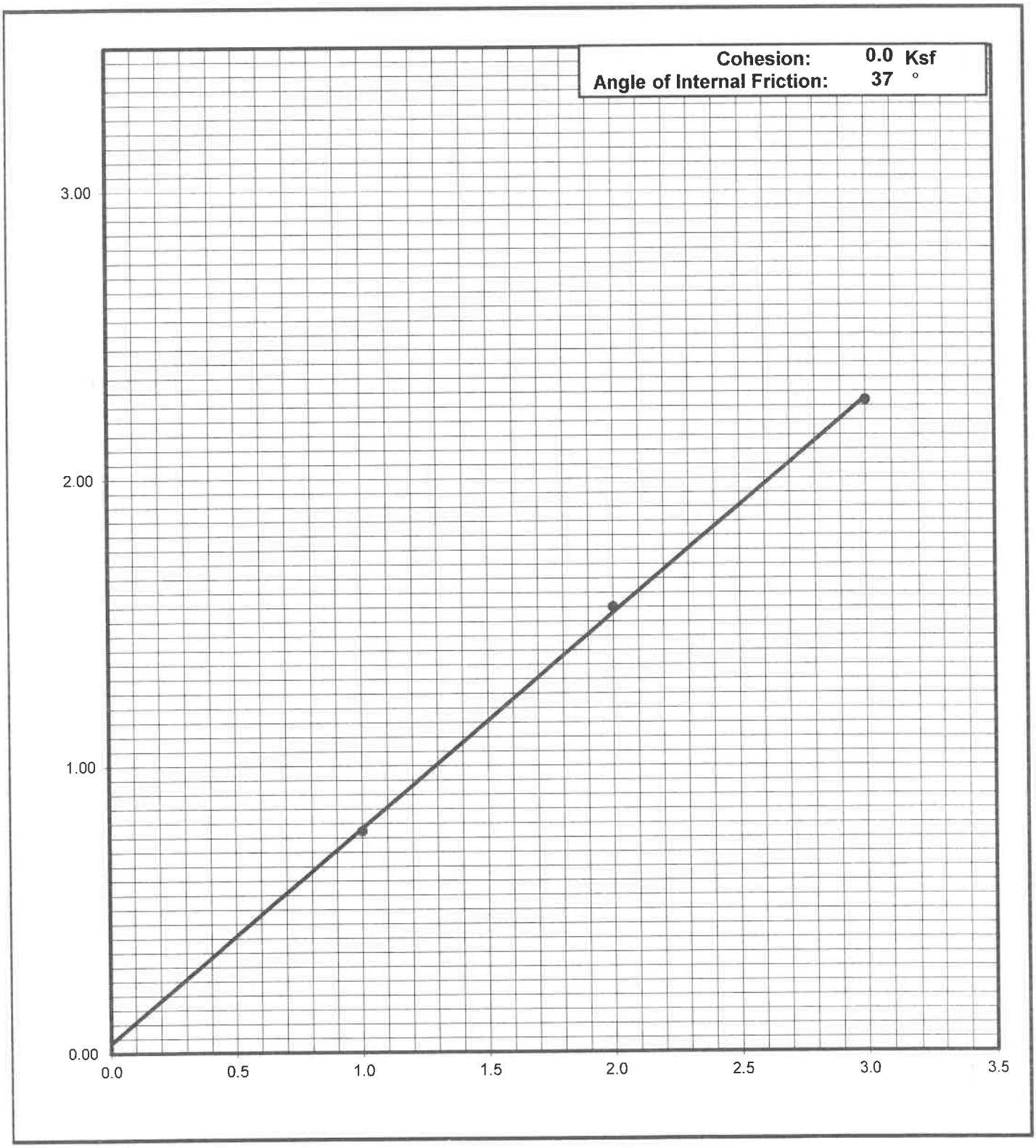
Project No	Boring No. & Depth	Date	Soil Classification
072-22066	B1 @ 2-3'	9/21/2022	SM



Krazan Testing Laboratory

Shear Strength Diagram (Direct Shear)
ASTM D - 3080 / AASHTO T - 236

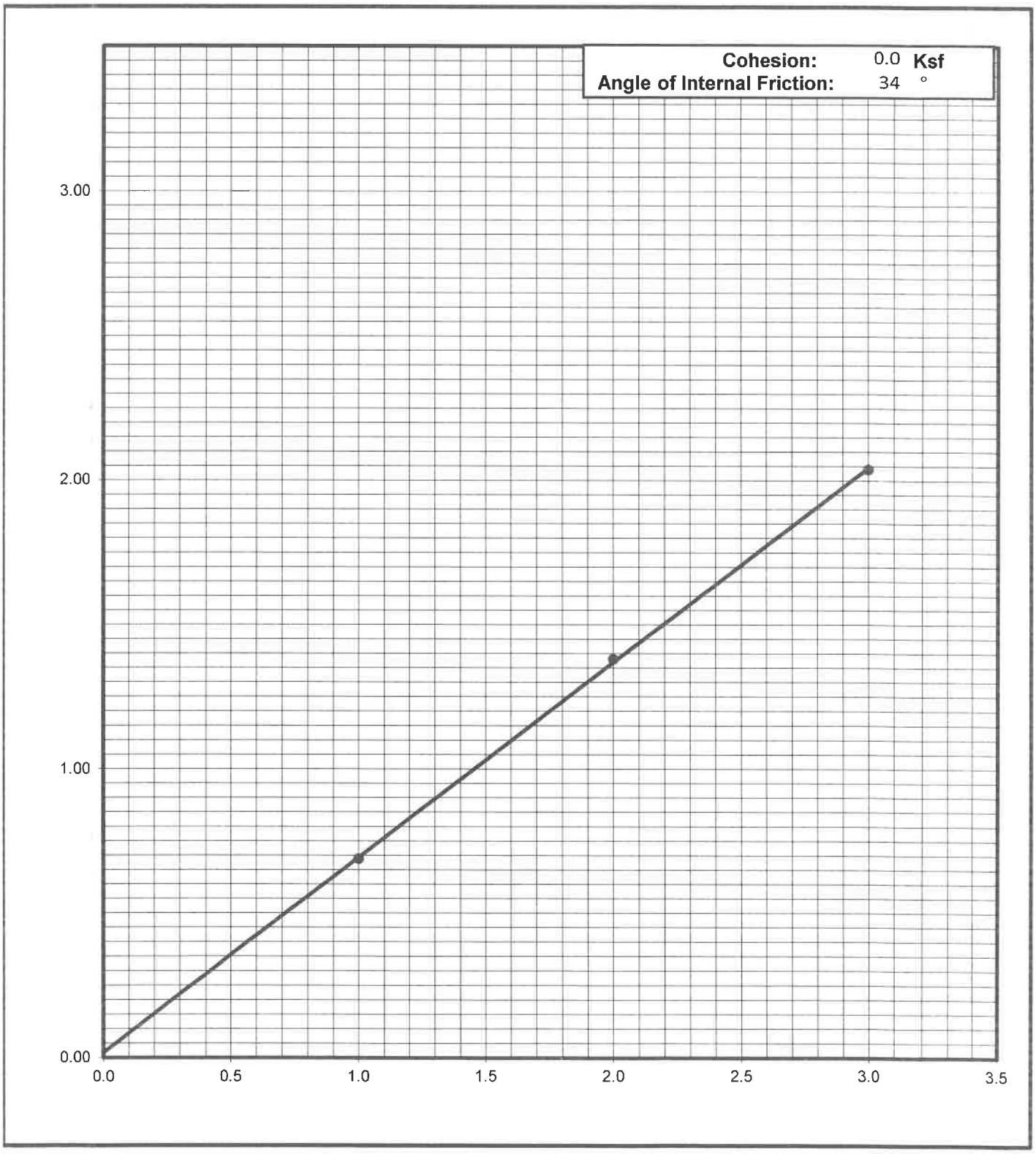
Project Number	Boring No. & Depth	Soil Type	Date
072-22066	B1 @ 5-6'	SM	9/21/2022



Krazan Testing Laboratory

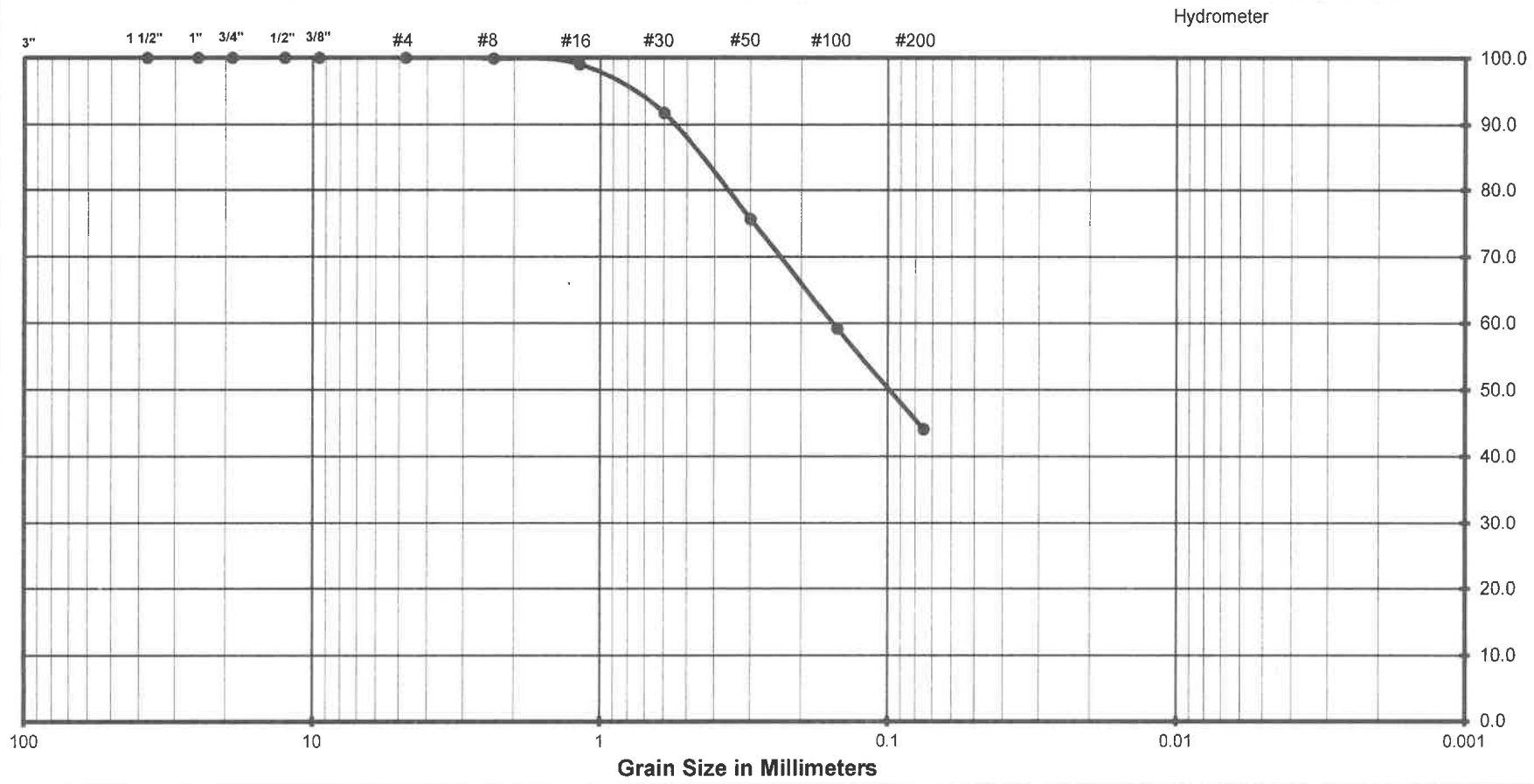
Shear Strength Diagram (Direct Shear)
ASTM D - 3080 / AASHTO T - 236

Project Number	Boring No. & Depth	Soil Type	Date
072-22066	B2 @ 2-3'	SM	9/21/2022



Krazan Testing Laboratory

Grain Size Analysis



Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Solar Arrays
Project Number	072-22066
Soil Classification	SM
Sample Number	B1 @ 2-3'

Krazan Testing Laboratory

APPENDIX B

EARTHWORK SPECIFICATIONS

GENERAL

When the text of the report conflicts with the general specifications in this appendix, the recommendations in the report have precedence.

SCOPE OF WORK: These specifications and applicable plans pertain to and include all earthwork associated with the site rough grading, including but not limited to the furnishing of all labor, tools, and equipment necessary for site clearing and grubbing, stripping, preparation of foundation materials for receiving fill, excavation, processing, placement and compaction of fill and backfill materials to the lines and grades shown on the project grading plans, and disposal of excess materials.

PERFORMANCE: The Contractor shall be responsible for the satisfactory completion of all earthwork in accordance with the project plans and specifications. This work shall be inspected and tested by a representative of Krazan and Associates, Inc., hereinafter known as the Soils Engineer and/or Testing Agency. Attainment of design grades when achieved shall be certified by the project Civil Engineer. Both the Soils Engineer and the Civil Engineer are the Owner's representatives. If the Contractor should fail to meet the technical or design requirements embodied in this document and on the applicable plans, he shall make the necessary readjustments until all work is deemed satisfactory as determined by both the Soils Engineer and the Civil Engineer. No deviation from these specifications shall be made except upon written approval of the Soils Engineer, Civil Engineer or project Architect.

No earthwork shall be performed without the physical presence or approval of the Soils Engineer. The Contractor shall notify the Soils Engineer at least 2 working days prior to the commencement of any aspect of the site earthwork.

The Contractor agrees that he shall assume sole and complete responsibility for job site conditions during the course of construction of this project, including safety of all persons and property; that this requirement shall apply continuously and not be limited to normal working hours; and that the Contractor shall defend, indemnify and hold the Owner and the Engineers harmless from any and all liability, real or alleged, in connection with the performance of work on this project, except for liability arising from the sole negligence of the Owner or the Engineers.

TECHNICAL REQUIREMENTS: All compacted materials shall be densified to a density not less than 90 percent relative compaction based on ASTM Test Method D1557 or CAL-216, as specified in the technical portion of the Soil Engineer's report. The location and frequency of field density tests shall be as determined by the Soils Engineer. The results of these tests and compliance with these specifications shall be the basis upon which satisfactory completion of work will be judged by the Soils Engineer.

SOILS AND FOUNDATION CONDITIONS: The Contractor is presumed to have visited the site and to have familiarized himself with existing site conditions and the contents of the data presented in the soil report.

The Contractor shall make his own interpretation of the data contained in said report, and the Contractor shall not be relieved of liability under the Contract documents for any loss sustained as a result of any variance between conditions indicated by or deduced from said report and the actual conditions encountered during the progress of the work.

DUST CONTROL: The work includes dust control as required for the alleviation or prevention of any dust nuisance on or about the site or the borrow area, or off-site if caused by the Contractor's operation either during the performance of the earthwork or resulting from the conditions in which the Contractor leaves the site. The Contractor shall assume all liability, including court costs of codefendants, for all claims related to dust or windblown materials attributable to his work.

SITE PREPARATION

Site preparation shall consist of site clearing and grubbing and the preparations of foundation materials for receiving fill.

CLEARING AND GRUBBING: The Contractor shall accept the site in this present condition and shall demolish and/or remove from the area of designated project earthwork all structures, both surface and subsurface, trees, brush, roots, debris, organic matter, and all other matter determined by the Soils Engineer to be deleterious or otherwise unsuitable. Such materials shall become the property of the Contractor and shall be removed from the site.

Tree root systems in proposed building areas should be removed to a minimum depth of 3 feet and to such an extent which would permit removal of all roots larger than 1 inch. Tree roots removed in parking areas may be limited to the upper 1½ feet of the ground surface. Backfill of tree root excavations should not be permitted until all exposed surfaces have been inspected and the Soils Engineer is present for the proper control of backfill placement and compaction. Burning in areas which are to receive fill materials shall not be permitted.

SUBGRADE PREPARATION: Surfaces to receive Engineered Fill, building or slab loads shall be prepared as outlined above, excavated/scarified to a depth of 12 inches, moisture-conditioned as necessary, and compacted to 90 percent relative compaction.

Loose soil areas, areas of uncertified fill, and/or areas of disturbed soils shall be moisture-conditioned as necessary and recompacted to 90 percent relative compaction. All ruts, hummocks, or other uneven surface features shall be removed by surface grading prior to placement of any fill materials. All areas which are to receive fill materials shall be approved by the Soils Engineer prior to the placement of any of the fill material.

EXCAVATION: All excavation shall be accomplished to the tolerance normally defined by the Civil Engineer as shown on the project grading plans. All over-excavation below the grades specified shall be backfilled at the Contractor's expense and shall be compacted in accordance with the applicable technical requirements.

FILL AND BACKFILL MATERIAL: No material shall be moved or compacted without the presence of the Soils Engineer. Material from the required site excavation may be utilized for construction site fills provided prior approval is given by the Soils Engineer. All materials utilized for constructing site fills shall be free from vegetation or other deleterious matter as determined by the Soils Engineer.

PLACEMENT, SPREADING AND COMPACTION: The placement and spreading of approved fill materials and the processing and compaction of approved fill and native materials shall be the responsibility of the Contractor. However, compaction of fill materials by flooding, ponding, or jetting shall not be permitted unless specifically approved by local code, as well as the Soils Engineer.

Both cut and fill areas shall be surface-compacted to the satisfaction of the Soils Engineer prior to final acceptance.

SEASONAL LIMITS: No fill material shall be placed, spread, or rolled while it is frozen or thawing or during unfavorable wet weather conditions. When the work is interrupted by heavy rains, fill operations shall not be resumed until the Soils Engineer indicates that the moisture content and density of previously placed fill are as specified.

APPENDIX NO. 3

GEOTECHNICAL ENGINEERING/GEOLOGIC HAZARDS INVESTIGATION UPDATE

PROPOSED NEW PRESS BOX – MODESTO JUNIOR COLLEGE

NEC Stoddard Ave. & Tully Road

Project No. 072-26013

DATED: APRIL 26, 2026

NOTICE TO CONTRACTORS:

This Appendix is included in the Contract Documents as a convenience to the Owner. The information contained herein has been prepared by:

Krazan & Associates, Inc.
Geotechnical Engineering Division
448 Mitchell Road, Suite C
Modesto, CA 95354
Phone: (209) 572-2200

Teter Architects and Engineers has no responsibility related to the work identified in this Appendix, all questions connected to the work indicated herein should be directed to Krazan & Associates, Inc.

GEOTECHNICAL ENGINEERING/GEOLOGIC HAZARDS INVESTIGATION UPDATE
PROPOSED NEW PRESS BOX
MODESTO JUNIOR COLLEGE
NEC STODDARD AVENUE & TULLY ROAD
MODESTO, CALIFORNIA

PROJECT NO. 072-26013
APRIL 24, 2026

PREPARED FOR:

MR. JAMIE HICKMAN
TETER ARCHITECTS
7535 N. PALM AVENUE #210
FRESNO, CALIFORNIA 93711

PREPARED BY:

KRAZAN & ASSOCIATES, INC.
GEOTECHNICAL ENGINEERING DIVISION
448 MITCHELL ROAD, SUITE C
MODESTO, CALIFORNIA 95354
(209) 572-2200

Krazan & ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

May 8, 2026

KA Project No. 072-26013

Mr. Jamie Hickman
Teter Architects
7535 N. Palm Avenue #201
Fresno, California 93711

RE: Addendum to Geotechnical Engineering Investigation
Proposed New Press Box - Modesto Junior College
NEC Stoddard Avenue and Tully Road
Modesto, California

Dear Mr. Hickman:

In accordance with your request, we are providing this Addendum to our Geotechnical Engineering Investigation for the above-referenced project site. Krazan & Associates, Inc. had previously conducted a Geotechnical Engineering Investigation report dated April 24, 2026 (KA Project No. 072-26013). This addendum provides supplemental site preparation and foundation recommendations.

In the above-referenced report, it was recommended footings have a minimum embedment depth of 18 inches and be supported on a minimum of 24 inches of compacted Engineered Fill. It is understood some of the footings for the press box will bottom at a depth of approximately 5 ½ feet below existing site grade. In the areas of these footings, due to the depth of the footings and the soil conditions encountered during our investigation, the Engineered Fill under the footing can be eliminated. However, the bottom of the footing excavation should be compacted to a minimum of 90 percent of maximum density prior to placement of reinforcing steel. If any undocumented fill is encountered during excavation of the footings, this material will need to be removed.

The recommendations and limitations provided in our Geotechnical Engineering Investigation report dated April 24, 2026 apply to this letter.

If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office at (209) 572-2200.



Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

Dave R. Jarosz
Managing Engineer
RGE No. 2698/RCE No. 60185

Krazan & ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

April 24, 2026 Project No. 072-26013

Mr. Jamie Hickman
Teter Architects
7535 N. Palm Avenue #201
Fresno, California 93711

RE: Geotechnical Engineering/Geologic Hazards Investigation Update
Proposed New Press Box - Modesto Junior College
NEC Stoddard Avenue and Tully Road
Modesto, California

Dear Mr. Hickman:

In accordance with your request, we have completed a Geotechnical Engineering/Geologic Hazards Investigation for the above-referenced site. The results of our investigation are presented in the attached report.

If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office at (209) 572-2200.

Respectfully submitted,
KRAZAN & ASSOCIATES, INC.



David R. Jarosz, II
Managing Engineer
RGE No. 2698/RCE No. 60185

DRJ:ht

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April 24, 2026 Project No. 072-26013

GEOTECHNICAL ENGINEERING/GEOLOGIC HAZARDS INVESTIGATION UPDATE
PROPOSED NEW PRESS BOX
MODESTO JUNIOR COLLEGE
NEC OF STODDARD AVENUE & TULLY ROAD
MODESTO, STANISLAUS COUNTY, CALIFORNIA

INTRODUCTION

This report presents the results of our Geotechnical Engineering/Geologic Hazards Investigation Update for the proposed Modesto Junior College new football stadium press box to be located at the northeast corner of Stoddard Avenue and Tully Road in Modesto, Stanislaus County, California. A previous Geotechnical Engineering Report, a Geologic Hazards Investigation, and an updated Geologic Hazards Investigation were conducted for a solar carport project in an asphaltic concrete parking lot located south of the football stadium (KA Project Numbers 072-22066, 072-23061, and 072-23086 - Modesto Junior College Solar Arrays dated October 20, 2022, September 6, 2023, and February 9, 2024). Discussions regarding site conditions are presented herein, together with conclusions and recommendations pertaining to site preparation, Engineered Fill, utility trench backfill, drainage and landscaping, foundations, retaining walls, and soil cement reactivity.

A site plan showing the approximate boring locations from the previous reports along with the update new press box project area are presented following the text of this report (Figure 2 Site Geologic Map and Figure 2.1 Site Map). A description of the field investigation, boring log, and the boring log legend are presented in Appendix A. Appendix A also contains a description of the laboratory testing phase of this study, along with the laboratory test results. Appendix B contains a guide to earthwork specifications. When conflicts in the text of the report occur with the general specifications in the appendices, the recommendations in the text of the report have precedence.

PURPOSE AND SCOPE

This investigation was conducted to evaluate the soil and groundwater conditions at the site, to make geotechnical engineering recommendations for use in design of specific construction elements, and to provide criteria for site preparation and Engineered Fill construction.

Our scope of services was outlined in our proposal dated February 13, 2026 (KA Proposal No. P096-26) and included the following:

- A site reconnaissance by a member of our engineering staff to evaluate the surface conditions at the project site.

- A review of available data for evaluation of subsurface conditions at the project site.
- Aerial photograph interpretation.
- A search of geologic and seismologic literature pertaining to the area of the site.
- Evaluation of potential geologic hazards.
- Review and interpretation of prior Geotechnical, Geologic Hazards, and Update Geologic Hazards Reports within the project area including KA Project Nos. 072-22066, 072-23061, and 072-23086.
- A recent field investigation consisting of drilling 1 additional boring to a depth of approximately 50 feet for evaluation of the subsurface conditions at the project site.
- Performing laboratory tests on representative soil samples obtained from the boring to evaluate the physical and index properties of the subsurface soils.
- Evaluation of the data obtained from the investigation and an engineering analysis to provide recommendations for use in the project design and preparation of construction specifications.
- Preparation of this report summarizing the results, conclusions, recommendations, and findings of our investigation.

PROPOSED CONSTRUCTION

We understand that design of the proposed development is currently underway; structural load information and other final details pertaining to the structure are unavailable. On a preliminary basis, it is understood that the proposed development will include the construction of a new press box that will be located on the west side of the existing football stadium central grandstands. Foundation loads are anticipated to be light to moderate. Modifications to on-site paved areas are also planned.

In the event these structural or grading details are inconsistent with the final design criteria, the Soils Engineer should be notified so that we may update this writing as applicable.

SITE LOCATION, SITE HISTORY AND SITE DESCRIPTION

The project area is roughly rectangular in shape and is located amongst the existing central grandstand and existing press box on the west side of the Modesto Junior College football stadium. Modesto Junior College-East Campus has an address of 435 College Avenue (see Vicinity Map, Figure 1). Tully Road, an asphaltic concrete parking lot, and a commercial development are located to the west; a track, football field, track, visitors grandstands, tennis courts, and the main college campus are located to the east; a smaller grandstand, light tower, and a track and field area are located to the north; and a smaller grandstand, light tower, and an asphaltic concrete parking lot (KA projects 072-22066, 072-23061, and 072-23086) are located to the south/southeast. The center of the project area is located at Longitude 121.01186 West and Latitude 37.65116 North. USGS topographic maps (Topozone) indicate that

surface elevations in the vicinity of the site are on the order of 87 feet above-mean sea level. The Tuolumne River is the main water course in the area and is located approximately 1.9 miles southeast of the site. Minor water courses identified as Lateral No. 4 Canal (concrete lined) runs approximately 0.26 miles to the southeast, Lateral No. 3 Canal (concrete lined) runs approximately 1.3 miles to the north, and Dry Creek runs approximately 1.6 miles to the southeast of the site.

Site history of the proposed press box area was obtained by reviewing aerial photographs taken in 1937, 1950, 1957, 1967, 1972, 1976, 1982, 1984, 1998, 2006, 2009, 2012, 2016, and 2020. Review of the 1937 aerial photograph indicates that the project area was located on the west side of a football stadium. The project area consisted of a row of grandstands, 3 light poles, and trees located just east of Tully Road.

Review of the 1950 aerial photograph indicates that the two separate sets of grandstands were located in the project area. It appeared that the primary/larger grandstand was under construction with sub-structures under the bleachers exposed at the time of the photograph.

Review of the 1957 aerial photograph indicate that the project site consisted of a completed large central grandstand and two smaller grandstands. Trees, light poles, and associated pavement were also located in the area.

Review of the 1967 aerial photograph indicates that the project site conditions appeared to be similar to the 1957 aerial photograph.

Review of the 1972 aerial photograph indicates that the project site conditions appeared to be similar to that in the 1967 aerial photograph.

Review of the 1976 aerial photograph indicates that the project site conditions appeared to be similar to that in the 1972 aerial photograph.

Review of the 1982 aerial photograph indicates that the project site conditions appeared to be similar to that in the 1976 aerial photograph, except multiple structures to the south side of the stadium appeared to have been removed and an asphaltic concrete parking lot was visible.

Review of the 1984 aerial photograph indicates that the project site conditions appeared to be similar to that in the 1982 aerial photograph.

Review of the 1998 aerial photograph indicates that the project site conditions appeared to be similar to that in the 1984 aerial photograph.

Review of the 2006 aerial photograph indicates that the project site conditions appeared to be similar to that in the 1998 aerial photograph.

Review of the 2009 aerial photograph indicates that the project site conditions appeared to be similar to that in the 2006 aerial photograph.

Review of the 2012 aerial photograph indicates that the project site conditions appeared to be similar to that in the 2009 aerial photograph.

Review of the 2016 aerial photograph indicates that the project site conditions appeared to be similar to that in the 2012 aerial photograph.

Review of the 2020 aerial photograph indicates that the project site conditions appeared to be similar to that in the 2016 aerial photograph.

The conditions shown on the aerial photographs indicate that the central grandstand project area was constructed around the year 1950. With the exception of several lineal features; identified as prior irrigation ditches, fence lines, access roads, streets, and tonal variations due to soil fertility; no distinct lineaments, or other potentially fault related features are shown on or adjacent to the property in the aerial photographs.

Presently, the area of proposed development is utilized as a stadium grandstand consisting of concrete bleachers, a press box, and built-in concrete sub-bleacher structures. Asphaltic concrete and concrete pavements cover the majority of the at-grade surface. Several trees are located along the west side of the site. Buried utility lines are located along the edges of the site and may extend into portions of the site. The site is relatively level with no major changes in grade.

No evidence of surface faulting was observed on the property during our reconnaissance. No evidence of slope failures or instabilities was observed on the subject property or adjoining properties. The site appears relatively well maintained.

GEOLOGIC SETTING

General

The subject property is located along the east margin of the northern San Joaquin Valley portion of the Great Valley Geomorphic Province of California. The San Joaquin Valley is bordered to the north by the Sacramento Valley portion of the Great Valley, to the east by the Sierra Nevada, to the west by the Coast Ranges, and to the south by the Transverse Ranges. The San Joaquin sedimentary basin is separated from the Sacramento basin to the north by the buried Stockton arch and associated Stockton Fault. The 450-mile long Great Valley is an asymmetric structural trough that has been filled with a prism of Mesozoic and Cenozoic sediments up to 5 miles thick.

The Sierra Nevada, located east of the San Joaquin Valley, is gently southwesterly tilted fault block comprised of igneous and metamorphic rocks of pre-Tertiary age that comprise the basement beneath the San Joaquin Valley. The Coast Ranges, located west of the San Joaquin Valley, are comprised of folded and faulted sedimentary and metasedimentary rocks of Mesozoic and Cenozoic age.

The Tuolumne and Stanislaus Rivers are the principal rivers in the area. Alluvial fans formed by these rivers are the predominant geomorphic features in the Modesto area. The area of the subject site is characterized by low alluvial fans and plains, which constitute a belt of coalescing alluvial fans of low relief between the dissected uplands, adjacent to the Sierra Nevada and the valley trough.

Lithology

The thick accumulation of deposits within the San Joaquin Valley range in age from Jurassic to Holocene and include both marine and continental rocks and deposits. The 1990 Geologic Map of San Francisco-San Jose Quadrangle indicates that the near-surface deposits in area of the subject site are identified as the Quaternary (Pleistocene) Modesto Formation (Qm) (see Regional Geologic Map, Figure 4). This unit consists of distinct alluvial terraces, alluvial fans, and abandoned channel ridges. The Modesto Formation was deposited by streams still existing today. The deposits, for the most part, border existing streams.

The subsurface information obtained in this study indicates that the surface and near-surface soil deposits at the subject site generally consist of silty sands, sandy silts, silty sand/sandy silts, and sands. These observed deposits are consistent with those mapped in the area, and are further described in the Soil Profile and Subsurface Conditions section of this report.

Structure and Faults

The general area of the subject site is underlain by a homoclinal series of Cenozoic deposits dipping 4 degrees to 6 degrees to the southwest toward the center of the San Joaquin Valley. The contact between the Cenozoic and basement rocks dips nearly 8 degrees southwest, or at a slightly greater inclination than does the on-lapping homoclinal Cenozoic sequence. No active faults are mapped within the Modesto area, and based on mapping and historical seismicity, the seismicity of the Modesto area is considered low by the scientific community.

Adjacent to the San Joaquin Valley, the Sierra Nevada and Coast Ranges are geologically young mountain ranges that possess active and potentially active fault zones. Major active faults and fault zones occur at some distance to the east, west, and south of the project site (see Fault Map, Figure 7).

Numerous active faults are present within the central Coast Ranges west of the site including the Great Valley (15.44 miles west), Ortigalita (30.0 miles southwest), Greenville Connected (30.9 miles west), Calaveras (44 miles west), Mount Diablo (44.8 miles west), Hayward-Rodgers Creek (47.99 miles west), Monte Vista-Shannon (54.6 miles west), and the San Andreas Fault (60.3 miles west). These faults are considered active and is of primary concern in evaluating seismic hazards throughout western Stanislaus County.

The 684-mile-long San Andreas Fault Zone is the principal element of the San Andreas Fault system, a network of faults with predominately dextral strike-slip displacement that collectively accommodates the majority of relative north-south motion between the North America and Pacific plates. The San Andreas Fault Zone is the most extensively studied fault in California and perhaps the world. The San Andreas Fault Zone is considered to be the Holocene and historically active dextral strike-slip fault that extends

along most of coastal California from its complex junction with the Mendocino Fault zone on the north, southwest to the northern Transverse Range and inland to the Salton Sea, where a well-defined zone of seismicity transfers the slip to the Imperial fault along a right-releasing step.

Two major surface-rupturing earthquakes have occurred on the San Andreas Fault in historic time: the 1857 Fort Tejon and 1906 San Francisco earthquakes. Additional historic surface rupturing earthquakes include the unnamed 1812 earthquake along the Mojave section and the northern part of the San Bernardino Mountains section, and a large earthquake in the San Francisco Bay area that occurred in 1838 that was probably on the Peninsula section. Historic fault creep rates are as high as 32 millimeters per year for the 82-mile-long creeping section in central California with creep rates gradually tapering to zero at the northwestern and southeastern ends of the section.

One of the nearest seismotectonic source is the Great Valley Fault Zone (Coast Ranges-Central Valley boundary zone), located approximately 15.4 miles west of the site. The Great Valley Fault zone is the geomorphic boundary of the Coast Ranges and the Central Valley and is underlain by a 300-mile long seismically active fold and thrust belt that has been the source of recent earthquakes, such as the 1983 magnitude 6.5 Coalinga and the 1985 magnitude 6.1 Kettleman Hills earthquakes. Nearly the entire thrust system is concealed or "blind". The basal detachment of this thrust system dips at a shallow angle to the west. East-directed thrusting over ramps in the detachment and west-directed thrusting on back thrusts are responsible for the uplift along the eastern range front of the Coast Ranges. Based on earthquake focal mechanisms, movement on the thrust zone is generally perpendicular to the strike of the geomorphic boundary and trend of the San Andreas Fault system. Shortening along the geomorphic boundary is driven by a component of the Pacific-North American Plate motion that is normal to the plate boundary. The Great Valley Fault Zone is considered the dominant seismic feature with potential for affecting the subject site.

Regional structure within the Western Sierra Nevada northeast of the subject site is complex and generally consists of blocks separated by steeply eastward-dipping, north and northwest striking reverse faults of the Foothills Fault System. The Foothills Fault system is located within approximately 28 miles east of the subject site. Based on mapping and historical seismicity, the seismicity of the Sierra Nevada foothills has been generally considered low by the scientific community. However, on August 1, 1975, a 5.7 Richter magnitude earthquake occurred near Oroville within the northern Sierra Nevada. Surface rupture along the Cleveland Hill Fault (part of the Foothills Fault System) was associated with 1975 Oroville earthquake. As a result of this event, numerous studies were undertaken to further evaluate the seismicity of the Sierra Nevada foothills. Of particular note are the geologic and seismicity studies conducted by Woodward-Clyde Consultants (WCC) to evaluate the proposed Auburn Dam site. Based on these studies, WCC concluded that seismic events in the Sierra Nevada foothills are associated with very small, geologically infrequent, incremental displacements having minor geomorphic surface expression. The Sierra Nevada and Owens Valley Fault Zones bound the eastern edge of the Sierra Nevada block more than 150 miles east of the site.

The Nunez fault is located approximately 6 to 7 miles northwest of Coalinga and is about 93 miles southwest of the site. The fault is about 2.6 miles long and is considered active based on surface rupture associated with the 1983 Coalinga earthquake. The fault is divided into two north and south trending segments. About 2.1 miles of right-reverse surface rupture occurred on the segments. Total displacement and timing of past fault movements are poorly constrained.

The Tracy-Stockton Fault passes near Tracy to directly beneath (and beyond) Stockton in a northeasterly direction, approximately 25 miles northwest of the site. Subsurface data indicates that no appreciable movement has occurred on this fault since Mid-Pliocene time, perhaps five million years ago or more. However, there is a serious question as to the inactivity of this fault since three known epicenters have been located near this fault in the central part of San Joaquin County.

Tensional forces resulting in normal faults are reported to be related to crustal stress relief in the southeast portion of the San Joaquin Valley. Numerous relatively short, normal faults traverse this region. Creep activity is the prominent mode of slip on those faults in this region that are active. These movements have continued on an intermittent basis from the early Miocene to Recent time. This faulting is directly related to and controls the accumulation of oil in several oil fields within the easterly portion of the valley. Most authors agree that current creep movements can be ascribed to subsidence promoted by extensive withdrawal of petroleum, and in some cases, groundwater. The faults considered to be active in the southern valley are Kern Front and Pond Faults located at least 172 miles south of the subject site.

As noted above, several dominant faults with seisomgenic structures are located in the vicinity of the subject site. Table I is a listing of active faults or seismogenic structures within 100 miles of the site, and a Fault Map is provided on Figure 7.

GEOLOGIC HAZARDS

Fault Rupture Hazard Zones in California

The Alquist-Priolo Geologic Hazards Zones Act went into effect in March, 1973. Since that time, the act has been amended 10 times (Hart, 1994). The purpose of the Act, as provided in DMG Special Publication 42 (SP 42), is to prohibit the location of most structures for human occupancy across the traces of active faults and to mitigate thereby the hazard of fault-rupture." The Act was renamed the Alquist-Priolo Earthquake Fault Zoning Act in 1994, and at that time, the originally designated "Special Studies Zones" was renamed the "Earthquake Fault Zones."

The subject site does not lie on a Fault Rupture Hazard Zones Map, and accordingly, the site is not within a Fault-Rupture Hazard Zone. The nearest zoned fault is a portion of the Great Valley and Ortigalita Faults located about 15.4 miles west and 30 miles southwest of the subject site, respectively.

Seismic Hazard Zones in California

In 1990, the California State Legislature passed the Seismic Hazard Mapping Act to protect public safety from the effects of strong shaking, liquefaction, landslides, or other ground failure, and other hazards caused by earthquakes. The Act requires that the State Geologist delineate various seismic hazards zones on Seismic Hazards Zones Maps. Specifically, the maps identify areas where soil liquefaction and earthquake-induced landslides are most likely to occur. A site-specific geotechnical evaluation is required prior to permitting most urban developments within the mapped zones. The Act also requires sellers of real property within the zones to disclose this fact to potential buyers. The area of the subject site is not included on any of the maps released to date. It is not known whether the subject site will be within a seismic hazard zone on a future map.

Historic Seismicity/Earthquake Epicenter Distribution

The Modesto area has historically experienced a low to moderate degree of seismicity. A listing of historic earthquakes with magnitudes greater than 4.0 within approximately 50 miles (80 kilometers) of the subject site was obtained from the comprehensive California Geological Survey computerized earthquake catalog for the State of California, the Townley and Allen (1939) catalog and the U.S. Geological Survey Earthquake Data Base System. In addition, a listing was obtained for all historic earthquakes with magnitudes greater than 5.0 within approximately 100 miles of the site. The listings include the date, time, location, depth, magnitude, and intensity all recorded events within the search radius between 1800 and 2023. A review of the literature for pre-1900 earthquakes (Toppozada, 1991) does not reveal any significant recorded seismic events in the vicinity of the subject site prior to the period covered by the above listing.

The historic earthquake listings are included in Appendix C. A plot of epicenters associated with historic earthquakes in the region of the site with magnitudes greater than 5 is shown on Figure 8, Epicenter Map. The earthquake data indicates that 115 events with magnitudes greater than 4.0 occurred within 100 miles of the subject site between 1800 and 2023. The nearest listed event occurred approximately 16.6 miles west of the site in 1994 with a magnitude of 4.1. Three of the listed earthquakes with magnitudes greater than 4.0 occurred within 25 miles of the site. Numerous earthquakes are listed with magnitudes between 5.0 and 6.0 beyond about 40 miles of the site. One event was recorded with a magnitude greater than 6.6 within 50 miles of the site.

The geologic literature indicates that ground shaking of VI intensity (Modified Mercalli Scale) was felt in Modesto from the 1872 Owens Valley Earthquake. This is one of the largest known earthquake events to have affected the Modesto area. The event likely to have caused the greatest seismic effect in the area of the subject site during historic time is the 1892 Vacaville-Winters Earthquake. This earthquake likely occurred on the Coast Range Central Valley (CRCV) boundary zone thrust belt currently referred to as the Great Valley Fault. This earthquake and related foreshocks and aftershocks are described by Bennett (1987), as follows: "Vacaville's night watchman, S.N. Bettis, was walking down Main Street at 2:40 a.m., lantern in hand, when "his attention was attracted by a rumbling sound coming from the hills, west of town. The noise resembled distant thunder or the roaring of water which had suddenly been let loose by the bursting of huge dam gates. Bettis stood still and listened a few

seconds, while the noise increased to a roar and the ground beneath his feet seemed to heave up... "I felt as if I was on the deck of a vessel during a heavy storm, and I put my hands to the ground to prevent myself from falling on my face... After that, brick walls and chimneys began to fall around and the noise for a minute or so was deafening." On that Tuesday morning, April 19, 1892 most of northern California and west-central Nevada was shaken by an earthquake of about Richter magnitude (M) 6.5. Major damage was concentrated in the communities of Vacaville and Dixon in Solano County, and Winters in Yolo County, and surrounding rural areas along the western margin of the lower Sacramento Valley. Two days later at 9:43 a.m. on Thursday, April 21, a second severe earthquake in the M6 range shook the area again, causing further damage. The largest of numerous after-shocks, (approximately M5.5 event) occurred several days later. The larger April 19, 1892 event resulted in damage of intensity VII or greater effects were felt as far north as the communities of Esparto and Capay in Yolo County and also at Vacaville and Fairfield in Solano County to the south.

Recurrence of an event of similar magnitude in the Vacaville-Winters area today could be a threat to a vastly increased population and attendant facilities in the west Central Valley and San Joaquin Delta areas. The 1892 Vacaville-Winters earthquakes were comparable in destructive potential to the 1983 Coalinga earthquake (Mw6.4) or the 1971 San Fernando earthquake (Mw6.4). "Total damage in the relatively sparsely populated Coalinga area was $31 million; in the densely populated San Fernando area damage was over $500 million."

Wakabayashi and Smith (1994), in describing the historical seismicity of the Coast Range Central Valley region (CRCV) indicate that, "it appears probable that several large (M>6) earthquakes occurred too far east of the San Andreas and related strike-slip faults, and too far west of any probable Sierra Nevada extensional faulting, to be associated with any fault system other than the CRCV." These authors believe that previous estimates underestimated the magnitude of earthquakes in the Coast Range region. They recalculated magnitudes and showed that, in the period 1850 to 1985, there have been 11 large (>M6) earthquakes associated with the CRCV. They found that "the largest historical earthquakes attributed to the CRCV are the twin earthquakes of the 1892 Vacaville-Winters sequence. The largest of the two 1892 events may have been Mw6.8, compared to Mw6.5 for the 1983 Coalinga event."

Geologic Subgrade

Information obtained from the geologic literature, as well as data from the above-described site exploration, indicate the general soil profile at the site consists predominately of loose to very dense silty sands, sandy silts, silty sand/sands, silty sand/sandy silts, and sands underlain at a depth by very dense decomposed granite and granitic rock. Assuming that any loose surface soil and fill materials on the site are removed and recompacted as recommended in our Geotechnical Engineering Investigation, the geologic subgrade of the site can be conservatively approximated as "stiff soil". A Joyner-Boore Class C subgrade classification is considered appropriate for the soil profile and corresponds with a National Earthquake Hazard Reduction Program (NEHRP) (BSSC, 1994) Site Class D. The site class definition from the 2022 California Building Code that is most consistent with the site conditions is Site Class D.

Soil Liquefaction

Soil liquefaction is a state of soil particles suspension caused by a complete loss of strength when the effective stress drops to zero. Liquefaction normally occurs in soils such as sand in which the strength is purely friction. However, liquefaction has occurred in soils other than clean sand. Liquefaction usually occurs under vibratory conditions such as those induced by seismic event.

To evaluate the liquefaction potential of the site, the following items were evaluated:

1) Groundwater depth;

2) Soil type;

3) Relative density;

4) Initial confining pressure;

5) Intensity and duration of ground shaking.

The predominant soils within the project site consist of layers of silty sand, sandy silt, silty sand/sandy silt, and sandy clay. Groundwater was encountered at a depth of 39 feet during our subsurface investigation. However, groundwater has been historically encountered at depths as shallow as 32 feet below site grade within the project site and vicinity.

The potential for soil liquefaction during a seismic event was evaluated using the LIQUEFYPRO computer program (version 5.9d) developed by CivilTech Software. For the analysis, a maximum earthquake magnitude of 6.27 was used. A peak horizontal ground surface acceleration of 0.384g was considered conservative and appropriate for the liquefaction analysis within the area. A high groundwater depth of 32 feet was used for the analysis. The analysis indicates that soils above a depth of 32 feet are non-liquefiable due to the absence of groundwater. The soils below a depth of 32 feet have a low potential for liquefaction with factors of safety ranging from 2.39 to 5.0. The analysis indicates that the estimated total seismic induced settlement due to soil liquefaction is less than ¼ inch. The estimated differential seismic settlements are less than ¼ inch over a horizontal distance of 100 feet.

Due to the relatively low levels of expected ground shaking at the site, the density of these deposits (83 pcf to 127 pcf), the moderate to high penetration resistance of the native soils (N = 6 to 50+), and the recommendation that all loose fill within proposed building areas be excavated and recompacted, liquefaction is not considered a viable geologic hazard at the subject site.

Seismic Settlement

One of the most common phenomena during seismic shaking accompanying any earthquake is the induced settlement of loose unconsolidated soils. Based on the nature of the subsurface materials, the plan to excavate and recompact the upper soils and any loose fill soils within the proposed building areas

and the relatively low to moderate seismicity of the region, we would not expect seismic settlement or lateral spread to represent a significant geologic hazard to the site provided that the recommendations of our referenced Geotechnical Engineering Investigation are followed

The estimated seismic settlement was determined at the site using the settlement analysis method by Tokimatsu, M-correction (1987). The results of the settlement analysis are included as follows:

Seismic Settlement (inches)					
Location	**Saturated Settlement**	**Unsaturated Settlement**	**Total Settlement**	**Range of Differential Settlement**	**Design for Differential Settlement**
B-201	0.00	0.17	0.17	0.085 to 0.113	¼ inch in 100 feet

The above settlement values were determined at a specific boring location. The total seismic induced settlement in the above settlement calculation was less than ¼ inch, providing a maximum differential seismic induced settlement value of less than ¼ inch. Therefore, we recommend the project be designed for a seismic induced settlement of ¼ inch in 100 feet. The consolidated settlement (under static load of specific structures) and differential settlement (per specified length in building area) are indicated in the Foundations section of this report.

The native soils within the project site are not conducive to hydrocollapse due to the relatively medium dense soil conditions, low void-ratio, and moderate to high penetration resistance measured. Any loose fill material at the site could be vulnerable to hydrocollapse. However, the proposed structures are planned to be supported on Engineered Fill. Therefore, the structures will not be vulnerable to hydrocollapse. In addition, this hazard can be mitigated by following the design and construction recommendations of current and future Geotechnical Engineering Investigations (over-excavation and rework of any loose soils and/or uncertified fill material).

The minor water course identified as Lateral No. 4 canal (concrete lined) trends northeast-southwest approximately 0.35 miles southeast of the site. In addition, the Tuolumne River is located approximately 1.9 miles southeast of the site and the Stanislaus River is located approximately 6.2 miles north of the site. The structures planned for development will be located greater than 0.25 miles away from the canals and rivers, and at an elevation approximately 40 feet higher than the rivers.

The potential for lateral spreading was evaluated using the "Revised Multilinear Regression Equations for Predication of Lateral Spread Displacement" by Youd, Hansen, Corbett and Bartlett (2002). Based on a lack of shallow liquefiable soils within the subject site, the distance of the proposed structure from the canal and rivers, the concrete lining within the canal, and a lack of saturated cohesionless sediments with $(N1)_{60}$ less than 15, the site is not likely subject to lateral spreading hazards.

Subsidence Due to Fluid Withdrawal

Portions of California, such as the San Joaquin Valley, have been subject to land subsidence due to fluid withdrawal (groundwater and petroleum). However, the area of the subject site is not known to be subject to such subsidence hazards.

Expansive Soils

The near-surface soils predominately consist of silty sand. These materials are considered to be non-expansive. Some silty sand or sandy silt with trace clay may be encountered at the site. These materials are considered to have a low expansion potential. Clayey soils with an expansion index greater than 15 should not be used within the upper 12 inches of proposed slab-on-grade and exterior flatwork areas.

Inundation Hazards

A review of Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for the area of the subject site (Panel Number 06099C0325E, effective September 25, 2008) indicates that the subject site is within "Zone "X indicates that the subject site is within "Zone X", "Areas determined to be outside the 0.2 percent annual chance flood plain" and "Zone X" shaded - Other Flood Areas: "Areas of Minimal Flood Hazard"(FEMA Flood Map, Figure 11).

A review of the California Department of Water Recourses indicates that the subject site is within an "Inundation Area" should a failure occur Don Pedro Reservoir located approximately 32 miles east of the site. (Dan Inundation Map, Figure 12)

Tsunamis and Seiches

A tsunami is a series of ocean waves generated in the ocean by an impulsive disturbance. Due to the inland location of the subject site, tsunamis are not considered a threat to the site. Seiches are standing waves in a body of water such as a lake or reservoir. Because such a body of water is not located near the site, seiches are not anticipated to affect the subject site.

Slope Stability and Potential for Slope Failure

Due to the generally flat-lying nature of the site and surrounding areas, problems from landslides are not anticipated to affect this site.

Volcanic Hazards

The subject site is not within an area known to be affected by volcanic hazards (Miller, 1989, USGS Bulletin, 1847).

County Seismic Safety Element

Documentation and mapping included in the Seismic Safety Element of the Stanislaus County General Plan, dated 1994 with updates to 2005, the Seismic Safety Element of the Modesto Community Development Department General Plan Master EIR, Updated 2003, and the Modesto General Plan dated October 14, 2008 were reviewed. The seismic information contained within the Safety Elements is somewhat dated and or generalized and is superseded by more recent information and analyses described herein. The referenced documents generally indicate that the site area is subject to relatively low to moderate seismicity and related hazards.

FIELD AND LABORATORY INVESTIGATIONS

Subsurface soil conditions were recently explored during this update investigation by drilling 1 boring to a depth of approximately 50 feet below existing site grade, using a truck-mounted drill rig. The approximate boring location is shown on the site plan. During drilling operations, penetration tests were performed at regular intervals to evaluate the soil consistency and to obtain information regarding the engineering properties of the subsoils. Soil samples were retained for laboratory testing. The soils encountered were continuously examined and visually classified in accordance with the Unified Soil Classification System. A more detailed description of the field investigation is presented in Appendix A.

Laboratory tests were performed on selected soil samples to evaluate their physical characteristics and engineering properties. The laboratory testing program was formulated with emphasis on the evaluation of natural moisture, density, gradation, shear strength, consolidation potential, plasticity and moisture-density relationships of the materials encountered. In addition, chemical tests were performed to evaluate the soil-cement reactivity. Details of the laboratory test program and results of the laboratory tests are summarized in Appendix A. This information, along with the field observations, was used to prepare the final boring log in Appendix A.

SOIL PROFILE AND SUBSURFACE CONDITIONS

Based on our finding, the subsurface conditions encountered appear typical of those found in the geologic region of the site. In general, the pavement section consisted of approximately 3 inches of asphaltic concrete.

Below the pavement, approximately 3 feet of loose silty sand was encountered. Field laboratory tests suggest that these soils are moderately strong and slightly compressible. A representative soil sample had a penetration resistance of 8 blows per foot. A representative soil sample had a dry density 114 pcf. A representative soil sample consolidated approximately 4 percent under 2 ksf load when saturated. A representative soil sample had an angle of internal friction of 30 degrees.

Below approximately 3 feet, layers of predominately loose to very dense silty sand, sandy silt, silty sand/sandy silt or hard sandy clay were encountered. Field and laboratory tests suggest that these soils are moderately strong and slightly compressible. Penetration resistance ranged from 10 blows per foot

to greater than 50 blows per 6 inches. Dry densities ranged from 83 to 127 pcf. A representative soil sample consolidated approximately 4 percent under 2 ksf load when saturated. These soils had similar strength characteristics as the upper soils and extended to the termination depth of our boring.

For additional information about the soils encountered, please refer to the boring log in Appendix A.

GROUNDWATER

The test boring location was checked for the presence of groundwater during and immediately following the drilling operations. Free groundwater was encountered at a depth of approximately 39 during our exploratory drilling. However, groundwater has been historically encountered at a depth as shallow as 32 feet in the site vicinity from well No. 376321N1210238W001.

It should be recognized that water table elevations may fluctuate with time, being dependent upon seasonal precipitation, irrigation, land use, and climatic conditions, as well as other factors. Therefore, water level observations at the time of the field investigation may vary from those encountered during the construction phase of the project. The evaluation of such factors is beyond the scope of this report.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of our field and laboratory investigations, along with previous geotechnical experience in the project area, the following is a summary of our evaluations, conclusions, and recommendations.

Administrative Summary

In brief, the subject site and soil conditions, with the exception of the loose surface soils, moderately compressible upper native soils, and existing development, appear to be conducive to the development of the project. The surface soils have a loose consistency. These soils are disturbed, have low strength characteristics, and are highly compressible when saturated. Accordingly, it is recommended that the surface soils be recompacted. This compaction effort should stabilize the surface soils and locate any unsuitable or pliant areas not found during our field investigation.

Fill material was not encountered in our borings. However, fill may be present between and beyond our boring locations. The extent of fill material was determined based on limited test borings and visual observation. Verification of the extent of fill should be determined during site grading. It is recommended that fill soils which have not been properly compacted and certified be excavated and stockpiled so that the native soils can be prepared properly. It is anticipated the fill material will be suitable for reuse as Engineered Fill, provided it is cleansed of excessive organics and debris.

The site presently consists of a concrete grandstand consisting of a press box, concrete bleachers, built-in structures under the grandstands, and associated pavement located on the west side of the Modesto Junior College football stadium. Associated with this development are buried structures, such as utility lines that may extend into the project site. Demolition activities should include proper removal of any buried structures encountered during construction. Any buried structures, including utilities encountered

during construction should be properly removed and/or relocated. It is suspected that demolition activities of the existing structures will disturb the upper soils. Following demolition activities, the exposed subgrade should be cleaned to firm native ground. The resulting excavation should be backfilled with Engineered Fill, compacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

In order to reduce the amount of differential settlement and provide uniform building support for the proposed structure, it is recommended following stripping operations and demolition activities, the exposed subgrade within proposed building areas be excavated an additional depth of 4 feet, worked until uniform and free from large clods, moisture-conditioned to at or above optimum moisture content and recompacted to a minimum of 90 percent of maximum density based on the ASTM Test Method D1557. In addition, it is recommended the proposed structure foundations be supported by a minimum of 24 inches of Engineered Fill. Over-excavation should extend to a minimum of 5 feet laterally beyond structural elements. The on-site, native soils will be suitable for reuse as Engineered Fill, provided they are cleansed of excessive organics, debris, and fragments larger than 4 inches in maximum dimension. Prior to backfilling, the bottom of the excavation should be excavated/scarified to a depth of 8 inches, moisture-conditioned as necessary and compacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557. This compaction effort should stabilize the surface soils and locate any unsuitable or pliant areas not found during our field investigation. Soft or pliant areas encountered should be excavated to firm native ground. Fill material should be moisture-conditioned to at or above optimum moisture content and compacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

For new foundations or slab-on-grade areas which are adjacent to existing building foundations and underlain by loosely placed fill which must be removed and recompacted, this condition may require the use of a slot-cutting procedure to complete the necessary over-excavation and backfill beneath the proposed foundation areas. When utilizing a slot-cutting procedure, the existing structure foundations should be unloaded in increments resulting in no more than one-third of the foundation being unloaded at any time. In addition, the maximum continuous length of foundation unloading should be held to 8 feet or less, with no less than 16 feet of supporting material remaining in-place between excavated slots. The most efficient means of completing a slot-cutting procedure with one-third maximum foundation unloading is to label adjacent 8-foot segments as "A," "B," and "C" in repeating alphabetical order. Excavation and backfill of the "A" slots would be performed first, followed by the "B" slots, and then the "C" slots. Completed slot excavations should have a horizontal bottom area so that subsequent fill will be placed and compacted on level ground. Excavated slots should be backfilled and compacted as soon as possible and should not be allowed to become saturated or remain open overnight. Vibratory equipment should not be used for compaction of the backfill soils. Krazan and Associates should be on-site full-time during excavation of slots and during backfill operations to verify and document the required over-excavation depth and width were achieved, and that soil conditions are firm and stable. Compaction of the bottom of excavated slots is required as previously noted, i.e., exposed subgrade soils should be scarified to a depth of 8 inches, moisture-conditioned to as necessary, and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557. If unstable conditions are encountered, work should be suspended and Krazan and Associates notified immediately so that alternative recommendations may be provided.

Trees are located within the site. If not utilized for the proposed development, tree removal operations should include roots greater than 1 inch in diameter. The resulting excavations should be cleaned to firm native ground and backfilled with Engineered Fill compacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

Sandy soil conditions were encountered at the site. These cohesionless soils have a tendency to cave in trench wall excavations. Shoring or sloping back trench sidewalls may be required within these sandy soils.

After completion of the recommended site preparation, the site should be suitable for shallow footing support. The proposed structure footings may be designed utilizing an allowable bearing pressure of 2,500 psf for dead-plus-live loads. Footings should have a minimum embedment of 18 inches.

Alternatively, the proposed structures may be supported on drilled cast-in-place concrete piers/caissons. If deep foundations will be utilized, over excavation will not be required provided the piers extend to a minimum depth of 8 feet or a minimum of 3 feet into firm undisturbed native soil, whichever is deeper. Recommendations regarding conventional foundations and deep foundations are provided in the Foundations section of this report.

Groundwater Influence on Structures/Construction

Based on our findings and historical records, it is not anticipated that groundwater will rise within the zone of structural influence or affect the construction of foundations and pavements for the project. However, if earthwork is performed during or soon after periods of precipitation, the subgrade soils may become saturated, "pump," or not respond to densification techniques. Typical remedial measures include: discing and aerating the soil during dry weather; mixing the soil with dryer materials; removing and replacing the soil with an approved fill material; or mixing the soil with an approved lime or cement product. Our firm should be consulted prior to implementing remedial measures to observe the unstable subgrade conditions and provide appropriate recommendations.

Site Preparation

General site clearing should include removal of vegetation; asphaltic concrete and concrete pavements; debris; existing utilities; structures including foundations; basement walls and floors; existing stockpiled soil; trees and associated root systems; rubble; rubbish; and any loose and/or saturated materials. Site stripping should extend to a minimum depth of 2 to 4 inches, or until all organics in excess of 3 percent by volume are removed. Deeper stripping may be required in localized areas. These materials will not be suitable for use as Engineered Fill. However, stripped topsoil may be stockpiled and reused in landscape or non-structural areas.

Fill material was not encountered in our borings. However, fill may be present between and beyond our boring locations. The extent of fill material was determined based on limited test borings and visual observation. Verification of the extent of fill should be determined during site grading. It is

recommended that fill soils which have not been properly compacted and certified be excavated and stockpiled so that the native soils can be prepared properly. It is anticipated the fill material will be suitable for reuse as Engineered Fill, provided it is cleansed of excessive organics and debris.

The site presently consists of a concrete grandstand consisting of a press box, concrete bleachers, built-in structures under the grandstands, and associated pavement located on the west side of the Modesto Junior College football stadium. Associated with these developments are buried structures, such as utility lines that may extend into the project site. Demolition activities should include proper removal of any buried structures. Any surface or buried structures, including utilities encountered during construction should be properly removed and/or relocated. The resulting excavations should be cleaned to firm native ground and backfilled with Engineered Fill, compacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557. Excavations, depressions, or soft and pliant areas extending below planned finish subgrade level should be cleaned to firm undisturbed soil, and backfilled with Engineered Fill. In general, any septic tanks, debris pits, cesspools, or similar structures should be entirely removed. Concrete footings should be removed to an equivalent depth of at least 3 feet below proposed footing elevations or as recommended by the Soils Engineer. Any other buried structures should be removed in accordance with the recommendations of the Soils Engineer. The resulting excavations should be backfilled with Engineered Fill.

For new foundations or slab-on-grade areas which are adjacent to existing building foundations and underlain by loosely placed fill which must be removed and recompacted, this condition may require the use of a slot-cutting procedure to complete the necessary over-excavation and backfill beneath the proposed foundation areas. When utilizing a slot-cutting procedure, the existing structure foundations should be unloaded in increments resulting in no more than one-third of the foundation being unloaded at any time. In addition, the maximum continuous length of foundation unloading should be held to 8 feet or less, with no less than 16 feet of supporting material remaining in-place between excavated slots. The most efficient means of completing a slot-cutting procedure with one-third maximum foundation unloading is to label adjacent 8-foot segments as "A," "B," and "C" in repeating alphabetical order. Excavation and backfill of the "A" slots would be performed first, followed by the "B" slots, and then the "C" slots. Completed slot excavations should have a horizontal bottom area so that subsequent fill will be placed and compacted on level ground. Excavated slots should be backfilled and compacted as soon as possible and should not be allowed to become saturated or remain open overnight. Vibratory equipment should not be used for compaction of the backfill soils. Krazan and Associates should be on-site full-time during excavation of slots and during backfill operations to verify and document the required over-excavation depth and width were achieved, and that soil conditions are firm and stable. Compaction of the bottom of excavated slots is required as previously noted, i.e., exposed subgrade soils should be scarified to a depth of 8 inches, moisture-conditioned to as necessary, and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557. If unstable conditions are encountered, work should be suspended and Krazan and Associates notified immediately so that alternative recommendations may be provided.

In order to reduce the amount of total and differential settlements and provide uniform support for the proposed structures, it is recommended that following stripping operations, demolition activities and fill removal, the upper 4 feet of soil within building areas be excavated for recompaction. In addition, it is

recommended that the proposed structure foundations be supported by a minimum of 24 inches of Engineered Fill. Over-excavation should extend to a minimum of 5 feet beyond structural elements. The on-site soils will be suitable for reuse as Engineered Fill, provided they are cleansed of excessive organics and debris. Prior to backfilling, the bottom of the excavation should be excavated/scarified to a depth of 8 inches, moisture-conditioned as necessary and compacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557. This compaction effort should stabilize the surface soils and locate any unsuitable or pliant areas not found during our field investigation. Soft or pliant areas should be excavated to firm native ground.

Trees are located within the project site vicinity. Tree root removal operations should include roots greater than 1 inch in diameter. The resulting excavations should be backfilled with Engineered Fill compacted to a minimum 90 percent of maximum density based on ASTM Test Method D1557.

The upper soils, during wet winter months, become very moist due to the absorptive characteristics of the soil. Earthwork operations performed during winter months may encounter very moist unstable soils, which may require removal to grade a stable building foundation. Project site winterization consisting of placement of aggregate base and protecting exposed soils during the construction phase should be performed.

A representative of our firm should be present during all site clearing and grading operations to test and observe earthwork construction. This testing and observation is an integral part of our service as acceptance of earthwork construction is dependent upon compaction of the material and the stability of the material. The Soils Engineer may reject any material that does not meet compaction and stability requirements. Further recommendations of this report are predicated upon the assumption that earthwork construction will conform to recommendations set forth in this section and the Engineered Fill section.

Engineered Fill

The on-site, upper native soils are predominately silty sand. These soils will be suitable for reuse as Engineered Fill, provided they are cleansed of excessive organics, debris and fragments greater than 4 inches in maximum dimension. Clayey soils with an expansion index of greater than 15 should not be used as Engineered Fill within the upper 12 inches of soil supporting slabs-on-grade or exterior flatwork.

The preferred materials specified for Engineered Fill are suitable for most applications with the exception of exposure to erosion. Project site winterization and protection of exposed soils during the construction phase should be the sole responsibility of the Contractor, since he has complete control of the project site at that time.

Imported Fill material should be predominately non-expansive granular material with a plasticity index less than 10 and an expansion index less than 15. Imported Fill should be free from rocks and lumps greater than 4 inches in diameter. All Imported Fill material should be submitted for approval to the Soils Engineer at least 48 hours prior to delivery to the site.

Percent Passing No. 200 Sieve	20 to 50
Plasticity Index	10 maximum
UBC Standard 29-2 Expansion Index	15 maximum

Fill soils should be placed in lifts approximately 6 inches thick, moisture-conditioned as necessary, and compacted to achieve at least 90 percent of maximum density based on ASTM Test Method D1557. Additional lifts should not be placed if the previous lift did not meet the required dry density or if soil conditions are not stable.

Drainage and Landscaping

The ground surface should slope away from building pad and pavement areas toward appropriate drop inlets or other surface drainage devices. In accordance with Section 1804 of the 2022 California Building Code, it is recommended that the ground surface adjacent to foundations be sloped a minimum of 5 percent for a minimum distance of 10 feet away from structures, or to an approved alternative means of drainage conveyance. Swales used for conveyance of drainage and located within 10 feet of foundations should be sloped a minimum of 2 percent. Impervious surfaces, such as pavement and exterior concrete flatwork, within 10 feet of building foundations should be sloped a minimum of 1 percent away from the structure. Drainage gradients should be maintained to carry all surface water to collection facilities and off-site. These grades should be maintained for the life of the project.

Utility Trench Backfill

Utility trenches should be excavated according to accepted engineering practices following OSHA (Occupational Safety and Health Administration) standards by a Contractor experienced in such work. The responsibility for the safety of open trenches should be borne by the Contractor. Traffic and vibration adjacent to trench walls should be minimized; cyclic wetting and drying of excavation side slopes should be avoided. Depending upon the location and depth of some utility trenches, groundwater flow into open excavations could be experienced, especially during or shortly following periods of precipitation.

Sandy soil conditions were encountered at the site. These cohesionless soils have a tendency to cave in trench wall excavations. Shoring or sloping back trench sidewalls may be required within these sandy soils.

Utility trench backfill placed in or adjacent to buildings and exterior slabs should be compacted to at least 90 percent of maximum density based on ASTM Test Method D1557. Utility trench backfill placed in pavement areas should be compacted to at least 90 percent of maximum density based on ASTM Test Method D1557. Pipe bedding should be in accordance with pipe manufacturer's recommendations.

The Contractor is responsible for removing all water-sensitive soils from the trench regardless of the backfill location and compaction requirements. The Contractor should use appropriate equipment and methods to avoid damage to the utilities and/or structures during fill placement and compaction.

Excavation Stability

Temporary excavations planned for the construction of the new building and other associated structures may be excavated, according to the accepted engineering practices following Occupational Safety and Health Administration (OSHA) standards by a Contractor experienced in such work. Open, unbraced excavations in undisturbed soils should be made according to the table below.

Recommended Excavation Slopes	
Depth of Excavation (ft)	**Slope (Horizontal:Vertical)**
	Temporary
0-5	1:1
5-10	1½:1
10-15	1¾:1
15-20	2:1

If, due to space limitation, excavation near existing structures or roads is performed in a vertical position, braced shorings or shields may be used for supporting vertical excavations. Therefore, in order to comply with the local and state safety regulations, a properly designed and installed shoring system would be required to accomplish planned excavation and installation. A specialty Shoring Contractor should be responsible for the design and installation of such a shoring system during construction. The lateral pressures provided below may be used in the design of a braced-type shoring system.

Recommended Lateral Earth Pressure for Braced Shoring	
Depth of Excavation Below Ground Surface (feet)	**Lateral Soil Pressure (psf)**
0	40 H
0.25 H	40 H
H	40 H
Where H is the total depth of the excavation in feet.	

The foregoing does not include excess hydrostatic pressure or surcharge loading. Fifty percent of any surcharge load, such as construction equipment weight, should be added to the lateral load given above.

Since the Contractor has the ultimate responsibility for excavation stability, he may design a different shoring system for the excavation.

The excavation/shoring recommendations provided herein are based on soil characteristics derived from the limited test boring drilled within the site. Variations in soil conditions will likely be encountered during the excavations. Krazan & Associates, Inc., should be afforded the opportunity to provide field review to evaluate the actual conditions and account for field condition variations not otherwise anticipated in the preparation of this recommendation.

Foundations – Conventional

After completion of the recommended site preparation and over-excavation, the site should be suitable for shallow footing support. The proposed structures may be supported on a shallow foundation system bearing on a minimum of 2 feet of Engineered Fill. Spread and continuous footings can be designed for the following maximum allowable soil bearing pressures:

Load	Allowable Soil Bearing Capacity
Dead Load Only	1,875 psf
Dead-Plus-Live Load	2,500 psf
Total Load, including wind or seismic loads	3,325 psf

Footings should have a minimum depth of 18 inches below pad subgrade (soil grade) or adjacent exterior grade, whichever is lower. Footings should have a minimum width of 12 inches, regardless of load. Ultimate design of foundations and reinforcement should be performed by the project Structural Engineer.

The total settlement associated with static loads is not expected to exceed 1 inch. Differential settlement should be less than ½ inch. Most of the settlement is expected to occur during construction, as the loads are applied. However, additional post-construction settlement may occur if the foundation soils are flooded or saturated. The total and differential seismic-induced settlement is estimated to be less than ¼ inch, respectively.

Resistance to lateral footing displacement can be computed using an allowable friction factor of 0.35 acting between the base of foundations and the supporting subgrade. Lateral resistance for footings can alternatively be developed using an allowable equivalent fluid passive pressure of 325 pounds per cubic foot acting against the appropriate vertical footing faces. The frictional and passive resistance of the soil may be combined without reduction in determining the total lateral resistance. A ⅓ increase in the value above may be used for short duration, wind, or seismic loads.

Foundations - Drilled Caissons/Piers

The proposed structure can be supported on drilled caissons/piers, using an allowable sidewall friction of 400 psf. This value is for dead-plus-live loads. This value may be increased ⅓ for short duration loads, such as wind or seismic. The upper 2 feet should be neglected from friction calculations. Uplift loads can be resisted by caissons/piers using an allowable sidewall friction of 225 psf of the surface area plus

the weight of the pier. Caissons should have a minimum embedment depth of 8 feet and extend into undisturbed native soils. The total and differential settlements of the piers are not expected to exceed 1 inch. Most of the settlement is expected to occur during construction as the loads are applied.

Caissons may be designed using a lateral bearing capacity of 175 psf/ft using the applicable formula for unconstrained or constrained conditions in the 2022 California Building Code. This value can be doubled if a lateral deflection of ½-inch is acceptable. Unconstrained or flexible cap conditions apply to isolated piers, and constrained or rigid cap (fixed against rotation) conditions apply to piers with a rigid connection to the structure.

Sandy soils were encountered at the site. These sandy soils may be subject to caving during drilling operations. Accordingly, cased caissons may be required. The drilled holes should be left open for as short of time as possible and should be protected from run-off.

Lateral Earth Pressures and Retaining Walls

Walls retaining horizontal backfill and capable of deflecting a minimum of 0.1 percent of its height at the top may be designed using an equivalent fluid active pressure of 40 pounds per square foot per foot of depth. Walls that are incapable of this deflection or walls that are fully constrained against deflection may be designed for an equivalent fluid at-rest pressure of 60 pounds per square foot per foot per depth. Expansive soils should not be used for backfill against walls. The wedge of non-expansive backfill material should extend from the bottom of each retaining wall outward and upward at a slope of 2:1 (horizontal to vertical) or flatter. The stated lateral earth pressures do not include the effects of hydrostatic water pressures generated by infiltrating surface water that may accumulate behind the retaining walls; or loads imposed by construction equipment, foundations, or roadways.

Retaining and/or below grade walls should be drained with either perforated pipe encased in free-draining gravel or a prefabricated drainage system. The gravel zone should have a minimum width of 12 inches and should extend upward to within 12 inches of the top of the wall. The upper 12 inches of backfill should consist of native soils, concrete, asphaltic concrete, or other suitable backfill to reduce surface drainage into the wall drain system. The aggregate should conform to Class 2 permeable materials graded in accordance with CalTrans Standard Specifications. Prefabricated drainage systems, such as Miradrain®, Enkadrain®, or an equivalent substitute, are acceptable alternatives in lieu of gravel, provided they are installed in accordance with the manufacturer's recommendations. If a prefabricated drainage system is proposed, our firm should review the system for final acceptance prior to installation.

Drainage pipes should be placed with perforations down and should discharge in a non-erosive manner away from foundations and other improvements. The pipes should be placed no higher than 6 inches above the heel of the wall, in the center line of the drainage blanket and should have a minimum diameter of four inches. Collector pipes may be either slotted or perforated. Slots should be no wider than ⅛ inch in diameter, while perforations should be no more than ¼ inch in diameter. If retaining walls are less than 6 feet in height, the perforated pipe may be omitted in lieu of weep holes on 4 feet maximum spacing. The weep holes should consist of 4-inch diameter holes (concrete walls) or

unmortared head joints (masonry walls) and not be higher than 18 inches above the lowest adjacent grade. Two 8-inch square overlapping patches of geotextile fabric (conforming to CalTrans Standard Specifications for "edge drains") should be affixed to the rear wall opening of each weep hole to retard soil piping.

During grading and backfilling operations adjacent to any walls, heavy equipment should not be allowed to operate within a lateral distance of 5 feet from the wall or within a lateral distance equal to the wall height, whichever is greater, to avoid developing excessive lateral pressures. Within this zone, only hand operated equipment ("whackers," vibratory plates, or pneumatic compactors) should be used to compact the backfill soils.

Seismic Parameters – 2022 California Building Code

The Site Class per Section 1613 of the 2022 California Building Code (2022 CBC) and ASCE 7-16, Chapter 20 is based upon the site soil conditions. It is our opinion that a Site Class D is most consistent with the subject site soil conditions. For seismic design of the structures based on the seismic provisions of the 2022 CBC, we recommend the following parameters:

Seismic Item	Value	CBC Reference
Site Class	D	Section 1613.2.2
Site Coefficient F_a	1.237	Table 1613.2.3 (1)
S_s	0.703	Section 1613.2.1
S_{MS}	0.870	Section 1613.2.3
S_{DS}	0.580	Section 1613.2.4
Site Coefficient F_v	2.050	Table 1613.2.3 (2)
S_1	0.275	Section 1613.2.1
S_{M1}	0.564	Section 1613.2.3
S_{D1}	0.376	Section 1613.2.4
T_S	0.648	Section 1613.2

* Based on Equivalent Lateral Force (ELF) Design Procedure being used.

Soil Cement Reactivity

Excessive sulfate in either the soil or native water may result in an adverse reaction between the cement in concrete (or stucco) and the soil. HUD/FHA and CBC have developed criteria for evaluation of sulfate levels and how they relate to cement reactivity with soil and/or water.

Soil samples were obtained from the site and tested in accordance with State of California Materials Manual Test Designation 417. The sulfate concentrations detected from these soil samples were less than 150 ppm (80.0 ppm) and are below the maximum allowable values established by HUD/FHA and CBC. Therefore, no special design requirements are necessary to compensate for sulfate reactivity with the cement. A representative soil sample had a chloride concentration of 50.9 ppm and a pH of 7.2.

Compacted Material Acceptance

Compaction specifications are not the only criteria for acceptance of the site grading or other such activities. However, the compaction test is the most universally recognized test method for assessing the performance of the Grading Contractor. The numerical test results from the compaction test cannot be used to predict the engineering performance of the compacted material. Therefore, the acceptance of compacted materials will also be dependent on the stability of that material. The Soils Engineer has the option of rejecting any compacted material regardless of the degree of compaction if that material is considered to be unstable or if future instability is suspected. A specific example of rejection of fill material passing the required percent compaction is a fill which has been compacted with an in-situ moisture content significantly less than optimum moisture. This type of dry fill (brittle fill) is susceptible to future settlement if it becomes saturated or flooded.

Testing and Inspection

A representative of Krazan & Associates, Inc. should be present at the site during the earthwork activities to confirm that actual subsurface conditions are consistent with the exploratory fieldwork. This activity is an integral part of our service, as acceptance of earthwork construction is dependent upon compaction testing and stability of the material. This representative can also verify that the intent of these recommendations is incorporated into the project design and construction. Krazan & Associates, Inc. will not be responsible for grades or staking, since this is the responsibility of the Prime Contractor.

LIMITATIONS

Soils Engineering is one of the newest divisions of Civil Engineering. This branch of Civil Engineering is constantly improving as new technologies and understanding of earth sciences advance. Although your site was analyzed using the most appropriate and most current techniques and methods, undoubtedly there will be substantial future improvements in this branch of engineering. In addition to advancements in the field of Soils Engineering, physical changes in the site, either due to excavation or fill placement, new agency regulations, or possible changes in the proposed structure after the soils report is completed may require the soils report to be professionally reviewed. In light of this, the Owner should be aware that there is a practical limit to the usefulness of this report without critical review. Although the time limit for this review is strictly arbitrary, it is suggested that 2 years be considered a reasonable time for the usefulness of this report.

Foundation and earthwork construction is characterized by the presence of a calculated risk that soil and groundwater conditions have been fully revealed by the original foundation investigation. This risk is derived from the practical necessity of basing interpretations and design conclusions on limited sampling of the earth. The recommendations made in this report are based on the assumption that soil conditions

do not vary significantly from those disclosed during our field investigation. If any variations or undesirable conditions are encountered during construction, the Soils Engineer should be notified so that supplemental recommendations may be made.

The conclusions of this report are based on the information provided regarding the proposed construction. If the proposed construction is relocated or redesigned, the conclusions in this report may not be valid. The Soils Engineer should be notified of any changes so the recommendations may be reviewed and re-evaluated.

This report is a Geotechnical Engineering Investigation with the purpose of evaluating the soil conditions in terms of foundation design. The scope of our services did not include any Environmental Site Assessment for the presence or absence of hazardous and/or toxic materials in the soil, groundwater, or atmosphere; or the presence of wetlands. Any statements, or absence of statements, in this report or on any boring log regarding odors, unusual or suspicious items, or conditions observed, are strictly for descriptive purposes and are not intended to convey engineering judgment regarding potential hazardous and/or toxic assessment.

The geotechnical engineering information presented herein is based upon professional interpretation utilizing standard engineering practices and a degree of conservatism deemed proper for this project. It is not warranted that such information and interpretation cannot be superseded by future geotechnical engineering developments. We emphasize that this report is valid for the project outlined above and should not be used for any other sites.

If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office at (209) 572-2200.

Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

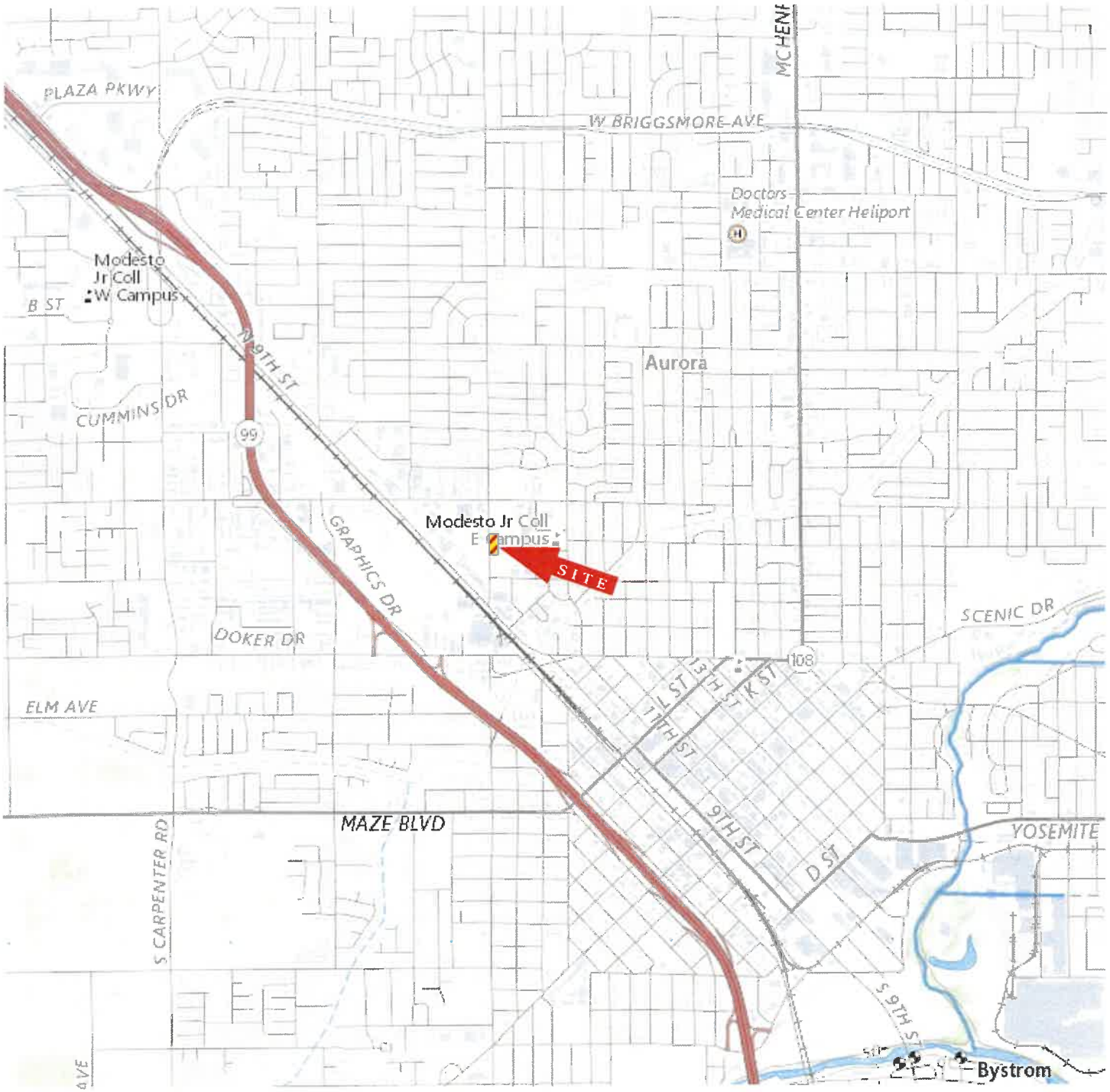


Stephen J. Nelson
Certified Engineering Geologist
CEG No. 2146



David R. Jarosz, II
Managing Engineer
RGE No. 2698/RCE No. 60185

SJN/DRJ:ht



VICINITY MAP

NORTH

0 ½ 1

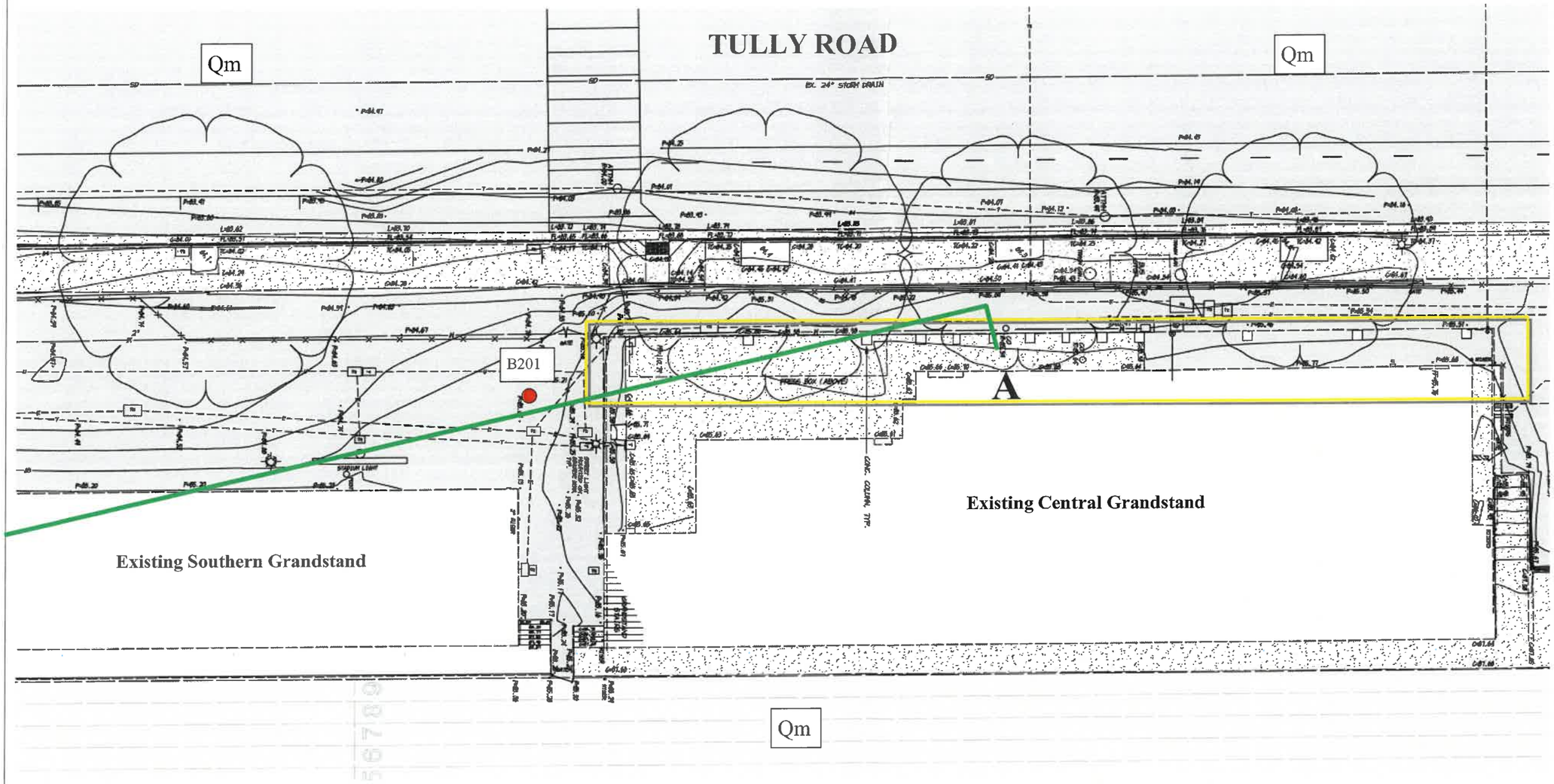
SCALE IN MILES (±)

MAP SOURCE:
United States Geological Survey; Topo ZoneMaps; https://www.topozone.com/California/

GEOTECHNICAL ENGINEERING INVESTIGATION UPDATE
PROPOSED NEW PRESS BOX
MODESTO JUNIOR COLLEGE
NEC Stoddard Avenue and Tully Road
Modesto, California

Scale: As Shown	**Date:** April 2026
Drawn by: WA	**Approved by:** SN
Project No. 072-26013	**Figure No.** 1

Krazan
GEOTECHNICAL ENGINEERING



APROXIMATE BORING LOCATION

PRESS BOX PROJECT AREA ENLARGED

A A' **CROSS SECTION A-A'**

Qm **MODESTO FORMATION- PLEISTOCENE (Covers Entire Site)**

0' 18'

SITE GEOLOGIC MAP

GEOTECHNICAL ENGINEERING INVESTIGATION UPDATE
PROPOSED NEW PRESS BOX
MODESTO JUNIOR COLLEGE
NEC Stoddard Avenue & Tully Road
Modesto, California

Scale: As Shown

Date: April 2026

Project No. 072-26013

Drawn by: WA

Approved by: DJ

Figure No. 2

Krazan
GEOTECHNICAL ENGINEERING



072-26013-NEW PRESS BOX PROJECT AREA

072-22066 & 072-23061 SOLAR PROJECT AREA (OCTOBER 2022 & SEPTEMBER 2023 REPORTS)

COLLEGE LIMITS

072-23086-ADJUSTED SOLAR PROJECT AREA (FEBRUARY 2024 UPDATE REPORT)

0’ 150’

N W E S

Qm MODESTO FORMATION- PLEISTOCENE (Covers Entire Site)

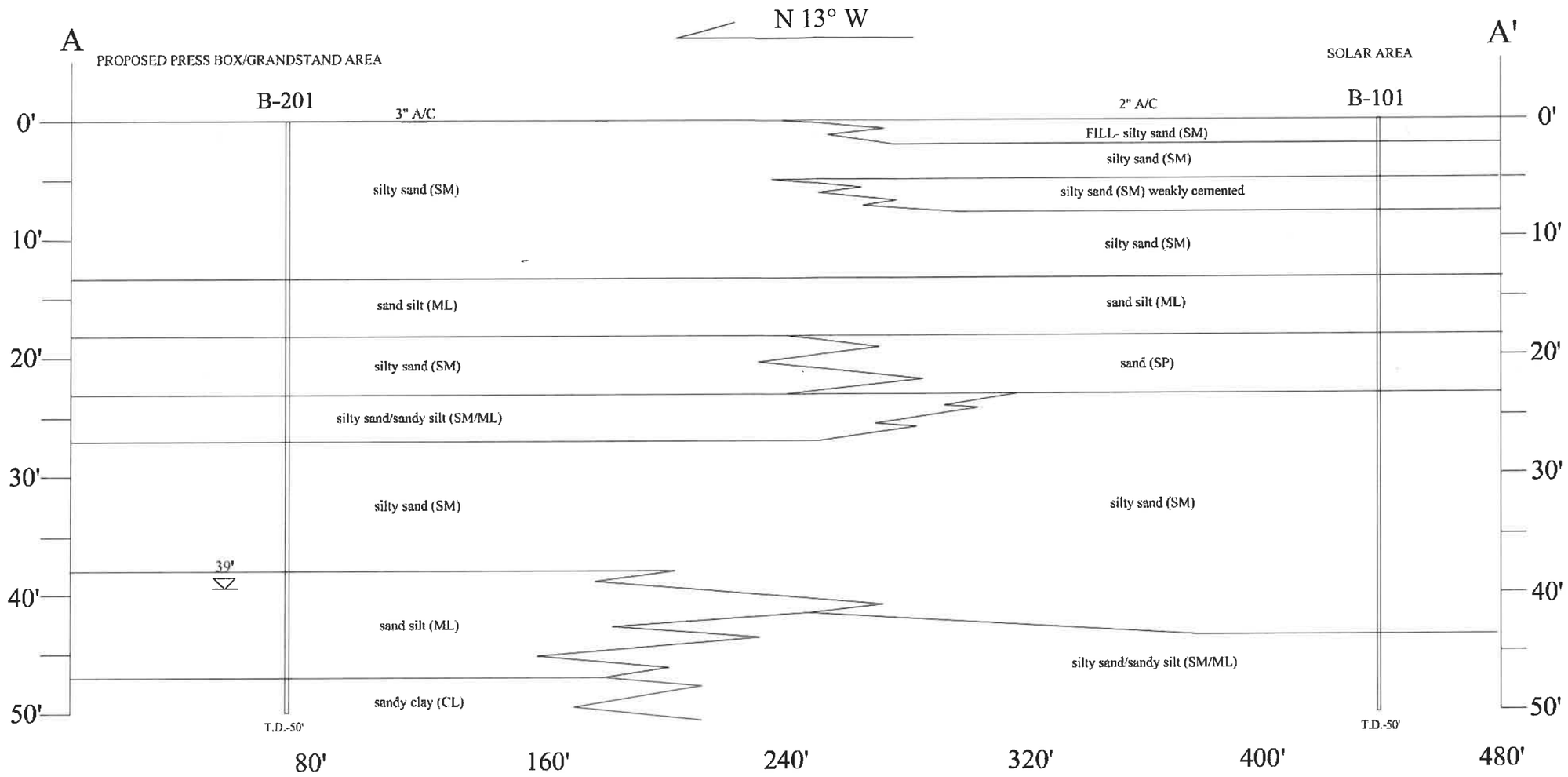
APPROXIMATE BORING LOCATION

A A’ CROSS SECTION A-A’

SITE MAP	Scale: As Shown	Date: April 2026	Krazan GEOTECHNICAL ENGINEERING
GEOTECHNICAL ENGINEERING INVESTIGATION UPDATE PROPOSED NEW PRESS BOX MODESTO JUNIOR COLLEGE NEC Stoddard Avenue and Tully Road Modesto, California	Drawn by: WA	Approved by: DJ	
	Project No. 072-26013	Figure No. 2.1	

NORTH/NORTHWEST

SOUTH/SOUTHEAST



SITE GEOLOGIC CROSS SECTION A-A'

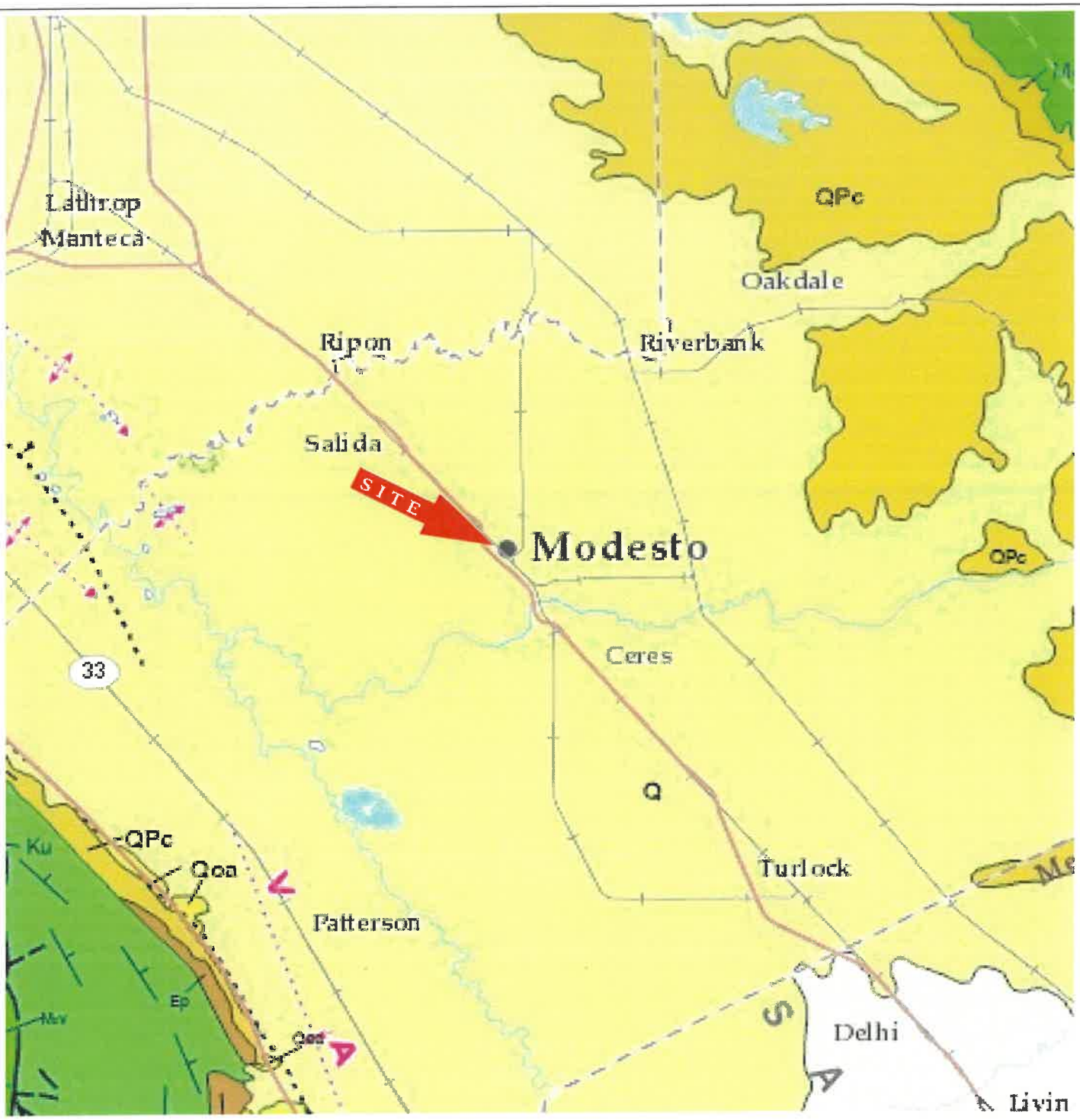
Vertical Scale
1" = 10'

0'
10'

0' 40'

Horizontal Scale
1" = 40'

GEOTECHNICAL ENGINEERING INVESTIGATION	**Scale:** As Shown	**Date:** April 2026	Krazan GEOTECHNICAL ENGINEERING
PROPOSED NEW PRESS BOX MODESTO JUNIOR COLLEGE NEC Stoddard Avenue and Tully Road Modesto, California	**Drawn by:** WA	**Approved by:** SN	
	Project No. 072-26013	**Figure No.** 3	



REGIONAL GEOLOGIC MAP

FROM:
CALIFORNIA GEOLOGICAL SURVEY, GEOLOGIC DATA MAP NO. 2-COMPILATION AND INTERPRETATION
BY: CHARLES W. JENNINGS (1977)

NORTH

0 4 8

SCALE IN MILES (±)

GEOTECHNICAL ENGINEERING INVESTIGATION UPDATE **PROPOSED NEW PRESS BOX** **MODESTO JUNIOR COLLEGE** NEC Stoddard Avenue and Tully Road Modesto, California	**Scale:** As Shown	**Date:** April 2026	Krazan GEOTECHNICAL ENGINEERING
	Drawn by: WA	**Approved by:** SN	
	Project No. 072-26013	**Figure No.** 4	

DESCRIPTION OF MAP UNITS

QUATERNARY DEPOSITS

Qs	Extensive marine and nonmarine sand deposits, generally near the coast or desert playas
Q	Alluvium, lake, playa, and terrace deposits; unconsolidated and semi-consolidated
Qls	Selected large landslides
Qg	Glacial till and moraines. Found at high elevations mostly in the Sierra Nevada and Klamath Mountains
Qoa	Older alluvium, lake, playa, and terrace deposits
QPc	Pleistocene and/or Pliocene sandstone, shale, and gravels deposits, mostly loosely consolidated

QUATERNARY VOLCANIC ROCKS

Qrv	Recent (Holocene) volcanic flow rocks, minor pyroclastic deposits
Qrv^{p}	Recent (Holocene) pyroclastic and volcanic mudflow deposits
Qv	Quaternary volcanic flow rocks; minor pyroclastic deposits
Qv^{p}	Quaternary pyroclastic and volcanic mudflow deposits

TERTIARY SEDIMENTARY ROCKS

Tc	Undivided Tertiary nonmarine sandstone, shale, conglomerate, breccia, and ancient lake deposits
P	Pliocene marine sandstone, siltstone, shale, and conglomerate; mostly moderately consolidated
M	Miocene marine sandstone, shale, siltstone, conglomerate, and breccia, moderately to well consolidated

REGIONAL GEOLOGIC MAP EXPLANATION

FROM:
CALIFORNIA GEOLOGICAL SURVEY, GEOLOGIC DATA
MAP NO. 2-COMPILATION AND INTERPRETATION
BY: CHARLES W. JENNINGS (1977)

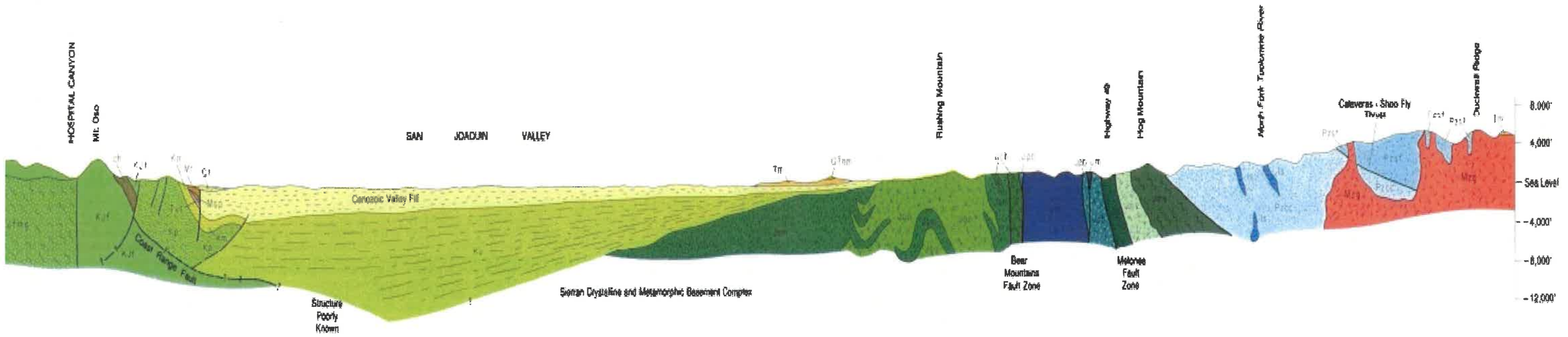
GEOTECHNICAL ENGINEERING INVESTIGATION UPDATE **PROPOSED NEW PRESS BOX MODESTO JUNIOR COLLEGE** NEC Stoddard Avenue and Tully Road Modesto, California	**Scale:** As Shown	**Date:** May 2026	Krazan GEOTECHNICAL ENGINEERING
	Drawn by: WA	**Approved by:** SN	
	Project No. 072-26013	**Figure No.** 4a	

Southwest

E

Northeast

E'



REGIONAL GEOLOGIC CROSS SECTION E-E'

FROM: GEOLOGIC MAP OF THE SAN FRANCISCO-SAN JOSE QUADRANGLE, D.W. WAGNER, E.J. BORTUGNO AND R.D. MCJUNKIN, 1991

SCALE
HORIZONTAL 1" = 35,000'
VERTICAL 1" = 10'000'

GEOTECHNICAL ENGINEERING INVESTIGATION UPDATE **PROPOSED NEW PRESS BOX MODESTO JUNIOR COLLEGE** NEC Stoddard Avenue & Tully Road Modesto, California	**Scale:** As Shown **Drawn by:** WA **Project No.** 072-26013	**Date:** April 2026 **Approved by:** SN **Figure No.** 5

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LOCAL GEOLOGIC MAP

FROM: GEOLOGIC MAP OF THE SAN FRANSISCO-SAN JOSE QUADRANGLE, COMPILATION BY D. WAGNER, E. BORTUGNO AND R. McJUNKIN, 1991

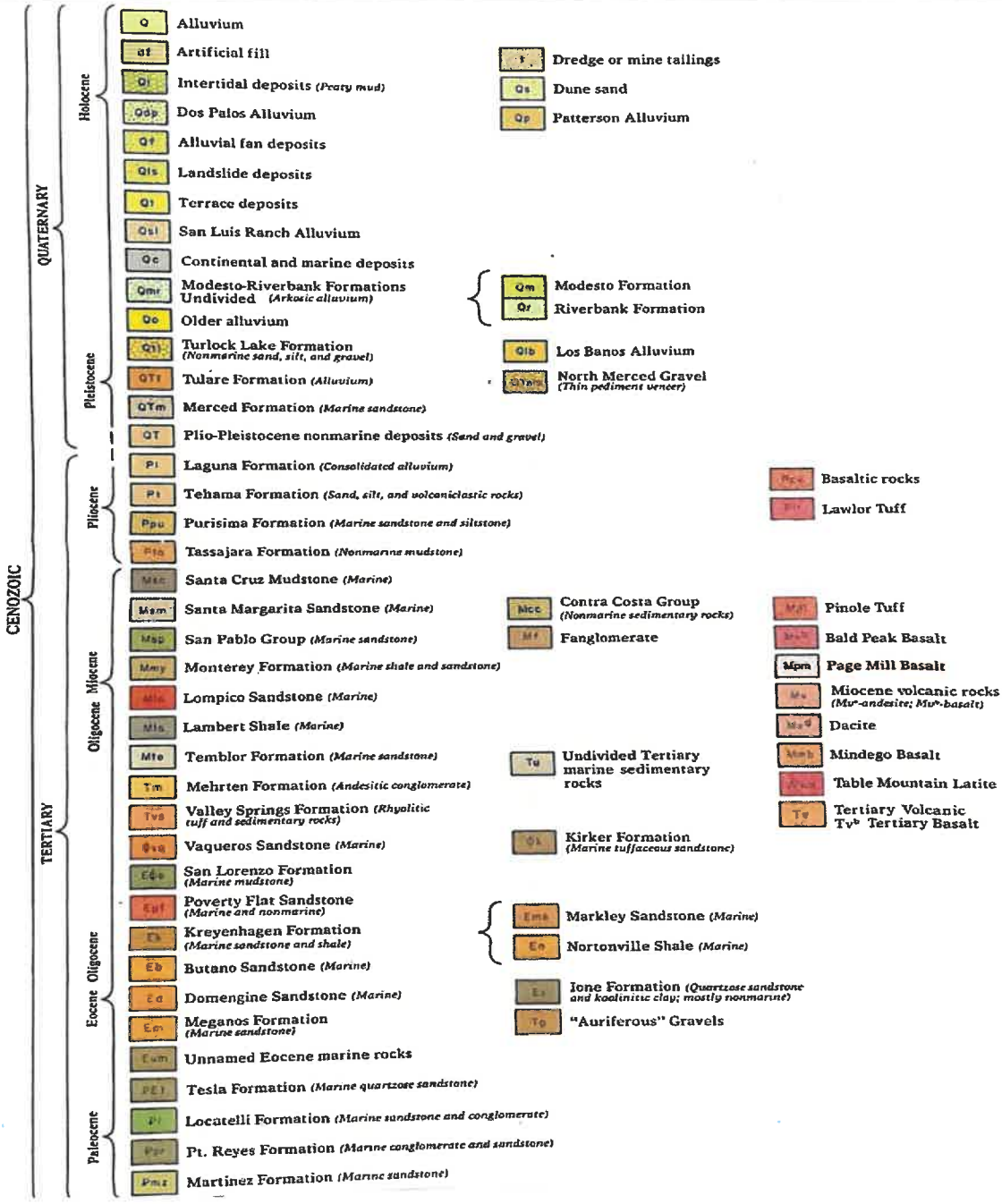
NORTH

0 2 4

SCALE IN MILES (±)

GEOTECHNICAL ENGINEERING INVESTIGATION UPDATE PROPOSED NEW PRESS BOX MODESTO JUNIOR COLLEGE NEC Stoddard Avenue and Tully Road Modesto, California	**Scale:** As Shown	**Date:** April 2026
	Drawn by: WA	**Approved by:** SN
	Project No. 072-26013	**Figure No.** 6

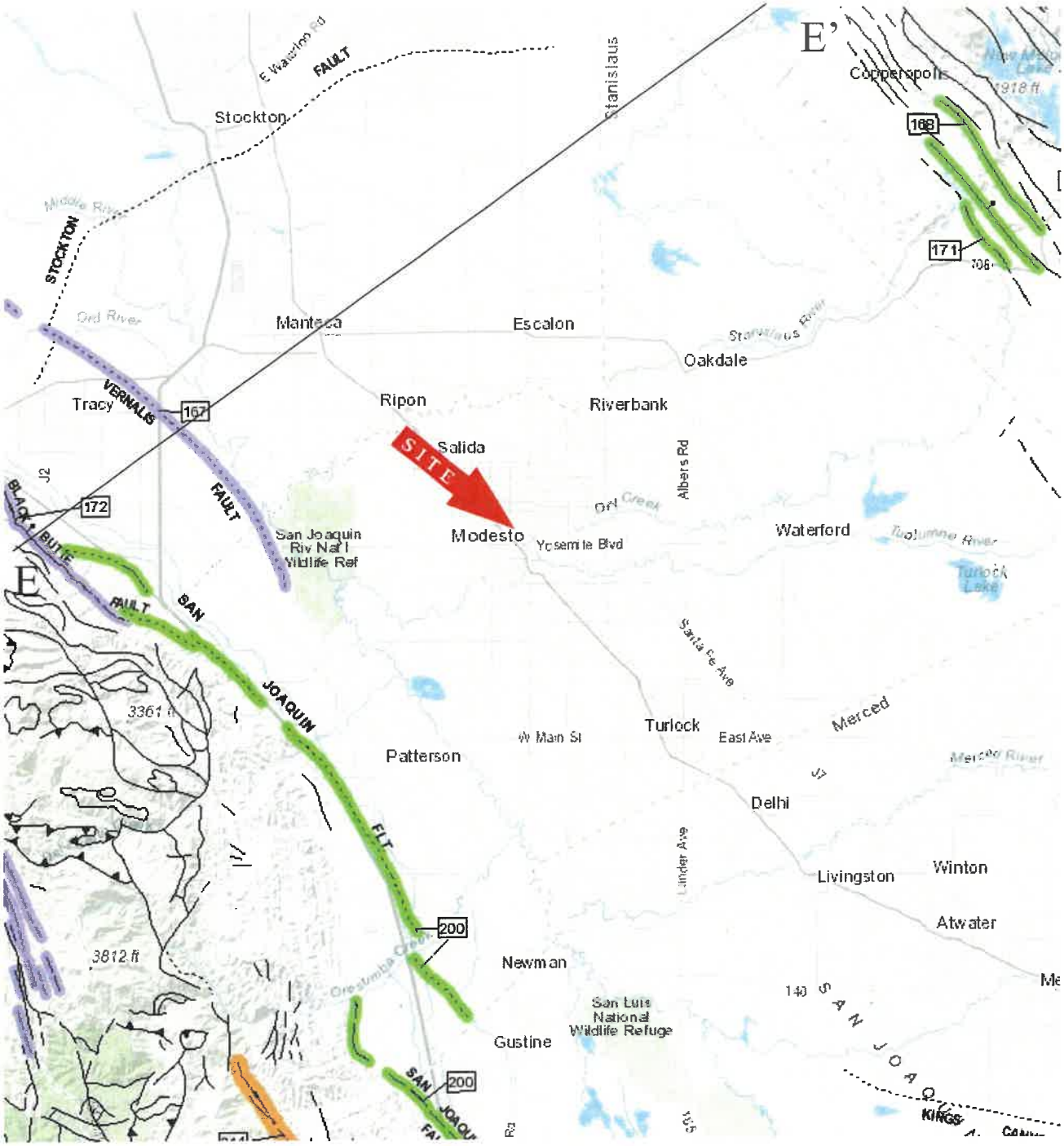
Krazan
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LOCAL GEOLOGIC MAP EXPLANATION

FROM:
GEOLOGIC MAP OF THE SAN FRANSISCO-SAN JOSE QUADRANGLE, COMPILATION BY D. WAGNER, E. BORTUGNO AND R. McJUNKIN, 1991

GEOTECHNICAL ENGINEERING INVESTIGATION UPDATE PROPOSED NEW PRESS BOX MODESTO JUNIOR COLLEGE NEC Stoddard Avenue and Tully Road Modesto, California	**Scale:** As Shown	**Date:** April 2026	Krazan GEOTECHNICAL ENGINEERING
	Drawn by: WA	**Approved by:** SN	
	Project No. 072-26013	**Figure No.** 6a	



FAULT ACTIVITY MAP

FROM:
PREPARED FROM THE C.G.S. "FAULT ACTIVITIY MAP OF CALIFORNIA" JENNINGS AND BRYANT, 2010

FAULT TRACES ON LAND ARE INDICATED BY SOLID LINES WHERE WELL LOCATED, BY DASHED LINES WHERE CONCEALED BY YOUNGER ROCKS OR BY LAKES OR BAYS. FAULT TRACES ARE QUERIED WHERE CONTINUATION OR EXISTENCE IS UNCERTAIN.

NORTH

0 8 16

SCALE IN MILES (±)

GEOTECHNICAL ENGINEERING INVESTIGATION UPDATE
PROPOSED NEW PRESS BOX
MODESTO JUNIOR COLLEGE
NEC Stoddard Avenue and Tully Road
Modesto, California

Scale: As Shown	**Date:** April 2026
Drawn by: WA	**Approved by:** SN
Project No. 072-26013	**Figure No.** 7

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Fault along which historic (last 200 years) displacement has occurred and is associated with one or more of the following:

(a) a recorded earthquake with surface rupture. (Also included are some well-defined surface breaks caused by ground shaking during earthquakes, e.g. extensive ground breakage, not on the White Wolf fault, caused by the Arvin-Tehachapi earthquake of 1952). The date of the associated earthquake is indicated. Where repeated surface ruptures on the same fault have occurred, only the date of the latest movement may be indicated, especially if earlier reports are not well documented as to location of ground breaks.

(b) fault creep slippage - slow ground displacement usually without accompanying earthquakes.

(c) displaced survey lines.



A triangle to the right or left of the date indicates termination point of observed surface displacement. Solid red triangle indicates known location of rupture termination point. Open black triangle indicates uncertain or estimated location of rupture termination point.



Date bracketed by triangles indicates local fault break.



No triangle by date indicates an intermediate point along fault break.



Fault that exhibits fault creep slippage. Hachures indicate linear extent of fault creep. Annotation (creep with leader) indicates representative locations where fault creep has been observed and recorded.



Square on fault indicates where fault creep slippage has occured that has been triggered by an earthquake on some other fault. Date of causative earthquake indicated. Squares to right and left of date indicate terminal points between which triggered creep slippage has occurred (creep either continuous or intermittent between these end points).



Holocene fault displacement (during past 11,700 years) without historic record. Geomorphic evidence for Holocene faulting includes sag ponds, scarps showing little erosion, or the following features in Holocene age deposits: offset stream courses, linear scarps, shutter ridges, and triangular faceted spurs. Recency of faulting offshore is based on the interpreted age of the youngest strata displaced by faulting.



Late Quaternary fault displacement (during past 700,000 years). Geomorphic evidence similar to that described for Holocene faults except features are less distinct. Faulting may be younger, but lack of younger overlying deposits precludes more accurate age classification.



Quaternary fault (age undifferentiated). Most faults of this category show evidence of displacement sometime during the past 1.6 million years; possible exceptions are faults which displace rocks of undifferentiated Plio-Pleistocene age. Unnumbered Quaternary faults were based on Fault Map of California, 1975. See Bulletin 201, Appendix D for source data.

Pre-Quaternary fault (older that 1.6 million years) or fault without recognized Quaternary displacement. Some faults are shown in this category because the source of mapping used was of reconnaissnce nature, or was not done with the object of dating fault displacements. Faults in this category are not necessarily inactive.

FAULT ACTIVITY MAP
EXPLANATION

FROM:

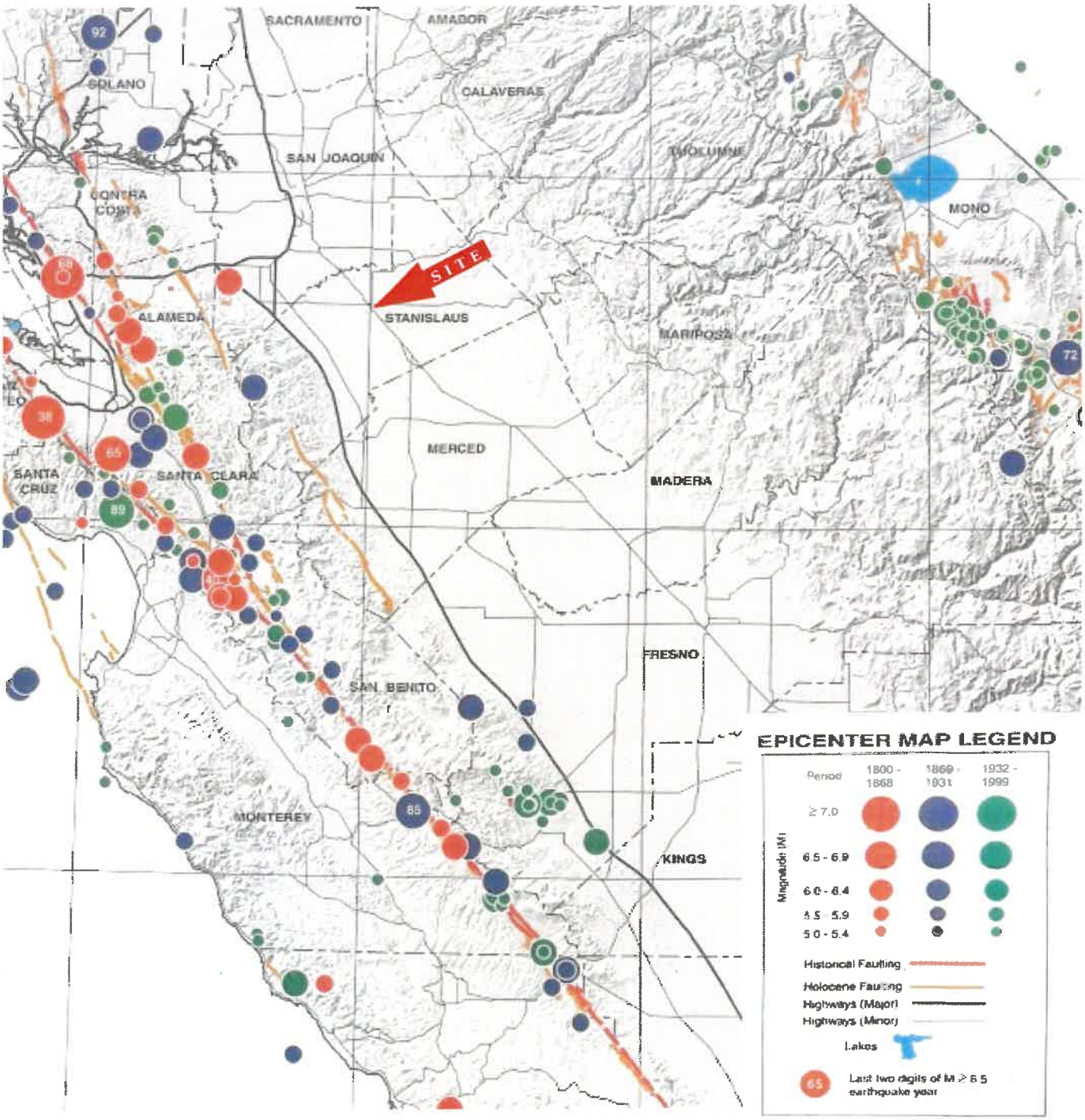
PREPARED FROM THE C.G.S. "FAULT ACTIVITIY MAP OF CALIFORNIA" JENNINGS AND BRYANT, 2010

FAULT TRACES ON LAND ARE INDICATED BY SOLID LINES WHERE WELL LOCATED, BY DASHED LINES WHERE CONCEALED BY YOUNGER ROCKS OR BY LAKES OR BAYS. FAULT TRACES ARE QUERIED WHERE CONTINUATION OR EXISTENCE IS UNCERTAIN.

GENERAL REGIONAL CROSS-SECTION E-E'

E ——— E'

GEOTECHNICAL ENGINEERING INVESTIGATION UPDATE PROPOSED NEW PRESS BOX MODESTO JUNIOR COLLEGE NEC Stoddard Avenue and Tully Road Modesto, California	**Scale:** As Shown	**Date:** April 2026	Krazan GEOTECHNICAL ENGINEERING
	Drawn by: WA	**Approved by:** SN	
	Project No. 072-26013	**Figure No.** 7a	



NOTES:

EPICENTER MAP

PREPARED FROM THE C.G.S. "FAULT ACTIVITIY MAP OF CALIFORNIA" JENNINGS AND BRYANT, 2010

FAULT TRACES ON LAND ARE INDICATED BY SOLID LINES WHERE WELL LOCATED, BY DASHED LINES WHERE CONCEALED BY YOUNGER ROCKS OR BY LAKES OR BAYS. FAULT TRACES ARE QUERIED WHERE CONTINUATION OR EXISTENCE IS UNCERTAIN.

NORTH

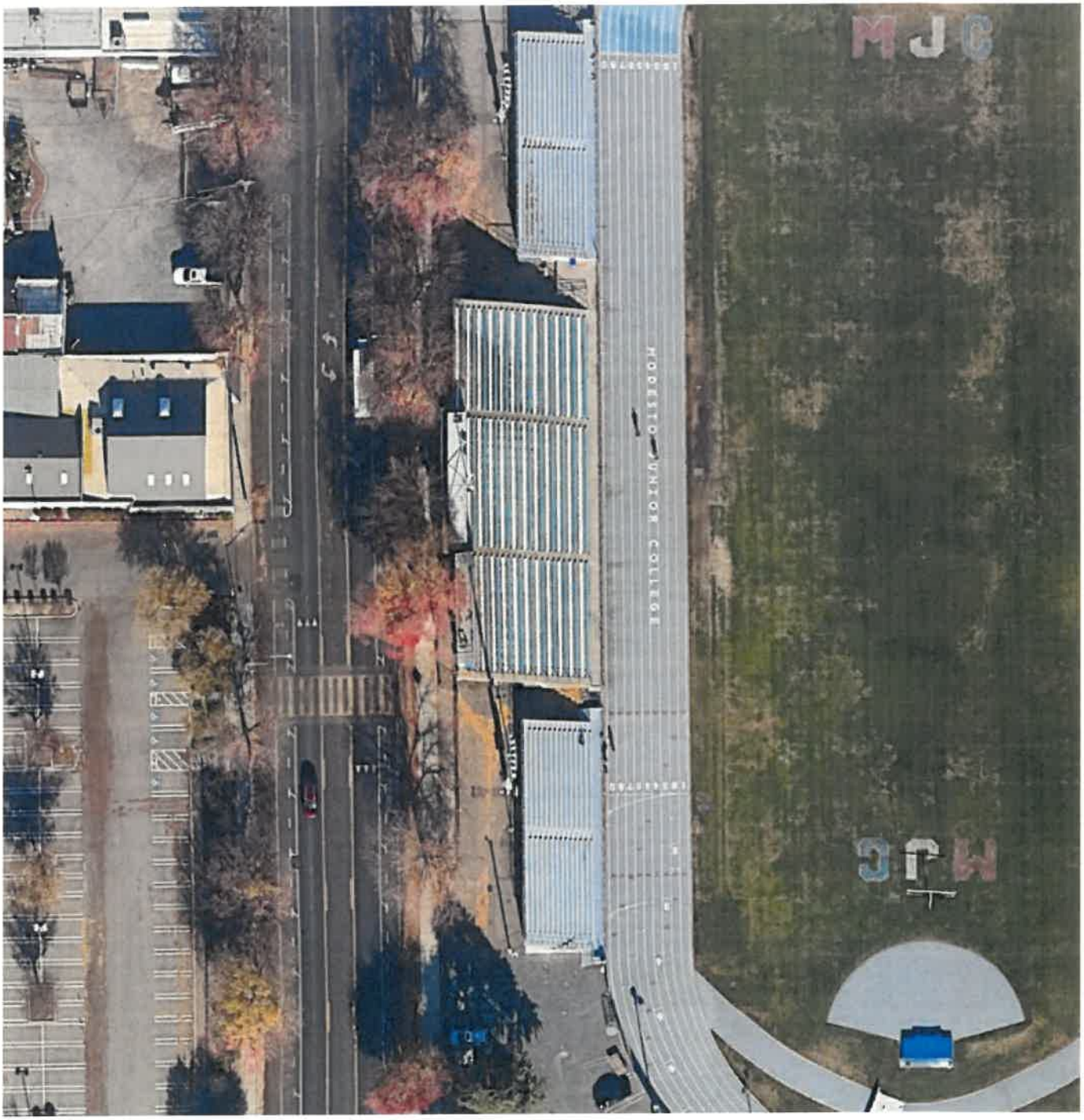
0 8 16

SCALE IN MILES (±)

GEOTECHNICAL ENGINEERING INVESTIGATION UPDATE
NEW PRESS BOX
MODESTO JUNIOR COLLEGE
NEC Stoddard Avenue and Tully Road
Modesto, California

Scale:	Date:
As Shown	April 2026
Drawn by: WA	**Approved by:** SN
Project No. 072-26013	**Figure No.** 8

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AERIAL PHOTO

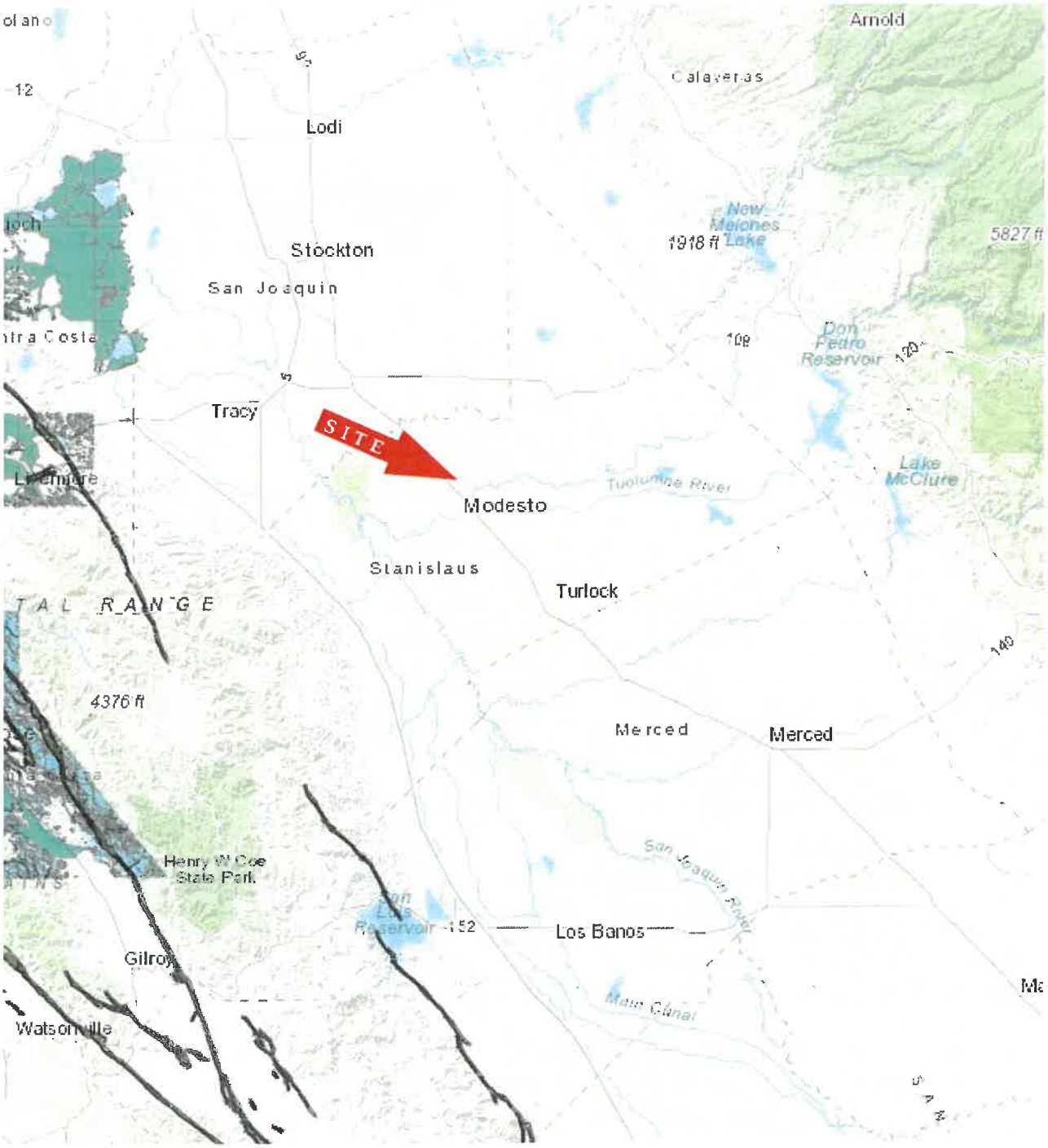
FROM:
GOOGLE EARTH PRO, 2023

NORTH

0' 60' 120'

SCALE IN FEET (±)

GEOTECHNICAL ENGINEERING INVESTIGATION UPDATE **PROPOSED NEW PRESS BOX** **MODESTO JUNIOR COLLEGE** NEC Stoddard Avenue and Tully Road Modesto, California	**Scale:** As Shown	**Date:** April 2026	Krazan GEOTECHNICAL ENGINEERING
	Drawn by: WA	**Approved by:** SN	
	Project No. 072-26013	**Figure No.** 9	



EARTHQUAKE ZONES OF REQUIRED INVESTIGATION

FAULTS, LIQUEFACTION, AND LANDSLIDES

NORTH

0 8 16

SCALE IN MILES (±)

MAP SOURCE:
Earthquake Fault Zones and Seismic Hazard Zones. Merced Quadrangle
By John Parrish, PHD., State Geologist, 2003

GEOTECHNICAL ENGINEERING INVESTIGATION UPDATE NEW PRESS BOX MODESTO JUNIOR COLLEGE NEC Stoddard Avenue and Tully Road Modesto, California	**Scale:** As Shown	**Date:** April 2026
	Drawn by: WA	**Approved by:** SN
	Project No. 072-26013	**Figure No.** 10

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GEOTECHNICAL ENGINEERING

Earthquake Zones of Required Investigation

This Map Shows Both Alquist-Priolo Earthquake Fault Zones and Seismic Hazard Zones

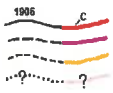
This map shows the location of Alquist-Priolo (AP) Earthquake Fault Zones and Seismic Hazard Zones, collectively referred to here as Earthquake Zones of Required Investigation. The Geographic Information System (GIS) digital files of these regulatory zones released by the California Geological Survey (CGS) are the "Official Maps." GIS files are available at the CGS website http://maps.conservation.ca.gov/cgs/informationwarehouse/. These zones will assist cities and counties in fulfilling their responsibilities for protecting the public from the effects of surface fault rupture and earthquake-triggered ground failure as required by the AP Earthquake Fault Zoning Act (Public Resources Code Sections 2621-2630) and the Seismic Hazards Mapping Act (Public Resources Code Sections 2690-2699.6). For information regarding the general approach and recommended methods for preparing these zones, see CGS Special Publication 42, *Earthquake Fault Zones, a Guide for Government Agencies, Property Owners/Developers, and Geoscience Practitioners for Assessing Fault Rupture Hazards in California*, Appendix C, and CGS Special Publication 118, *Recommended Criteria for Delineating Seismic Hazard Zones in California*.

For information regarding the scope and recommended methods to be used in conducting required site investigations refer to CGS Special Publication 42, and CGS Special Publication 117A, *Guidelines for Evaluating and Mitigating Seismic Hazards in California*. For a general description of the AP and Seismic Hazards Mapping acts, the zonation programs, and related information, please refer to the website at www.conservation.ca.gov/cgs/.

MAP EXPLANATION

EARTHQUAKE FAULT ZONES

Earthquake Fault Zones
Zone boundaries are delineated by straight-line segments; the boundaries define the zone encompassing active faults that constitute a potential hazard to structures from surface faulting or fault creep such that avoidance as described in Public Resources Code Section 2621.5(a) would be required.



Active Fault Traces
Faults considered to have been active during Holocene time and to have potential for surface rupture: Solid Line in Black or Red where Accurately Located; Long Dash in Black or Solid Line in Purple where Approximately Located; Short Dash in Black or Solid Line in Orange where Inferred; Dotted Line in Black or Solid Line in Rose where Concealed; Query (?) indicates additional uncertainty. Evidence of historic offset indicated by year of earthquake-associated event or C for displacement caused by fault creep.

SEISMIC HAZARD ZONES



Liquefaction Zones
Areas where historical occurrence of liquefaction, or local geological, geotechnical and ground water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.



Earthquake-Induced Landslide Zones
Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

OVERLAPPING EARTHQUAKE FAULT AND SEISMIC HAZARD ZONES



Overlap of Earthquake Fault Zone and Liquefaction Zone
Areas that are covered by both Earthquake Fault Zone and Liquefaction Zone.



Overlap of Earthquake Fault Zone and Earthquake-Induced Landslide Zone
Areas that are covered by both Earthquake Fault Zone and Earthquake-Induced Landslide Zone.

Note: Mitigation methods differ for each zone –
AP Act only allows avoidance; Seismic Hazard Mapping Act allows mitigation by engineering/geotechnical design as well as avoidance.

EARTHQUAKE ZONES OF REQUIRED INVESTIGATION EXPLANATION

MAP SOURCE:
Earthquake Fault Zones and Seismic Hazard Zones.
By John Parrish, PHD., State Geologist, 2003

GEOTECHNICAL ENGINEERING INVESTIGATION UPDATE NEW PRESS BOX MODESTO JUNIOR COLLEGE NEC Stoddard Avenue and Tully Road Modesto, California	**Scale:** As Shown	**Date:** April 2026	Krazan GEOTECHNICAL ENGINEERING
	Drawn by: WA	**Approved by:** SN	
	Project No. 072-26013	**Figure No.** 10a	



FLOOD MAP

NOTE:

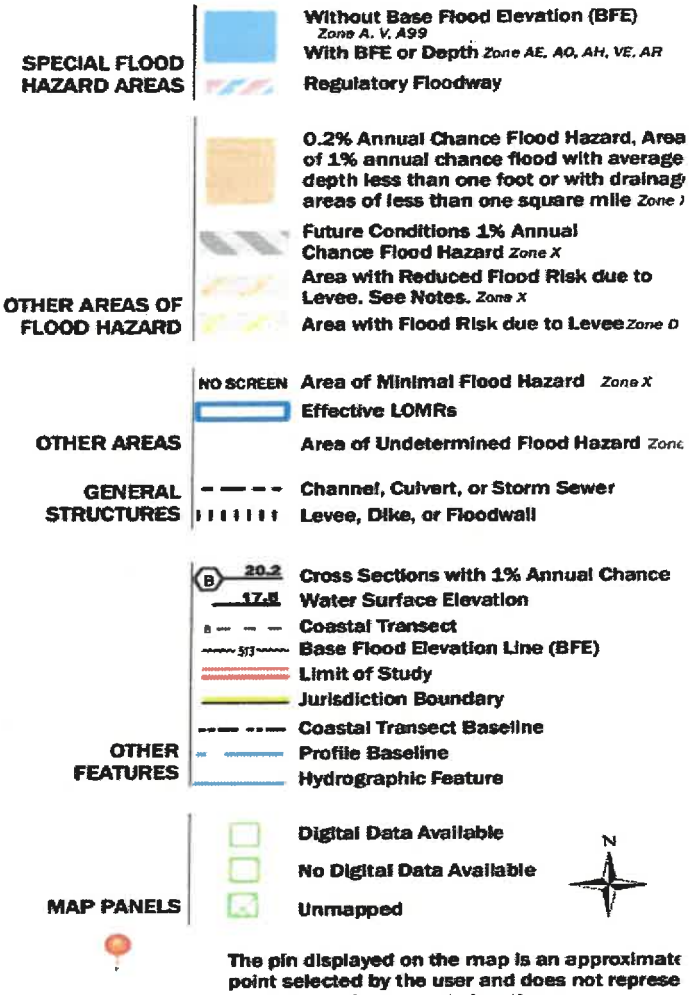
ALL OF FEMA FLOOD INSURANCE MAP IS SHOWN WITHIN "ZONE X" UNLESS OTHERWISE NOTED.
EFFECTIVE 2019

NORTH

0' 300' 600'

SCALE IN FEET (±)

GEOTECHNICAL ENGINEERING INVESTIGATION UPDATE NEW PRESS BOX MODESTO JUNIOR COLLEGE NEC Stoddard Avenue and Tully Road Modesto, California	**Scale:** As Shown	**Date:** April 2026	Krazan GEOTECHNICAL ENGINEERING
	Drawn by: WA	**Approved by:** SN	
	Project No. 072-26013	**Figure No.** 11	



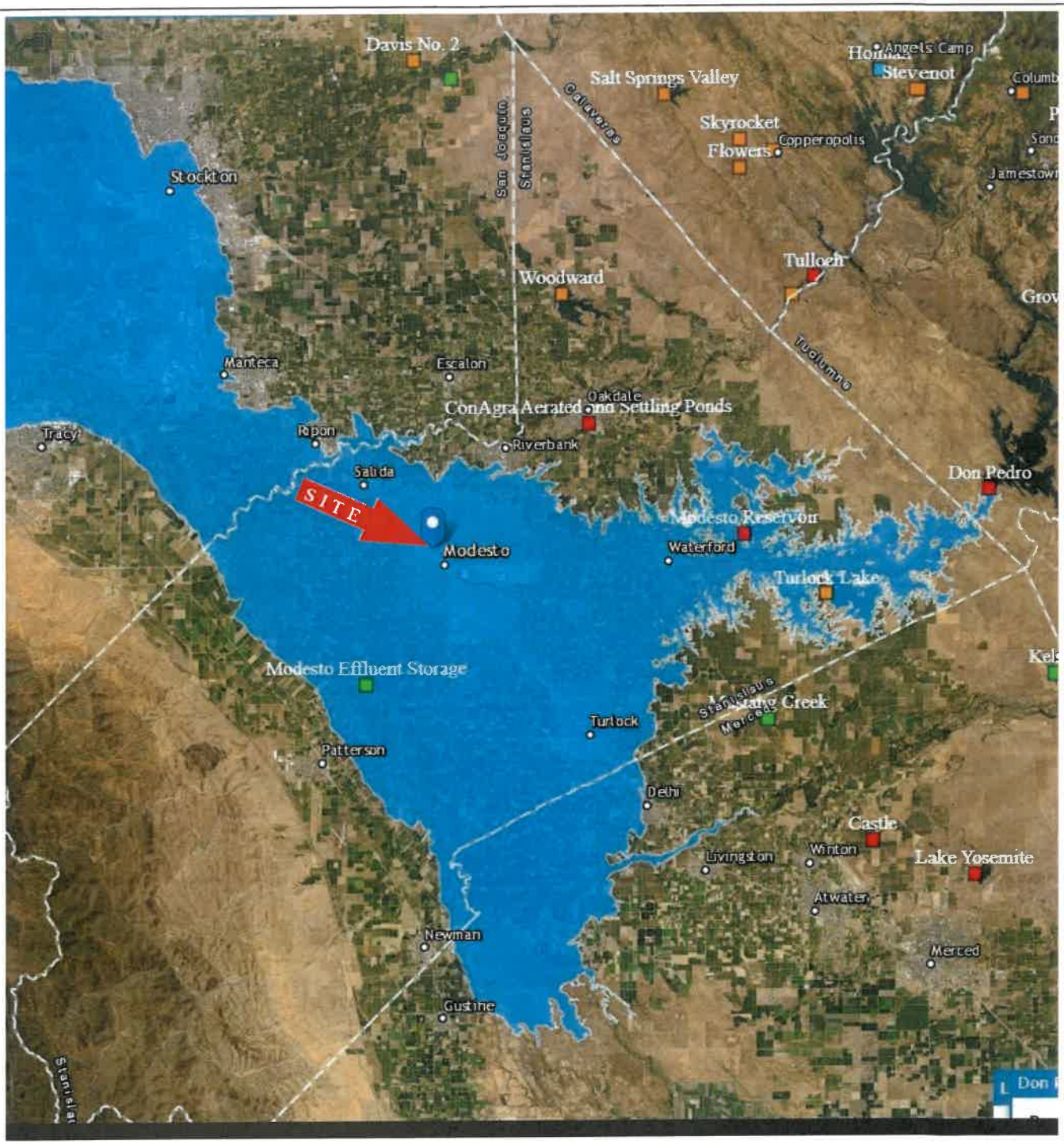
FLOOD MAP EXPLANATION

NOTE:

ALL OF FEMA FLOOD INSURANCE MAP IS SHOWN WITHIN "ZONE X" UNLESS OTHERWISE NOTED.
EFFECTIVE 2019

GEOTECHNICAL ENGINEERING INVESTIGATION UPDATE NEW PRESS BOX MODESTO JUNIOR COLLEGE NEC Stoddard Avenue and Tully Road Modesto, California	**Scale:** As Shown	**Date:** April 2026
	Drawn by: WA	**Approved by:** SN
	Project No. 072-26013	**Figure No.** 11a

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INUNDATION BOUNDARY

DAM INUNDATION MAP
LAKE DON PEDRO

NORTH

0 8 16

SCALE IN MILES (±)

FROM:
California Department of Water Resources, Dam Inundation Map, 2017

GEOTECHNICAL ENGINEERING INVESTIGATION UPDATE NEW PRESS BOX MODESTO JUNIOR COLLEGE NEC Stoddard Avenue and Tully Road Modesto, California	**Scale:** As Shown	**Date:** April 2026	Krazan GEOTECHNICAL ENGINEERING
	Drawn by: WA	**Approved by:** SN	
	Project No. 072-26013	**Figure No.** 12	

U.S. Geological Survey - Earthquake Hazards Program

2008 National Seismic Hazard Maps - Source Parameters

New Search

Distance in Miles	Name	State	Pref Slip Rate (mm/yr)	Dip (degrees)	Dip Dir	Slip Sense	Rupture Top (km)	Rupture Bottom (km)	Length (km)
15.44	Great Valley 7	CA	1.5	15	W	thrust	7	10	45
16.95	Great Valley 8	CA	1.5	15	W	thrust	7	10	41
30.08	Ortigalita	CA	1	90	V	strike slip	0	11	70
30.91	Greenville Connected	CA	2	90	V	strike slip	0.8	15	50
37.73	Great Valley 9	CA	1.5	15	W	thrust	7	10	39
44.12	Calaveras;CC+CS	CA	15	90	V	strike slip	4.2	7	78
44.12	Calaveras;CN+CC+CS	CA	n/a	90	V	strike slip	2.2	7	123
44.12	Calaveras;CN+CC	CA	n/a	90	V	strike slip	2	8	104
44.12	Calaveras;CC	CA	15	90	V	strike slip	4.2	7	59
44.87	Mount Diablo Thrust	CA	2	38	NE	thrust	8	16	25
45.96	Calaveras;CN	CA	6	90	V	strike slip	1.3	11	45
47.99	Hayward-Rodgers Creek;HS	CA	9	90	V	strike slip	2.4	9	52
47.99	Hayward-Rodgers Creek;HN+HS	CA	9	90	V	strike slip	2.4	9	87
47.99	Hayward-Rodgers Creek;RC+HN+HS	CA	9	90	V	strike slip	1.2	10	150
52.02	Calaveras;CS	CA	15	90	V	strike slip	4.4	6	19
52.17	Great Valley 5, Pittsburg Kirby Hills	CA	1	90	V	reverse	10	20	32
53.62	Quien Sabe	CA	1	90	V	strike slip	0	10	23
54.68	Monte Vista-Shannon	CA	0.4	45	W	thrust	0	4	45

56.32	Green Valley Connected	CA	4.7	90	V	strike slip	3.7	11	56
60.27	Great Valley 10	CA	1.5	15	W	thrust	7	10	22
60.33	N. San Andreas;SAO+SAN+SAP+SAS	CA	n/a	90	V	strike slip	0.2	12	472
60.33	N. San Andreas;SAN+SAP+SAS	CA	n/a	90	V	strike slip	0.2	12	336
60.33	N. San Andreas;SAP+SAS	CA	n/a	90	V	strike slip	0.4	13	147
60.33	N. San Andreas;SAS	CA	17	90	V	strike slip	0.8	15	62
63.20	San Andreas fault - creeping segment	CA	34	90	V	strike slip	0		125
63.54	Zayante-Vergeles	CA	0.1	90	V	strike slip	0	12	58
63.66	N. San Andreas;SAO+SAN+SAP	CA	n/a	90	V	strike slip	0.1	11	410
63.66	N. San Andreas;SAP	CA	17	90	V	strike slip	0.1	13	85
63.66	N. San Andreas;SAN+SAP	CA	n/a	90	V	strike slip	0.1	11	274
66.99	Hayward-Rodgers Creek;RC+HN	CA	9	90	V	strike slip	0.7	11	97
66.99	Hayward-Rodgers Creek;HN	CA	9	90	V	strike slip	2.4	9	35
67.38	Great Valley 4b, Gordon Valley	CA	1.3	20	W	thrust	9	14	28
72.32	Great Valley 11	CA	1.5	15	W	thrust	7	10	24
76.21	West Napa	CA	1	90	V	strike slip	0	10	30
78.82	Rinconada	CA	1	90	V	strike slip	0	10	191
79.23	Monterey Bay-Tularcitos	CA	0.5	90	V	strike slip	0	14	83
79.65	San Gregorio Connected	CA	5.5	90	V	strike slip	0.6	12	176
81.26	Great Valley 4a, Trout Creek	CA	1.3	20	W	thrust	9	14	19
83.49	Hayward-Rodgers Creek;RC	CA	9	90	V	strike slip	0.1	12	62
85.19	Hunting Creek-Berryessa	CA	6	90	V	strike slip	0	12	60

86.18	N. San Andreas;SAN	CA	24	90	V	strike slip	0.1	11	189
86.18	N. San Andreas;SAO+SAN	CA	n/a	90	V	strike slip	0.1	11	325
86.68	Great Valley 12	CA	1.5	15	W	thrust	7	10	17
91.33	Great Valley 3, Mysterious Ridge	CA	1.3	20	W	thrust	9	14	51
96.05	Carson Range fault	NV	2.61	60/40/50	E	normal	0	15	53
96.05	Carson Range-Kings Canyon fault	NV	2.61	50/40/60	E	normal	0	15	70
96.33	Great Valley 13 (Coalinga)	CA	1.5	15	W	thrust	9.1	15	32
96.70	West Tahoe	CA	0.6	50	E	normal	0	13	51

APPENDIX A

FIELD AND LABORATORY INVESTIGATIONS

Field Investigation

The field investigation consisted of a surface reconnaissance and a subsurface exploratory program. One 6½-inch exploratory boring was advanced. The boring location is shown on the site plan.

The soils encountered were logged in the field during the exploration and, with supplementary laboratory test data, are described in accordance with the Unified Soil Classification System.

Modified standard penetration tests and standard penetration tests were performed at selected depths. These tests represent the resistance to driving a 2½-inch and 1½-inch diameter split barrel sampler, respectively. The driving energy was provided by a hammer weighing 140 pounds falling 30 inches. Relatively undisturbed soil samples were obtained while performing this test. Bag samples of the disturbed soil were obtained from the auger cuttings. The modified standard penetration tests are identified in the sample type on the boring log with a full shaded in block. The standard penetration tests are identified in the sample type on the boring log with half of the block shaded. All samples were returned to our Clovis laboratory for evaluation.

Laboratory Investigation

The laboratory investigation was programmed to determine the physical and mechanical properties of the foundation soil underlying the site. Test results were used as criteria for determining the engineering suitability of the surface and subsurface materials encountered.

In-situ moisture content, dry density, consolidation, direct shear, Atterberg limits and sieve analysis tests were completed for the undisturbed samples representative of the subsurface material. These tests, supplemented by visual observation, comprised the basis for our evaluation of the site material.

The exploratory boring log and laboratory determinations are presented in this Appendix.

UNIFIED SOIL CLASSIFICATION SYSTEM

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

COARSE-GRAINED SOILS (more than 50% of material is larger than No. 200 sieve size.)			
GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size	Clean Gravels (Less than 5% fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravels with fines (More than 12% fines)	GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
SANDS 50% or more of coarse fraction smaller than No. 4 sieve size	Clean Sands (Less than 5% fines)	SW	Well-graded sands, gravelly sands, little or no fines
		SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with fines (More than 12% fines)	SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size.)			
SILTS AND CLAYS Liquid limit less than 50%		ML	Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS		PT	Peat and other highly organic soils

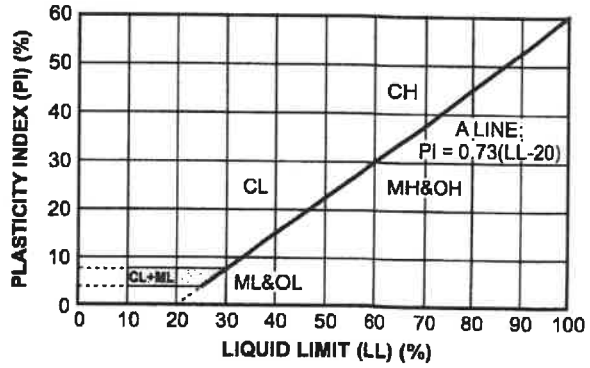
CONSISTENCY CLASSIFICATION

Description	Blows per Foot
Granular Soils	
Very Loose	< 5
Loose	5 – 15
Medium Dense	16 – 40
Dense	41 – 65
Very Dense	> 65
Cohesive Soils	
Very Soft	< 3
Soft	3 – 5
Firm	6 – 10
Stiff	11 – 20
Very Stiff	21 – 40
Hard	> 40

GRAIN SIZE CLASSIFICATION

Grain Type	*Standard Sieve Size*	*Grain Size in Millimeters*
Boulders	Above 12 inches	Above 305
Cobbles	12 to 13 inches	305 to 76.2
Gravel	3 inches to No. 4	76.2 to 4.76
Coarse-grained	3 to ¾ inches	76.2 to 19.1
Fine-grained	¾ inches to No. 4	19.1 to 4.76
Sand	No. 4 to No. 200	4.76 to 0.074
Coarse-grained	No. 4 to No. 10	4.76 to 2.00
Medium-grained	No. 10 to No. 40	2.00 to 0.042
Fine-grained	No. 40 to No. 200	0.042 to 0.074
Silt and Clay	Below No. 200	Below 0.074

PLASTICITY CHART



Log of Boring B201

Project: New Press Box

Project No: 072-26013

Client: Teter Architects

Figure No.: A-201

Location: Stoddard Avenue and Tully Road, Modesto, California

Logged By: Emmett Gonzales

Depth to Water> **Initial:** 39 Feet **At Completion:** 40 Feet

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
0		Ground Surface				
0		ASPHALTIC CONCRETE = 3 inches				
2		***SILTY SAND (SM)*** Loose, fine- to medium-grained; brown, damp, drills easily	113.9	2.5		8
4						
6			118.4	2.8		10
8		Fine-grained and light brown below 8½ feet				
10			107.4	3.0		15
12						
14						
16		***SANDY SILT (ML)*** Dense, fine- to medium-grained; brown, moist, drills firmly	101.3	15.5		60
18		***SILTY SAND (SM)*** Dense, fine-grained; brown, moist, drills firmly				
20						

Penetration Test blows/ft: 20, 40, 60

Water Content (%): 10, 20, 30, 40

Drill Method: Hollow Stem

Drill Rig: CME 45C

Driller: Eddie Tapia

Krazan and Associates

Drill Date: 4-1-26

Hole Size: 4½ Inches

Elevation: 50 Feet

Log of Boring B201

Project: New Press Box

Project No: 072-26013

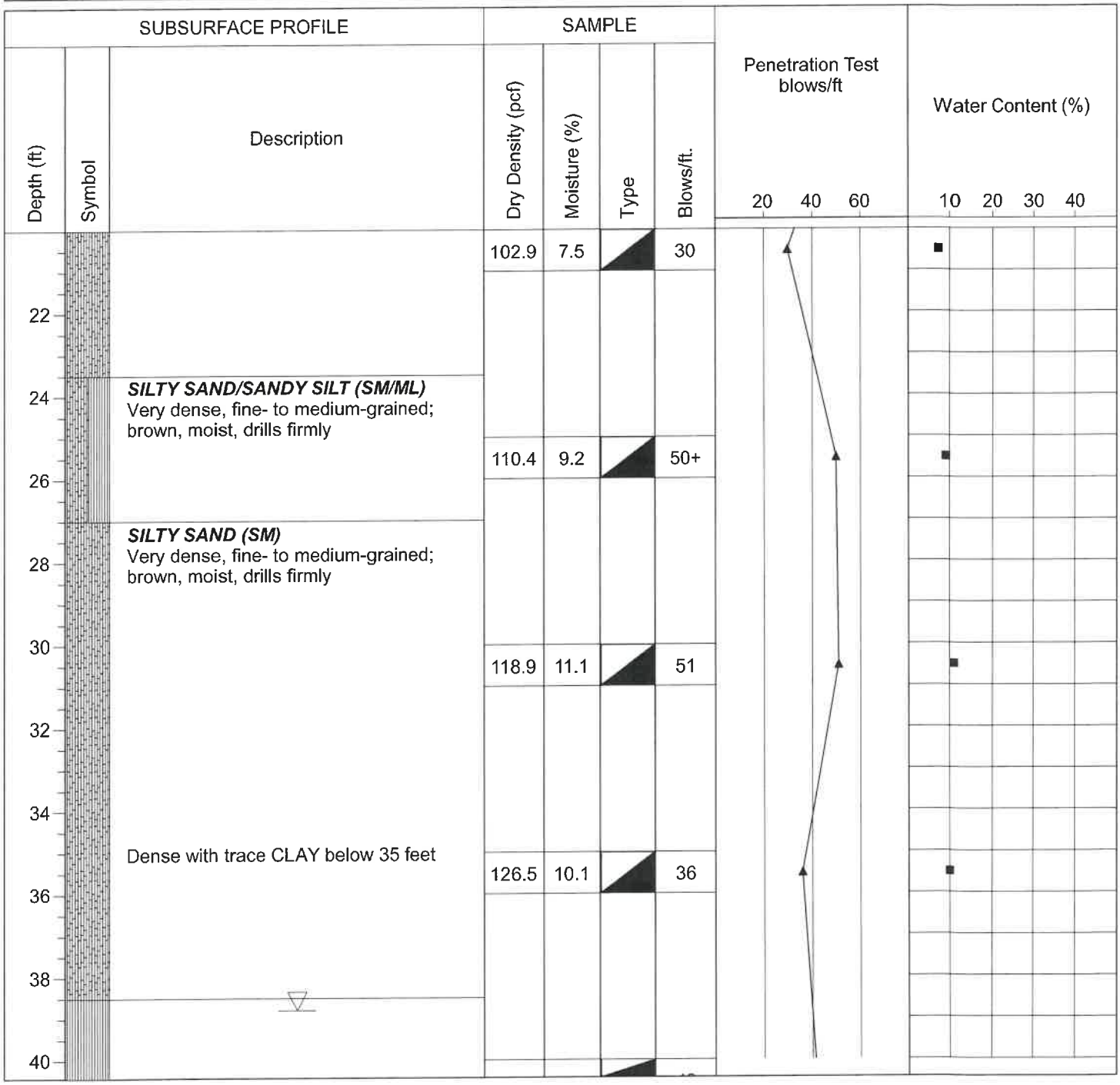
Client: Teter Architects

Figure No.: A-201

Location: Stoddard Avenue and Tully Road, Modesto, California

Logged By: Emmett Gonzales

Depth to Water> **Initial:** 39 Feet **At Completion:** 40 Feet



Drill Method: Hollow Stem

Drill Date: 4-1-26

Drill Rig: CME 45C

Krazan and Associates

Hole Size: 4½ Inches

Driller: Eddie Tapia

Elevation: 50 Feet

Log of Boring B201

Project: New Press Box

Project No: 072-26013

Client: Teter Architects

Figure No.: A-201

Location: Stoddard Avenue and Tully Road, Modesto, California

Logged By: Emmett Gonzales

Depth to Water> **Initial:** 39 Feet **At Completion:** 40 Feet

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
42		***SANDY SILT (ML)*** Dense, fine-grained; brown, moist, drills firmly Perched water between 39 and 40 feet	83.4	35.9		42		■
44		***SANDY CLAY (CL)*** Hard, fine- to medium-grained; brown, moist, drills firmly						
46			101.4	22.2		37		■
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Rig: CME 45C

Driller: Eddie Tapia

Krazan and Associates

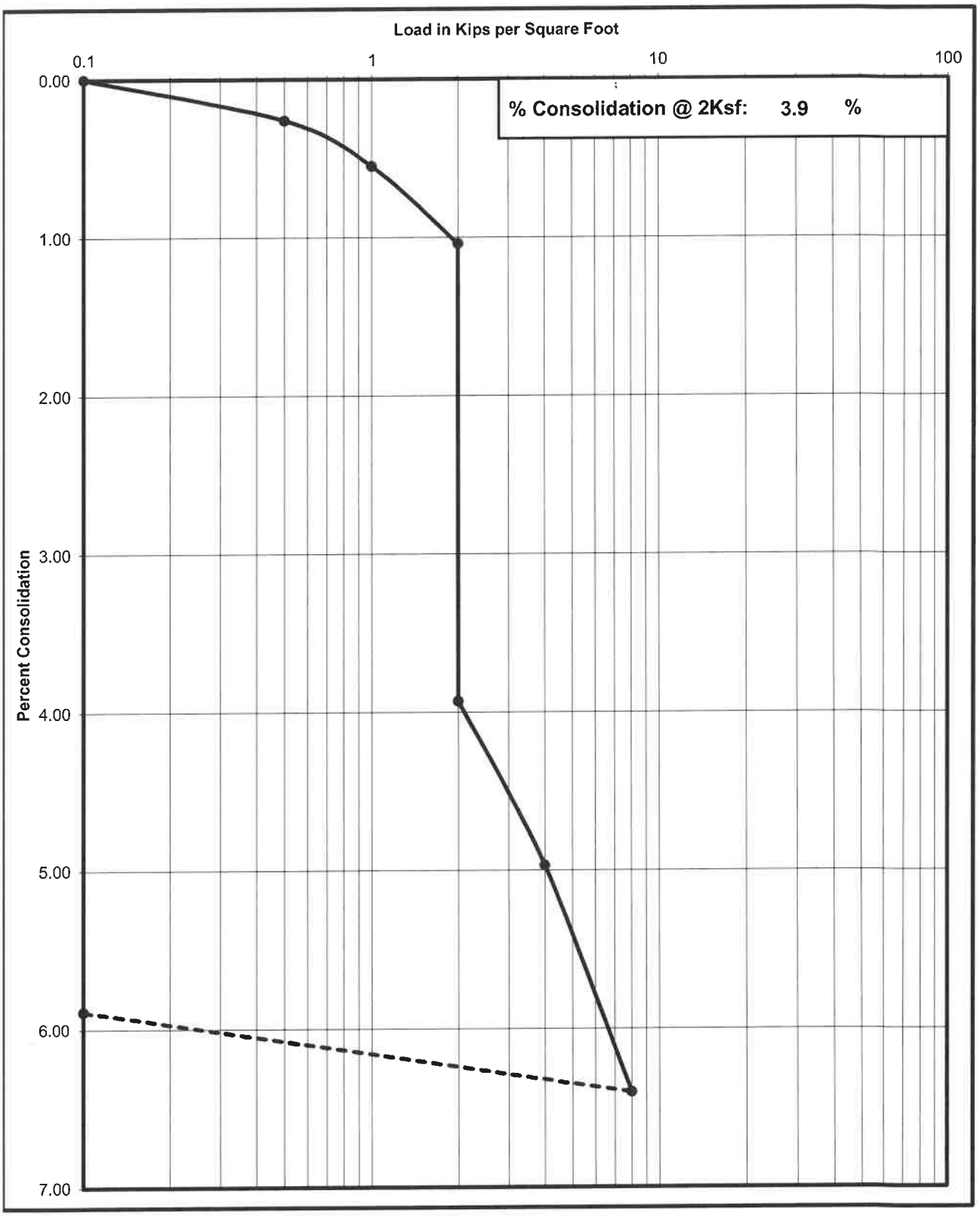
Drill Date: 4-1-26

Hole Size: 4½ Inches

Elevation: 50 Feet

Consolidation Test

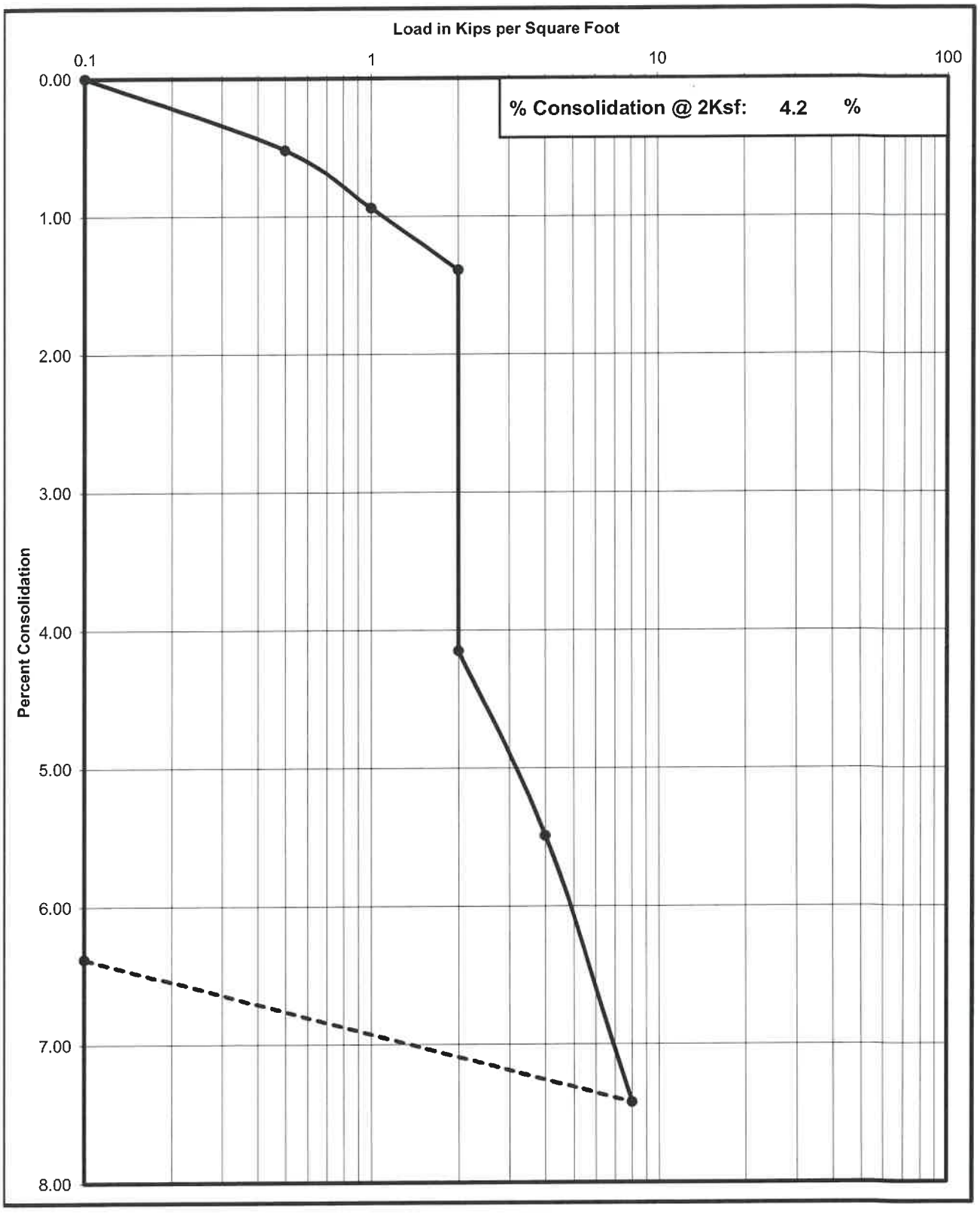
Project No	Boring No. & Depth	Date	Soil Classification
072-26013	B201 @ 2-3'	4/15/2026	SM



Krazan Testing Laboratory

Consolidation Test

Project No	Boring No. & Depth	Date	Soil Classification
072-26013	B201 @ 5-6'	4/15/2026	SM

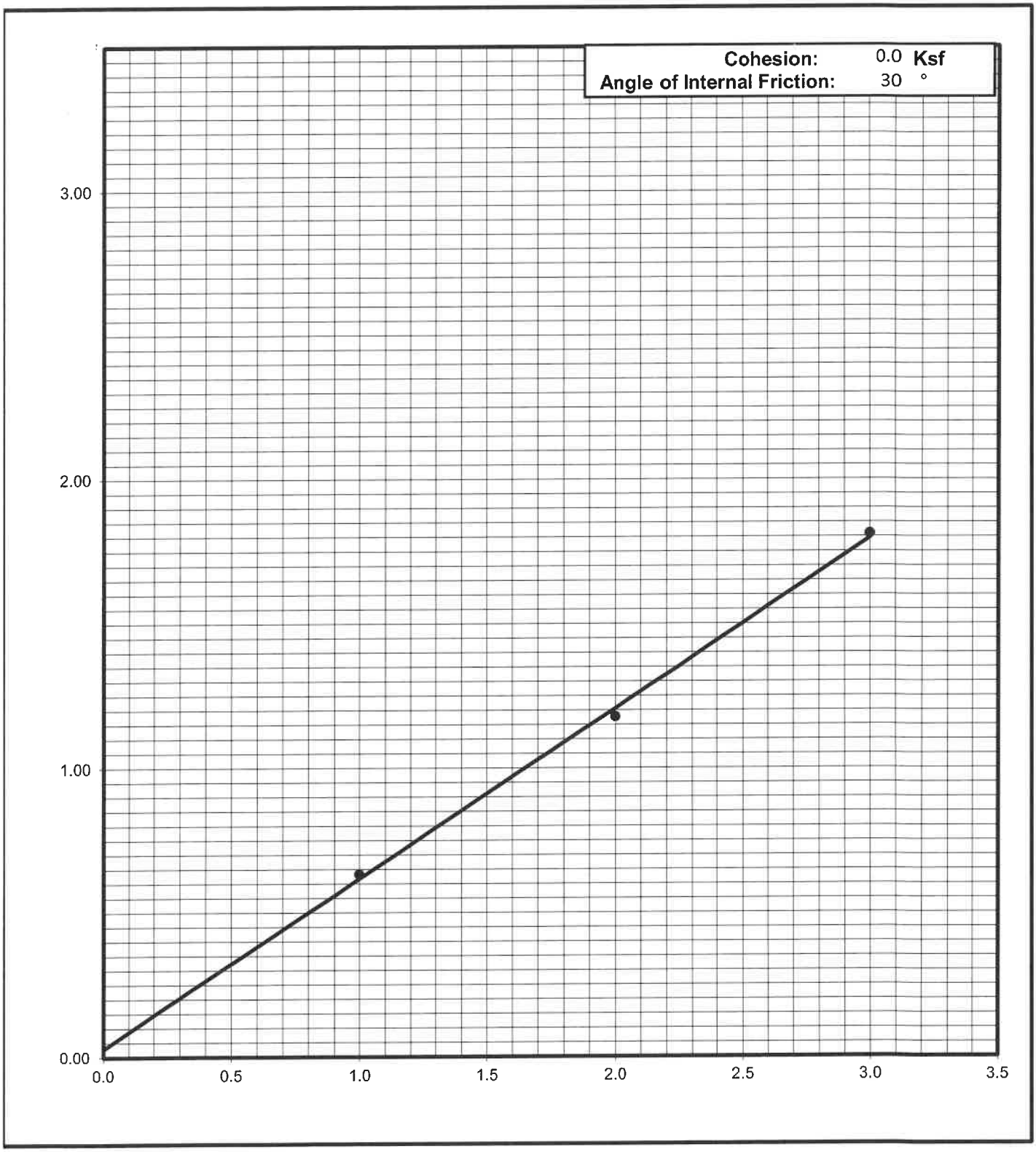


Krazan Testing Laboratory

Shear Strength Diagram (Direct Shear)

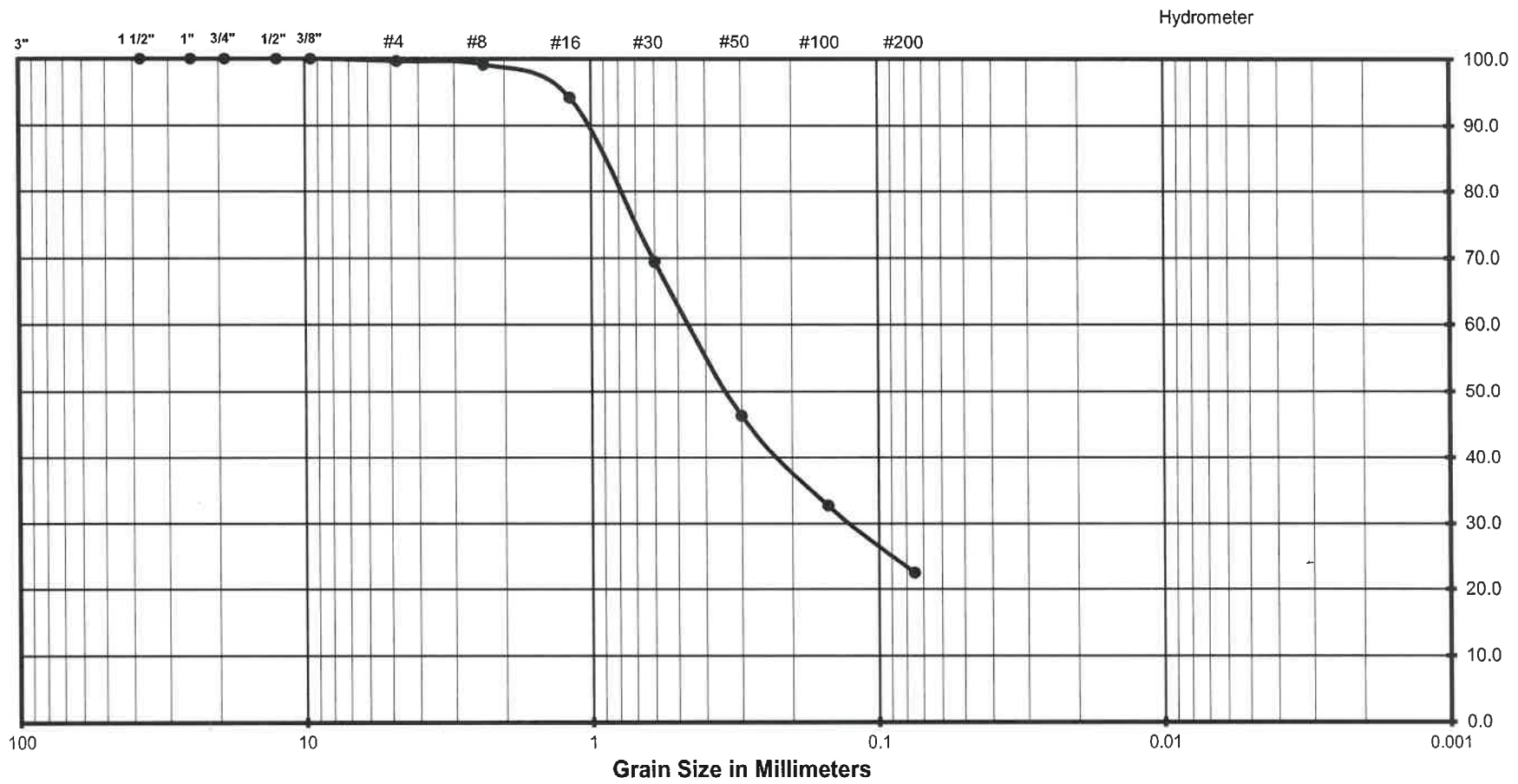
ASTM D - 3080 / AASHTO T - 236

Project Number	Boring No. & Depth	Soil Type	Date
072-26013	B201 @ 2-3'	SM	4/15/2026



Krazan Testing Laboratory

Grain Size Analysis



Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	New Press Box
Project Number	072-26013
Soil Classification	SM
Sample Number	B201 @ 5-6'

Krazan Testing Laboratory

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

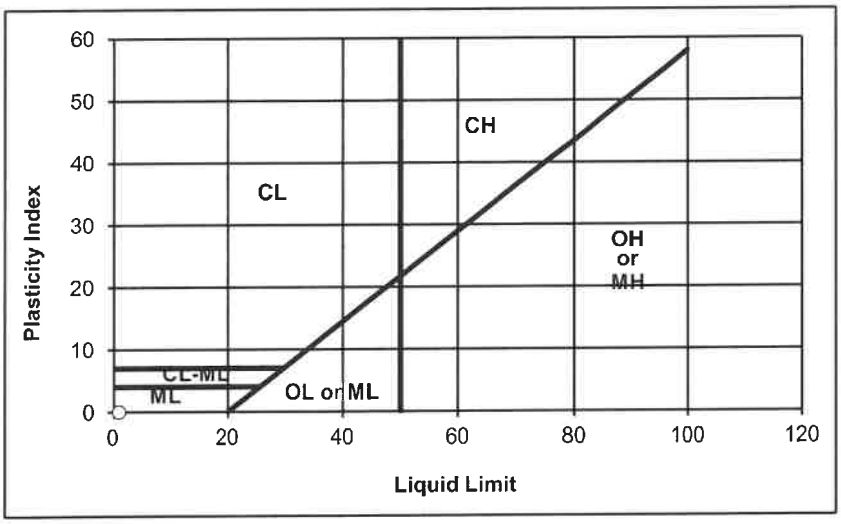
Project: **New Press Box**
Project Number: **072-26013**
Date Sampled: 4/1/2026
Sampled By: EG
Sample Number: -
Sample Location: B201 @ 30-31'
Sample Description: SM

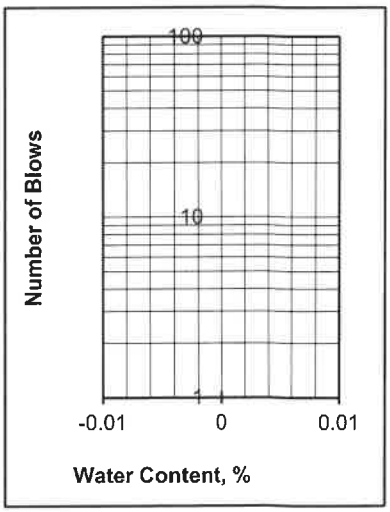
Date Tested: 4/10/2026
Tested By: EY
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

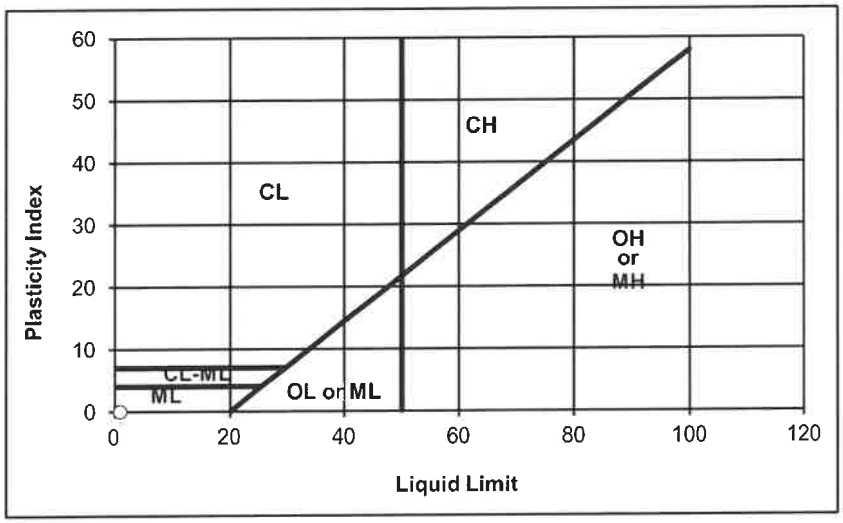
Project: **New Press Box**
Project Number: **072-26013**
Date Sampled: 4/1/2026
Sampled By: EG
Sample Number: -
Sample Location: B201 @ 35-36'
Sample Description: SM

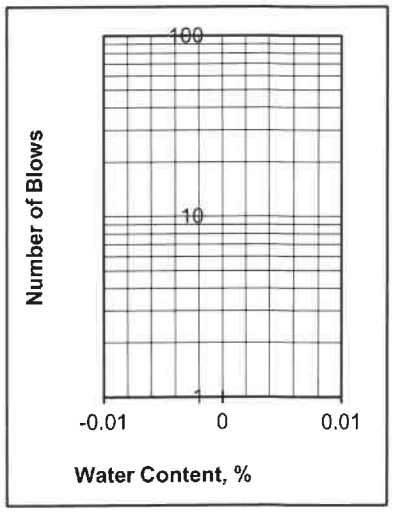
Date Tested: 4/10/2026
Tested By: EY
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

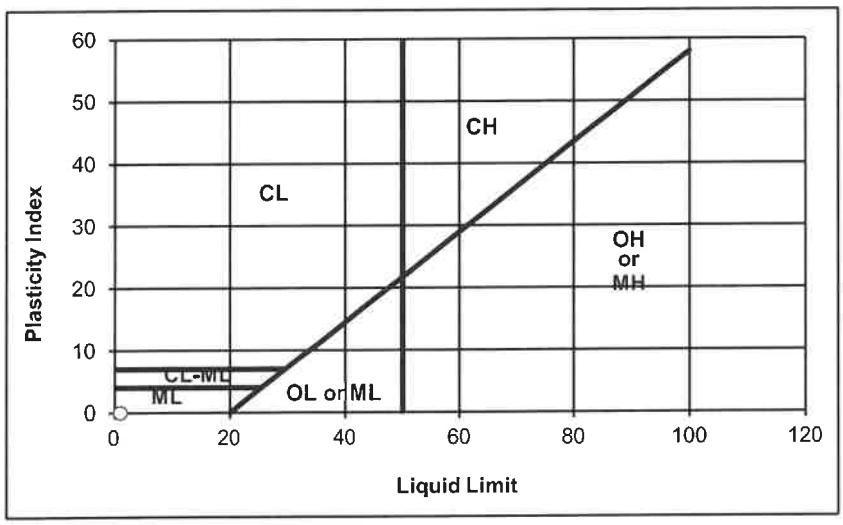
Project: **New Press Box**
Project Number: **072-26013**
Date Sampled: 4/1/2026
Sampled By: EG
Sample Number: -
Sample Location: B201 @ 40-41'
Sample Description: ML

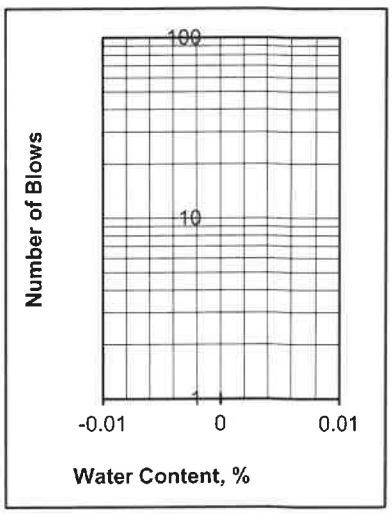
Date Tested: 4/10/2026
Tested By: EY
Verified By: JG

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

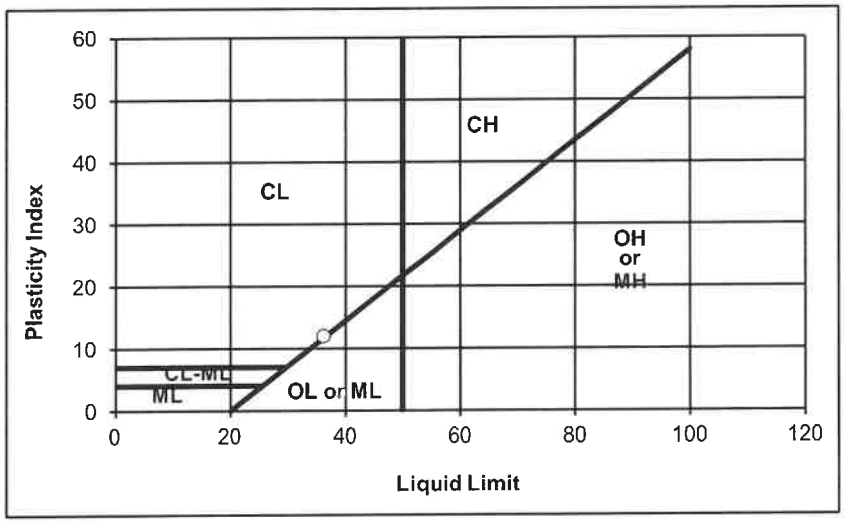
Project: **New Press Box**
Project Number: **072-26013**
Date Sampled: 4/1/2026
Sampled By: EG
Sample Number: -
Sample Location: B201 @ 45-46'
Sample Description: CL

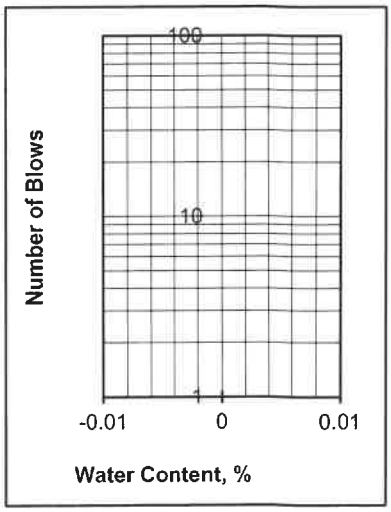
Date Tested: 4/10/2026
Tested By: EY
Verified By: JG

Trial Number	Plastic Limit			Liquid Limit		
	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	34.17	34.02		36.08	34.93	36.03
Weight of Dry Soil & Tare (g)	33.13	32.98		34.16	33.11	34.07
Weight of Tare (g)	28.71	28.58		29.02	28.10	28.43
Weight of water (g)	1.04	1.04		1.92	1.82	1.96
Weight of Dry Soil (g)	4.42	4.40		5.14	5.01	5.64
Water Content (% of dry wt.)	23.5%	23.6%		37.4%	36.3%	34.8%
Number of Blows				17	27	35

Plastic Limit : 24 **Liquid Limit : 36**

Plasticity Index : 12
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

APPENDIX B

EARTHWORK SPECIFICATIONS

GENERAL

When the text of the report conflicts with the general specifications in this appendix, the recommendations in the report have precedence.

SCOPE OF WORK: These specifications and applicable plans pertain to and include all earthwork associated with the site rough grading, including but not limited to the furnishing of all labor, tools, and equipment necessary for site clearing and grubbing, stripping, preparation of foundation materials for receiving fill, excavation, processing, placement and compaction of fill and backfill materials to the lines and grades shown on the project grading plans, and disposal of excess materials.

PERFORMANCE: The Contractor shall be responsible for the satisfactory completion of all earthwork in accordance with the project plans and specifications. This work shall be inspected and tested by a representative of Krazan and Associates, Inc., hereinafter known as the Soils Engineer and/or Testing Agency. Attainment of design grades when achieved shall be certified by the project Civil Engineer. Both the Soils Engineer and the Civil Engineer are the Owner's representatives. If the Contractor should fail to meet the technical or design requirements embodied in this document and on the applicable plans, he shall make the necessary readjustments until all work is deemed satisfactory as determined by both the Soils Engineer and the Civil Engineer. No deviation from these specifications shall be made except upon written approval of the Soils Engineer, Civil Engineer or project Architect.

No earthwork shall be performed without the physical presence or approval of the Soils Engineer. The Contractor shall notify the Soils Engineer at least 2 working days prior to the commencement of any aspect of the site earthwork.

The Contractor agrees that he shall assume sole and complete responsibility for job site conditions during the course of construction of this project, including safety of all persons and property; that this requirement shall apply continuously and not be limited to normal working hours; and that the Contractor shall defend, indemnify and hold the Owner and the Engineers harmless from any and all liability, real or alleged, in connection with the performance of work on this project, except for liability arising from the sole negligence of the Owner or the Engineers.

TECHNICAL REQUIREMENTS: All compacted materials shall be densified to a density not less than 90 percent relative compaction based on ASTM Test Method D1557 or CAL-216, as specified in the technical portion of the Soil Engineer's report. The location and frequency of field density tests shall be as determined by the Soils Engineer. The results of these tests and compliance with these specifications shall be the basis upon which satisfactory completion of work will be judged by the Soils Engineer.

SOILS AND FOUNDATION CONDITIONS: The Contractor is presumed to have visited the site and to have familiarized himself with existing site conditions and the contents of the data presented in the soil report.

The Contractor shall make his own interpretation of the data contained in said report, and the Contractor shall not be relieved of liability under the Contract documents for any loss sustained as a result of any variance between conditions indicated by or deduced from said report and the actual conditions encountered during the progress of the work.

DUST CONTROL: The work includes dust control as required for the alleviation or prevention of any dust nuisance on or about the site or the borrow area, or off-site if caused by the Contractor's operation either during the performance of the earthwork or resulting from the conditions in which the Contractor leaves the site. The Contractor shall assume all liability, including court costs of codefendants, for all claims related to dust or windblown materials attributable to his work.

SITE PREPARATION

Site preparation shall consist of site clearing and grubbing and the preparations of foundation materials for receiving fill.

CLEARING AND GRUBBING: The Contractor shall accept the site in this present condition and shall demolish and/or remove from the area of designated project earthwork all structures, both surface and subsurface, trees, brush, roots, debris, organic matter, and all other matter determined by the Soils Engineer to be deleterious or otherwise unsuitable. Such materials shall become the property of the Contractor and shall be removed from the site.

Tree root systems in proposed building areas should be removed to a minimum depth of 3 feet and to such an extent which would permit removal of all roots larger than 1 inch. Tree roots removed in parking areas may be limited to the upper 1½ feet of the ground surface. Backfill of tree root excavations should not be permitted until all exposed surfaces have been inspected and the Soils Engineer is present for the proper control of backfill placement and compaction. Burning in areas which are to receive fill materials shall not be permitted.

SUBGRADE PREPARATION: Surfaces to receive Engineered Fill, building or slab loads shall be prepared as outlined above, excavated/scarified to a depth of 12 inches, moisture-conditioned as necessary, and compacted to 90 percent relative compaction.

Loose soil areas, areas of uncertified fill, and/or areas of disturbed soils shall be moisture-conditioned as necessary and recompacted to 90 percent relative compaction. All ruts, hummocks, or other uneven surface features shall be removed by surface grading prior to placement of any fill materials. All areas which are to receive fill materials shall be approved by the Soils Engineer prior to the placement of any of the fill material.

EXCAVATION: All excavation shall be accomplished to the tolerance normally defined by the Civil Engineer as shown on the project grading plans. All over-excavation below the grades specified shall be backfilled at the Contractor's expense and shall be compacted in accordance with the applicable technical requirements.

FILL AND BACKFILL MATERIAL: No material shall be moved or compacted without the presence of the Soils Engineer. Material from the required site excavation may be utilized for construction site fills provided prior approval is given by the Soils Engineer. All materials utilized for constructing site fills shall be free from vegetation or other deleterious matter as determined by the Soils Engineer.

PLACEMENT, SPREADING AND COMPACTION: The placement and spreading of approved fill materials and the processing and compaction of approved fill and native materials shall be the responsibility of the Contractor. However, compaction of fill materials by flooding, ponding, or jetting shall not be permitted unless specifically approved by local code, as well as the Soils Engineer.

Both cut and fill areas shall be surface-compacted to the satisfaction of the Soils Engineer prior to final acceptance.

SEASONAL LIMITS: No fill material shall be placed, spread, or rolled while it is frozen or thawing or during unfavorable wet weather conditions. When the work is interrupted by heavy rains, fill operations shall not be resumed until the Soils Engineer indicates that the moisture content and density of previously placed fill are as specified.

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*                        *
*    E Q S E A R C H     *
*                        *
*     Version 3.00       *
*                        *
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ESTIMATION OF
PEAK ACCELERATION FROM
CALIFORNIA EARTHQUAKE CATALOGS

JOB NUMBER: 072-26013

DATE: 04-27-2026

JOB NAME: New Press Box

EARTHQUAKE-CATALOG-FILE NAME: ALLQUAKE.DAT

MAGNITUDE RANGE:
   MINIMUM MAGNITUDE: 5.00
   MAXIMUM MAGNITUDE: 9.00

SITE COORDINATES:
   SITE LATITUDE: 37.6511
   SITE LONGITUDE: 121.0118

SEARCH DATES:
           START DATE: 1800
           END DATE: 2023

SEARCH RADIUS:
           100.0 mi
           160.9 km

ATTENUATION RELATION: 3) Boore et al. (1997) Horiz. - NEHRP D (250)
   UNCERTAINTY (M=Median, S=Sigma): M   Number of Sigmas: 0.0
   ASSUMED SOURCE TYPE: DS [SS=Strike-slip, DS=Reverse-slip, BT=Blind-thrust]
   SCOND: 0 Depth Source: A
   Basement Depth: 5.00 km   Campbell SSR: Campbell SHR:
   COMPUTE PEAK HORIZONTAL ACCELERATION

MINIMUM DEPTH VALUE (km): 0.0

EARTHQUAKE SEARCH RESULTS

Page 1

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	37.5000	121.3000	07/15/1866	630 0.0	0.0	5.80	0.105	VII	18.9(30.4)
DMG	37.4000	121.4000	04/10/1881	10 0 0.0	0.0	5.90	0.083	VII	27.4(44.1)
GSB	37.4830	121.6900	03/31/1986	115540.0	8.0	5.70	0.057	VI	38.9(62.6)
BRK	37.7600	121.7300	01/27/1980	23336.0	0.0	5.40	0.048	VI	39.9(64.3)
DMG	37.2000	121.5000	07/06/1899	2010 0.0	0.0	5.80	0.058	VI	41.1(66.1)
DMG	37.6000	121.8000	06/11/1903	1312 0.0	0.0	5.50	0.048	VI	43.2(69.6)
BRK	37.8100	121.7900	01/24/1980	19 1 2.0	0.0	5.10	0.038	V	43.9(70.6)
GSB	37.3200	121.6980	04/24/1984	211519.0	8.0	6.20	0.068	VI	44.0(70.8)
GSB	37.4340	121.7740	10/31/2007	030454.8	10.0	5.50	0.047	VI	44.3(71.3)
BRK	37.8300	121.8100	01/24/1980	19 0 9.0	0.0	5.80	0.054	VI	45.3(72.9)
GSB	37.3850	121.7720	06/13/1988	014536.8	7.0	5.40	0.043	VI	45.5(73.2)
DMG	37.3700	121.7800	09/05/1955	2 118.0	0.0	5.50	0.045	VI	46.3(74.6)
BRK	37.1000	121.5000	08/06/1979	17 522.0	0.0	5.80	0.053	VI	46.5(74.9)
T-A	38.0000	120.2500	04/11/1872	12 0 0.0	0.0	5.00	0.034	V	48.0(77.3)
DMG	37.2500	121.7500	07/01/1911	22 0 0.0	0.0	6.60	0.077	VII	49.0(78.9)
DMG	37.3000	121.8000	01/02/1891	20 0 0.0	0.0	5.50	0.043	VI	49.5(79.7)
DMG	37.3000	121.8000	08/03/1903	649 0.0	0.0	5.50	0.043	VI	49.5(79.7)
GSB	37.0250	121.4580	01/16/1993	062934.9	5.0	5.30	0.038	V	49.7(80.0)
DMG	37.5000	121.9000	11/26/1858	835 0.0	0.0	6.10	0.059	VI	49.7(80.0)
DMG	37.1000	121.6000	03/26/1866	2012 0.0	0.0	5.40	0.040	V	49.9(80.3)
DMG	37.0200	121.4800	03/09/1949	122839.0	0.0	5.20	0.036	V	50.6(81.4)
DMG	37.0000	121.5000	06/20/1897	2014 0.0	0.0	6.20	0.059	VI	52.3(84.2)
DMG	36.9000	121.2000	03/06/1882	2145 0.0	0.0	5.70	0.045	VI	52.9(85.1)
DMG	37.1000	121.7000	02/26/1864	1347 0.0	0.0	5.90	0.050	VI	53.6(86.3)
DMG	38.0000	121.9000	05/19/1889	1110 0.0	0.0	6.00	0.052	VI	54.1(87.1)
DMG	37.7000	122.0000	03/05/1864	1649 0.0	0.0	5.70	0.044	VI	54.1(87.1)
DMG	37.3000	121.9000	10/08/1865	2046 0.0	0.0	6.30	0.061	VI	54.4(87.5)
MGI	37.3000	121.9000	05/28/1927	1739 0.0	0.0	5.00	0.031	V	54.4(87.5)
T-A	37.0000	121.5700	03/25/1859	0 0 0.0	0.0	5.00	0.031	V	54.4(87.6)
MGI	37.0000	121.5700	01/09/1928	250 0.0	0.0	5.30	0.036	V	54.4(87.6)
DMG	37.8000	122.0000	07/04/1861	011 0.0	0.0	5.60	0.042	VI	54.9(88.4)
DMG	37.0600	121.6900	11/16/1964	24641.7	0.0	5.00	0.030	V	55.2(88.9)
DMG	36.9800	121.6000	03/02/1959	232717.0	30.0	5.30	0.035	V	56.5(90.9)
DMG	36.9100	121.4800	11/28/1974	23 124.7	0.0	5.20	0.033	V	57.3(92.2)
DMG	37.1000	121.8000	05/24/1865	1121 0.0	0.0	5.50	0.038	V	57.6(92.7)
DMG	37.7000	122.1000	10/21/1868	1553 0.0	0.0	6.80	0.074	VII	59.6(95.8)
GSB	37.1300	121.8780	06/27/1988	184322.3	13.0	5.70	0.041	V	59.6(95.9)
DMG	37.6000	122.1000	05/21/1864	2 1 0.0	0.0	5.30	0.033	V	59.6(95.9)
GSB	36.8100	121.2750	01/26/1986	192051.2	7.0	5.50	0.037	V	59.8(96.3)
GSB	37.0780	121.8320	10/25/1989	012726.6	14.0	5.00	0.028	V	59.9(96.4)
GSB	36.8030	121.3020	02/20/1988	083957.5	9.0	5.30	0.033	V	60.7(97.7)
DMG	37.9700	122.0500	10/24/1955	41044.0	0.0	5.40	0.035	V	60.8(97.8)
DMG	36.8300	121.4200	12/31/1910	1211 0.0	0.0	5.00	0.028	V	61.0(98.1)
MGI	36.9000	121.6000	10/11/1800	0 0 0.0	0.0	5.70	0.040	V	61.1(98.3)
DMG	36.9000	121.6000	04/24/1890	1136 0.0	0.0	6.00	0.047	VI	61.1(98.3)
DMG	36.9000	121.6000	03/30/1883	1545 0.0	0.0	5.60	0.038	V	61.1(98.3)
DMG	37.0000	121.7800	12/18/1967	172432.0	0.0	5.30	0.033	V	61.6(99.2)
DMG	36.9300	121.6800	04/25/1954	203328.0	0.0	5.30	0.032	V	61.9(99.5)
GSB	36.9180	121.6700	04/18/1990	134138.8	6.0	5.00	0.028	V	62.2(100.1)
GSB	36.9320	121.6950	04/18/1990	154603.7	9.0	5.20	0.031	V	62.2(100.1)
GSB	36.9170	121.6750	04/18/1990	135351.4	5.0	5.40	0.034	V	62.4(100.4)
DMG	36.8000	121.4000	04/02/1885	1525 0.0	0.0	5.40	0.034	V	62.5(100.6)
GSB	37.1300	121.9520	08/08/1989	081327.5	15.0	5.30	0.032	V	62.9(101.2)

EARTHQUAKE SEARCH RESULTS

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FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	36.8000	121.4500	06/24/1939	13 2 0.0	0.0	5.50	0.035	V	63.5(102.2)
DMG	37.1700	122.0000	11/09/1914	231 0.0	0.0	5.50	0.035	V	63.6(102.3)
DMG	36.8700	121.6300	09/14/1963	194617.0	0.0	5.40	0.033	V	63.7(102.6)
GSB	37.0360	121.8830	10/18/1989	000415.2	18.5	7.00	0.077	VII	64.0(102.9)
DMG	36.9000	121.7000	04/30/1899	2241 0.0	0.0	5.60	0.037	V	64.2(103.3)
DMG	36.7800	121.4300	01/20/1960	32553.0	0.0	5.00	0.027	V	64.4(103.6)
T-A	36.8300	121.5700	10/18/1800	0 0 0.0	0.0	7.00	0.077	VII	64.5(103.7)
DMG	36.8000	121.5000	11/13/1892	1245 0.0	0.0	5.60	0.037	V	64.6(104.0)
DMG	37.8000	122.2000	06/10/1836	1530 0.0	0.0	6.80	0.068	VI	65.7(105.7)
DMG	37.8000	122.2000	07/31/1889	1247 0.0	0.0	5.20	0.029	V	65.7(105.7)
DMG	38.3000	121.9000	05/19/1902	1831 0.0	0.0	5.50	0.034	V	65.9(106.1)
GSB	36.7550	121.4640	08/12/1998	141025.1	8.0	5.40	0.032	V	66.7(107.3)
DMG	38.4000	121.8000	04/30/1892	0 9 0.0	0.0	5.50	0.034	V	67.2(108.1)
DMG	37.2000	122.1000	02/17/1870	2012 0.0	0.0	5.80	0.040	V	67.3(108.3)
DMG	36.7000	121.3000	04/09/1961	72541.0	0.0	5.50	0.034	V	67.6(108.7)
DMG	36.7000	121.3000	03/31/1885	756 0.0	0.0	5.50	0.034	V	67.6(108.7)
DMG	36.9000	121.8000	03/11/1910	652 0.0	0.0	5.50	0.034	V	67.6(108.7)
GSB	37.1980	122.1050	10/18/1989	004124.7	19.0	5.10	0.027	V	67.6(108.8)
DMG	36.6800	121.3000	04/09/1961	72316.0	0.0	5.60	0.035	V	68.9(110.9)
MGI	37.8500	122.2500	09/10/1935	2355 0.0	0.0	5.00	0.025	V	69.0(111.0)
T-A	36.6700	121.2500	04/01/1857	1135 0.0	0.0	5.00	0.025	V	69.0(111.0)
DMG	36.6700	121.2500	08/06/1916	1938 0.0	0.0	5.50	0.033	V	69.0(111.0)
T-A	37.0000	122.0000	06/30/1890	2030 0.0	0.0	5.00	0.025	V	70.5(113.4)
DMG	37.5000	122.3000	02/15/1856	1325 0.0	0.0	5.50	0.032	V	71.3(114.7)
DMG	37.9000	122.3000	04/02/1870	1948 0.0	0.0	5.30	0.029	V	72.4(116.5)
GSB	36.6030	121.2010	04/23/1995	084136.6	7.0	5.00	0.024	V	73.1(117.7)
DMG	36.6000	120.8000	07/25/1926	175749.0	15.0	5.00	0.024	V	73.5(118.3)
DMG	36.5800	121.1800	07/29/1951	105345.0	0.0	5.00	0.024	V	74.5(119.9)
DMG	38.4000	122.0000	04/19/1892	1050 0.0	0.0	6.40	0.050	VI	74.6(120.0)
DMG	36.5780	121.2090	02/24/1972	155651.0	7.5	5.10	0.025	V	74.9(120.5)
DMG	37.1000	122.2000	03/26/1884	040 0.0	0.0	5.90	0.038	V	75.5(121.5)
DMG	38.5000	121.9000	04/21/1892	1743 0.0	0.0	6.20	0.044	VI	75.9(122.2)
DMG	37.6000	122.4000	06/01/1838	0 0 0.0	0.0	7.00	0.068	VI	76.0(122.3)
MGI	37.8000	122.4000	10/05/1859	2016 0.0	0.0	5.00	0.023	IV	76.5(123.1)
MGI	37.8000	122.4000	05/15/1851	1610 0.0	0.0	5.00	0.023	IV	76.5(123.1)
DMG	37.0200	122.2000	10/24/1926	225149.5	0.0	5.50	0.030	V	78.4(126.2)
DMG	37.6700	122.4800	03/22/1957	194421.0	8.5	5.30	0.027	V	80.3(129.2)
GSB	38.2152	122.3123	08/24/2014	102044.1	11.1	6.02	0.039	V	80.8(130.1)
T-A	37.6700	122.5000	11/23/1852	7 0 0.0	0.0	5.70	0.032	V	81.4(130.9)
DMG	37.7000	122.5000	06/02/1899	719 0.0	0.0	5.40	0.028	V	81.4(131.0)
MGI	37.7000	122.5000	04/25/1906	2315 0.0	0.0	5.30	0.026	V	81.4(131.0)
DMG	37.7000	122.5000	04/18/1906	131221.0	0.0	8.25	0.124	VII	81.4(131.0)
T-A	37.7500	122.5000	10/22/1854	330 0.0	0.0	5.00	0.022	IV	81.6(131.3)
T-A	37.7500	122.5000	12/11/1855	12 0 0.0	0.0	5.00	0.022	IV	81.6(131.3)
T-A	37.7500	122.5000	02/26/1864	840 0.0	0.0	5.00	0.022	IV	81.6(131.3)
MGI	37.8000	122.5000	06/21/1808	0 0 0.0	0.0	6.30	0.044	VI	81.9(131.8)
DMG	37.5000	122.5000	01/02/1856	1815 0.0	0.0	5.30	0.026	V	82.1(132.1)
DMG	36.9500	122.2600	02/15/1927	2354 3.5	0.0	5.00	0.022	IV	83.9(135.0)
DMG	36.4500	121.2500	09/27/1938	1223 0.0	0.0	5.00	0.022	IV	84.0(135.1)
DMG	38.2000	122.4000	03/31/1898	743 0.0	0.0	6.20	0.041	V	84.6(136.1)
DMG	36.4000	121.0000	04/12/1885	4 5 0.0	0.0	6.20	0.040	V	86.4(139.0)
DMG	38.3000	122.4000	10/12/1891	628 0.0	0.0	5.50	0.027	V	87.8(141.4)
MGI	36.6000	122.0000	07/03/1841	22 7 0.0	0.0	5.00	0.021	IV	90.7(146.0)

EARTHQUAKE SEARCH RESULTS

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FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
GSB	38.3790	122.4130	09/03/2000	083630.1	10.0	5.00	0.020	IV	91.3(146.9)
GSB	36.3110	120.8560	10/21/2012	065509.5	9.0	5.30	0.024	IV	92.9(149.5)
DMG	38.2200	119.4500	04/13/1962	153851.9	6.0	5.10	0.021	IV	93.7(150.8)
DMG	38.3000	119.5000	12/19/1919	1359 0.0	0.0	5.20	0.022	IV	93.7(150.8)
DMG	38.6000	119.7000	09/17/1868	1655 0.0	0.0	5.20	0.022	IV	96.8(155.8)
DMG	36.5700	122.1700	10/22/1926	133522.0	0.0	6.10	0.035	V	98.2(158.0)
DMG	38.8200	119.9800	03/22/1953	519 0.0	0.0	5.00	0.019	IV	98.2(158.0)
T-A	38.2500	122.6700	08/19/1858	648 0.0	0.0	5.00	0.019	IV	99.3(159.8)
PAS	36.2860	120.4130	10/25/1982	2226 4.0	6.0	5.60	0.026	V	99.9(160.7)

****

-END OF SEARCH- 115 EARTHQUAKES FOUND WITHIN THE SPECIFIED SEARCH AREA.

TIME PERIOD OF SEARCH: 1800 TO 2023

LENGTH OF SEARCH TIME: 224 years

THE EARTHQUAKE CLOSEST TO THE SITE IS ABOUT 18.9 MILES (30.4 km) AWAY.

LARGEST EARTHQUAKE MAGNITUDE FOUND IN THE SEARCH RADIUS: 8.3

LARGEST EARTHQUAKE SITE ACCELERATION FROM THIS SEARCH: 0.124 g

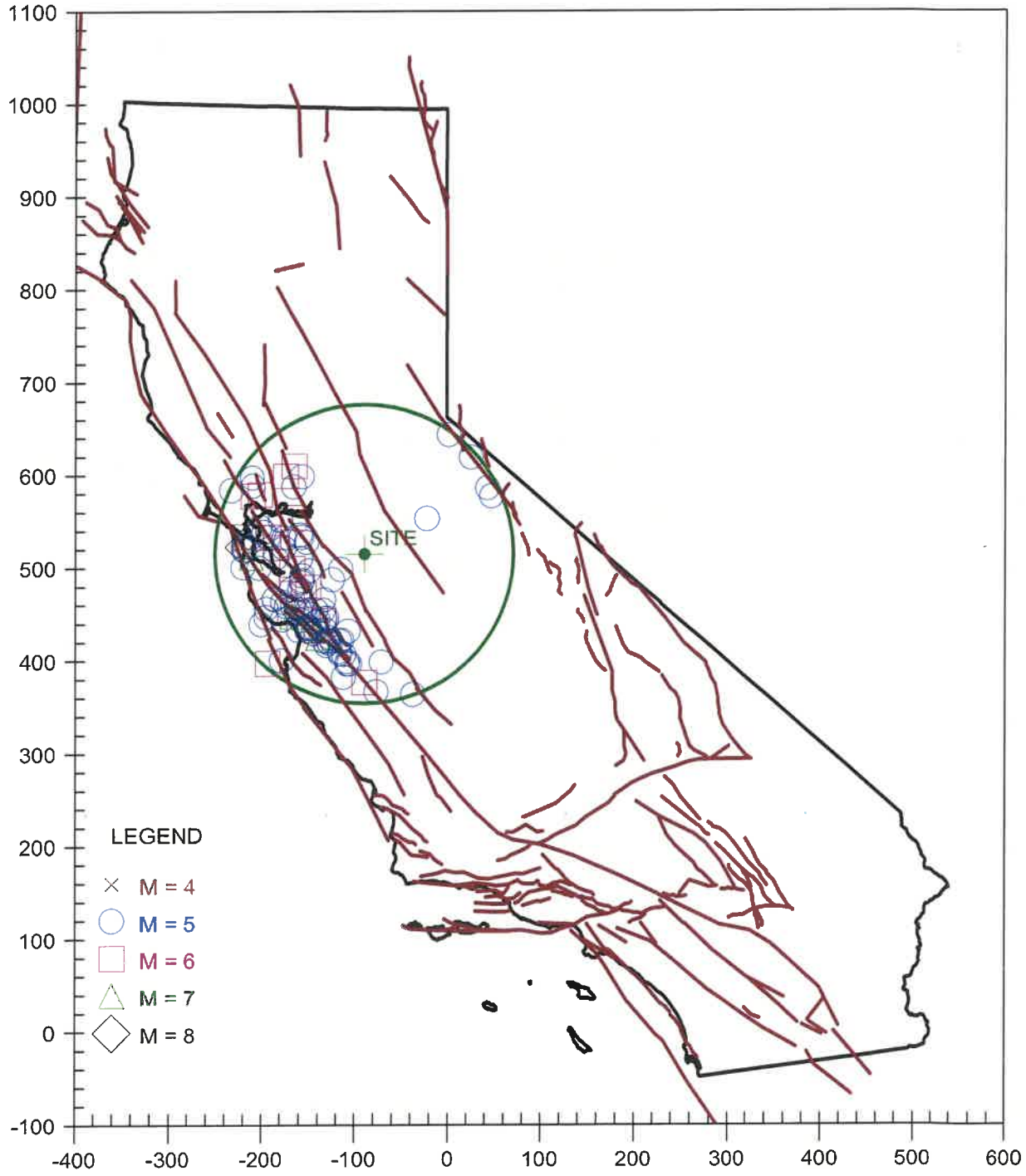
COEFFICIENTS FOR GUTENBERG & RICHTER RECURRENCE RELATION:
a-value= 1.316
b-value= 0.363
beta-value= 0.837

TABLE OF MAGNITUDES AND EXCEEDANCES:

Earthquake Magnitude	Number of Times Exceeded	Cumulative No. / Year
4.0	115	0.51570
4.5	115	0.51570
5.0	115	0.51570
5.5	58	0.26009
6.0	20	0.08969
6.5	7	0.03139
7.0	4	0.01794
7.5	1	0.00448
8.0	1	0.00448

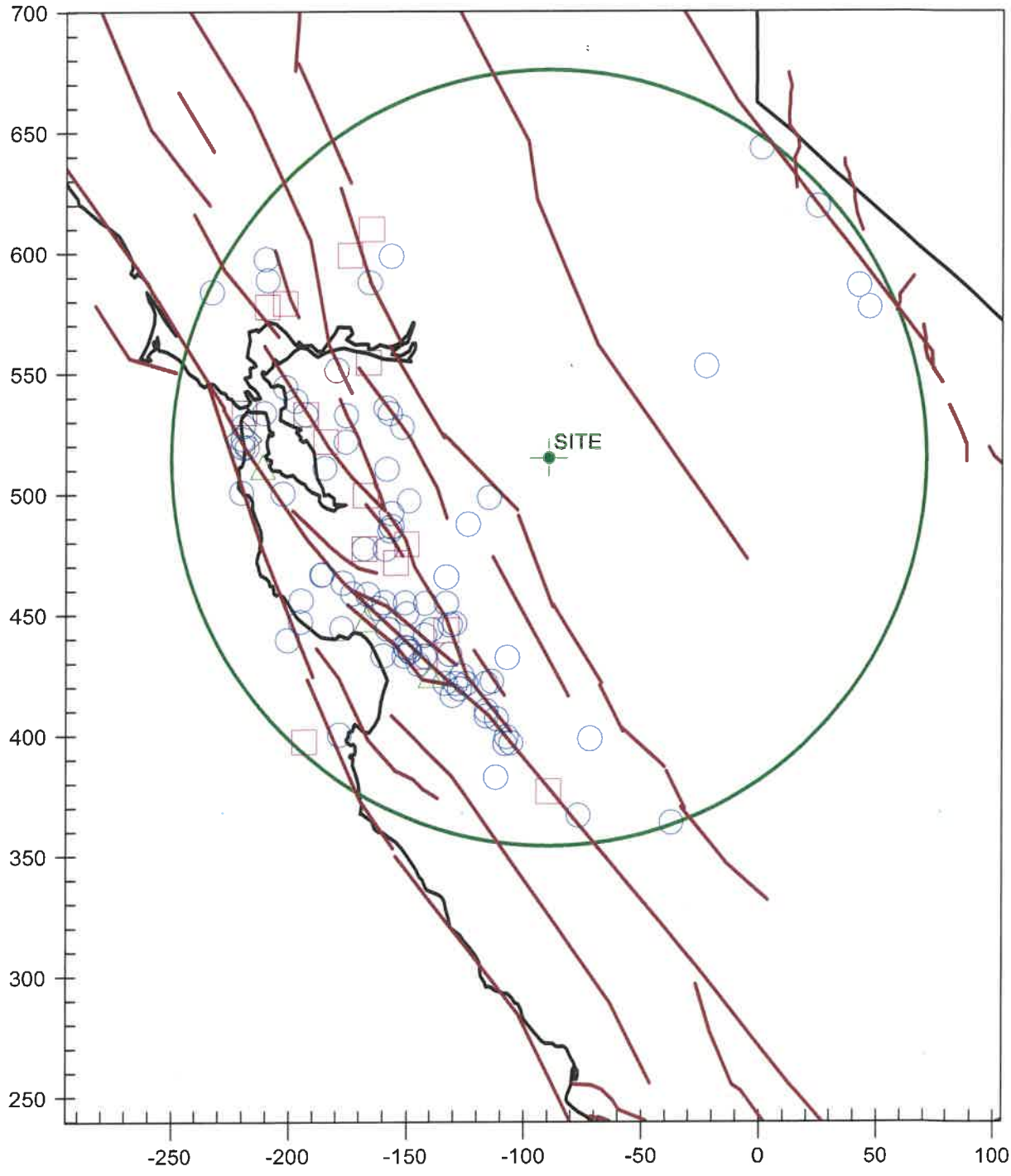
EARTHQUAKE EPICENTER MAP

New Press Box



EARTHQUAKE EPICENTER MAP

New Press Box



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*************************
*                       *
*    E Q S E A R C H    *
*                       *
*     Version 3.00      *
*                       *
*************************

      ESTIMATION OF
  PEAK ACCELERATION FROM
CALIFORNIA EARTHQUAKE CATALOGS

JOB NUMBER: 072-26013                          DATE: 04-27-2026

JOB NAME: New Press Box

EARTHQUAKE-CATALOG-FILE NAME: ALLQUAKE.DAT


MAGNITUDE RANGE:
   MINIMUM MAGNITUDE:  4.00
   MAXIMUM MAGNITUDE:  9.00

SITE COORDINATES:
   SITE LATITUDE:  37.6511
   SITE LONGITUDE:  121.0118

SEARCH DATES:
           START DATE:   1800
           END DATE:   2023

SEARCH RADIUS:
           50.0 mi
           80.5 km

ATTENUATION RELATION:   3) Boore et al. (1997) Horiz. - NEHRP D (250)
   UNCERTAINTY (M=Median, S=Sigma): M       Number of Sigmas:  0.0
   ASSUMED SOURCE TYPE:  DS [SS=Strike-slip, DS=Reverse-slip, BT=Blind-thrust]
   SCOND:   0  Depth Source:  A
   Basement Depth:  5.00 km     Campbell SSR:        Campbell SHR:
   COMPUTE PEAK HORIZONTAL ACCELERATION

MINIMUM DEPTH VALUE (km):  0.0
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EARTHQUAKE SEARCH RESULTS

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FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
GSB	37.5140	121.2620	09/07/1994	190959.9	3.0	4.10	0.047	VI	16.6(26.8)
DMG	37.5000	121.3000	07/15/1866	630 0.0	0.0	5.80	0.105	VII	18.9(30.4)
DMG	37.4200	121.3300	07/29/1954	85136.0	0.0	4.20	0.038	V	23.6(38.0)
DMG	37.4000	121.4000	04/10/1881	10 0 0.0	0.0	5.90	0.083	VII	27.4(44.1)
GSB	37.3950	121.4870	02/05/2005	184330.4	7.0	4.10	0.029	V	31.5(50.6)
GSB	37.6880	121.5900	02/15/1992	143620.2	16.0	4.00	0.027	V	31.7(51.0)
BRK	37.1900	120.9500	06/18/1975	175019.0	0.0	4.10	0.029	V	32.0(51.5)
DMG	37.6800	121.6000	05/02/1946	12612.0	0.0	4.60	0.037	V	32.2(51.8)
BRK	37.6600	121.6700	06/21/1977	243 6.0	0.0	4.40	0.031	V	36.0(57.9)
BRK	37.5600	121.6600	08/24/1980	124117.0	0.0	4.00	0.025	V	36.0(57.9)
GSB	37.5680	121.6650	12/11/1986	141805.3	4.0	4.10	0.026	V	36.2(58.2)
DMG	37.6800	121.7200	04/21/1943	233944.0	0.0	4.20	0.026	V	38.8(62.4)
GSB	37.4830	121.6900	03/31/1986	115540.0	8.0	5.70	0.057	VI	38.9(62.6)
DMG	37.4300	121.6800	10/26/1943	45033.0	12.0	4.90	0.037	V	39.6(63.8)
BRK	37.7600	121.7300	01/27/1980	23336.0	0.0	5.40	0.048	VI	39.9(64.3)
GSB	37.4550	121.7000	02/28/1987	162428.3	6.0	4.00	0.023	IV	40.0(64.4)
MGI	37.3000	121.6000	12/11/1901	2158 0.0	0.0	4.00	0.023	IV	40.3(64.9)
MGI	37.3000	121.6000	08/27/1904	205847.0	0.0	4.60	0.031	V	40.3(64.9)
MGI	37.6500	121.7500	05/01/1943	252 0.0	0.0	4.30	0.027	V	40.4(64.9)
GSB	37.7580	121.7400	03/18/1984	052730.3	12.0	4.30	0.027	V	40.5(65.1)
GSB	37.7230	121.7480	03/10/1991	174601.1	16.0	4.00	0.023	IV	40.5(65.2)
GSB	37.4270	121.7000	04/20/1991	194153.4	5.0	4.20	0.025	V	40.7(65.5)
DMG	37.2000	121.5000	07/06/1899	2010 0.0	0.0	5.80	0.058	VI	41.1(66.1)
DMG	37.3800	121.6800	09/18/1941	733 0.0	0.0	4.00	0.022	IV	41.1(66.1)
DMG	37.9000	121.7000	09/20/1940	1859 0.0	0.0	4.00	0.022	IV	41.3(66.5)
DMG	37.9000	121.7000	09/19/1940	82018.0	0.0	4.00	0.022	IV	41.3(66.5)
GSB	37.8050	121.7430	10/22/1987	034800.3	7.0	4.40	0.028	V	41.3(66.5)
DMG	37.6800	121.7700	04/15/1943	1531 2.0	0.0	4.10	0.023	IV	41.5(66.8)
DMG	37.6800	121.7700	04/15/1943	1523 4.0	0.0	4.00	0.022	IV	41.5(66.8)
GSB	37.2850	121.6150	03/30/2009	174029.3	7.0	4.30	0.026	V	41.6(67.0)
DMG	37.6200	121.7800	04/26/1943	1154 0.0	0.0	4.10	0.023	IV	42.1(67.7)
GSB	37.2680	121.6100	06/05/1984	165620.8	6.0	4.20	0.024	V	42.1(67.8)
DMG	37.3300	121.6700	04/03/1924	2354 0.0	0.0	4.50	0.029	V	42.3(68.1)
T-A	37.3300	121.6700	11/04/1888	1136 0.0	0.0	4.30	0.026	V	42.3(68.1)
T-A	37.3300	121.6700	02/05/1892	1428 0.0	0.0	4.30	0.026	V	42.3(68.1)
T-A	37.3300	121.6700	01/15/1890	13 5 0.0	0.0	4.30	0.026	V	42.3(68.1)
T-A	37.3300	121.6700	03/08/1912	948 0.0	0.0	4.30	0.026	V	42.3(68.1)
T-A	37.3300	121.6700	06/28/1891	11 3 0.0	0.0	4.30	0.026	V	42.3(68.1)
T-A	37.3300	121.6700	10/12/1887	855 0.0	0.0	4.30	0.026	V	42.3(68.1)
DMG	37.3300	121.6800	06/22/1949	18 846.0	7.0	4.10	0.023	IV	42.8(68.9)
GSB	37.3135	121.6720	10/10/2017	005318.3	9.7	4.09	0.023	IV	43.0(69.2)
BRK	37.3800	121.7200	01/15/1981	124751.0	0.0	4.80	0.033	V	43.1(69.3)
GSG	37.3130	121.6750	08/11/1993	223304.0	9.0	4.80	0.033	V	43.2(69.5)
DMG	37.6000	121.8000	06/11/1903	1312 0.0	0.0	5.50	0.048	VI	43.2(69.6)
USG	37.3380	121.6970	09/26/1984	2046 6.0	9.5	4.50	0.028	V	43.3(69.7)
DMG	37.1700	121.5200	11/08/1945	20 917.0	0.0	4.20	0.024	V	43.4(69.8)
GSB	37.2870	121.6580	01/08/2011	001016.7	10.0	4.10	0.023	IV	43.4(69.9)
DMG	37.3000	121.6700	06/10/1949	3 640.0	0.0	4.60	0.029	V	43.5(69.9)
GSB	37.2950	121.6670	09/03/1986	043114.8	10.0	4.20	0.024	IV	43.5(70.0)
GSB	37.3330	121.6990	02/25/2001	231822.5	7.0	4.50	0.028	V	43.6(70.1)
DMG	37.4800	121.7800	10/31/1958	02614.0	0.0	4.20	0.024	IV	43.7(70.3)
BRK	37.3600	121.7200	08/29/1978	01446.0	0.0	4.10	0.023	IV	43.7(70.3)
DMG	37.2300	121.6100	09/28/1967	153836.1	0.0	4.90	0.034	V	43.8(70.5)

EARTHQUAKE SEARCH RESULTS

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FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
GSB	37.2870	121.6680	05/03/1984	130711.8	10.0	4.40	0.026	V	43.9(70.6)
BRK	37.8100	121.7900	01/24/1980	19 1 2.0	0.0	5.10	0.038	V	43.9(70.6)
BRK	37.3000	121.6800	05/08/1979	511 7.0	0.0	4.80	0.033	V	43.9(70.7)
GSG	37.3590	121.7240	05/21/1996	205020.2	7.0	4.70	0.031	V	43.9(70.7)
GSB	37.3200	121.6980	04/24/1984	211519.0	8.0	6.20	0.068	VI	44.0(70.8)
GSB	37.4230	121.7630	07/01/1990	003641.6	7.0	4.20	0.024	IV	44.0(70.9)
BRK	37.8200	121.7900	01/24/1980	19 145.0	0.0	4.00	0.021	IV	44.1(70.9)
GSB	37.4340	121.7740	10/31/2007	030454.8	10.0	5.50	0.047	VI	44.3(71.3)
GSB	37.2770	121.6700	04/27/1984	164834.1	10.0	4.00	0.021	IV	44.4(71.4)
DMG	37.5000	121.8000	12/01/1938	1617 0.0	0.0	4.50	0.028	V	44.4(71.4)
BRK	37.8400	121.7900	01/25/1980	51242.0	0.0	4.40	0.026	V	44.4(71.5)
BRK	37.8400	121.7900	01/24/1980	19 319.0	0.0	4.80	0.032	V	44.4(71.5)
GSG	37.4350	121.7790	10/31/2007	225424.5	8.0	4.00	0.021	IV	44.6(71.7)
GSB	37.4810	121.7980	01/07/2010	180935.0	11.0	4.10	0.022	IV	44.6(71.8)
T-A	38.2500	121.3200	08/04/1850	0 0 0.0	0.0	4.30	0.025	V	44.6(71.8)
GSB	37.2580	121.6620	11/11/1991	095643.4	4.0	4.10	0.022	IV	44.8(72.1)
GSB	37.2870	121.6900	12/30/1988	235424.4	7.0	4.30	0.025	V	44.9(72.2)
GSB	37.3400	121.7320	09/26/1984	204606.2	6.0	4.40	0.026	V	44.9(72.3)
GSB	37.3730	121.7570	11/10/1988	050803.0	7.0	4.80	0.032	V	45.1(72.6)
GSB	37.2880	121.6970	08/17/1990	022617.2	5.0	4.00	0.021	IV	45.1(72.6)
GSB	37.4580	121.8000	12/29/1986	152804.9	6.0	4.50	0.027	V	45.2(72.7)
GSB	37.3230	121.7250	02/08/1988	140915.3	6.0	4.00	0.021	IV	45.2(72.7)
BRK	37.8300	121.8100	01/24/1980	19 0 9.0	0.0	5.80	0.054	VI	45.3(72.9)
DMG	37.2500	121.6700	07/09/1958	52340.0	0.0	4.10	0.022	IV	45.5(73.2)
BRK	37.8400	121.8100	01/27/1980	1058 1.0	0.0	4.10	0.022	IV	45.5(73.2)
GSB	37.3850	121.7720	06/13/1988	014536.8	7.0	5.40	0.043	VI	45.5(73.2)
GSB	37.1220	121.5120	06/20/1988	152638.2	7.0	4.20	0.023	IV	45.7(73.5)
GSB	37.4220	121.7950	04/03/1989	174634.4	9.0	4.70	0.030	V	45.7(73.5)
GSB	37.4030	121.7880	07/09/1989	133844.5	5.0	4.00	0.021	IV	45.8(73.7)
BRK	37.8600	121.8100	01/25/1980	52436.0	0.0	4.60	0.028	V	45.9(73.9)
DMG	37.3300	121.7500	10/26/1917	920 0.0	0.0	4.00	0.021	IV	46.1(74.2)
GSB	37.1020	121.4920	06/15/2006	122451.1	3.0	4.30	0.024	V	46.2(74.3)
DMG	37.3700	121.7800	09/05/1955	2 118.0	0.0	5.50	0.045	VI	46.3(74.6)
MGI	37.7500	120.1700	08/12/1918	1630 0.0	0.0	4.00	0.020	IV	46.5(74.8)
BRK	37.1000	121.5000	08/06/1979	17 522.0	0.0	5.80	0.053	VI	46.5(74.9)
DMG	37.0700	120.5800	11/01/1954	64240.0	0.0	4.00	0.020	IV	46.6(75.0)
GSB	37.1500	121.5820	01/19/1987	080904.4	7.0	4.30	0.024	IV	46.6(75.0)
GSB	37.1380	121.5700	04/26/1984	062951.9	5.0	4.00	0.020	IV	46.8(75.3)
DMG	37.2700	121.7200	03/24/1959	22113.0	0.0	4.10	0.021	IV	46.9(75.5)
DMG	37.6300	121.8700	03/29/1943	114555.0	0.0	4.20	0.023	IV	46.9(75.5)
GSG	37.0970	121.5140	09/13/1995	203646.6	8.0	4.20	0.022	IV	47.1(75.9)
MGI	37.3000	121.7500	03/11/1936	1356 0.0	0.0	4.30	0.024	IV	47.2(75.9)
DMG	37.1300	121.5700	01/29/1959	164123.0	0.0	4.30	0.024	IV	47.2(76.0)
DMG	37.6000	121.8800	09/24/1936	3 9 0.0	0.0	4.30	0.023	IV	47.6(76.6)
DMG	37.0000	121.3000	02/04/1942	9 824.0	0.0	4.00	0.020	IV	47.7(76.7)
T-A	38.0000	120.2500	04/11/1872	12 0 0.0	0.0	5.00	0.034	V	48.0(77.3)
DMG	38.1000	121.7000	02/14/1909	1555 0.0	0.0	4.50	0.026	V	48.7(78.3)
DMG	37.8200	121.8800	03/17/1962	213844.5	2.0	4.10	0.021	IV	48.8(78.6)
MGI	37.9000	121.8500	11/11/1936	225 0.0	0.0	4.30	0.023	IV	48.9(78.6)
DMG	37.8170	121.8830	03/17/1963	213844.5	0.0	4.10	0.021	IV	48.9(78.7)
DMG	37.2500	121.7500	07/01/1911	22 0 0.0	0.0	6.60	0.077	VII	49.0(78.9)
GSB	37.0390	121.4790	06/15/1998	015922.4	8.0	4.00	0.019	IV	49.4(79.5)
MGI	37.3300	121.8200	09/02/1927	0 0 0.0	0.0	4.60	0.027	V	49.5(79.7)

EARTHQUAKE SEARCH RESULTS

Page 3

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	37.3000	121.8000	08/03/1903	649 0.0	0.0	5.50	0.043	VI	49.5(79.7)
DMG	37.3000	121.8000	01/02/1891	20 0 0.0	0.0	5.50	0.043	VI	49.5(79.7)
GSB	37.0250	121.4580	01/16/1993	062934.9	5.0	5.30	0.038	V	49.7(80.0)
DMG	37.5000	121.9000	11/26/1858	835 0.0	0.0	6.10	0.059	VI	49.7(80.0)
DMG	37.0000	121.4000	06/18/1935	415 0.0	0.0	4.00	0.019	IV	49.7(80.1)
DMG	37.1000	121.6000	03/26/1866	2012 0.0	0.0	5.40	0.040	V	49.9(80.3)

****

-END OF SEARCH- 112 EARTHQUAKES FOUND WITHIN THE SPECIFIED SEARCH AREA.

TIME PERIOD OF SEARCH: 1800 TO 2023

LENGTH OF SEARCH TIME: 224 years

THE EARTHQUAKE CLOSEST TO THE SITE IS ABOUT 16.6 MILES (26.8 km) AWAY.

LARGEST EARTHQUAKE MAGNITUDE FOUND IN THE SEARCH RADIUS: 6.6

LARGEST EARTHQUAKE SITE ACCELERATION FROM THIS SEARCH: 0.105 g

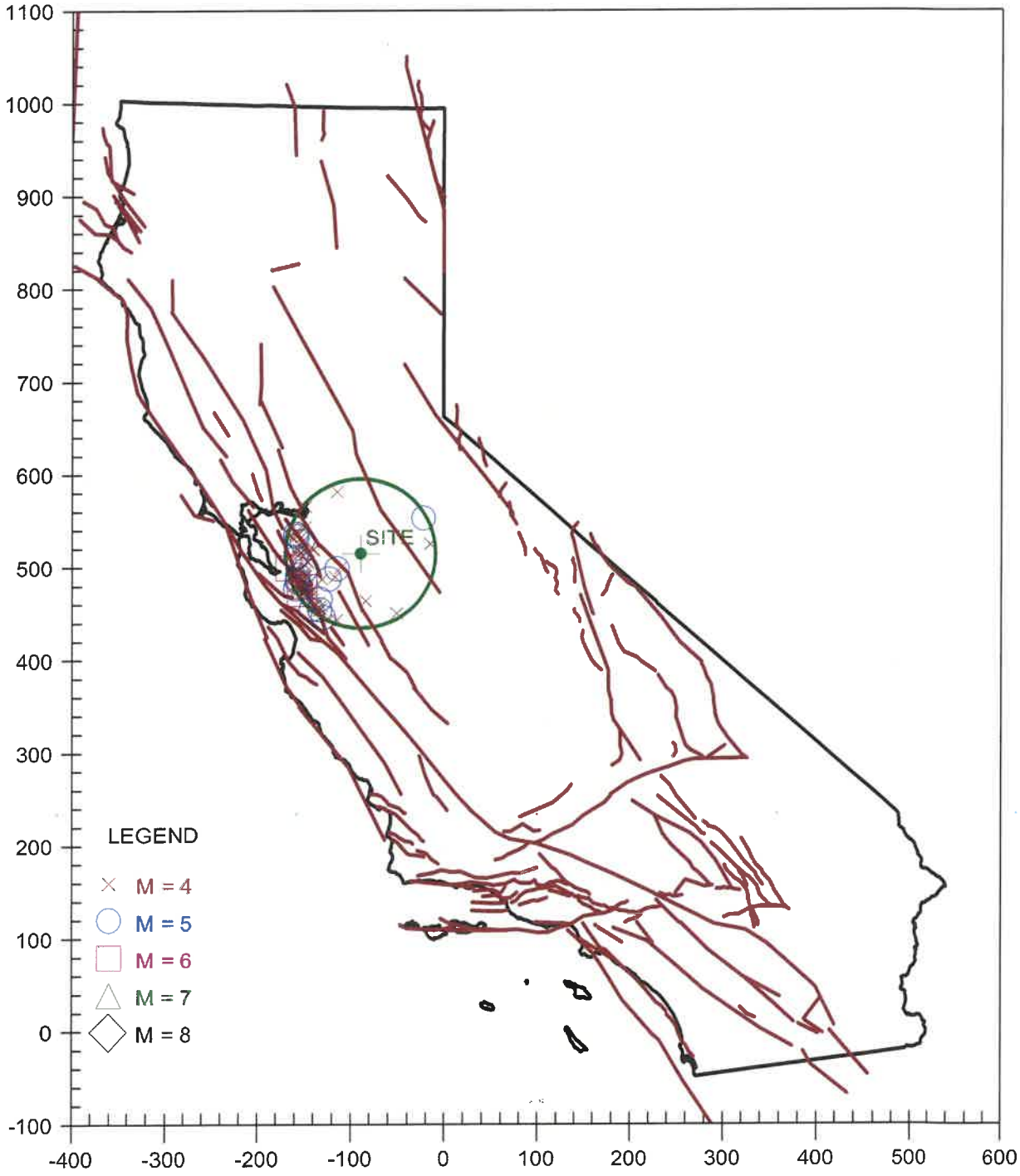
COEFFICIENTS FOR GUTENBERG & RICHTER RECURRENCE RELATION:
a-value= 2.565
b-value= 0.720
beta-value= 1.658

TABLE OF MAGNITUDES AND EXCEEDANCES:

Earthquake Magnitude	Number of Times Exceeded	Cumulative No. / Year
4.0	112	0.50224
4.5	40	0.17937
5.0	20	0.08969
5.5	14	0.06278
6.0	3	0.01345
6.5	1	0.00448

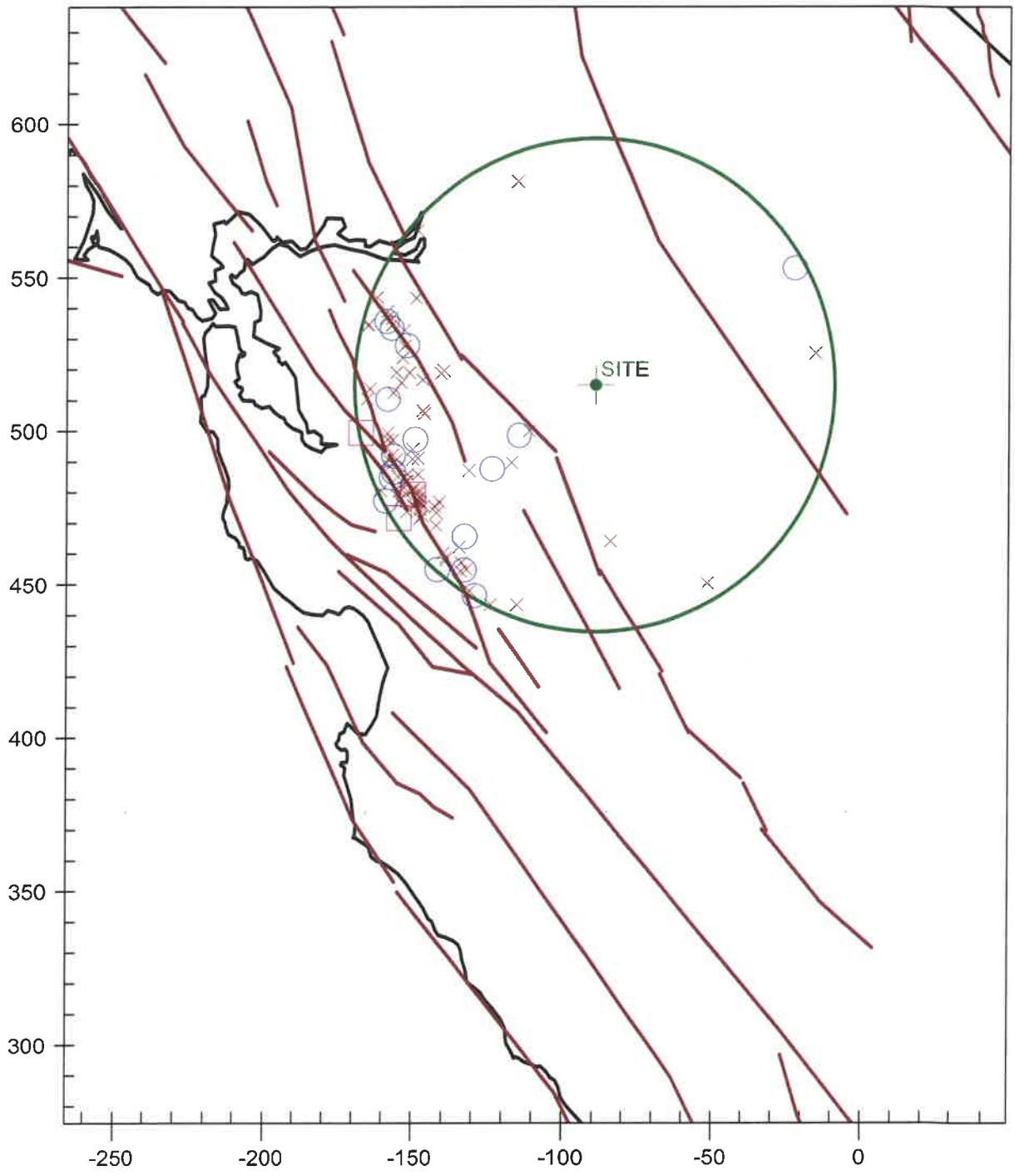
EARTHQUAKE EPICENTER MAP

New Press Box



EARTHQUAKE EPICENTER MAP

New Press Box

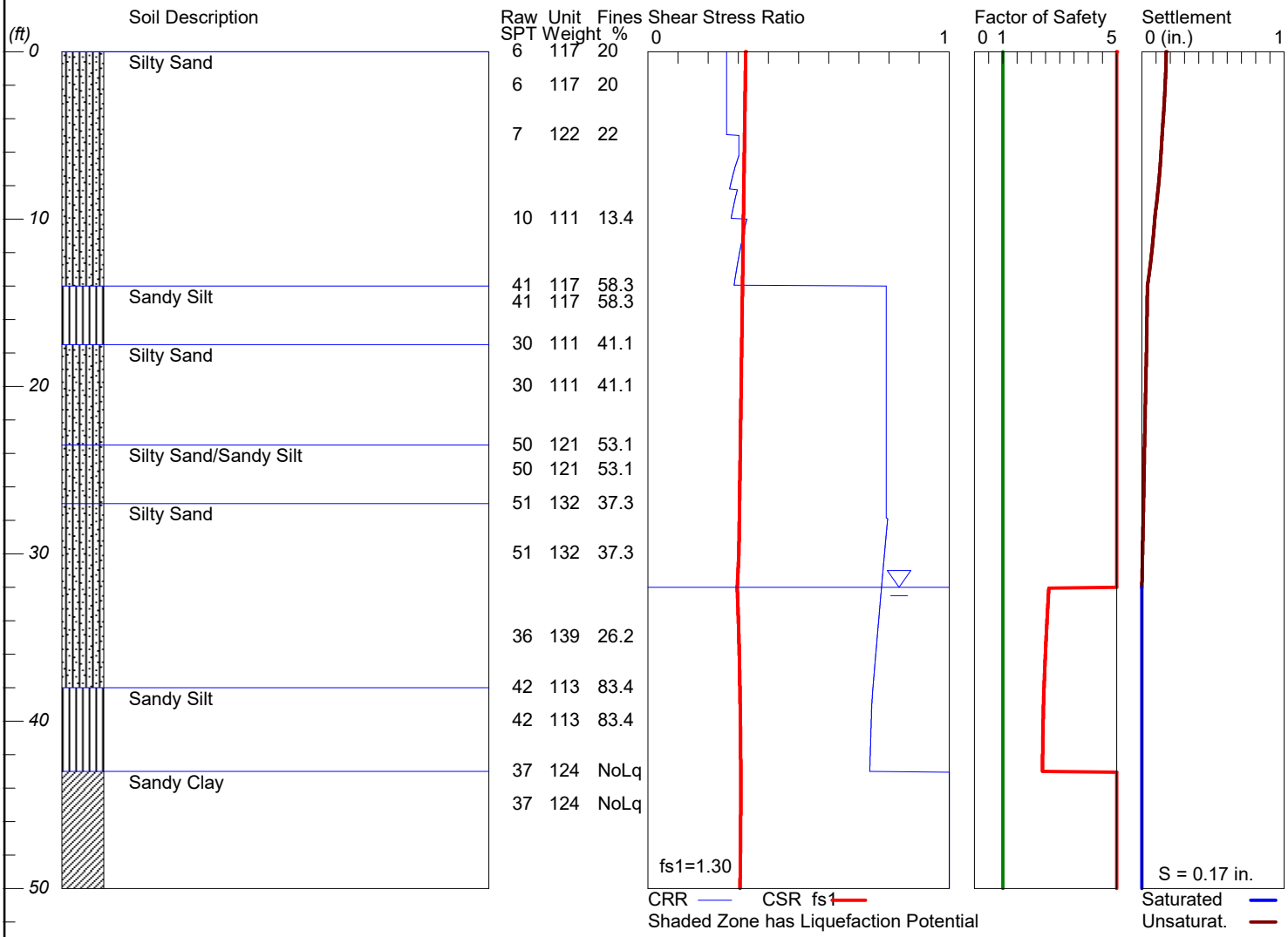


LIQUEFACTION ANALYSIS

New Press Box-Modesto JC

Hole No.=B-201 Water Depth=32 ft

Magnitude=6.27
Acceleration=0.384g



LiquefyPro CivilTech Software USA www.civiltech.com

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LIQUEFACTION ANALYSIS SUMMARY

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Licensed to , 5/1/2026 4:49:05 PM

Input File Name: P:\072\26\013\Liquefaction.liq
Title: New Press Box-Modesto JC
Subtitle: 072-26013

Surface Elev.=
Hole No.=B-201
Depth of Hole= 50.00 ft
Water Table during Earthquake= 32.00 ft
Water Table during In-Situ Testing= 39.00 ft
Max. Acceleration= 0.38 g
Earthquake Magnitude= 6.27

Input Data:
Surface Elev.=
Hole No.=B-201
Depth of Hole=50.00 ft
Water Table during Earthquake= 32.00 ft
Water Table during In-Situ Testing= 39.00 ft
Max. Acceleration=0.38 g
Earthquake Magnitude=6.27
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Tokimatsu/Seed
3. Fines Correction for Liquefaction: Modify Stark/Olson
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.45
7. Borehole Diameter, Cb= 1.05
8. Sampling Method, Cs= 1
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: No
* Recommended Options

In-Situ Test Data:
Depth SPT gamma Fines

ft		pcf	%
0.00	6.00	117.00	20.00
2.00	6.00	117.00	20.00
5.00	7.00	122.00	22.00
10.00	10.00	111.00	13.40
14.00	41.00	117.00	58.30
15.00	41.00	117.00	58.30
17.50	30.00	111.00	41.10
20.00	30.00	111.00	41.10
23.50	50.00	121.00	53.10
25.00	50.00	121.00	53.10
27.00	51.00	132.00	37.30
30.00	51.00	132.00	37.30
35.00	36.00	139.00	26.20
38.00	42.00	113.00	83.40
40.00	42.00	113.00	83.40
43.00	37.00	124.00	NoLiq
45.00	37.00	124.00	NoLiq

Output Results:

Settlement of Saturated Sands=0.00 in.
Settlement of Unsaturated Sands=0.17 in.
Total Settlement of Saturated and Unsaturated Sands=0.17 in.
Differential Settlement=0.085 to 0.113 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	0.26	0.32	5.00	0.00	0.17	0.17
0.05	0.26	0.32	5.00	0.00	0.17	0.17
0.10	0.26	0.32	5.00	0.00	0.17	0.17
0.15	0.26	0.32	5.00	0.00	0.17	0.17
0.20	0.26	0.32	5.00	0.00	0.17	0.17
0.25	0.26	0.32	5.00	0.00	0.17	0.17
0.30	0.26	0.32	5.00	0.00	0.17	0.17
0.35	0.26	0.32	5.00	0.00	0.17	0.17
0.40	0.26	0.32	5.00	0.00	0.17	0.17
0.45	0.26	0.32	5.00	0.00	0.17	0.17
0.50	0.26	0.32	5.00	0.00	0.17	0.17
0.55	0.26	0.32	5.00	0.00	0.17	0.17
0.60	0.26	0.32	5.00	0.00	0.17	0.17
0.65	0.26	0.32	5.00	0.00	0.17	0.17
0.70	0.26	0.32	5.00	0.00	0.17	0.17
0.75	0.26	0.32	5.00	0.00	0.17	0.17
0.80	0.26	0.32	5.00	0.00	0.17	0.17
0.85	0.26	0.32	5.00	0.00	0.17	0.17
0.90	0.26	0.32	5.00	0.00	0.17	0.17
0.95	0.26	0.32	5.00	0.00	0.17	0.17

1.00	0.26	0.32	5.00	0.00	0.17	0.17
1.05	0.26	0.32	5.00	0.00	0.17	0.17
1.10	0.26	0.32	5.00	0.00	0.17	0.17
1.15	0.26	0.32	5.00	0.00	0.17	0.17
1.20	0.26	0.32	5.00	0.00	0.17	0.17
1.25	0.26	0.32	5.00	0.00	0.17	0.17
1.30	0.26	0.32	5.00	0.00	0.17	0.17
1.35	0.26	0.32	5.00	0.00	0.17	0.17
1.40	0.26	0.32	5.00	0.00	0.17	0.17
1.45	0.26	0.32	5.00	0.00	0.17	0.17
1.50	0.26	0.32	5.00	0.00	0.17	0.17
1.55	0.26	0.32	5.00	0.00	0.17	0.17
1.60	0.26	0.32	5.00	0.00	0.17	0.17
1.65	0.26	0.32	5.00	0.00	0.17	0.17
1.70	0.26	0.32	5.00	0.00	0.17	0.17
1.75	0.26	0.32	5.00	0.00	0.17	0.17
1.80	0.26	0.32	5.00	0.00	0.16	0.16
1.85	0.26	0.32	5.00	0.00	0.16	0.16
1.90	0.26	0.32	5.00	0.00	0.16	0.16
1.95	0.26	0.32	5.00	0.00	0.16	0.16
2.00	0.26	0.32	5.00	0.00	0.16	0.16
2.05	0.26	0.32	5.00	0.00	0.16	0.16
2.10	0.26	0.32	5.00	0.00	0.16	0.16
2.15	0.26	0.32	5.00	0.00	0.16	0.16
2.20	0.26	0.32	5.00	0.00	0.16	0.16
2.25	0.26	0.32	5.00	0.00	0.16	0.16
2.30	0.26	0.32	5.00	0.00	0.16	0.16
2.35	0.26	0.32	5.00	0.00	0.16	0.16
2.40	0.26	0.32	5.00	0.00	0.16	0.16
2.45	0.26	0.32	5.00	0.00	0.16	0.16
2.50	0.26	0.32	5.00	0.00	0.16	0.16
2.55	0.26	0.32	5.00	0.00	0.16	0.16
2.60	0.26	0.32	5.00	0.00	0.16	0.16
2.65	0.26	0.32	5.00	0.00	0.16	0.16
2.70	0.26	0.32	5.00	0.00	0.16	0.16
2.75	0.26	0.32	5.00	0.00	0.16	0.16
2.80	0.26	0.32	5.00	0.00	0.16	0.16
2.85	0.26	0.32	5.00	0.00	0.16	0.16
2.90	0.26	0.32	5.00	0.00	0.16	0.16
2.95	0.26	0.32	5.00	0.00	0.16	0.16
3.00	0.26	0.32	5.00	0.00	0.16	0.16
3.05	0.26	0.32	5.00	0.00	0.16	0.16
3.10	0.26	0.32	5.00	0.00	0.16	0.16
3.15	0.26	0.32	5.00	0.00	0.16	0.16
3.20	0.26	0.32	5.00	0.00	0.16	0.16
3.25	0.26	0.32	5.00	0.00	0.16	0.16
3.30	0.26	0.32	5.00	0.00	0.16	0.16
3.35	0.26	0.32	5.00	0.00	0.16	0.16
3.40	0.26	0.32	5.00	0.00	0.16	0.16
3.45	0.26	0.32	5.00	0.00	0.15	0.15

3.50	0.26	0.32	5.00	0.00	0.15	0.15
3.55	0.26	0.32	5.00	0.00	0.15	0.15
3.60	0.26	0.32	5.00	0.00	0.15	0.15
3.65	0.26	0.32	5.00	0.00	0.15	0.15
3.70	0.26	0.32	5.00	0.00	0.15	0.15
3.75	0.26	0.32	5.00	0.00	0.15	0.15
3.80	0.26	0.32	5.00	0.00	0.15	0.15
3.85	0.26	0.32	5.00	0.00	0.15	0.15
3.90	0.26	0.32	5.00	0.00	0.15	0.15
3.95	0.26	0.32	5.00	0.00	0.15	0.15
4.00	0.26	0.32	5.00	0.00	0.15	0.15
4.05	0.26	0.32	5.00	0.00	0.15	0.15
4.10	0.26	0.32	5.00	0.00	0.15	0.15
4.15	0.26	0.32	5.00	0.00	0.15	0.15
4.20	0.26	0.32	5.00	0.00	0.15	0.15
4.25	0.26	0.32	5.00	0.00	0.15	0.15
4.30	0.26	0.32	5.00	0.00	0.15	0.15
4.35	0.26	0.32	5.00	0.00	0.15	0.15
4.40	0.26	0.32	5.00	0.00	0.15	0.15
4.45	0.26	0.32	5.00	0.00	0.15	0.15
4.50	0.26	0.32	5.00	0.00	0.15	0.15
4.55	0.26	0.32	5.00	0.00	0.15	0.15
4.60	0.26	0.32	5.00	0.00	0.15	0.15
4.65	0.26	0.32	5.00	0.00	0.15	0.15
4.70	0.26	0.32	5.00	0.00	0.14	0.14
4.75	0.26	0.32	5.00	0.00	0.14	0.14
4.80	0.26	0.32	5.00	0.00	0.14	0.14
4.85	0.26	0.32	5.00	0.00	0.14	0.14
4.90	0.26	0.32	5.00	0.00	0.14	0.14
4.95	0.26	0.32	5.00	0.00	0.14	0.14
5.00	0.30	0.32	5.00	0.00	0.14	0.14
5.05	0.30	0.32	5.00	0.00	0.14	0.14
5.10	0.30	0.32	5.00	0.00	0.14	0.14
5.15	0.30	0.32	5.00	0.00	0.14	0.14
5.20	0.30	0.32	5.00	0.00	0.14	0.14
5.25	0.30	0.32	5.00	0.00	0.14	0.14
5.30	0.30	0.32	5.00	0.00	0.14	0.14
5.35	0.30	0.32	5.00	0.00	0.14	0.14
5.40	0.30	0.32	5.00	0.00	0.14	0.14
5.45	0.30	0.32	5.00	0.00	0.14	0.14
5.50	0.30	0.32	5.00	0.00	0.14	0.14
5.55	0.30	0.32	5.00	0.00	0.14	0.14
5.60	0.30	0.32	5.00	0.00	0.14	0.14
5.65	0.30	0.32	5.00	0.00	0.14	0.14
5.70	0.30	0.32	5.00	0.00	0.14	0.14
5.75	0.30	0.32	5.00	0.00	0.14	0.14
5.80	0.30	0.32	5.00	0.00	0.14	0.14
5.85	0.30	0.32	5.00	0.00	0.14	0.14
5.90	0.30	0.32	5.00	0.00	0.14	0.14
5.95	0.30	0.32	5.00	0.00	0.14	0.14

6.00	0.30	0.32	5.00	0.00	0.14	0.14
6.05	0.30	0.32	5.00	0.00	0.13	0.13
6.10	0.30	0.32	5.00	0.00	0.13	0.13
6.15	0.30	0.32	5.00	0.00	0.13	0.13
6.20	0.30	0.32	5.00	0.00	0.13	0.13
6.25	0.30	0.32	5.00	0.00	0.13	0.13
6.30	0.30	0.32	5.00	0.00	0.13	0.13
6.35	0.30	0.32	5.00	0.00	0.13	0.13
6.40	0.30	0.32	5.00	0.00	0.13	0.13
6.45	0.30	0.32	5.00	0.00	0.13	0.13
6.50	0.30	0.32	5.00	0.00	0.13	0.13
6.55	0.30	0.32	5.00	0.00	0.13	0.13
6.60	0.29	0.32	5.00	0.00	0.13	0.13
6.65	0.29	0.32	5.00	0.00	0.13	0.13
6.70	0.29	0.32	5.00	0.00	0.13	0.13
6.75	0.29	0.32	5.00	0.00	0.13	0.13
6.80	0.29	0.32	5.00	0.00	0.13	0.13
6.85	0.29	0.32	5.00	0.00	0.13	0.13
6.90	0.29	0.32	5.00	0.00	0.13	0.13
6.95	0.29	0.32	5.00	0.00	0.13	0.13
7.00	0.29	0.32	5.00	0.00	0.13	0.13
7.05	0.29	0.32	5.00	0.00	0.13	0.13
7.10	0.29	0.32	5.00	0.00	0.13	0.13
7.15	0.29	0.32	5.00	0.00	0.13	0.13
7.20	0.28	0.32	5.00	0.00	0.13	0.13
7.25	0.28	0.32	5.00	0.00	0.12	0.12
7.30	0.28	0.32	5.00	0.00	0.12	0.12
7.35	0.28	0.32	5.00	0.00	0.12	0.12
7.40	0.28	0.32	5.00	0.00	0.12	0.12
7.45	0.28	0.32	5.00	0.00	0.12	0.12
7.50	0.28	0.32	5.00	0.00	0.12	0.12
7.55	0.28	0.32	5.00	0.00	0.12	0.12
7.60	0.28	0.32	5.00	0.00	0.12	0.12
7.65	0.28	0.32	5.00	0.00	0.12	0.12
7.70	0.28	0.32	5.00	0.00	0.12	0.12
7.75	0.28	0.32	5.00	0.00	0.12	0.12
7.80	0.28	0.32	5.00	0.00	0.12	0.12
7.85	0.28	0.32	5.00	0.00	0.12	0.12
7.90	0.27	0.32	5.00	0.00	0.12	0.12
7.95	0.27	0.32	5.00	0.00	0.12	0.12
8.00	0.27	0.32	5.00	0.00	0.12	0.12
8.05	0.27	0.32	5.00	0.00	0.12	0.12
8.10	0.27	0.32	5.00	0.00	0.12	0.12
8.15	0.27	0.32	5.00	0.00	0.11	0.11
8.20	0.27	0.32	5.00	0.00	0.11	0.11
8.25	0.30	0.32	5.00	0.00	0.11	0.11
8.30	0.30	0.32	5.00	0.00	0.11	0.11
8.35	0.30	0.32	5.00	0.00	0.11	0.11
8.40	0.29	0.32	5.00	0.00	0.11	0.11
8.45	0.29	0.32	5.00	0.00	0.11	0.11

8.50	0.29	0.32	5.00	0.00	0.11	0.11
8.55	0.29	0.32	5.00	0.00	0.11	0.11
8.60	0.29	0.32	5.00	0.00	0.11	0.11
8.65	0.29	0.32	5.00	0.00	0.11	0.11
8.70	0.29	0.32	5.00	0.00	0.11	0.11
8.75	0.29	0.32	5.00	0.00	0.11	0.11
8.80	0.29	0.32	5.00	0.00	0.11	0.11
8.85	0.29	0.32	5.00	0.00	0.11	0.11
8.90	0.29	0.32	5.00	0.00	0.11	0.11
8.95	0.29	0.32	5.00	0.00	0.11	0.11
9.00	0.29	0.32	5.00	0.00	0.10	0.10
9.05	0.29	0.32	5.00	0.00	0.10	0.10
9.10	0.29	0.32	5.00	0.00	0.10	0.10
9.15	0.28	0.32	5.00	0.00	0.10	0.10
9.20	0.28	0.32	5.00	0.00	0.10	0.10
9.25	0.28	0.32	5.00	0.00	0.10	0.10
9.30	0.28	0.32	5.00	0.00	0.10	0.10
9.35	0.28	0.32	5.00	0.00	0.10	0.10
9.40	0.28	0.32	5.00	0.00	0.10	0.10
9.45	0.28	0.32	5.00	0.00	0.10	0.10
9.50	0.28	0.32	5.00	0.00	0.10	0.10
9.55	0.28	0.32	5.00	0.00	0.10	0.10
9.60	0.28	0.32	5.00	0.00	0.10	0.10
9.65	0.28	0.32	5.00	0.00	0.09	0.09
9.70	0.28	0.32	5.00	0.00	0.09	0.09
9.75	0.28	0.32	5.00	0.00	0.09	0.09
9.80	0.28	0.32	5.00	0.00	0.09	0.09
9.85	0.28	0.32	5.00	0.00	0.09	0.09
9.90	0.28	0.32	5.00	0.00	0.09	0.09
9.95	0.28	0.32	5.00	0.00	0.09	0.09
10.00	0.33	0.32	5.00	0.00	0.09	0.09
10.05	0.33	0.32	5.00	0.00	0.09	0.09
10.10	0.33	0.32	5.00	0.00	0.09	0.09
10.15	0.33	0.32	5.00	0.00	0.09	0.09
10.20	0.33	0.32	5.00	0.00	0.09	0.09
10.25	0.32	0.32	5.00	0.00	0.09	0.09
10.30	0.32	0.32	5.00	0.00	0.09	0.09
10.35	0.32	0.32	5.00	0.00	0.09	0.09
10.40	0.32	0.32	5.00	0.00	0.09	0.09
10.45	0.32	0.32	5.00	0.00	0.09	0.09
10.50	0.32	0.32	5.00	0.00	0.09	0.09
10.55	0.32	0.32	5.00	0.00	0.09	0.09
10.60	0.32	0.32	5.00	0.00	0.09	0.09
10.65	0.32	0.32	5.00	0.00	0.08	0.08
10.70	0.32	0.32	5.00	0.00	0.08	0.08
10.75	0.32	0.32	5.00	0.00	0.08	0.08
10.80	0.32	0.32	5.00	0.00	0.08	0.08
10.85	0.32	0.32	5.00	0.00	0.08	0.08
10.90	0.32	0.32	5.00	0.00	0.08	0.08
10.95	0.32	0.32	5.00	0.00	0.08	0.08

11.00	0.32	0.32	5.00	0.00	0.08	0.08
11.05	0.31	0.32	5.00	0.00	0.08	0.08
11.10	0.31	0.32	5.00	0.00	0.08	0.08
11.15	0.31	0.32	5.00	0.00	0.08	0.08
11.20	0.31	0.32	5.00	0.00	0.08	0.08
11.25	0.31	0.32	5.00	0.00	0.08	0.08
11.30	0.31	0.32	5.00	0.00	0.08	0.08
11.35	0.31	0.32	5.00	0.00	0.08	0.08
11.40	0.31	0.32	5.00	0.00	0.08	0.08
11.45	0.31	0.32	5.00	0.00	0.08	0.08
11.50	0.31	0.32	5.00	0.00	0.08	0.08
11.55	0.31	0.32	5.00	0.00	0.07	0.07
11.60	0.31	0.32	5.00	0.00	0.07	0.07
11.65	0.31	0.32	5.00	0.00	0.07	0.07
11.70	0.31	0.32	5.00	0.00	0.07	0.07
11.75	0.31	0.32	5.00	0.00	0.07	0.07
11.80	0.31	0.32	5.00	0.00	0.07	0.07
11.85	0.31	0.32	5.00	0.00	0.07	0.07
11.90	0.31	0.32	5.00	0.00	0.07	0.07
11.95	0.30	0.32	5.00	0.00	0.07	0.07
12.00	0.30	0.32	5.00	0.00	0.07	0.07
12.05	0.30	0.32	5.00	0.00	0.07	0.07
12.10	0.30	0.32	5.00	0.00	0.07	0.07
12.15	0.30	0.32	5.00	0.00	0.07	0.07
12.20	0.30	0.32	5.00	0.00	0.07	0.07
12.25	0.30	0.32	5.00	0.00	0.07	0.07
12.30	0.30	0.32	5.00	0.00	0.07	0.07
12.35	0.30	0.32	5.00	0.00	0.06	0.06
12.40	0.30	0.32	5.00	0.00	0.06	0.06
12.45	0.30	0.32	5.00	0.00	0.06	0.06
12.50	0.30	0.32	5.00	0.00	0.06	0.06
12.55	0.30	0.31	5.00	0.00	0.06	0.06
12.60	0.30	0.31	5.00	0.00	0.06	0.06
12.65	0.30	0.31	5.00	0.00	0.06	0.06
12.70	0.30	0.31	5.00	0.00	0.06	0.06
12.75	0.30	0.31	5.00	0.00	0.06	0.06
12.80	0.30	0.31	5.00	0.00	0.06	0.06
12.85	0.30	0.31	5.00	0.00	0.06	0.06
12.90	0.30	0.31	5.00	0.00	0.06	0.06
12.95	0.29	0.31	5.00	0.00	0.06	0.06
13.00	0.29	0.31	5.00	0.00	0.06	0.06
13.05	0.29	0.31	5.00	0.00	0.05	0.05
13.10	0.29	0.31	5.00	0.00	0.05	0.05
13.15	0.29	0.31	5.00	0.00	0.05	0.05
13.20	0.29	0.31	5.00	0.00	0.05	0.05
13.25	0.29	0.31	5.00	0.00	0.05	0.05
13.30	0.29	0.31	5.00	0.00	0.05	0.05
13.35	0.29	0.31	5.00	0.00	0.05	0.05
13.40	0.29	0.31	5.00	0.00	0.05	0.05
13.45	0.29	0.31	5.00	0.00	0.05	0.05

13.50	0.29	0.31	5.00	0.00	0.05	0.05
13.55	0.29	0.31	5.00	0.00	0.05	0.05
13.60	0.29	0.31	5.00	0.00	0.05	0.05
13.65	0.29	0.31	5.00	0.00	0.05	0.05
13.70	0.29	0.31	5.00	0.00	0.04	0.04
13.75	0.29	0.31	5.00	0.00	0.04	0.04
13.80	0.29	0.31	5.00	0.00	0.04	0.04
13.85	0.29	0.31	5.00	0.00	0.04	0.04
13.90	0.29	0.31	5.00	0.00	0.04	0.04
13.95	0.29	0.31	5.00	0.00	0.04	0.04
14.00	0.79	0.31	5.00	0.00	0.04	0.04
14.05	0.79	0.31	5.00	0.00	0.04	0.04
14.10	0.79	0.31	5.00	0.00	0.04	0.04
14.15	0.79	0.31	5.00	0.00	0.04	0.04
14.20	0.79	0.31	5.00	0.00	0.04	0.04
14.25	0.79	0.31	5.00	0.00	0.04	0.04
14.30	0.79	0.31	5.00	0.00	0.04	0.04
14.35	0.79	0.31	5.00	0.00	0.04	0.04
14.40	0.79	0.31	5.00	0.00	0.04	0.04
14.45	0.79	0.31	5.00	0.00	0.04	0.04
14.50	0.79	0.31	5.00	0.00	0.04	0.04
14.55	0.79	0.31	5.00	0.00	0.04	0.04
14.60	0.79	0.31	5.00	0.00	0.04	0.04
14.65	0.79	0.31	5.00	0.00	0.04	0.04
14.70	0.79	0.31	5.00	0.00	0.04	0.04
14.75	0.79	0.31	5.00	0.00	0.04	0.04
14.80	0.79	0.31	5.00	0.00	0.04	0.04
14.85	0.79	0.31	5.00	0.00	0.04	0.04
14.90	0.79	0.31	5.00	0.00	0.04	0.04
14.95	0.79	0.31	5.00	0.00	0.04	0.04
15.00	0.79	0.31	5.00	0.00	0.04	0.04
15.05	0.79	0.31	5.00	0.00	0.04	0.04
15.10	0.79	0.31	5.00	0.00	0.04	0.04
15.15	0.79	0.31	5.00	0.00	0.04	0.04
15.20	0.79	0.31	5.00	0.00	0.04	0.04
15.25	0.79	0.31	5.00	0.00	0.04	0.04
15.30	0.79	0.31	5.00	0.00	0.04	0.04
15.35	0.79	0.31	5.00	0.00	0.04	0.04
15.40	0.79	0.31	5.00	0.00	0.04	0.04
15.45	0.79	0.31	5.00	0.00	0.04	0.04
15.50	0.79	0.31	5.00	0.00	0.04	0.04
15.55	0.79	0.31	5.00	0.00	0.04	0.04
15.60	0.79	0.31	5.00	0.00	0.04	0.04
15.65	0.79	0.31	5.00	0.00	0.04	0.04
15.70	0.79	0.31	5.00	0.00	0.04	0.04
15.75	0.79	0.31	5.00	0.00	0.04	0.04
15.80	0.79	0.31	5.00	0.00	0.04	0.04
15.85	0.79	0.31	5.00	0.00	0.04	0.04
15.90	0.79	0.31	5.00	0.00	0.04	0.04
15.95	0.79	0.31	5.00	0.00	0.04	0.04

16.00	0.79	0.31	5.00	0.00	0.04	0.04
16.05	0.79	0.31	5.00	0.00	0.04	0.04
16.10	0.79	0.31	5.00	0.00	0.04	0.04
16.15	0.79	0.31	5.00	0.00	0.04	0.04
16.20	0.79	0.31	5.00	0.00	0.04	0.04
16.25	0.79	0.31	5.00	0.00	0.04	0.04
16.30	0.79	0.31	5.00	0.00	0.04	0.04
16.35	0.79	0.31	5.00	0.00	0.04	0.04
16.40	0.79	0.31	5.00	0.00	0.04	0.04
16.45	0.79	0.31	5.00	0.00	0.04	0.04
16.50	0.79	0.31	5.00	0.00	0.04	0.04
16.55	0.79	0.31	5.00	0.00	0.04	0.04
16.60	0.79	0.31	5.00	0.00	0.03	0.03
16.65	0.79	0.31	5.00	0.00	0.03	0.03
16.70	0.79	0.31	5.00	0.00	0.03	0.03
16.75	0.79	0.31	5.00	0.00	0.03	0.03
16.80	0.79	0.31	5.00	0.00	0.03	0.03
16.85	0.79	0.31	5.00	0.00	0.03	0.03
16.90	0.79	0.31	5.00	0.00	0.03	0.03
16.95	0.79	0.31	5.00	0.00	0.03	0.03
17.00	0.79	0.31	5.00	0.00	0.03	0.03
17.05	0.79	0.31	5.00	0.00	0.03	0.03
17.10	0.79	0.31	5.00	0.00	0.03	0.03
17.15	0.79	0.31	5.00	0.00	0.03	0.03
17.20	0.79	0.31	5.00	0.00	0.03	0.03
17.25	0.79	0.31	5.00	0.00	0.03	0.03
17.30	0.79	0.31	5.00	0.00	0.03	0.03
17.35	0.79	0.31	5.00	0.00	0.03	0.03
17.40	0.79	0.31	5.00	0.00	0.03	0.03
17.45	0.79	0.31	5.00	0.00	0.03	0.03
17.50	0.79	0.31	5.00	0.00	0.03	0.03
17.55	0.79	0.31	5.00	0.00	0.03	0.03
17.60	0.79	0.31	5.00	0.00	0.03	0.03
17.65	0.79	0.31	5.00	0.00	0.03	0.03
17.70	0.79	0.31	5.00	0.00	0.03	0.03
17.75	0.79	0.31	5.00	0.00	0.03	0.03
17.80	0.79	0.31	5.00	0.00	0.03	0.03
17.85	0.79	0.31	5.00	0.00	0.03	0.03
17.90	0.79	0.31	5.00	0.00	0.03	0.03
17.95	0.79	0.31	5.00	0.00	0.03	0.03
18.00	0.79	0.31	5.00	0.00	0.03	0.03
18.05	0.79	0.31	5.00	0.00	0.03	0.03
18.10	0.79	0.31	5.00	0.00	0.03	0.03
18.15	0.79	0.31	5.00	0.00	0.03	0.03
18.20	0.79	0.31	5.00	0.00	0.03	0.03
18.25	0.79	0.31	5.00	0.00	0.03	0.03
18.30	0.79	0.31	5.00	0.00	0.03	0.03
18.35	0.79	0.31	5.00	0.00	0.03	0.03
18.40	0.79	0.31	5.00	0.00	0.03	0.03
18.45	0.79	0.31	5.00	0.00	0.03	0.03

18.50	0.79	0.31	5.00	0.00	0.03	0.03
18.55	0.79	0.31	5.00	0.00	0.03	0.03
18.60	0.79	0.31	5.00	0.00	0.03	0.03
18.65	0.79	0.31	5.00	0.00	0.03	0.03
18.70	0.79	0.31	5.00	0.00	0.03	0.03
18.75	0.79	0.31	5.00	0.00	0.03	0.03
18.80	0.79	0.31	5.00	0.00	0.03	0.03
18.85	0.79	0.31	5.00	0.00	0.03	0.03
18.90	0.79	0.31	5.00	0.00	0.03	0.03
18.95	0.79	0.31	5.00	0.00	0.03	0.03
19.00	0.79	0.31	5.00	0.00	0.03	0.03
19.05	0.79	0.31	5.00	0.00	0.03	0.03
19.10	0.79	0.31	5.00	0.00	0.03	0.03
19.15	0.79	0.31	5.00	0.00	0.03	0.03
19.20	0.79	0.31	5.00	0.00	0.03	0.03
19.25	0.79	0.31	5.00	0.00	0.03	0.03
19.30	0.79	0.31	5.00	0.00	0.03	0.03
19.35	0.79	0.31	5.00	0.00	0.03	0.03
19.40	0.79	0.31	5.00	0.00	0.03	0.03
19.45	0.79	0.31	5.00	0.00	0.03	0.03
19.50	0.79	0.31	5.00	0.00	0.03	0.03
19.55	0.79	0.31	5.00	0.00	0.03	0.03
19.60	0.79	0.31	5.00	0.00	0.03	0.03
19.65	0.79	0.31	5.00	0.00	0.03	0.03
19.70	0.79	0.31	5.00	0.00	0.03	0.03
19.75	0.79	0.31	5.00	0.00	0.03	0.03
19.80	0.79	0.31	5.00	0.00	0.03	0.03
19.85	0.79	0.31	5.00	0.00	0.03	0.03
19.90	0.79	0.31	5.00	0.00	0.03	0.03
19.95	0.79	0.31	5.00	0.00	0.03	0.03
20.00	0.79	0.31	5.00	0.00	0.03	0.03
20.05	0.79	0.31	5.00	0.00	0.03	0.03
20.10	0.79	0.31	5.00	0.00	0.03	0.03
20.15	0.79	0.31	5.00	0.00	0.03	0.03
20.20	0.79	0.31	5.00	0.00	0.03	0.03
20.25	0.79	0.31	5.00	0.00	0.03	0.03
20.30	0.79	0.31	5.00	0.00	0.03	0.03
20.35	0.79	0.31	5.00	0.00	0.03	0.03
20.40	0.79	0.31	5.00	0.00	0.03	0.03
20.45	0.79	0.31	5.00	0.00	0.03	0.03
20.50	0.79	0.31	5.00	0.00	0.03	0.03
20.55	0.79	0.31	5.00	0.00	0.03	0.03
20.60	0.79	0.31	5.00	0.00	0.03	0.03
20.65	0.79	0.31	5.00	0.00	0.03	0.03
20.70	0.79	0.31	5.00	0.00	0.03	0.03
20.75	0.79	0.31	5.00	0.00	0.03	0.03
20.80	0.79	0.31	5.00	0.00	0.03	0.03
20.85	0.79	0.31	5.00	0.00	0.03	0.03
20.90	0.79	0.31	5.00	0.00	0.02	0.02
20.95	0.79	0.31	5.00	0.00	0.02	0.02

21.00	0.79	0.31	5.00	0.00	0.02	0.02
21.05	0.79	0.31	5.00	0.00	0.02	0.02
21.10	0.79	0.31	5.00	0.00	0.02	0.02
21.15	0.79	0.31	5.00	0.00	0.02	0.02
21.20	0.79	0.31	5.00	0.00	0.02	0.02
21.25	0.79	0.31	5.00	0.00	0.02	0.02
21.30	0.79	0.31	5.00	0.00	0.02	0.02
21.35	0.79	0.31	5.00	0.00	0.02	0.02
21.40	0.79	0.31	5.00	0.00	0.02	0.02
21.45	0.79	0.31	5.00	0.00	0.02	0.02
21.50	0.79	0.31	5.00	0.00	0.02	0.02
21.55	0.79	0.31	5.00	0.00	0.02	0.02
21.60	0.79	0.31	5.00	0.00	0.02	0.02
21.65	0.79	0.31	5.00	0.00	0.02	0.02
21.70	0.79	0.31	5.00	0.00	0.02	0.02
21.75	0.79	0.31	5.00	0.00	0.02	0.02
21.80	0.79	0.31	5.00	0.00	0.02	0.02
21.85	0.79	0.31	5.00	0.00	0.02	0.02
21.90	0.79	0.31	5.00	0.00	0.02	0.02
21.95	0.79	0.31	5.00	0.00	0.02	0.02
22.00	0.79	0.31	5.00	0.00	0.02	0.02
22.05	0.79	0.31	5.00	0.00	0.02	0.02
22.10	0.79	0.31	5.00	0.00	0.02	0.02
22.15	0.79	0.31	5.00	0.00	0.02	0.02
22.20	0.79	0.31	5.00	0.00	0.02	0.02
22.25	0.79	0.31	5.00	0.00	0.02	0.02
22.30	0.79	0.31	5.00	0.00	0.02	0.02
22.35	0.79	0.31	5.00	0.00	0.02	0.02
22.40	0.79	0.31	5.00	0.00	0.02	0.02
22.45	0.79	0.31	5.00	0.00	0.02	0.02
22.50	0.79	0.31	5.00	0.00	0.02	0.02
22.55	0.79	0.31	5.00	0.00	0.02	0.02
22.60	0.79	0.31	5.00	0.00	0.02	0.02
22.65	0.79	0.31	5.00	0.00	0.02	0.02
22.70	0.79	0.31	5.00	0.00	0.02	0.02
22.75	0.79	0.31	5.00	0.00	0.02	0.02
22.80	0.79	0.31	5.00	0.00	0.02	0.02
22.85	0.79	0.31	5.00	0.00	0.02	0.02
22.90	0.79	0.31	5.00	0.00	0.02	0.02
22.95	0.79	0.31	5.00	0.00	0.02	0.02
23.00	0.79	0.31	5.00	0.00	0.02	0.02
23.05	0.79	0.31	5.00	0.00	0.02	0.02
23.10	0.79	0.31	5.00	0.00	0.02	0.02
23.15	0.79	0.31	5.00	0.00	0.02	0.02
23.20	0.79	0.31	5.00	0.00	0.02	0.02
23.25	0.79	0.31	5.00	0.00	0.02	0.02
23.30	0.79	0.31	5.00	0.00	0.02	0.02
23.35	0.79	0.31	5.00	0.00	0.02	0.02
23.40	0.79	0.31	5.00	0.00	0.02	0.02
23.45	0.79	0.31	5.00	0.00	0.02	0.02

23.50	0.79	0.31	5.00	0.00	0.02	0.02
23.55	0.79	0.31	5.00	0.00	0.02	0.02
23.60	0.79	0.31	5.00	0.00	0.02	0.02
23.65	0.79	0.31	5.00	0.00	0.02	0.02
23.70	0.79	0.31	5.00	0.00	0.02	0.02
23.75	0.79	0.31	5.00	0.00	0.02	0.02
23.80	0.79	0.31	5.00	0.00	0.02	0.02
23.85	0.79	0.31	5.00	0.00	0.02	0.02
23.90	0.79	0.31	5.00	0.00	0.02	0.02
23.95	0.79	0.31	5.00	0.00	0.02	0.02
24.00	0.79	0.31	5.00	0.00	0.02	0.02
24.05	0.79	0.31	5.00	0.00	0.02	0.02
24.10	0.79	0.31	5.00	0.00	0.02	0.02
24.15	0.79	0.31	5.00	0.00	0.02	0.02
24.20	0.79	0.31	5.00	0.00	0.02	0.02
24.25	0.79	0.31	5.00	0.00	0.02	0.02
24.30	0.79	0.31	5.00	0.00	0.02	0.02
24.35	0.79	0.31	5.00	0.00	0.02	0.02
24.40	0.79	0.31	5.00	0.00	0.02	0.02
24.45	0.79	0.31	5.00	0.00	0.02	0.02
24.50	0.79	0.31	5.00	0.00	0.02	0.02
24.55	0.79	0.31	5.00	0.00	0.02	0.02
24.60	0.79	0.31	5.00	0.00	0.02	0.02
24.65	0.79	0.31	5.00	0.00	0.02	0.02
24.70	0.79	0.31	5.00	0.00	0.02	0.02
24.75	0.79	0.31	5.00	0.00	0.02	0.02
24.80	0.79	0.31	5.00	0.00	0.02	0.02
24.85	0.79	0.31	5.00	0.00	0.02	0.02
24.90	0.79	0.31	5.00	0.00	0.02	0.02
24.95	0.79	0.31	5.00	0.00	0.02	0.02
25.00	0.79	0.31	5.00	0.00	0.02	0.02
25.05	0.79	0.31	5.00	0.00	0.02	0.02
25.10	0.79	0.31	5.00	0.00	0.02	0.02
25.15	0.79	0.31	5.00	0.00	0.02	0.02
25.20	0.79	0.31	5.00	0.00	0.02	0.02
25.25	0.79	0.31	5.00	0.00	0.02	0.02
25.30	0.79	0.31	5.00	0.00	0.02	0.02
25.35	0.79	0.31	5.00	0.00	0.02	0.02
25.40	0.79	0.31	5.00	0.00	0.02	0.02
25.45	0.79	0.31	5.00	0.00	0.02	0.02
25.50	0.79	0.31	5.00	0.00	0.02	0.02
25.55	0.79	0.31	5.00	0.00	0.01	0.01
25.60	0.79	0.31	5.00	0.00	0.01	0.01
25.65	0.79	0.31	5.00	0.00	0.01	0.01
25.70	0.79	0.31	5.00	0.00	0.01	0.01
25.75	0.79	0.30	5.00	0.00	0.01	0.01
25.80	0.79	0.30	5.00	0.00	0.01	0.01
25.85	0.79	0.30	5.00	0.00	0.01	0.01
25.90	0.79	0.30	5.00	0.00	0.01	0.01
25.95	0.79	0.30	5.00	0.00	0.01	0.01

26.00	0.79	0.30	5.00	0.00	0.01	0.01
26.05	0.79	0.30	5.00	0.00	0.01	0.01
26.10	0.79	0.30	5.00	0.00	0.01	0.01
26.15	0.79	0.30	5.00	0.00	0.01	0.01
26.20	0.79	0.30	5.00	0.00	0.01	0.01
26.25	0.79	0.30	5.00	0.00	0.01	0.01
26.30	0.79	0.30	5.00	0.00	0.01	0.01
26.35	0.79	0.30	5.00	0.00	0.01	0.01
26.40	0.79	0.30	5.00	0.00	0.01	0.01
26.45	0.79	0.30	5.00	0.00	0.01	0.01
26.50	0.79	0.30	5.00	0.00	0.01	0.01
26.55	0.79	0.30	5.00	0.00	0.01	0.01
26.60	0.79	0.30	5.00	0.00	0.01	0.01
26.65	0.79	0.30	5.00	0.00	0.01	0.01
26.70	0.79	0.30	5.00	0.00	0.01	0.01
26.75	0.79	0.30	5.00	0.00	0.01	0.01
26.80	0.79	0.30	5.00	0.00	0.01	0.01
26.85	0.79	0.30	5.00	0.00	0.01	0.01
26.90	0.79	0.30	5.00	0.00	0.01	0.01
26.95	0.79	0.30	5.00	0.00	0.01	0.01
27.00	0.79	0.30	5.00	0.00	0.01	0.01
27.05	0.79	0.30	5.00	0.00	0.01	0.01
27.10	0.79	0.30	5.00	0.00	0.01	0.01
27.15	0.79	0.30	5.00	0.00	0.01	0.01
27.20	0.79	0.30	5.00	0.00	0.01	0.01
27.25	0.79	0.30	5.00	0.00	0.01	0.01
27.30	0.79	0.30	5.00	0.00	0.01	0.01
27.35	0.79	0.30	5.00	0.00	0.01	0.01
27.40	0.79	0.30	5.00	0.00	0.01	0.01
27.45	0.79	0.30	5.00	0.00	0.01	0.01
27.50	0.79	0.30	5.00	0.00	0.01	0.01
27.55	0.79	0.30	5.00	0.00	0.01	0.01
27.60	0.79	0.30	5.00	0.00	0.01	0.01
27.65	0.79	0.30	5.00	0.00	0.01	0.01
27.70	0.79	0.30	5.00	0.00	0.01	0.01
27.75	0.79	0.30	5.00	0.00	0.01	0.01
27.80	0.79	0.30	5.00	0.00	0.01	0.01
27.85	0.79	0.30	5.00	0.00	0.01	0.01
27.90	0.80	0.30	5.00	0.00	0.01	0.01
27.95	0.80	0.30	5.00	0.00	0.01	0.01
28.00	0.80	0.30	5.00	0.00	0.01	0.01
28.05	0.79	0.30	5.00	0.00	0.01	0.01
28.10	0.79	0.30	5.00	0.00	0.01	0.01
28.15	0.79	0.30	5.00	0.00	0.01	0.01
28.20	0.79	0.30	5.00	0.00	0.01	0.01
28.25	0.79	0.30	5.00	0.00	0.01	0.01
28.30	0.79	0.30	5.00	0.00	0.01	0.01
28.35	0.79	0.30	5.00	0.00	0.01	0.01
28.40	0.79	0.30	5.00	0.00	0.01	0.01
28.45	0.79	0.30	5.00	0.00	0.01	0.01

28.50	0.79	0.30	5.00	0.00	0.01	0.01
28.55	0.79	0.30	5.00	0.00	0.01	0.01
28.60	0.79	0.30	5.00	0.00	0.01	0.01
28.65	0.79	0.30	5.00	0.00	0.01	0.01
28.70	0.79	0.30	5.00	0.00	0.01	0.01
28.75	0.79	0.30	5.00	0.00	0.01	0.01
28.80	0.79	0.30	5.00	0.00	0.01	0.01
28.85	0.79	0.30	5.00	0.00	0.01	0.01
28.90	0.79	0.30	5.00	0.00	0.01	0.01
28.95	0.79	0.30	5.00	0.00	0.01	0.01
29.00	0.79	0.30	5.00	0.00	0.01	0.01
29.05	0.79	0.30	5.00	0.00	0.01	0.01
29.10	0.79	0.30	5.00	0.00	0.01	0.01
29.15	0.79	0.30	5.00	0.00	0.01	0.01
29.20	0.79	0.30	5.00	0.00	0.01	0.01
29.25	0.79	0.30	5.00	0.00	0.01	0.01
29.30	0.79	0.30	5.00	0.00	0.01	0.01
29.35	0.79	0.30	5.00	0.00	0.01	0.01
29.40	0.79	0.30	5.00	0.00	0.01	0.01
29.45	0.79	0.30	5.00	0.00	0.01	0.01
29.50	0.79	0.30	5.00	0.00	0.01	0.01
29.55	0.79	0.30	5.00	0.00	0.01	0.01
29.60	0.79	0.30	5.00	0.00	0.01	0.01
29.65	0.79	0.30	5.00	0.00	0.01	0.01
29.70	0.79	0.30	5.00	0.00	0.01	0.01
29.75	0.79	0.30	5.00	0.00	0.01	0.01
29.80	0.79	0.30	5.00	0.00	0.01	0.01
29.85	0.79	0.30	5.00	0.00	0.01	0.01
29.90	0.79	0.30	5.00	0.00	0.01	0.01
29.95	0.79	0.30	5.00	0.00	0.01	0.01
30.00	0.78	0.30	5.00	0.00	0.01	0.01
30.05	0.78	0.30	5.00	0.00	0.00	0.00
30.10	0.78	0.30	5.00	0.00	0.00	0.00
30.15	0.78	0.30	5.00	0.00	0.00	0.00
30.20	0.78	0.30	5.00	0.00	0.00	0.00
30.25	0.78	0.30	5.00	0.00	0.00	0.00
30.30	0.78	0.30	5.00	0.00	0.00	0.00
30.35	0.78	0.30	5.00	0.00	0.00	0.00
30.40	0.78	0.30	5.00	0.00	0.00	0.00
30.45	0.78	0.30	5.00	0.00	0.00	0.00
30.50	0.78	0.30	5.00	0.00	0.00	0.00
30.55	0.78	0.30	5.00	0.00	0.00	0.00
30.60	0.78	0.30	5.00	0.00	0.00	0.00
30.65	0.78	0.30	5.00	0.00	0.00	0.00
30.70	0.78	0.30	5.00	0.00	0.00	0.00
30.75	0.78	0.30	5.00	0.00	0.00	0.00
30.80	0.78	0.30	5.00	0.00	0.00	0.00
30.85	0.78	0.30	5.00	0.00	0.00	0.00
30.90	0.78	0.30	5.00	0.00	0.00	0.00
30.95	0.78	0.30	5.00	0.00	0.00	0.00

31.00	0.78	0.30	5.00	0.00	0.00	0.00
31.05	0.78	0.30	5.00	0.00	0.00	0.00
31.10	0.78	0.30	5.00	0.00	0.00	0.00
31.15	0.78	0.30	5.00	0.00	0.00	0.00
31.20	0.78	0.30	5.00	0.00	0.00	0.00
31.25	0.78	0.30	5.00	0.00	0.00	0.00
31.30	0.78	0.30	5.00	0.00	0.00	0.00
31.35	0.78	0.30	5.00	0.00	0.00	0.00
31.40	0.78	0.30	5.00	0.00	0.00	0.00
31.45	0.78	0.30	5.00	0.00	0.00	0.00
31.50	0.78	0.30	5.00	0.00	0.00	0.00
31.55	0.78	0.30	5.00	0.00	0.00	0.00
31.60	0.78	0.30	5.00	0.00	0.00	0.00
31.65	0.78	0.30	5.00	0.00	0.00	0.00
31.70	0.78	0.30	5.00	0.00	0.00	0.00
31.75	0.78	0.30	5.00	0.00	0.00	0.00
31.80	0.78	0.30	5.00	0.00	0.00	0.00
31.85	0.78	0.30	5.00	0.00	0.00	0.00
31.90	0.78	0.30	5.00	0.00	0.00	0.00
31.95	0.78	0.30	5.00	0.00	0.00	0.00
32.00	0.78	0.30	5.00	0.00	0.00	0.00
32.05	0.77	0.30	2.61	0.00	0.00	0.00
32.10	0.77	0.30	2.61	0.00	0.00	0.00
32.15	0.77	0.30	2.61	0.00	0.00	0.00
32.20	0.77	0.30	2.61	0.00	0.00	0.00
32.25	0.77	0.30	2.61	0.00	0.00	0.00
32.30	0.77	0.30	2.61	0.00	0.00	0.00
32.35	0.77	0.30	2.60	0.00	0.00	0.00
32.40	0.77	0.30	2.60	0.00	0.00	0.00
32.45	0.77	0.30	2.60	0.00	0.00	0.00
32.50	0.77	0.30	2.60	0.00	0.00	0.00
32.55	0.77	0.30	2.60	0.00	0.00	0.00
32.60	0.77	0.30	2.60	0.00	0.00	0.00
32.65	0.77	0.30	2.59	0.00	0.00	0.00
32.70	0.77	0.30	2.59	0.00	0.00	0.00
32.75	0.77	0.30	2.59	0.00	0.00	0.00
32.80	0.77	0.30	2.59	0.00	0.00	0.00
32.85	0.77	0.30	2.59	0.00	0.00	0.00
32.90	0.77	0.30	2.59	0.00	0.00	0.00
32.95	0.77	0.30	2.58	0.00	0.00	0.00
33.00	0.77	0.30	2.58	0.00	0.00	0.00
33.05	0.77	0.30	2.58	0.00	0.00	0.00
33.10	0.77	0.30	2.58	0.00	0.00	0.00
33.15	0.77	0.30	2.58	0.00	0.00	0.00
33.20	0.77	0.30	2.58	0.00	0.00	0.00
33.25	0.77	0.30	2.57	0.00	0.00	0.00
33.30	0.77	0.30	2.57	0.00	0.00	0.00
33.35	0.77	0.30	2.57	0.00	0.00	0.00
33.40	0.77	0.30	2.57	0.00	0.00	0.00
33.45	0.77	0.30	2.57	0.00	0.00	0.00

33.50	0.77	0.30	2.57	0.00	0.00	0.00
33.55	0.77	0.30	2.56	0.00	0.00	0.00
33.60	0.77	0.30	2.56	0.00	0.00	0.00
33.65	0.77	0.30	2.56	0.00	0.00	0.00
33.70	0.77	0.30	2.56	0.00	0.00	0.00
33.75	0.77	0.30	2.56	0.00	0.00	0.00
33.80	0.77	0.30	2.56	0.00	0.00	0.00
33.85	0.77	0.30	2.55	0.00	0.00	0.00
33.90	0.77	0.30	2.55	0.00	0.00	0.00
33.95	0.77	0.30	2.55	0.00	0.00	0.00
34.00	0.77	0.30	2.55	0.00	0.00	0.00
34.05	0.77	0.30	2.55	0.00	0.00	0.00
34.10	0.77	0.30	2.55	0.00	0.00	0.00
34.15	0.76	0.30	2.55	0.00	0.00	0.00
34.20	0.76	0.30	2.54	0.00	0.00	0.00
34.25	0.76	0.30	2.54	0.00	0.00	0.00
34.30	0.76	0.30	2.54	0.00	0.00	0.00
34.35	0.76	0.30	2.54	0.00	0.00	0.00
34.40	0.76	0.30	2.54	0.00	0.00	0.00
34.45	0.76	0.30	2.54	0.00	0.00	0.00
34.50	0.76	0.30	2.54	0.00	0.00	0.00
34.55	0.76	0.30	2.53	0.00	0.00	0.00
34.60	0.76	0.30	2.53	0.00	0.00	0.00
34.65	0.76	0.30	2.53	0.00	0.00	0.00
34.70	0.76	0.30	2.53	0.00	0.00	0.00
34.75	0.76	0.30	2.53	0.00	0.00	0.00
34.80	0.76	0.30	2.53	0.00	0.00	0.00
34.85	0.76	0.30	2.53	0.00	0.00	0.00
34.90	0.76	0.30	2.52	0.00	0.00	0.00
34.95	0.76	0.30	2.52	0.00	0.00	0.00
35.00	0.76	0.30	2.52	0.00	0.00	0.00
35.05	0.76	0.30	2.52	0.00	0.00	0.00
35.10	0.76	0.30	2.52	0.00	0.00	0.00
35.15	0.76	0.30	2.52	0.00	0.00	0.00
35.20	0.76	0.30	2.52	0.00	0.00	0.00
35.25	0.76	0.30	2.51	0.00	0.00	0.00
35.30	0.76	0.30	2.51	0.00	0.00	0.00
35.35	0.76	0.30	2.51	0.00	0.00	0.00
35.40	0.76	0.30	2.51	0.00	0.00	0.00
35.45	0.76	0.30	2.51	0.00	0.00	0.00
35.50	0.76	0.30	2.51	0.00	0.00	0.00
35.55	0.76	0.30	2.51	0.00	0.00	0.00
35.60	0.76	0.30	2.50	0.00	0.00	0.00
35.65	0.76	0.30	2.50	0.00	0.00	0.00
35.70	0.76	0.30	2.50	0.00	0.00	0.00
35.75	0.76	0.30	2.50	0.00	0.00	0.00
35.80	0.76	0.30	2.50	0.00	0.00	0.00
35.85	0.76	0.30	2.50	0.00	0.00	0.00
35.90	0.76	0.30	2.50	0.00	0.00	0.00
35.95	0.76	0.30	2.50	0.00	0.00	0.00

36.00	0.76	0.30	2.49	0.00	0.00	0.00
36.05	0.76	0.30	2.49	0.00	0.00	0.00
36.10	0.76	0.30	2.49	0.00	0.00	0.00
36.15	0.76	0.30	2.49	0.00	0.00	0.00
36.20	0.76	0.30	2.49	0.00	0.00	0.00
36.25	0.75	0.30	2.49	0.00	0.00	0.00
36.30	0.75	0.30	2.49	0.00	0.00	0.00
36.35	0.75	0.30	2.49	0.00	0.00	0.00
36.40	0.75	0.30	2.48	0.00	0.00	0.00
36.45	0.75	0.30	2.48	0.00	0.00	0.00
36.50	0.75	0.30	2.48	0.00	0.00	0.00
36.55	0.75	0.30	2.48	0.00	0.00	0.00
36.60	0.75	0.30	2.48	0.00	0.00	0.00
36.65	0.75	0.30	2.48	0.00	0.00	0.00
36.70	0.75	0.30	2.48	0.00	0.00	0.00
36.75	0.75	0.30	2.48	0.00	0.00	0.00
36.80	0.75	0.30	2.47	0.00	0.00	0.00
36.85	0.75	0.30	2.47	0.00	0.00	0.00
36.90	0.75	0.30	2.47	0.00	0.00	0.00
36.95	0.75	0.30	2.47	0.00	0.00	0.00
37.00	0.75	0.30	2.47	0.00	0.00	0.00
37.05	0.75	0.30	2.47	0.00	0.00	0.00
37.10	0.75	0.30	2.47	0.00	0.00	0.00
37.15	0.75	0.30	2.47	0.00	0.00	0.00
37.20	0.75	0.30	2.46	0.00	0.00	0.00
37.25	0.75	0.30	2.46	0.00	0.00	0.00
37.30	0.75	0.30	2.46	0.00	0.00	0.00
37.35	0.75	0.30	2.46	0.00	0.00	0.00
37.40	0.75	0.30	2.46	0.00	0.00	0.00
37.45	0.75	0.30	2.46	0.00	0.00	0.00
37.50	0.75	0.30	2.46	0.00	0.00	0.00
37.55	0.75	0.30	2.46	0.00	0.00	0.00
37.60	0.75	0.30	2.46	0.00	0.00	0.00
37.65	0.75	0.30	2.45	0.00	0.00	0.00
37.70	0.75	0.30	2.45	0.00	0.00	0.00
37.75	0.75	0.30	2.45	0.00	0.00	0.00
37.80	0.75	0.31	2.45	0.00	0.00	0.00
37.85	0.75	0.31	2.45	0.00	0.00	0.00
37.90	0.75	0.31	2.45	0.00	0.00	0.00
37.95	0.75	0.31	2.45	0.00	0.00	0.00
38.00	0.75	0.31	2.45	0.00	0.00	0.00
38.05	0.75	0.31	2.45	0.00	0.00	0.00
38.10	0.75	0.31	2.44	0.00	0.00	0.00
38.15	0.75	0.31	2.44	0.00	0.00	0.00
38.20	0.75	0.31	2.44	0.00	0.00	0.00
38.25	0.75	0.31	2.44	0.00	0.00	0.00
38.30	0.75	0.31	2.44	0.00	0.00	0.00
38.35	0.75	0.31	2.44	0.00	0.00	0.00
38.40	0.74	0.31	2.44	0.00	0.00	0.00
38.45	0.74	0.31	2.44	0.00	0.00	0.00

38.50	0.74	0.31	2.44	0.00	0.00	0.00
38.55	0.74	0.31	2.44	0.00	0.00	0.00
38.60	0.74	0.31	2.43	0.00	0.00	0.00
38.65	0.74	0.31	2.43	0.00	0.00	0.00
38.70	0.74	0.31	2.43	0.00	0.00	0.00
38.75	0.74	0.31	2.43	0.00	0.00	0.00
38.80	0.74	0.31	2.43	0.00	0.00	0.00
38.85	0.74	0.31	2.43	0.00	0.00	0.00
38.90	0.74	0.31	2.43	0.00	0.00	0.00
38.95	0.74	0.31	2.43	0.00	0.00	0.00
39.00	0.74	0.31	2.43	0.00	0.00	0.00
39.05	0.74	0.31	2.43	0.00	0.00	0.00
39.10	0.74	0.31	2.43	0.00	0.00	0.00
39.15	0.74	0.31	2.42	0.00	0.00	0.00
39.20	0.74	0.31	2.42	0.00	0.00	0.00
39.25	0.74	0.31	2.42	0.00	0.00	0.00
39.30	0.74	0.31	2.42	0.00	0.00	0.00
39.35	0.74	0.31	2.42	0.00	0.00	0.00
39.40	0.74	0.31	2.42	0.00	0.00	0.00
39.45	0.74	0.31	2.42	0.00	0.00	0.00
39.50	0.74	0.31	2.42	0.00	0.00	0.00
39.55	0.74	0.31	2.42	0.00	0.00	0.00
39.60	0.74	0.31	2.42	0.00	0.00	0.00
39.65	0.74	0.31	2.42	0.00	0.00	0.00
39.70	0.74	0.31	2.42	0.00	0.00	0.00
39.75	0.74	0.31	2.42	0.00	0.00	0.00
39.80	0.74	0.31	2.42	0.00	0.00	0.00
39.85	0.74	0.31	2.42	0.00	0.00	0.00
39.90	0.74	0.31	2.42	0.00	0.00	0.00
39.95	0.74	0.31	2.42	0.00	0.00	0.00
40.00	0.74	0.31	2.42	0.00	0.00	0.00
40.05	0.74	0.31	2.41	0.00	0.00	0.00
40.10	0.74	0.31	2.41	0.00	0.00	0.00
40.15	0.74	0.31	2.41	0.00	0.00	0.00
40.20	0.74	0.31	2.41	0.00	0.00	0.00
40.25	0.74	0.31	2.41	0.00	0.00	0.00
40.30	0.74	0.31	2.41	0.00	0.00	0.00
40.35	0.74	0.31	2.41	0.00	0.00	0.00
40.40	0.74	0.31	2.41	0.00	0.00	0.00
40.45	0.74	0.31	2.41	0.00	0.00	0.00
40.50	0.74	0.31	2.41	0.00	0.00	0.00
40.55	0.74	0.31	2.41	0.00	0.00	0.00
40.60	0.74	0.31	2.41	0.00	0.00	0.00
40.65	0.74	0.31	2.41	0.00	0.00	0.00
40.70	0.74	0.31	2.41	0.00	0.00	0.00
40.75	0.74	0.31	2.41	0.00	0.00	0.00
40.80	0.74	0.31	2.41	0.00	0.00	0.00
40.85	0.74	0.31	2.41	0.00	0.00	0.00
40.90	0.74	0.31	2.41	0.00	0.00	0.00
40.95	0.74	0.31	2.41	0.00	0.00	0.00

41.00	0.74	0.31	2.41	0.00	0.00	0.00
41.05	0.74	0.31	2.40	0.00	0.00	0.00
41.10	0.74	0.31	2.40	0.00	0.00	0.00
41.15	0.74	0.31	2.40	0.00	0.00	0.00
41.20	0.74	0.31	2.40	0.00	0.00	0.00
41.25	0.74	0.31	2.40	0.00	0.00	0.00
41.30	0.74	0.31	2.40	0.00	0.00	0.00
41.35	0.74	0.31	2.40	0.00	0.00	0.00
41.40	0.74	0.31	2.40	0.00	0.00	0.00
41.45	0.74	0.31	2.40	0.00	0.00	0.00
41.50	0.74	0.31	2.40	0.00	0.00	0.00
41.55	0.74	0.31	2.40	0.00	0.00	0.00
41.60	0.74	0.31	2.40	0.00	0.00	0.00
41.65	0.74	0.31	2.40	0.00	0.00	0.00
41.70	0.74	0.31	2.40	0.00	0.00	0.00
41.75	0.74	0.31	2.40	0.00	0.00	0.00
41.80	0.74	0.31	2.40	0.00	0.00	0.00
41.85	0.74	0.31	2.40	0.00	0.00	0.00
41.90	0.74	0.31	2.40	0.00	0.00	0.00
41.95	0.74	0.31	2.40	0.00	0.00	0.00
42.00	0.74	0.31	2.40	0.00	0.00	0.00
42.05	0.74	0.31	2.40	0.00	0.00	0.00
42.10	0.74	0.31	2.40	0.00	0.00	0.00
42.15	0.74	0.31	2.40	0.00	0.00	0.00
42.20	0.74	0.31	2.40	0.00	0.00	0.00
42.25	0.74	0.31	2.39	0.00	0.00	0.00
42.30	0.74	0.31	2.39	0.00	0.00	0.00
42.35	0.74	0.31	2.39	0.00	0.00	0.00
42.40	0.74	0.31	2.39	0.00	0.00	0.00
42.45	0.74	0.31	2.39	0.00	0.00	0.00
42.50	0.74	0.31	2.39	0.00	0.00	0.00
42.55	0.74	0.31	2.39	0.00	0.00	0.00
42.60	0.74	0.31	2.39	0.00	0.00	0.00
42.65	0.74	0.31	2.39	0.00	0.00	0.00
42.70	0.74	0.31	2.39	0.00	0.00	0.00
42.75	0.74	0.31	2.39	0.00	0.00	0.00
42.80	0.74	0.31	2.39	0.00	0.00	0.00
42.85	0.74	0.31	2.39	0.00	0.00	0.00
42.90	0.74	0.31	2.39	0.00	0.00	0.00
42.95	0.74	0.31	2.39	0.00	0.00	0.00
43.00	0.74	0.31	2.39	0.00	0.00	0.00
43.05	2.00	0.31	5.00	0.00	0.00	0.00
43.10	2.00	0.31	5.00	0.00	0.00	0.00
43.15	2.00	0.31	5.00	0.00	0.00	0.00
43.20	2.00	0.31	5.00	0.00	0.00	0.00
43.25	2.00	0.31	5.00	0.00	0.00	0.00
43.30	2.00	0.31	5.00	0.00	0.00	0.00
43.35	2.00	0.31	5.00	0.00	0.00	0.00
43.40	2.00	0.31	5.00	0.00	0.00	0.00
43.45	2.00	0.31	5.00	0.00	0.00	0.00

43.50	2.00	0.31	5.00	0.00	0.00	0.00
43.55	2.00	0.31	5.00	0.00	0.00	0.00
43.60	2.00	0.31	5.00	0.00	0.00	0.00
43.65	2.00	0.31	5.00	0.00	0.00	0.00
43.70	2.00	0.31	5.00	0.00	0.00	0.00
43.75	2.00	0.31	5.00	0.00	0.00	0.00
43.80	2.00	0.31	5.00	0.00	0.00	0.00
43.85	2.00	0.31	5.00	0.00	0.00	0.00
43.90	2.00	0.31	5.00	0.00	0.00	0.00
43.95	2.00	0.31	5.00	0.00	0.00	0.00
44.00	2.00	0.31	5.00	0.00	0.00	0.00
44.05	2.00	0.31	5.00	0.00	0.00	0.00
44.10	2.00	0.31	5.00	0.00	0.00	0.00
44.15	2.00	0.31	5.00	0.00	0.00	0.00
44.20	2.00	0.31	5.00	0.00	0.00	0.00
44.25	2.00	0.31	5.00	0.00	0.00	0.00
44.30	2.00	0.31	5.00	0.00	0.00	0.00
44.35	2.00	0.31	5.00	0.00	0.00	0.00
44.40	2.00	0.31	5.00	0.00	0.00	0.00
44.45	2.00	0.31	5.00	0.00	0.00	0.00
44.50	2.00	0.31	5.00	0.00	0.00	0.00
44.55	2.00	0.31	5.00	0.00	0.00	0.00
44.60	2.00	0.31	5.00	0.00	0.00	0.00
44.65	2.00	0.31	5.00	0.00	0.00	0.00
44.70	2.00	0.31	5.00	0.00	0.00	0.00
44.75	2.00	0.31	5.00	0.00	0.00	0.00
44.80	2.00	0.31	5.00	0.00	0.00	0.00
44.85	2.00	0.31	5.00	0.00	0.00	0.00
44.90	2.00	0.31	5.00	0.00	0.00	0.00
44.95	2.00	0.31	5.00	0.00	0.00	0.00
45.00	2.00	0.31	5.00	0.00	0.00	0.00
45.05	2.00	0.31	5.00	0.00	0.00	0.00
45.10	2.00	0.31	5.00	0.00	0.00	0.00
45.15	2.00	0.31	5.00	0.00	0.00	0.00
45.20	2.00	0.31	5.00	0.00	0.00	0.00
45.25	2.00	0.31	5.00	0.00	0.00	0.00
45.30	2.00	0.31	5.00	0.00	0.00	0.00
45.35	2.00	0.31	5.00	0.00	0.00	0.00
45.40	2.00	0.31	5.00	0.00	0.00	0.00
45.45	2.00	0.31	5.00	0.00	0.00	0.00
45.50	2.00	0.31	5.00	0.00	0.00	0.00
45.55	2.00	0.31	5.00	0.00	0.00	0.00
45.60	2.00	0.31	5.00	0.00	0.00	0.00
45.65	2.00	0.31	5.00	0.00	0.00	0.00
45.70	2.00	0.31	5.00	0.00	0.00	0.00
45.75	2.00	0.31	5.00	0.00	0.00	0.00
45.80	2.00	0.31	5.00	0.00	0.00	0.00
45.85	2.00	0.31	5.00	0.00	0.00	0.00
45.90	2.00	0.31	5.00	0.00	0.00	0.00
45.95	2.00	0.31	5.00	0.00	0.00	0.00

46.00	2.00	0.31	5.00	0.00	0.00	0.00
46.05	2.00	0.31	5.00	0.00	0.00	0.00
46.10	2.00	0.31	5.00	0.00	0.00	0.00
46.15	2.00	0.31	5.00	0.00	0.00	0.00
46.20	2.00	0.31	5.00	0.00	0.00	0.00
46.25	2.00	0.31	5.00	0.00	0.00	0.00
46.30	2.00	0.31	5.00	0.00	0.00	0.00
46.35	2.00	0.31	5.00	0.00	0.00	0.00
46.40	2.00	0.31	5.00	0.00	0.00	0.00
46.45	2.00	0.31	5.00	0.00	0.00	0.00
46.50	2.00	0.31	5.00	0.00	0.00	0.00
46.55	2.00	0.31	5.00	0.00	0.00	0.00
46.60	2.00	0.31	5.00	0.00	0.00	0.00
46.65	2.00	0.31	5.00	0.00	0.00	0.00
46.70	2.00	0.31	5.00	0.00	0.00	0.00
46.75	2.00	0.31	5.00	0.00	0.00	0.00
46.80	2.00	0.31	5.00	0.00	0.00	0.00
46.85	2.00	0.31	5.00	0.00	0.00	0.00
46.90	2.00	0.31	5.00	0.00	0.00	0.00
46.95	2.00	0.31	5.00	0.00	0.00	0.00
47.00	2.00	0.31	5.00	0.00	0.00	0.00
47.05	2.00	0.31	5.00	0.00	0.00	0.00
47.10	2.00	0.31	5.00	0.00	0.00	0.00
47.15	2.00	0.31	5.00	0.00	0.00	0.00
47.20	2.00	0.31	5.00	0.00	0.00	0.00
47.25	2.00	0.31	5.00	0.00	0.00	0.00
47.30	2.00	0.31	5.00	0.00	0.00	0.00
47.35	2.00	0.31	5.00	0.00	0.00	0.00
47.40	2.00	0.31	5.00	0.00	0.00	0.00
47.45	2.00	0.31	5.00	0.00	0.00	0.00
47.50	2.00	0.31	5.00	0.00	0.00	0.00
47.55	2.00	0.31	5.00	0.00	0.00	0.00
47.60	2.00	0.31	5.00	0.00	0.00	0.00
47.65	2.00	0.31	5.00	0.00	0.00	0.00
47.70	2.00	0.31	5.00	0.00	0.00	0.00
47.75	2.00	0.31	5.00	0.00	0.00	0.00
47.80	2.00	0.31	5.00	0.00	0.00	0.00
47.85	2.00	0.31	5.00	0.00	0.00	0.00
47.90	2.00	0.31	5.00	0.00	0.00	0.00
47.95	2.00	0.31	5.00	0.00	0.00	0.00
48.00	2.00	0.31	5.00	0.00	0.00	0.00
48.05	2.00	0.31	5.00	0.00	0.00	0.00
48.10	2.00	0.31	5.00	0.00	0.00	0.00
48.15	2.00	0.31	5.00	0.00	0.00	0.00
48.20	2.00	0.31	5.00	0.00	0.00	0.00
48.25	2.00	0.31	5.00	0.00	0.00	0.00
48.30	2.00	0.31	5.00	0.00	0.00	0.00
48.35	2.00	0.31	5.00	0.00	0.00	0.00
48.40	2.00	0.31	5.00	0.00	0.00	0.00
48.45	2.00	0.31	5.00	0.00	0.00	0.00

48.50	2.00	0.31	5.00	0.00	0.00	0.00
48.55	2.00	0.31	5.00	0.00	0.00	0.00
48.60	2.00	0.31	5.00	0.00	0.00	0.00
48.65	2.00	0.31	5.00	0.00	0.00	0.00
48.70	2.00	0.31	5.00	0.00	0.00	0.00
48.75	2.00	0.31	5.00	0.00	0.00	0.00
48.80	2.00	0.31	5.00	0.00	0.00	0.00
48.85	2.00	0.31	5.00	0.00	0.00	0.00
48.90	2.00	0.31	5.00	0.00	0.00	0.00
48.95	2.00	0.31	5.00	0.00	0.00	0.00
49.00	2.00	0.31	5.00	0.00	0.00	0.00
49.05	2.00	0.31	5.00	0.00	0.00	0.00
49.10	2.00	0.31	5.00	0.00	0.00	0.00
49.15	2.00	0.31	5.00	0.00	0.00	0.00
49.20	2.00	0.31	5.00	0.00	0.00	0.00
49.25	2.00	0.31	5.00	0.00	0.00	0.00
49.30	2.00	0.31	5.00	0.00	0.00	0.00
49.35	2.00	0.31	5.00	0.00	0.00	0.00
49.40	2.00	0.31	5.00	0.00	0.00	0.00
49.45	2.00	0.31	5.00	0.00	0.00	0.00
49.50	2.00	0.31	5.00	0.00	0.00	0.00
49.55	2.00	0.31	5.00	0.00	0.00	0.00
49.60	2.00	0.31	5.00	0.00	0.00	0.00
49.65	2.00	0.31	5.00	0.00	0.00	0.00
49.70	2.00	0.31	5.00	0.00	0.00	0.00
49.75	2.00	0.31	5.00	0.00	0.00	0.00
49.80	2.00	0.31	5.00	0.00	0.00	0.00
49.85	2.00	0.31	5.00	0.00	0.00	0.00
49.90	2.00	0.31	5.00	0.00	0.00	0.00
49.95	2.00	0.31	5.00	0.00	0.00	0.00
50.00	2.00	0.31	5.00	0.00	0.00	0.00

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* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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1 atm (atmosphere) = 1 tsf (ton/ft2)
CRRm Cyclic resistance ratio from soils
CSRsf Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat Settlement from saturated sands
S_dry Settlement from Unsaturated Sands
S_all Total Settlement from Saturated and Unsaturated Sands
NoLiq No-Liquefy Soils

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APPENDIX NO. 4

HAZARDOUS BUILDING MATERIALS SURVEY REPORT

Stadium Press Boxes
Modesto Junior College – East Campus

FACS Project No. PJ91751

DATED: April 20, 2026

NOTICE TO CONTRACTORS:

This Appendix is included in the Contract Documents as a convenience to the Owner. The information contained herein has been prepared by:

Forensic Analytical Consulting Services (FACS)
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Teter Architects and Engineers has no responsibility related to the work identified in this Appendix, all questions connected to the work indicated herein should be directed to Forensic Analytical Consulting Services.

FACS
Forensic Analytical Consulting Services

May 5, 2026

Hazardous Building Materials Survey Report

Stadium Press Boxes
Modesto Junior College East Campus
435 College Avenue
Modesto, California 95350

Prepared for:

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FACS Project #PJ91751

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Appendix B: Lead Paint Chip Summary, Sample Chain-of-Custody, Laboratory Results Report and CDPH 8552 Forms

Appendix C: Site Photos and Sample Location Drawings

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List of Acronyms

AAS	Atomic Absorption Spectroscopy
ACBM	Asbestos-Containing Building Material
ACCM	Asbestos-Containing Construction Material
ACM	Asbestos-Containing Material
AHERA	Asbestos Hazard Emergency Response Act
AIHA	American Industrial Hygiene Association
CAC	California - Certified Asbestos Consultant
Cal/OSHA	California Occupational Safety and Health Association
CCR	Code of California Regulations
CFR	Code of Federal Regulation
CSST	California – Certified Site Surveillance Technician
DOSH	Department of Occupational Safety and Health
ELAP	Environmental Laboratory Accreditation Program
EPA	Environmental Protection Agency (EPA)
FACS	Forensic Analytical Consulting Services, Inc.
ICP	Inductively Coupled Plasma
LCP	Lead-Containing Paint
LBP	Lead-Based Paint
ND	None Detected
NESHAP	National Emissions Standard Hazardous Air Pollutants
NIOSH	National Institute for Occupational Safety and Health
NIST	National Institute of Science and Technology
NVLAP	National Voluntary Laboratory Accreditation Program
PCM	Phase Contrast Microscopy
PLM	Polarized Light Microscopy
SGS	SGS - Forensic Laboratories
TEM	Transmission Electron Microscopy
TTLC	Total Threshold Limit Concentration
XRF	X-Ray Fluorescence Spectrum Analyzer
<	Less Than Reporting Limit

Executive Summary

Forensic Analytical Consulting Services, Inc. (FACS) was retained by Yosemite Community College District to perform an asbestos and lead paint survey at the east campus of the Modesto Junior College's Stadium, located at 435 College Avenue in Modesto, California. The survey included any suspect asbestos-containing materials (ACM) and suspect paints and coatings which may be disturbed during the planned demolition project at the press boxes on the top of the west bleachers. A summary list of suspect asbestos-containing materials which were identified and sampled is included in Appendix A of this report. A table reporting suspect lead-containing paints or coatings which were identified and sampled is included in Appendix B of this report. The survey was performed on April 13 and 21, 2026.

Asbestos

The following suspect material was sampled and laboratory analysis confirmed asbestos to be present:

- **Silver Paint and Mastic – Handrail Connections – Press Box C Roof**

The following suspect materials were sampled during this survey and identified to **not contain** asbestos by laboratory analysis:

- **Concrete**
- **Rolled Asphalt Roofing**
- **4" Baseboard and Mastic – Black**
- **Stucco**
- **Fiber Reinforced Plastic (FRP) and Glue**
- **Blue Paint on Wood**
- **Expansion Joint**

Please see Appendix A for a complete listing of materials sampled at the work areas and results from this survey. Any suspect materials not included must be assumed to be asbestos-containing materials until tested and proven not to contain asbestos.

Lead

The following paint was found to be **lead-based** by laboratory analysis:

- **Blue Paint on Wood Walls – Press Box D-E**

The following paints/coatings were found to be **lead-containing** by laboratory analysis:

- **Blue Paint on Wood Windowsill / Walls – Press Box C**
- **White Paint on Wood Framing – Press Box C**
- **Silver Paint on Metal Handrail – Press Box C**
- **Blue Paint on Concrete Foundation – Press Box D-E**
- **Grey Coating on Metal Corrugated Walls – Grounds Shed**

The following paints did **not** contain detectable concentrations of lead by laboratory analysis:

- **White Paint on Wood Door – Press Box C**
- **Grey Paint on Wood Floor – Press Box C**
- **White Paint on Wood Door – Press Box D-E**
- **Beige Paint on Wood Door Frame – Press Box D-E**
- **White Paint on Wood Framing – Press Box D-E**
- **Grey Paint on Metal Door – Grounds Shed**

Please see Appendix B for a complete listing of paint / coating sample data from the work areas and results from this survey. Any paints not included in the survey must be handled as lead-containing unless sampled and proven otherwise.

Introduction

Forensic Analytical Consulting Services, Inc. (FACS) was retained by Yosemite Community College District to perform an asbestos and lead paint survey at two press boxes of the Stadum at the east campus of Modesto Junior College, located at 435 College Avenue in Modesto, California. The survey included any suspect asbestos-containing materials (ACM) and suspect paints and coatings which may be disturbed during the planned demolition project. The survey was performed on April 13 and 21, 2026.

Scope of Work

The purpose of this survey was to identify asbestos-containing materials (ACMs) and lead-containing paints and coatings which may be disturbed during the upcoming demolition project. The visual inspection, bulk sampling, and survey documentation were performed by Chris Chipponeri. Mr. Chipponeri is a DOSH Certified Asbestos Consultant (CAC #10-4633) and CDPH Certified Lead Inspector/Assessor (LRC-00000782), as required under California regulations. The scope of the survey and the services provided by FACS included:

- Performing a visual inspection of the project area to identify accessible suspect asbestos-containing materials (ACMs) and lead-containing paints and coatings that will be disturbed during the planned project;
- Collection of bulk material samples for asbestos laboratory analysis by polarized light microscopy (PLM);
- Collection of bulk paint chip samples for lead laboratory analysis using atomic absorption spectrometry (AAS);
- Ensuring the technical quality of all work by using Asbestos Hazard Emergency Response Act (AHERA) accredited Building Inspectors;
- Ensuring the technical quality of all work by using California Department of Public Health (CDPH) Certified Lead Sampling Technicians and Inspector/Assessors; and
- Consolidating data and findings into a report format.

Site Characterization

The two press boxes surveyed are located at the top of the western concrete bleacher structure. The press boxes are typical construction for this type of structure and included common material such as wood, rolled asphalt roofing, concrete and various sealants. It appears that Press Box D-E is the older structure of the two press boxes surveyed. The stucco wall surface above the restrooms at the ground level below the press boxes was included in the project survey as well.

Survey Methods

Document Review

No previous documentation was reviewed prior to the inspection. The extent of the planned renovation project was provided by Modesto Junior College.

Visual Inspection

Accessible building materials were visually inspected using the methods presented in the Federal AHERA regulations (40 CFR, Part 763). AHERA inspection methodology is required to be used for inspections of K-12 schools and is generally accepted as the industry standard for all ACM inspections regardless of structure or facility type. Suspect ACMs were also physically assessed for friability, condition and possible disturbance factors.

All areas were accessible during this inspection.

Asbestos Inspection

Bulk Sample Collection

Bulk samples of identified homogeneous materials were collected in building areas that may be impacted by the planned renovation/demolition activities. Samples were collected of each separate homogeneous area. A homogeneous area is defined as a surfacing material, thermal system insulation, or miscellaneous material that is uniform in use, color and texture. Examples of homogeneous areas could include:

Vinyl floor tiles
False ceiling panels
Drywall with joint compound
Vinyl sheet flooring

The specific number of samples collected was determined by using the methods required by the Federal AHERA regulations (40 CFR, Part 763.86) as noted below:

1) For Surfacing Material:
   1,000 ft^2 or less - collect 3 samples
   1,001 to 5,000 ft^2 - collect 5 samples
   5,001 ft^2 or greater - collect 7 samples

2) For Thermal System Insulation:
   “In a randomly distributed manner” - collect 3 samples
   6 linear feet of patching or less - collect 1 sample
   cementitious pipe fittings - “In a manner sufficient to determine”

3) For all Miscellaneous Material:
   Collect samples "In a manner sufficient to determine whether material is ACM (asbestos-containing material) or not ACM..."

The suspect ACMs were sampled using a knife, chisel, scraper, drill or other similar coring device suitable to the type of material sampled to cut through its entire thickness and to ensure that a cross-section of the material was obtained. The material was then placed in an appropriately labeled container that was sealed and submitted to SGS-Forensic Laboratories for analysis. A unique sample number (e.g. PJ89156-01A) was assigned to each sample.

Bulk samples will be retained by the laboratory for one month unless otherwise instructed. After this period, the samples will be disposed of appropriately.

Bulk Sample Analysis

A total of fifteen (15) bulk samples were collected from a total of eight (8) suspect materials. Bulk samples were analyzed by SGS-Forensic Laboratories (SGS) in Hayward, California. SGS is accredited by the California Department of Public Health (CDPH) Environmental Laboratory Accreditation Program (ELAP) and the National Institute of Science and Technology's (NIST) National Voluntary Laboratory Accreditation Program (NVLAP). SGS participates in the National Institute for Occupational Safety and Health (NIOSH) Proficiency Analytical Testing Program and has substantial experience in the analysis of asbestos.

All samples were analyzed using Polarized Light Microscopy with Dispersion Staining (PLM/DS) techniques in accordance with the methodology approved by the U.S. Environmental Protection Agency (EPA). The percentage of asbestos present in the samples was determined on the basis of a visual area estimation. The EPA defines asbestos-containing materials (ACM) as any material containing more than one percent (1%) asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy (PLM). 40 CFR Part 763 identifies the lower limit of reliable quantification for asbestos using the PLM method as approximately one percent (1%) by volume. Regulations in California (CAL/OSHA Title 8 CCR 1529) define asbestos-containing construction materials (ACCM) as those materials having asbestos content of greater than one tenth of one percent (> 0.1%); therefore, for the purpose of this survey, any amount of asbestos detected will be considered positive. In addition to the percentages, the types of asbestos minerals are also reported. The PLM method is the standard method used to analyze asbestos bulk samples.

When "None Detected" (ND) appears in the laboratory results, it should be interpreted as meaning asbestos was not observed in the sample material.

Lead Inspection

The client-defined lead inspection was conducted in accordance with the CDPH Lead-Related Construction Program and modeled upon the sampling protocol described in “Chapter 7: Lead Based Paint Inspection” of the HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1997 Revision).

Cal/OSHA, in Title 8 California Code of Regulations (CCR) Section 1532.1, Lead in Construction Standard which implements California Labor Code 8716-6717, regulates all construction work where an employee may be occupationally exposed to lead. Paint or materials with any detectable level of lead is considered lead-containing by Cal/OSHA.

Bulk Sampling Methodology

During this inspection, FACS personnel collected twelve (12) bulk paint chip samples for laboratory confirmation of lead-content. Each sample was scraped from the substrate it had been applied to using a knife or chisel to obtain sufficient material for analysis. Each sample was given a unique marker number, identified on a chain-of-custody, packaged, and sent via FedEx to SGS in Hayward, California for analysis. SGS is accredited by the American Industrial Hygiene Association’s Environmental Lead Laboratory Accreditation Program for the analysis of lead in bulk paint chips by flame atomic absorption.

Regulations

Background

Asbestos is the name of a class of magnesium-silicate minerals that occur in fibrous form. Minerals that are included in this group are chrysotile, crocidolite, amosite, anthophyllite asbestos, tremolite asbestos, and actinolite asbestos. Although the chrysotile minerals are the most common type of asbestos found in the construction industry, all types of asbestos are regulated in the same manner. Asbestos has been used in more than 3,000 different building materials. Asbestos was added to building materials to: increase fire-resistance, insulate against heat, cold and sound, resist corrosion, and increase tensile strength. Common building materials that may contain asbestos include but are not limited to the following: floor tile, resilient sheet flooring, ceiling tile, mastics, roofing materials, fireproofing, acoustical treatments, wallboard, pipe and boiler insulations. Adverse health effects have been associated with the inhalation of airborne asbestos. However, asbestos fibers that are tightly bound in the building material, may not represent an exposure hazard, unless disturbed in such a way that releases airborne fibers (i.e., cutting, drilling, sanding, and other abrasive methods).

Building Surveys

The following is a summary of some current Federal and California State regulations which contain requirements related to the performance of building surveys for asbestos. These summaries are not intended to be all inclusive and do not contain every aspect of the regulations discussed.

U.S. EPA National Emission Standard for Hazardous Air Pollutants (NESHAPs), 40 CFR Part 61

Under the NESHAPs regulation, no visible emissions are allowed during building demolition or renovation activities which involve regulated asbestos-containing materials. For this reason, all buildings must be surveyed for asbestos-containing materials prior to demolition or renovation. The EPA, CARB, and/or the local Air Quality Management District which implements EPA actions, must be notified prior to any building demolition even if no asbestos-containing materials are present. Regulated asbestos-containing material (RACM) is defined as a) any friable material with an asbestos content of greater than one percent, or b) any non-friable material with asbestos content of greater than one percent that will, or could, become friable.

Asbestos Hazard Emergency Response Act (AHERA), 40 CFR Part 763, Subpart E

AHERA requires performance of asbestos surveys and the development of Asbestos Management Plans for all primary and secondary schools in the United States. Although this regulation applies to primary and secondary schools only, the procedures mandated under AHERA are considered the industry standard and are applied to all surveys performed by FACS unless otherwise specified by the building owner.

Worker Protection

California Assembly Bill AB3713, Health and Safety Code Division 20, Chapter 10.4, Section 25915-25924

The state of California has enacted legislation that requires building owners, employers, lessees, etc. to notify tenants, employees and contractors of the presence of asbestos in both friable and non-friable forms. In addition, preventive maintenance activities must be developed and communicated to these parties. Notification is required 15 days after the identification of ACM in the building, and annually thereafter.

Occupational Safety and Health Administration (OSHA) 29 CFR 1926.1101 and 8 CCR 1529

The Federal and State Occupational Safety and Health Administrations (OSHA) require employers to implement specific work practices which protect workers from airborne asbestos exposure.

Building materials which contain even low levels of asbestos (<1%) can potentially generate significant concentrations of airborne asbestos fibers when disturbed. Therefore, control measures should be instituted which adequately address worker health and safety during planned renovation or demolition activities involving these materials. Cal/OSHA defines asbestos-containing construction materials as those materials having greater than one tenth of one percent asbestos (>0.1%). As stated previously, there is currently no viable method to accurately quantify asbestos at this level.

Hazardous Waste

Building materials reported to contain less than one percent (<1%) of asbestos are not considered hazardous by the U.S. EPA, and hence, may not require removal and disposal prior to demolition or renovation. Regulations may vary, however, between regional air quality management districts and/or other state agencies responsible for implementing EPA's rules. Therefore, local agencies should be contacted for specific ACM definitions and handling requirements. Cal/OSHA may also require special packaging and labeling on containers with asbestos-containing construction materials.

Composite sampling, which may potentially reduce the total asbestos content of the material, is only permitted when sampling joint compound, tape, and gypsum wallboard according to EPA’s Asbestos NESHAP Clarification Regarding Analysis of Multi-Layered Systems (40 CFR Part 61 FRL-4821-7).

Lead

Cal/OSHA Lead (8 CCR 1532.1) & CDPH (Title 17)

If paints or coatings containing any detectable concentration of lead will be impacted, a project should be considered regulated by Cal/OSHA as lead-related construction (8 CCR 1532.1).

A contractor who has employees that may be occupationally exposed to lead during a project must perform an initial determination regarding worker exposures to lead, which may be based on personal air monitoring at the start of the project, prior employee monitoring from the past 12 months under workplace conditions closely resembling the current project, or objective data demonstrating that exposures will not exceed the Cal/OSHA action level. It is the contractor’s responsibility to conduct their initial determination and comply with any relevant Cal/OSHA requirements.

Workers disturbing existing paints or coatings during a project must have lead awareness or action level training depending on the initial exposure determination and lead-safe work practices must be used. Disturbance of lead-containing paints or coatings must be performed within a contained area to prevent the spread and build-up of lead dust in order to comply with CDPH requirements. HEPA vacuums, dustless tools or shrouds, and/or intact removal of components should be employed to minimize lead dust generation and properly cleanup work areas following disturbance to lead-containing materials during a project. Waste generated during disturbance to lead-containing materials must be profiled in a hazardous waste determination to ascertain proper disposal requirements.

If the initial determination or initial exposure monitoring shows that workers impacting lead can be expected to be or are shown to be exposed to lead above the Cal/OSHA permissible exposure level workers and supervisors must have the requisite training and CDPH lead worker or supervisor certification.

It should be noted that depending on the timing of the project, lead requirements may be more stringent than those identified above due to changes to the lead construction standard (8 CCR 1532.1) that will be implemented on January 1, 2025.

Findings and Recommendations

Forensic Analytical Consulting Services, Inc. (FACS) was retained by Yosemite Community College District to perform an asbestos and lead paint survey of two press boxes at the Stadium on the east campus of Modesto Junior College, located at 435 College Avenue in Modesto, California

Asbestos

The following suspect material was sampled and laboratory analysis confirmed asbestos to be present:

- **Silver Paint and Mastic – Handrail Connections – Press Box C Roof**

The following suspect materials were sampled during this survey and identified to **not contain** asbestos by laboratory analysis:

- **Concrete**
- **Rolled Asphalt Roofing**
- **4” Baseboard and Mastic – Black**
- **Stucco**
- **Fiber Reinforced Plastic (FRP) and Glue**
- **Blue Paint on Wood**
- **Expansion Joint**

Please see Appendix A for a complete listing of materials sampled at the work areas and results from this survey. Any suspect materials not included must be assumed to be asbestos-containing materials until tested and proven not to contain asbestos.

While less than 100 square feet of asbestos-containing material is present at the structure to be demolished, FACS recommends a contractor registered with DOSH as an asbestos abatement contractor be used for the abatement. This is due to the specialty contractor retaining the workforce with necessary training, equipment and technical knowledge to perform the removal of materials in a legal fashion.

Workers abating asbestos-containing materials must have AHERA Worker training and one worker shall be trained to the AHERA Contractor-Supervisor level. Workers will need to use containment, work practices, and engineering controls as required by Cal/OSHA for the various classes of work that may be required to be performed. The contractor performing abatement must also file a “report of use” temporary worksite notification to the local Cal/OSHA office at least 24 hours prior to mobilizing to the site, regardless of the amount of material to be abated.

The US EPA NESHAP regulation requires the abatement of asbestos-containing materials that are friable or likely to become friable by forces impacting them as part of any renovation activities. Those materials that are friable, or non-friable materials made friable during removal, would need to be disposed of as hazardous (regulated) asbestos-containing material. Non-friable materials that are not made friable may be disposed of as non-hazardous asbestos-containing waste material at a landfill that will accept the waste.

For the demolition of the structures, the San Joaquin Valley Air Pollution Control District must be notified 10 working days prior to demolition commencing since these structures would be deemed as a regulated facility.

See the Regulations section above for additional information regarding asbestos compliance.

Lead

The following paint was found to be **lead-based** by laboratory analysis:

- **Blue Paint on Wood Walls – Press Box D-E**

The following paints/coatings were found to be **lead-containing** by laboratory analysis:

- **Blue Paint on Wood Windowsill / Walls – Press Box C**
- **White Paint on Wood Framing – Press Box C**
- **Silver Paint on Metal Handrail – Press Box C**
- **Blue Paint on Concrete Foundation – Press Box D-E**
- **Grey Coating on Metal Corrugated Walls – Grounds Shed**

The following paints/coatings did **not** contain detectable concentrations of lead above the laboratory's reporting limit:

- **White Paint on Wood Door – Press Box C**
- **Grey Paint on Wood Floor – Press Box C**
- **White Paint on Wood Door – Press Box D-E**
- **Beige Paint on Wood Door Frame – Press Box D-E**
- **White Paint on Wood Framing – Press Box D-E**
- **Grey Paint on Metal Door – Grounds Shed**

Please see Appendix B for a complete listing of paint / coating sample data from the work areas and results from this survey. Any paints not included in the survey must be handled as lead-containing unless sampled and proven otherwise.

Workers that impact paints containing any detectable amount of lead must use lead-safe practices and have valid training for the method of impact to comply with Cal/OSHA, 8 CCR 1532.1. To comply with CDPH requirements, any disturbance to paints or coatings that contain lead must be completed within a contained area to prevent the creation of a lead hazard. To comply with California Department of Toxic Substance Control and Title 22 requirements, any waste streams containing lead must be profiled prior to disposal.

See the Regulations section above for additional information regarding lead compliance. As noted above, additional lead paint handling requirements may be required if the work is to be performed after January 1, 2025 based on changes to Cal/OSHA's lead construction standard (8 CCR 1532.1).

FACS recommends that the results of this report be incorporated into any renovation plans provided for this project for informational purposes.

Limitations

This investigation is limited to the conditions and practices observed, and information made available to FACS. The methods, conclusions and recommendations provided are based on FACS' judgment, expertise, and the standard of practice for professional service. They are subject to the limitations and variability inherent in the methodology employed. As with all environmental investigations, this investigation is limited to the defined scope and does not purport to set forth all hazards, nor indicate that other hazards do not exist.

Please do not hesitate to contact our office at 209-551-2000 with any questions or concerns. Thank you for the opportunity to assist Yosemite Community College District with promoting worker safety and a healthy environment.

Respectfully,
FORENSIC ANALYTICAL



Eric Stockel
Environmental Health Specialist
CDPH LRC-00014855

Reviewed by:
FORENSIC ANALYTICAL



Chris Chipponeri
Director
DOSH CAC 10-4633
CDPH LRC-00000782

Appendix A

Asbestos Survey Summary, Sample Chain-of-Custody and Laboratory Results Report

Asbestos Survey Summary (Lab Report #B383008) MJC – East Campus Press Boxes – HBM Survey Survey Date: April 13, 2026						
Sample Number	**Material Description**	**Location(s) of Material**	**Material Number**	**Asbestos Content (%)**	**Asbestos NESHAP Category**	**Approximate Quantity (ft^2)**
01A	Blue Paint - Wood	Press Box D-E Center East Wall	01	Layer: Blue Non-Fibrous Material – None Detected	N/A	NA
02A, 02B	Expansion Joint	Press Box Landing, Bleacher Stairway	02	Layer: Grey Non-Fibrous Material – None Detected	N/A	N/A
03A, 03B	Concrete	Press Box Landing, Center Space of Press Box D-E	03	Layer: Grey Cementitious Material – None Detected	N/A	N/A
04A	**Silver Paint and Mastic**	**Handrail Connections**	**04**	**Layer: Black Semi Fibrous Tar – 2% Chrysotile** Layer: Silver Non-Fibrous Material – None Detected	**Category I Nonfriable**	**4 sq ft**
05A	Rolled Asphalt Roofing	Press Box C – Northeast Corner and Southwest Corner	05	Layer: Brown Wood – None Detected Layer: Black Tar – None Detected Layer: Black Felt – None Detected Layer: Black Tar – None Detected Layer: Black Felt – None Detected	N/A	N/A
06A, 06B	4″ Baseboard and Mastic	Press Box C – West Wall North and South End	06	Layer: Black Non-Fibrous Material – None Detected Layer: Beige Mastic – None Detected	N/A	N/A
07A, 07B	FRP and Glue	Press Box C – Wast Wall North and South End	07	Layer: White Semi-Fibrous Material – None Detected Layer: Beige Mastic – None Detected Layer: Wood – None Detected	N/A	N/A

Asbestos Survey Summary (Lab Report #B383008) MJC – East Campus Press Boxes – HBM Survey Survey Date: April 13, 2026						
Sample Number	**Material Description**	**Location(s) of Material**	**Material Number**	**Asbestos Content (%)**	**Asbestos NESHAP Category**	**Approximate Quantity (ft^2)**
08A, 08B, 08C	Stucco	Walls Above Restrooms	08	Layer: Grey Cementitious Material – None Detected	N/A	N/A

SGS FORENSIC LABORATORIES

Analysis Request Form (COC)

Client Name & Address: FACS Modesto, 313 Banner Court, Suite B, Modesto, CA 95356

Client No.: MOD08

PO / Job#: PJ91751

Date: 04/13/26

Turn Around Time: Same Day / 1Day / 2Day / 3Day / 4Day / 5Day

☐ PCM: ☐ NIOSH 7400A / ☐ NIOSH 7400B ☐ Rotometer

☒ PLM: ☒ Standard / ☐ Point Count 400 - 1000 / ☐ CARB 435

Contact: Chris Chipponeri

Phone: (209) 484-4648

E-mail: chris.c@facs.com

☐ TEM Air: ☐ AHERA / ☐ Yamate2 / ☐ NIOSH 7402
☐ TEM Bulk: ☐ Quantitative / ☐ Qualitative / ☐ Chatfield
☐ TEM Water: ☐ Potable / ☐ Non-Potable / ☐ Weight %
☐ TEM Microvac: ☐ Qual / ☐ D5755(str/area) / ☐ D5756(str/mass)

Site Name: MJC Stadium Press Box Demolition

☐ IAQ Particle Identification (PLM LAB) ☐ PLM Opaques/Soot
☐ Particle Identification (TEM LAB) ☐ Special Project

Site Location: 435 College Avenue, Modesto, CA 95350

☐ Metals Analysis Matrix: Method: Analytes:

Comments: **Please email results to chris.c@facs.com; Page 1 of 2**

☐ Silica in Air ☐ w/Gravimetry ☐ Quartz Only

Sample ID	Date / Time	Sample Location / Description	FOR AIR SAMPLES ONLY: Type	Time On/Off	Avg ~~LPM~~	~~Total Time~~	Sample Area / Air Volume
PJ91751-01A	04/13/26	Blue Paint on Wood - Press Boxes - East Wall Center - PB D-E	A P C				
PJ91751-02A	04/13/26	Expansion Joint - Press Box Landing - Center Between PBs	A P C				
PJ91751-02B	04/13/26	Expansion Joint - Press Box / Bleacher Stairway	A P C				
PJ91751-03A	04/13/26	Concrete - Press Box Landing - Center Between PBs	A P C				
PJ91751-03B	04/13/26	Concrete - Center Space of Press Box D-E - At Threshold	A P C				
PJ91751-04A	04/13/26	Silver Paint and Mastic - Handrail Connections - Press Box C at Roof - East Center	A P C				
PJ91751-05A	04/13/26	Rolled Asphalt Roofing - Press Box C - NE Corner	A P C				
PJ91751-05B	04/13/26	Rolled Asphalt Roofing - Press Box C - SW Corner	A P C				
PJ91751-06A	04/13/26	4" Baseboard and Mastic - Black - Press Box C - West Wall. South End	A P C				
PJ91751-06B	04/13/26	4" Baseboard and Mastic - Black - Press Box C - West Wall. North End	A P C				

Sampled By: Chris C Date/Time: 04/13

Shipped Via: ☒ Fed Ex ☐ UPS ☐ US Mail ☐ Courier ☐ Drop Off ☐ Other:

Relinquished By:	Relinquished By:	Relinquished By:
Date / Time: 04/13/26	Date / Time:	Date / Time:
Received By: MC	Received By:	Received By:
Date / Time: 4/14/26 430PM	Date / Time:	Date / Time:
Condition Acceptable? ☐ Yes ☐ No	Condition Acceptable? ☐ Yes ☐ No	Condition Acceptable? ☐ Yes ☐ No

SGS FORENSIC LABORATORIES

Analysis Request Form (COC)

Client Name & Address: FACS Modesto, 313 Banner Court, Suite B, Modesto, CA 95356

Client No.: MOD08

PO / Job#: PJ91751

Date: 04/13/26

Turn Around Time: Same Day / 1Day / ~~2Day~~ / 3Day / 4Day / 5Day

☐ PCM: ☐ NIOSH 7400A / ☐ NIOSH 7400B ☐ Rotometer

☒ PLM: ☒ Standard / ☐ Point Count 400 - 1000 / ☐ CARB 435

Contact: Chris Chipponeri

Phone: (209) 484-4648

E-mail: chris.c@facs.com

☐ TEM Air: ☐ AHERA / ☐ Yamate2 / ☐ NIOSH 7402
☐ TEM Bulk: ☐ Quantitative / ☐ Qualitative / ☐ Chatfield
☐ TEM Water: ☐ Potable / ☐ Non-Potable / ☐ Weight %
☐ TEM Microvac: ☐ Qual / ☐ D5755(str/area) / ☐ D5756(str/mass)

Site Name: MJC Stadium Press Box Demolition

☐ IAQ Particle Identification (PLM LAB) ☐ PLM Opaques/Soot
☐ Particle Identification (TEM LAB) ☐ Special Project

Site Location: 435 College Avenue, Modesto, CA 95350

☐ Metals Analysis Matrix: Method: Analytes:

Comments: **Please email results to chris.c@facs.com; Page 2 of 2**

☐ Silica in Air ☐ w/Gravimetry ☐ Quartz Only

Sample ID	Date / Time	Sample Location / Description	FOR AIR SAMPLES ONLY: Type	Time On/Off	Avg ~~LPM~~	~~Total Time~~	Sample Area / Air Volume
PJ91751-07A	04/13/26	FRP and Glue - White - Press Box C - West Wall. North End	A P C				
PJ91751-07B	04/13/26	FRP and Glue - White - Press Box C - West Wall. South End	A P C				
PJ91751-08A	04/13/26	Stucco - Walls Above Restrooms - Womens Side - South Wall. West End	A P C				
PJ91751-08B	04/13/26	Stucco - Walls Above Restrooms - West Wall, Center	A P C				
PJ91751-08C	04/13/26	Stucco - Walls Above Restrooms - Mens Side - North Wall. East End	A P C				
			A P C				
			A P C				
			A P C				
			A P C				
			A P C				

Sampled By: Chris C Date/Time: 04/13

Shipped Via: ☒ Fed Ex ☐ UPS ☐ US Mail ☐ Courier ☐ Drop Off ☐ Other:

Relinquished By: [signature] Date / Time: 04/13/26	Relinquished By: Date / Time:	Relinquished By: Date / Time:
Received By: MC Date / Time: 4/14/26 930FX Condition Acceptable? ☐ Yes ☐ No	Received By: Date / Time: Condition Acceptable? ☐ Yes ☐ No	Received By: Date / Time: Condition Acceptable? ☐ Yes ☐ No

Bulk Asbestos Analysis

(EPA Method 40CFR, Part 763, Appendix E to Subpart E and EPA 600/R-93-116, Visual Area Estimation)
NVLAP Lab Code: 101459-0

FACS - Modesto
Chris Chipponeri
313 Banner Court
Suite B
Modesto, CA 95356

Client ID: MOD08
Report Number: B383008
Date Received: 04/14/26
Date Analyzed: 04/16/26
Date Printed: 04/16/26
First Reported: 04/16/26

Job ID/Site: PJ91751; Yosemite Community College District 21228 Cabot Blvd., Hayward, CA 94545
Date(s) Collected: 04/13/2026

SGSFL Job ID: MOD08
Total Samples Submitted: 15
Total Samples Analyzed: 15

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
PJ91751-01A	12856843						
Layer: Blue Non-Fibrous Material			**ND**				
Total Percentage Values of Non-Asbestos Fibrous Components:							
PJ91751-02A	12856844						
Layer: Grey Non-Fibrous Material			**ND**				
Total Percentage Values of Non-Asbestos Fibrous Components: Cellulose (Trace)							
PJ91751-02B	12856845						
Layer: Grey Non-Fibrous Material			**ND**				
Total Percentage Values of Non-Asbestos Fibrous Components: Cellulose (Trace)							
PJ91751-03A	12856846						
Layer: Grey Cementitious Material			**ND**				
Total Percentage Values of Non-Asbestos Fibrous Components: Cellulose (Trace)							
PJ91751-03B	12856847						
Layer: Grey Cementitious Material			**ND**				
Total Percentage Values of Non-Asbestos Fibrous Components: Cellulose (Trace)							
PJ91751-04A	12856848						
Layer: Black Semi-Fibrous Tar		Chrysotile	**2 %**				
Layer: Silver Non-Fibrous Material			**ND**				
Total Percentage Values of Non-Asbestos Fibrous Components: Cellulose (Trace)							
PJ91751-05A	12856849						
Layer: Brown Wood			**ND**				
Layer: Black Tar			**ND**				
Layer: Black Felt			**ND**				
Layer: Black Tar			**ND**				
Layer: Black Felt			**ND**				
Total Percentage Values of Non-Asbestos Fibrous Components: Cellulose (55 %) Fibrous Glass (Trace) Synthetic (5 %)							
Comment: Bulk complex sample.							

Report Number: B383008

Client Name: FACS - Modesto **Date Printed:** 04/16/26

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
PJ91751-05B	12856850						
Layer: Black Tar			**ND**				
Layer: Brown Wood			**ND**				
Total Percentage Values of Non-Asbestos Fibrous Components: Cellulose (85 %) Synthetic (3 %)							
PJ91751-06A	12856851						
Layer: Black Non-Fibrous Material			**ND**				
Layer: Beige Mastic			**ND**				
Total Percentage Values of Non-Asbestos Fibrous Components: Cellulose (Trace)							
PJ91751-06B	12856852						
Layer: Black Non-Fibrous Material			**ND**				
Layer: Beige Mastic			**ND**				
Total Percentage Values of Non-Asbestos Fibrous Components: Cellulose (Trace)							
PJ91751-07A	12856853						
Layer: White Semi-Fibrous Material			**ND**				
Layer: Beige Mastic			**ND**				
Layer: Wood			**ND**				
Total Percentage Values of Non-Asbestos Fibrous Components: Cellulose (20 %) Fibrous Glass (65 %)							
PJ91751-07B	12856854						
Layer: White Semi-Fibrous Material			**ND**				
Layer: Beige Mastic			**ND**				
Layer: Wood			**ND**				
Total Percentage Values of Non-Asbestos Fibrous Components: Cellulose (20 %) Fibrous Glass (65 %)							
PJ91751-08A	12856855						
Layer: Grey Cementitious Material			**ND**				
Total Percentage Values of Non-Asbestos Fibrous Components: Cellulose (Trace)							
PJ91751-08B	12856856						
Layer: Grey Cementitious Material			**ND**				
Total Percentage Values of Non-Asbestos Fibrous Components: Cellulose (Trace)							
PJ91751-08C	12856857						
Layer: Grey Cementitious Material			**ND**				
Total Percentage Values of Non-Asbestos Fibrous Components: Cellulose (Trace)							

19743 Cabot Blvd., Hayward, CA 94545 | Phone: 510.887.8828 | https://www.sgs-ehsusa.com/

Report Number: B383008

Client Name: FACS - Modesto **Date Printed:** 04/16/26

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer



Maria Cosper, Laboratory Supervisor, Hayward Laboratory

Note: Limit of Quantification ('LOQ') = 1%. 'Trace' denotes the presence of asbestos below the LOQ. 'ND' = 'None Detected'.

Inhomogeneous samples are separated into homogenous subsamples and analyzed individually. Analytical results and reports are generated by SGS at the request of and for the exclusive use of the person or entity (client) named on such report. Results, reports or copies of same will not be released by SGS to any third party without prior written request from client. This report applies only to the sample(s) tested. Supporting laboratory documentation is available upon request. This report must not be reproduced except in full, unless approved by SGS. The client is solely responsible for the use and interpretation of test results and reports requested from SGS. This report must not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government. SGS is not able to assess the degree of hazard resulting from materials analyzed. SGS reserves the right to dispose of all samples after a period of thirty (30) days, according to all state and federal guidelines, unless otherwise specified. All samples were received in acceptable condition unless otherwise noted.

19743 Cabot Blvd., Hayward, CA 94545 | Phone: 510.887.8828 | https://www.sgs-ehsusa.com/

Appendix B

Lead Paint Chip Summary, Sample Chain-of-Custody, Laboratory Results Report and CDPH 8552 Forms

Lead Paint Chip Summary (Lab Report #M277498 and #M277775) YCCD – MJC Stadium Press Box – HBM Survey Survey Date: April 13 and 21, 2026					
Sample Number	**Component Location**	**Component**	**Color**	**Substrate**	**Analytical Results (weight percent of lead)**
Pb01	**Press Box C – East Wall Exterior**	**Windowsill**	**Blue**	**Wood**	**0.26**
Pb02	Press Box C – South Door Exterior	Door	White	Wood	<0.006
Pb03	Press Box C – Center Interior	Floor	Grey	Wood	<0.006
Pb04	**Press Box C – Center interior**	**Framing**	**White**	**Wood**	**0.058**
Pb05	**Press Box C – Northwest Side Roof Access Exterior**	**Handrail**	**Silver**	**Metal**	**0.33**
Pb06	**Press Box D-E – Center East Wall Exterior**	**Wall**	**Blue**	**Wood**	**0.71**
Pb07	**Press Box D-E – Center East Side Exterior**	**Foundation**	**Blue**	**Concrete**	**0.16**
Pb08	Press Box D-E – South Door Exterior	Door	White	Wood	<0.006
Pb09	Press Box D-E – West Side Interior	Door Frame	Beige	Wood	<0.006
Pb10	Press Box D-E – South End Interior	Framing	White	Wood	<0.006
11Pb	Grounds Shed – South Side Exterior	Door	Grey	Metal	<0.009
12Pb	**Grounds Shed – Northwest Side Exterior**	**Wall**	**Grey**	**Metal**	**0.21**

SGS FORENSIC LABORATORIES

Analysis Request Form (COC)

Client Name & Address: FACS Modesto 313 Banner Court, Suite B Modesto, CA 95356	Client No.: MOD08
PO / Job#: PJ91751	Date: 04/13/26
Turn Around Time: ☐ Same Day / ☐ 1Day / ☒ 2Day / ☐ 3Day / ☐ 4Day / ☐ 5Day	
☐ PCM: ☐ NIOSH 7400A / ☐ NIOSH 7400B ☐ Rotometer	
☐ PLM: ☐ Standard / ☐ Point Count 400 - 1000 / ☐ CARB 435	
Contact: Chris Chipponeri	Phone: (209) 484-4648
E-mail: chris.c@facs.com	☐ TEM Air: ☐ AHERA / ☐ Yamate2 / ☐ NIOSH 7402 ☐ TEM Bulk: ☐ Quantitative / ☐ Qualitative / ☐ Chatfield ☐ TEM Water: ☐ Potable / ☐ Non-Potable / ☐ Weight % ☐ TEM Microvac: ☐ Qual / ☐ D5755(str/area) / ☐ D5756(str/mass)
Site Name: MJC Stadium Press Box Demolition	☐ IAQ Particle Identification (PLM LAB) ☐ PLM Opaques/Soot ☐ Particle Identification (TEM LAB) ☐ Special Project
Site Location: 435 College Avenue, Modesto, CA 95350	☒ Metals Analysis Matrix: Paint Chip Method: Flame AA Analytes: Lead
Comments: **Please email results to chris.c@facs.com**	☐ Silica in Air ☐ w/Gravimetry ☐ Quartz Only

Sample ID	Date / Time	Sample Location / Description	FOR AIR SAMPLES ONLY: Type	Time On/Off	Avg ~~LPM~~	~~Total Time~~	Sample Area / Air Volume
PJ91751-01Pb	04/13/26	Blue paint on wood window sill / walls - Press Box C - East Wall Center Exterior	A P C				
PJ91751-02Pb	04/13/26	White paint on wood door - Press Box C - South Door Exterior	A P C				
PJ91751-03Pb	04/13/26	Grey paint on wood floor - Press Box C - Interior Center	A P C				
PJ91751-04Pb	04/13/26	White paint on wood framing - Press Box C - Interior Center	A P C				
PJ91751-05Pb	04/13/26	Silver paint on metal handrail - Press Box C - NW Side Roof Area Exterior	A P C				
PJ91751-06Pb	04/13/26	Blue paint on wood walls - Press Box D-E - East Wall Center Exterior	A P C				
PJ91751-07Pb	04/13/26	Blue paint on concrete foundation - Press Box D-E - East Side Center Exterior	A P C				
PJ91751-08Pb	04/13/26	White paint on wood door - Press Box D-E - South Door Exterior	A P C				
PJ91751-09Pb	04/13/26	Beige paint on wood door frame - Press Box D-E - Center Space - West Side. North Interior	A P C				
PJ91751-10Pb	04/13/26	White paint on wood framing - Press Box D-E - North Space - South End Interior	A P C				

Sampled By: Chris Chipponeri Date/Time: 04/13/26 Shipped Via: ☐ Fed Ex ☐ UPS ☐ US Mail ☐ Courier ☐ Drop Off ☐ Other:

Relinquished By: [signature] Date / Time: 04/13/26	Relinquished By: Date / Time:	Relinquished By: Date / Time:
Received By: MC Date / Time: 4/14/26 930 PT Condition Acceptable? ☐ Yes ☐ No	Received By: Date / Time: Condition Acceptable? ☐ Yes ☐ No	Received By: Date / Time: Condition Acceptable? ☐ Yes ☐ No

Metals Analysis of Paints

(AIHA-LAP, LLC Accreditation, Lab ID #101762)

FACS - Modesto
Chris Chipponeri
313 Banner Court
Suite B
Modesto, CA 95356

Client ID: MOD08
Report Number: M277498
Date Received: 04/14/26
Date Analyzed: 04/15/26
Date Printed: 04/15/26
First Reported: 04/15/26

Job ID / Site: PJ91751; Yosemite Community College District 21228 Cabot Blvd., Hayward, CA 94545
SGSFL Job ID: MOD08

Date(s) Collected: 4/13/26
Total Samples Submitted: 10
Total Samples Analyzed: 10

Sample Number	Lab Number	Analyte	Result	Result Units	Reporting Limit*	Method Reference
PJ91751-01PB	30968439	Pb	0.26	wt%	0.02	EPA 3050B/7000B
PJ91751-02PB	30968440	Pb	< 0.006	wt%	0.006	EPA 3050B/7000B
PJ91751-03PB	30968441	Pb	< 0.006	wt%	0.006	EPA 3050B/7000B
PJ91751-04PB	30968442	Pb	0.058	wt%	0.006	EPA 3050B/7000B
PJ91751-05PB	30968443	Pb	0.33	wt%	0.02	EPA 3050B/7000B
Comment:	Sample submission below 0.1 grams.					
PJ91751-06PB	30968444	Pb	0.71	wt%	0.06	EPA 3050B/7000B
PJ91751-07PB	30968445	Pb	0.16	wt%	0.02	EPA 3050B/7000B
PJ91751-08PB	30968446	Pb	< 0.006	wt%	0.006	EPA 3050B/7000B
PJ91751-09PB	30968447	Pb	< 0.006	wt%	0.006	EPA 3050B/7000B
PJ91751-10PB	30968448	Pb	< 0.006	wt%	0.006	EPA 3050B/7000B

* The Reporting Limit represents the lowest amount of analyte that the laboratory can confidently detect in the sample, and is not a regulatory level. The Units for the Reporting Limit are the same as the Units for the Final Results.

Kevin Poon

Kevin Poon, Laboratory Supervisor, Hayward Laboratory

Analytical results and reports are generated by SGS at the request of and for the exclusive use of the person or entity (client) named on such report. Results, reports or copies of same will not be released by SGS to any third party without prior written request from client. This report applies only to the sample(s) tested. Supporting laboratory documentation is available upon request. This report must not be reproduced except in full, unless approved by SGS. The client is solely responsible for the use and interpretation of test results and reports requested from SGS. SGS is not able to assess the degree of hazard resulting from materials analyzed. SGS reserves the right to dispose of all samples after a period of thirty (30) days, according to all state and federal guidelines, unless otherwise specified. Any modifications that have been made to referenced test methods are documented in SGS Standard Operating Procedures Manual. Sample results have not been blank corrected. Quality control and sample receipt condition were acceptable unless otherwise noted.
Note* Sampling data used in this report was provided by the client as noted on the associated chain of custody form.

SGS FORENSIC LABORATORIES

Analysis Request Form (COC)

Client Name & Address: FACS Modesto 313 Banner Court, Suite B Modesto, CA 95356	Client No.: MOD08
PO / Job#: PJ91751	Date: 04/21/26
Turn Around Time: Same Day / 1Day / ~~2Day~~ / 3Day / 4Day / 5Day	
☐ PCM: ☐ NIOSH 7400A / ☐ NIOSH 7400B ☐ Rotometer	
☐ PLM: ☐ Standard / ☐ Point Count 400 - 1000 / ☐ CARB 435	
Contact: Chris Chipponeri	Phone: (209) 484-4648
E-mail: chris.c@facs.com	☐ TEM Air: ☐ AHERA / ☐ Yamate2 / ☐ NIOSH 7402 ☐ TEM Bulk: ☐ Quantitative / ☐ Qualitative / ☐ Chatfield ☐ TEM Water: ☐ Potable / ☐ Non-Potable / ☐ Weight % ☐ TEM Microvac: ☐ Qual / ☐ D5755(str/area) / ☐ D5756(str/mass)
Site Name: MJC East Stadium Press Box Demolition	☐ IAQ Particle Identification (PLM LAB) ☐ PLM Opaques/Soot ☐ Particle Identification (TEM LAB) ☐ Special Project
Site Location: 435 College Avenue, Modesto, CA 95350	☒ Metals Analysis Matrix: Paint Chip Method: Flame AA Analytes: Lead
Comments: **Please email results to chris.c@facs.com**	☐ Silica in Air ☐ w/Gravimetry ☐ Quartz Only

Sample ID	Date / Time	Sample Location / Description	FOR AIR SAMPLES ONLY				Sample Area / Air Volume
			Type	Time On/Off	Avg ~~LPM~~	~~Total Time~~	
PJ91751-11Pb	04/21/26	Grey paint on metal door - Grounds Shed below Southwest Bleacher Stand	A P C				
PJ91751-12Pb	04/21/26	Grey coating on metal corrugated walls - Grouns SHed below Southwest Bleacher Stand	A P C				
			A P C				
			A P C				
			A P C				
			A P C				
			A P C				
			A P C				
			A P C				
			A P C				

Sampled By: Chris Chipponeri Date/Time: 04/21/26 Shipped Via: ☐ Fed Ex ☐ UPS ☐ US Mail ☐ Courier ☐ Drop Off ☐ Other:

Relinquished By: [signature] Date / Time: 04/21/26	Relinquished By: Date / Time:	Relinquished By: Date / Time:
Received By: [signature] Date / Time: 4/22/26 @ 930 PM Condition Acceptable? ☐ Yes ☐ No	Received By: Date / Time: Condition Acceptable? ☐ Yes ☐ No	Received By: Date / Time: Condition Acceptable? ☐ Yes ☐ No

Metals Analysis of Paints

(AIHA-LAP, LLC Accreditation, Lab ID #101762)

FACS - Modesto
Chris Chipponeri
313 Banner Court
Suite B
Modesto, CA 95356

Client ID: MOD08
Report Number: M277775
Date Received: 04/22/26
Date Analyzed: 04/24/26
Date Printed: 04/24/26
First Reported: 04/24/26

Job ID / Site: PJ91751; Yosemite Community College District 435 College Avenue Modesto CA
SGSFL Job ID: MOD08

Date(s) Collected: 4/21/26
Total Samples Submitted: 2
Total Samples Analyzed: 2

Sample Number	Lab Number	Analyte	Result	Result Units	Reporting Limit*	Method Reference
PJ91751-11PB	30968763	Pb	< 0.009	wt%	0.009	EPA 3050B/7000B
PJ91751-12PB	30968764	Pb	0.21	wt%	0.02	EPA 3050B/7000B

* The Reporting Limit represents the lowest amount of analyte that the laboratory can confidently detect in the sample, and is not a regulatory level. The Units for the Reporting Limit are the same as the Units for the Final Results.

Kevin Poon

Kevin Poon, Laboratory Supervisor, Hayward Laboratory

Analytical results and reports are generated by SGS at the request of and for the exclusive use of the person or entity (client) named on such report. Results, reports or copies of same will not be released by SGS to any third party without prior written request from client. This report applies only to the sample(s) tested. Supporting laboratory documentation is available upon request. This report must not be reproduced except in full, unless approved by SGS. The client is solely responsible for the use and interpretation of test results and reports requested from SGS. SGS is not able to assess the degree of hazard resulting from materials analyzed. SGS reserves the right to dispose of all samples after a period of thirty (30) days, according to all state and federal guidelines, unless otherwise specified. Any modifications that have been made to referenced test methods are documented in SGS Standard Operating Procedures Manual. Sample results have not been blank corrected. Quality control and sample receipt condition were acceptable unless otherwise noted.
Note* Sampling data used in this report was provided by the client as noted on the associated chain of custody form.

LEAD HAZARD EVALUATION REPORT

Section 1 — Date of Lead Hazard Evaluation April 13, 2026

Section 2 — Type of Lead Hazard Evaluation (Check one box only)

☑ Lead Inspection ☐ Risk assessment ☐ Clearance Inspection ☐ Other (specify) _____

Section 3 — Structure Where Lead Hazard Evaluation Was Conducted

Address [number, street, apartment (if applicable)]	City	County	Zip Code
435 College Avenue	Modesto	Stanislaus	95350

Construction date (year) of structure	Type of structure	Children living in structure?
Uknown	☐ Multi-unit building ☐ School or daycare ☐ Single family dwelling ☑ Other Stadium	☐ Yes ☑ No ☐ Don't Know

Section 4 — Owner of Structure (if business/agency, list contact person)

Name	Telephone number
Yosemite Community College District / Yolanda Perregil	209-575-6512

Address [number, street, apartment (if applicable)]	City	State	Zip Code
2201 Blue Gum Avenue	Modesto	CA	95350

Section 5 — Results of Lead Hazard Evaluation (check all that apply)

☐ No lead-based paint detected ☑ Intact lead-based paint detected ☐ Deteriorated lead-based paint detected

☑ No lead hazards detected ☐ Lead-contaminated dust found ☐ Lead-contaminated soil found ☐ Other _____

Section 6 — Individual Conducting Lead Hazard Evaluation

Name	Telephone number
Chris Chipponeri	209-551-2000

Address [number, street, apartment (if applicable)]	City	State	Zip Code
313 Banner Court, Suite B	Modesto	CA	95356

CDPH certification number	Signature	Date
LRC-00000782		04/20/26

Name and CDPH certification number of any other individuals conducting sampling or testing (if applicable)

Section 7 — Attachments

A. A foundation diagram or sketch of the structure indicating the specifc locations of each lead hazard or presence of lead-based paint;
B. Each testing method, device, and sampling procedure used;
C. All data collected, including quality control data, laboratory results, including laboratory name, address, and phone number.

First copy and attachments retained by inspector

Second copy and attachments retained by owner

Third copy only (no attachments) mailed or faxed to:

California Department of Public Health
Childhood Lead Poisoning Prevention Branch Reports
850 Marina Bay Parkway, Building P, Third Floor
Richmond, CA 94804-6403
Fax: (510) 620-5656

LEAD HAZARD EVALUATION REPORT

Section 1 — Date of Lead Hazard Evaluation April 21, 2026

Section 2 — Type of Lead Hazard Evaluation (Check one box only)

☑ Lead Inspection ☐ Risk assessment ☐ Clearance Inspection ☐ Other (specify) _____

Section 3 — Structure Where Lead Hazard Evaluation Was Conducted

Address [number, street, apartment (if applicable)]	City	County	Zip Code
435 College Avenue	Modesto	Stanislaus	95350

Construction date (year) of structure	Type of structure		Children living in structure?	
Uknown	☐ Multi-unit building	☐ School or daycare	☐ Yes	☑ No
	☐ Single family dwelling	☑ Other Stadium	☐ Don't Know	

Section 4 — Owner of Structure (if business/agency, list contact person)

Name	Telephone number
Yosemite Community College District / Yolanda Perregil	209-575-6512

Address [number, street, apartment (if applicable)]	City	State	Zip Code
2201 Blue Gum Avenue	Modesto	CA	95358

Section 5 — Results of Lead Hazard Evaluation (check all that apply)

☑ No lead-based paint detected ☐ Intact lead-based paint detected ☐ Deteriorated lead-based paint detected

☑ No lead hazards detected ☐ Lead-contaminated dust found ☐ Lead-contaminated soil found ☐ Other _____

Section 6 — Individual Conducting Lead Hazard Evaluation

Name	Telephone number
Chris Chipponeri	209-551-2000

Address [number, street, apartment (if applicable)]	City	State	Zip Code
313 Banner Court, Suite B	Modesto	CA	95351

CDPH certification number	Signature	Date
LRC-00000782		05/05/26

Name and CDPH certification number of any other individuals conducting sampling or testing (if applicable)

Section 7 — Attachments

A. A foundation diagram or sketch of the structure indicating the specifc locations of each lead hazard or presence of lead-based paint;
B. Each testing method, device, and sampling procedure used;
C. All data collected, including quality control data, laboratory results, including laboratory name, address, and phone number.

First copy and attachments retained by inspector

Second copy and attachments retained by owner

Third copy only (no attachments) mailed or faxed to:

California Department of Public Health
Childhood Lead Poisoning Prevention Branch Reports
850 Marina Bay Parkway, Building P, Third Floor
Richmond, CA 94804-6403
Fax: (510) 620-5656

Appendix C
Site Photos and Sample Location Drawings



Photo #1 - Exterior of Press Box C



Photo #2 – Interior South Space of Press Box D-E



Photo #3 – Roof of Press Box D-E (Metal Corrugated)



Photo #4 – Roof of Press Box C

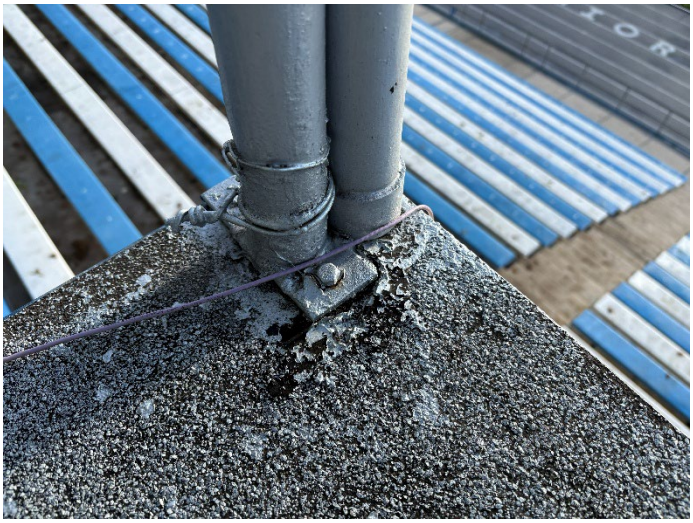
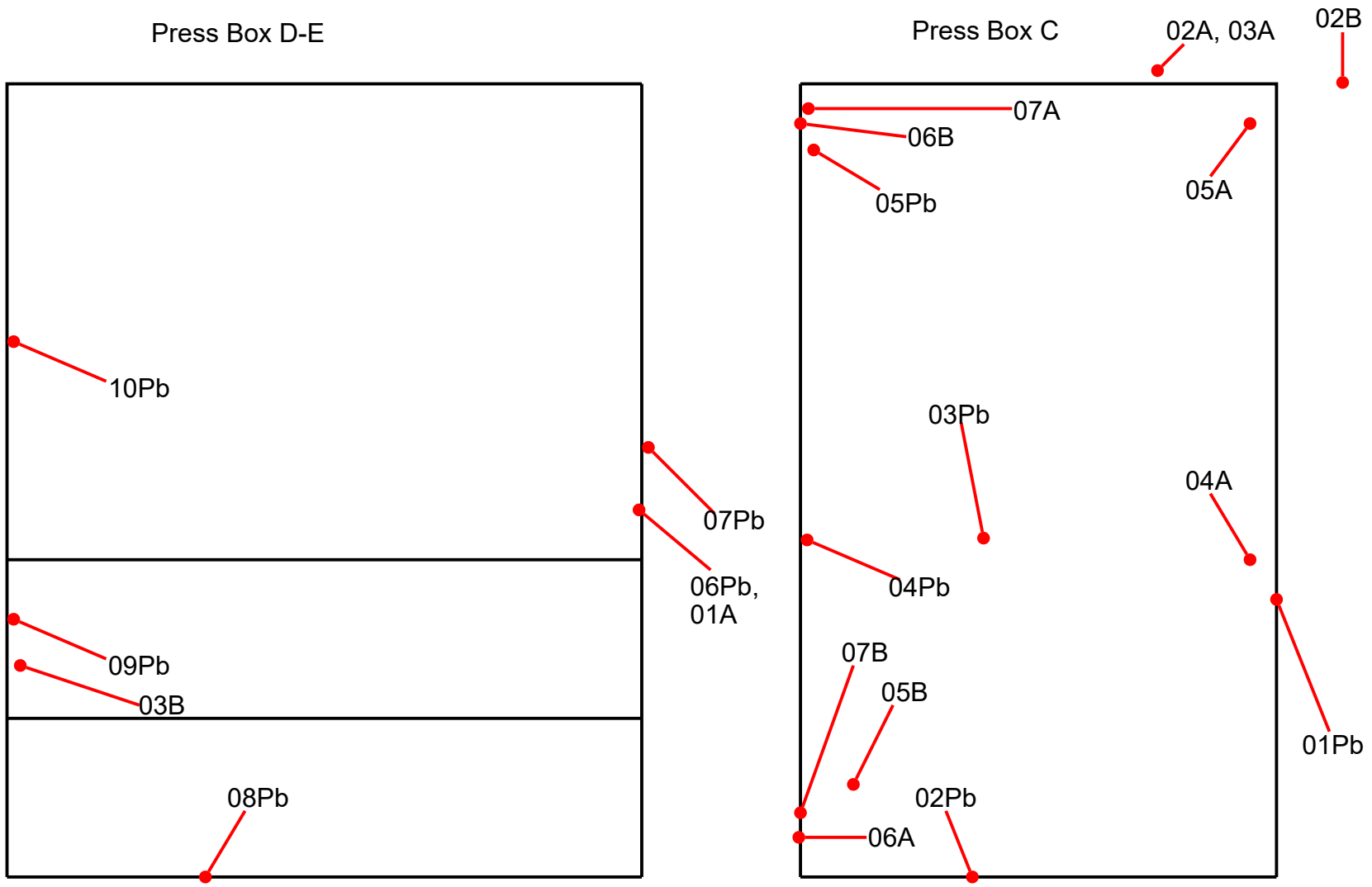


Photo #5 – Silver Paint and Mastic at Handrail Connection



Photo #6 – Exterior of Press Box D-E



FACS 35
Forensic Analytical Consulting Services
CELEBRATING 35 YEARS OF EXCELLENCE · 1986–2021

313 Banner Court, Suite B
Modesto, CA 95356

N

Sample Location

MJC East Campus
Stadium Press Boxes

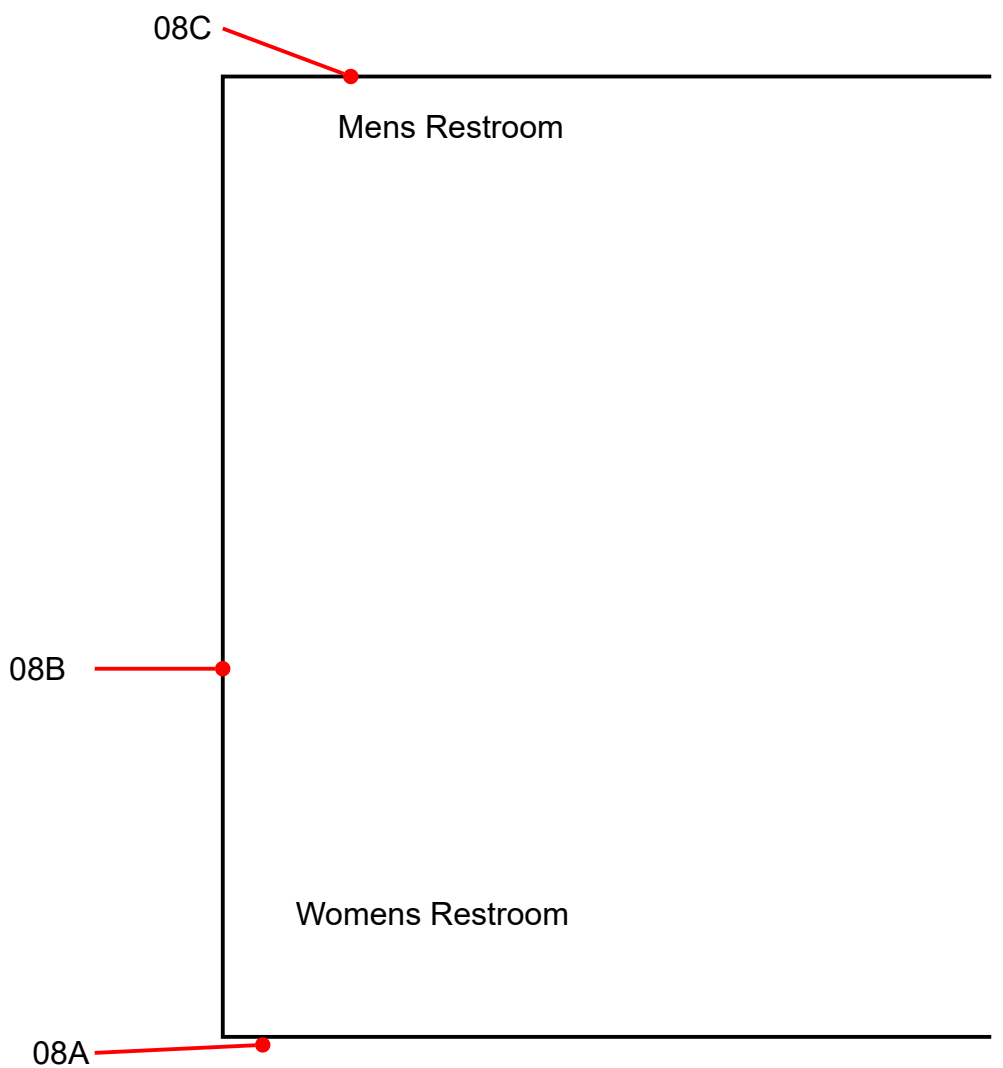
Yosemite Community College District

LOCATION:
435 College Avenue
Modesto, CA 95350

DRAWN BY:
Chris Chipponeri

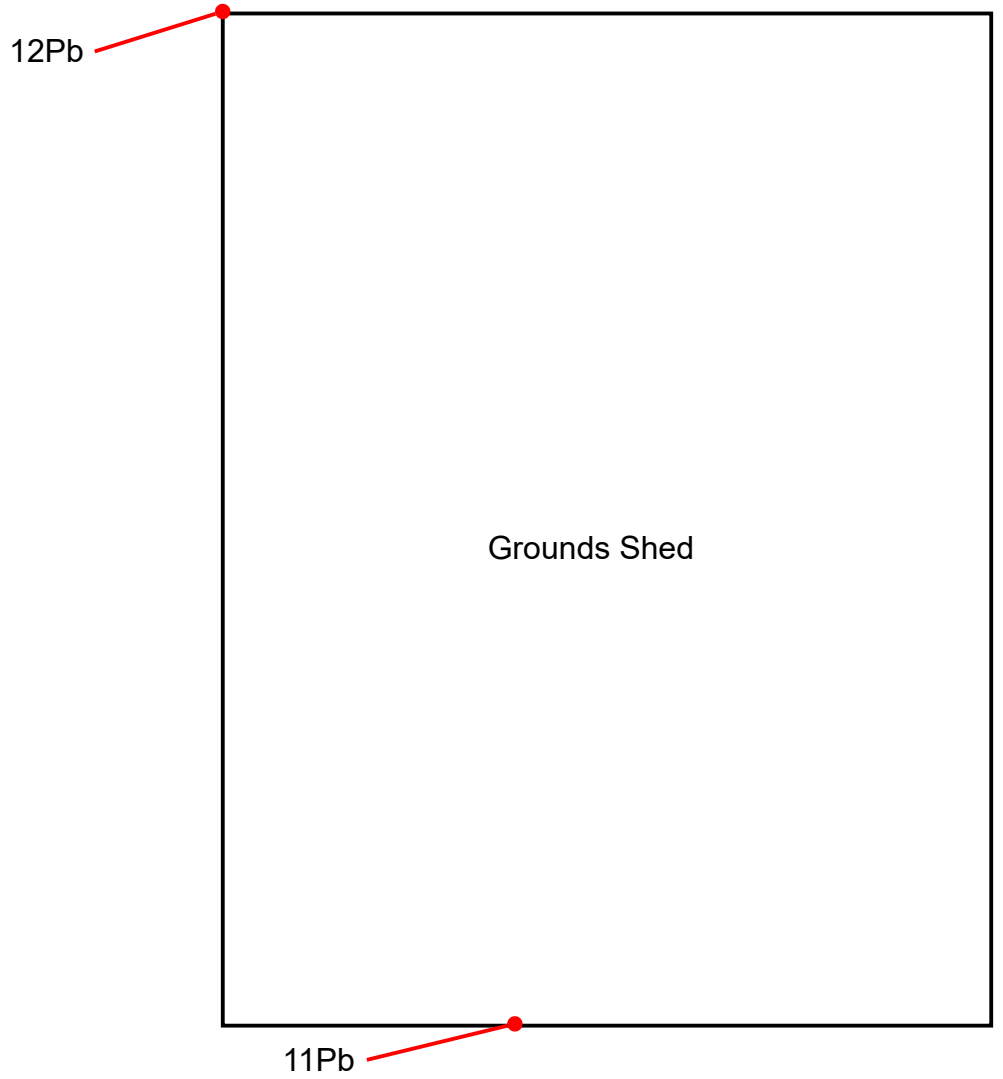
FACS PROJECT No.:
PJ91751

This is a design drawing and is the property of Forensic Analytical Consulting Services, Inc. It is not intended to replace required architectural or engineering plans.



FACS 35 Forensic Analytical Consulting Services CELEBRATING 35 YEARS OF EXCELLENCE · 1986–2021 313 Banner Court, Suite B Modesto, CA 95356	N	Sample Location	MJC East Campus Stadium Press Boxes Restroom Area	Yosemite Community College District LOCATION: 435 College Avenue Modesto, CA 95350	DRAWN BY: Chris Chipponeri FACS PROJECT No.: PJ91751

This is a design drawing and is the property of Forensic Analytical Consulting Services, Inc. It is not intended to replace required architectural or engineering plans.



FACS 35 Forensic Analytical Consulting Services CELEBRATING 35 YEARS OF EXCELLENCE · 1986–2021 313 Banner Court, Suite B Modesto, CA 95356	N	Sample Location	MJC East Campus Stadium Press Boxes Grounds Shed (Southwest Bleachers)	Yosemite Community College District LOCATION: 435 College Avenue Modesto, CA 95350	DRAWN BY: Chris Chipponeri FACS PROJECT No.: PJ91751

This is a design drawing and is the property of Forensic Analytical Consulting Services, Inc. It is not intended to replace required architectural or engineering plans.

Appendix D
Certifications of Personnel and Laboratories

STATE OF CALIFORNIA Gavin Newsom, Governor

DEPARTMENT OF INDUSTRIAL RELATIONS
Division of Occupational Safety and Health-Asbestos & Carcinogen Unit
1750 Howe Avenue, Suite 460
Sacramento, CA 95825
(916) 574-2993 Office http://www.dir.ca.gov/dosh/asbestos.html actu@dir.ca.gov

005174633C 339

May 06, 2025

Christopher J Chipponeri
1401 Louise Avenue
Modesto CA 95350

Dear Certified Asbestos Consultant or Technician:

Enclosed is your certification card. **To maintain your certification, you must abide by the rules printed on the back of the certification card.**

Your certification is valid for a period of one year. If you wish to renew your certification, you must apply for renewal at least 60 days before the expiration date shown on your card. [8 CCR 341.15(h)(1)].

Please hold and do not send copies of your required AHERA refresher renewal certificates to our office until you apply for renewal of your certification.

Certificates must be kept current if you are actively working as a CAC or CSST. The grace period is only for those who are not actively working as an asbestos consultant or site surveillance technician.

Please contact our office at the above address or email w any changes in your contact/mailing information within 15 days of the change.

Sincerely,

Dean Mochrie, CAC
Senior Safety Engineer

Attachment: Certification Card

cc: File



Renewal – Card Attached (08/24)

Forensic Analytical Consulting Services, Inc.

This is to confirm that

Chris Chipponeri

Has attended the Four hour

AHERA Refresher Course for Asbestos Inspectors

And has completed the requisite training for asbestos accreditation under TSCA Title II

Course Date: 08-28-2025 to 08-28-2025

Certificate Number: PETBIR2025183
Valid Until: August 28, 2026

Cal/OSHA Approval Number: CA-025-06

FACS
Forensic Analytical Consulting Services

Fred J. Vinciguerra, Chief Executive Officer
Forensic Analytical Consulting Services, Inc.
21228 Cabot Blvd, Hayward, CA 94545
(800) 677-1483

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH

LEAD-RELATED CONSTRUCTION CERTIFICATE

INDIVIDUAL:	CERTIFICATE TYPE:	NUMBER:	EXPIRATION DATE:
 **Chris Chipponeri**	Lead Inspector/Assessor	LRC-00000782	6/20/2026

Disclaimer: This document alone should not be relied upon to confirm certification status. Compare the individual's photo and name to another valid form of government issued photo identification. Verify the individual's certification status by searching for Lead-Related Construction Professionals at www.cdph.ca.gov/programs/clppb or calling (800) 597-LEAD

United States Department of Commerce
National Institute of Standards and Technology

Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 101459-0

SGS Forensic Laboratories

Hayward, CA

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Asbestos Fiber Analysis

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique on ISO/IEC 17025).

2025-07-01 through 2026-06-30

Effective Dates

For the National Voluntary Laboratory Accreditation Program

National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

SGS Forensic Laboratories
19743 Cabot Blvd.
Hayward, CA 94545
Ryan Sutliffe
Phone: 702-332-1937
Email: ryan.sutliffe@sgs.com
www.falaboratories.com

ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 101459-0**

Bulk Asbestos Analysis

Code	*Description*
18/A01	EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples
18/A03	EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Airborne Asbestos Analysis

Code	*Description*
18/A02	U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.



For the National Voluntary Laboratory Accreditation Program

AIHA Laboratory Accreditation Programs, LLC

acknowledges that

SGS North America

19743 Cabot Blvd. Hayward, CA 94545

Laboratory ID: LAP-101762

along with all premises from which key activities are performed, as listed above, has fulfilled the requirements of the AIHA Laboratory Accreditation Programs, LLC (AIHA LAP) accreditation to the ISO/IEC 17025:2017 international standard, General Requirements for the Competence of Testing and Calibration Laboratories in the following:

LABORATORY ACCREDITATION PROGRAMS

☑	**INDUSTRIAL HYGIENE**	Accreditation Expires: December 01, 2027
☑	**ENVIRONMENTAL LEAD**	Accreditation Expires: December 01, 2027
☑	**ENVIRONMENTAL MICROBIOLOGY**	Accreditation Expires: December 01, 2027
☐	**FOOD**	Accreditation Expires:
☐	**UNIQUE SCOPES**	Accreditation Expires:
☐	**BE FIELD/MOBILE**	Accreditation Expires:

Specific Field(s) of Testing/Method(s) within each Accreditation Program for which the above named laboratory maintains accreditation is outlined on the attached Scope of Accreditation. Continued accreditation is contingent upon successful on-going compliance with ISO/IEC 17025:2017 and AIHA LAP requirements. This certificate is not valid without the attached Scope of Accreditation. Please review the AIHA LAP website (www.aihaaccreditedlabs.org) for the most current Scope.

Olena Bulgakova

Olena Bulgakova
Accreditation Director, AIHA Laboratory Accreditation Programs, LLC

Revision22: 12/01/2025

Date Issued: 02/01/2026

Right People

Right Perspective

Right Now

www.facs.com

APPENDIX NO. 5

DSA 403-C

CALGREEN CODE SUMBITTAL CHECKLIST

DSA

403-C

CALGREEN CODE SUBMITTAL CHECKLIST

PURPOSE

K-12 schools and community college projects submitted to the Division of the State Architect (DSA) as a single project, increments, or pre-checked (PC) applications, must comply with the Title 24, Part 11, California Green Building Standards Code (CALGreen). This form lists the mandatory measures required for CALGreen compliance, as applicable, and must be submitted with the construction documents. Applicable CALGreen mandatory measures, including applicable worksheets and declaration statements, are required to be included in the construction documents.

CALGreen Section 306 Voluntary Measures encourages building practices that improve public health, safety, and general welfare by promoting the use of building concepts which minimize the building's impact on the environment and promote a more sustainable design. Chapter 5 Nonresidential Mandatory Measures that are not adopted by DSA-SS, and Nonresidential Voluntary Measures indicated in CALGreen Appendix A5, Divisions A5.1 through A5.5, are voluntary. Including voluntary measures into the project is encouraged; however, DSA will not review the compliance of voluntary measures included in the project.

Documentation demonstrating compliance with CALGreen Division 5.2 – ENERGY EFFICIENCY, which requires compliance of the project with the current edition of Title 24, Part 6, California Energy Code, is not addressed herein. All applicable energy forms must be included in the Project per California Energy Code requirements.

INSTRUCTIONS

For project submission, provide the CALGreen Mandatory Measures that are required for the project, submit the completed form DSA 403-C, completed applicable worksheets, and applicable signed declaration statements with the project documents.

If the project does not require compliance with CALGreen mandatory measures addressed herein check "NO" in the box at the top of the checklist. If compliance with CALGreen mandatory measures addressed herein is required, check "YES" in the box at the top of the checklist and proceed to fill out the checklist as to the applicable measures.

All clear fields must be filled with a sheet number and/or a specification section number indicating the location where required items are included in the construction documents. Regulatory requirements not applicable to the scope of work shall be indicated "N/A". Do not provide input to shaded boxes in the checklist.

The design professional in responsible charge is responsible for CALGreen compliance and completion of form DSA 403-C. Prior to project submittal, compliance of mandatory measures supported by the requisite information shall be verified. Any questions related to the applicability of a listed item to the specific project scope should be clarified with DSA staff at a pre-application meeting or prior to project registration.

Plan review will not commence until this completed checklist is submitted, and any applicable worksheets and declaration statements are signed and included in the construction documents.

APPLICABILITY

CALGreen regulatory requirements for public schools and community colleges consist of the scoping provisions in CALGreen Chapter 3, Section 301.4 and the nonresidential mandatory measures indicated as adopted by DSA-SS in Chapter 5 Matrix Adoption Table below.

CALGREEN CODE SUBMITTAL CHECKLIST

CHAPTER 5 – NONRESIDENTIAL MANDATORY MEASURES FOR K-12 SCHOOLS AND COMMUNITY COLLEGES

COMPLIANCE WITH THE CALGREEN MANDATORY MEASURES INDCATED HEREIN IS REQUIRED FOR THE PROJECT	Yes No
CALGREEN SECTION – TITLE	**Provide: Sheet(s) # in Plans Specification Section Complete as indicated or "N/A" if not applicable.**
5.105 - DECONSTRUCTION AND REUSEOF EXISTING STRUCTURES	
Section 5.105.1[1] and 5.105.2 Reuse of existing building. Provide WS-3 in construction documents, see EXHIBIT A below.	
5.106 – SITE DEVELOPMENT	
Section 5.106.4.2 Bicycle parking.	
Section 5.106.4.2.1 Student bicycle parking.	N/A
Section 5.106.4.2.2 Staff bicycle parking.	N/A
Section 5.106.5.6 Electric vehicle charging.	
Section 5.106.5.6.1 Electric vehicle capable spaces.	N/A
Section 5.106.5.6.2 or 5.106.5.6.3 Electric vehicle charging stations (EVCS).	N/A
Section 5.106.8 Light pollution reduction.	N/A
Section 5.106.10 Grading and paving.	C5.0, C5.1
Section 5.106.12 Shade trees.	
Section 5.106.12.1 Surface parking area shade tree calculation. Enter calculated percentage.	N/A
Section 5.106.12.2 Landscape area shade tree calculation. Enter calculated percentage.	N/A
Section 5.106.12.3 Hardscape area shade tree calculation. Enter calculated percentage.	N/A
5.303 INDOOR WATER USE	
Section 5.303.3 Water conserving plumbing fixtures.	

Section 5.303.3.1 Water closets.	N/A
Section 5.303.3.2.1 Wall mounted urinals.	N/A
Section 5.303.3.2.1 Floor mounted (or other) urinals.	N/A
Section 5.303.3.3.1 Single showerheads.	N/A
Section 5.303.3.3.2 Multiple showerheads serving one shower.	N/A
Section 5.303.3.4.1 Nonresidential lavatory faucets.	N/A
Section 5.303.3.4.2 Kitchen faucets.	N/A
Section 5.303.3.4.3 Wash fountains.	N/A
Section 5.303.3.4.4 Metering faucets.	N/A
Section 5.303.3.4.5 Metering faucets for wash fountains.	N/A
Section 5.303.3.4.6 Pre-rinse spray valve.	N/A
5.304 OUTDOOR WATER USE	
Section 5.304.6 Outdoor potable water use.	
Section 5.304.6.1 Newly constructed landscapes. Submit DSA 1-L and enter “Y”.	N/A
Section 5.304.6.2 Rehabilitated landscapes. Submit DSA 1-L and enter “Y”.	N/A
5.407 WATER RESISTANCE AND MOISTURE MANAGEMENT	
Section 5.407.1 Weather protection.	N/A
Section 5.407.2 Moisture control.	
Section 5.407.2.1 Sprinklers (landscape irrigation).	N/A
Section 5.407.2.2.1 Exterior door protection for primary exterior entries.	N/A
Section 5.407.2.2.1 Flashing.	N/A
5.408 CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING	
Section 5.408.1 Construction waste management.	
Section 5.408.1.1 Construction waste management plan.	017419 CONSTRUCTIO
Section 5.408.1.2 Waste management company.	017419 CONSTRUCTIO

CALGREEN CODE SUBMITTAL CHECKLIST

Section 5.408.1.3 Waste stream reduction alternative.	017419 CONSTRUCTIO
SECTION 5.409 LIFE CYCLE ASSESSMENT	
Section 5.409.2 Whole building life cycle assessment[1]. Provide signed declaration statement and worksheet in drawings, see EXHIBIT B below.	N/A
Section 5.409.3 Product GWP compliance[1] – prescriptive compliance. Provide signed declaration statement in drawings, see EXHIBIT C below.	N/A
5.410 BUILDING MAINTENANCE AND OPERATION	
Section 5.410.1 Recycling by occupants.	
5.504 POLLUTANT CONTROL	
Section 5.504.3 Covering of duct openings and protection of mechanical equipment during construction.	018113 SUSTAINABLE DESIGN
Section 5.504.4 Finish material pollutant control.	
Section 5.504.4.1 Adhesives sealants and caulks.	N/A
Section 5.504.4.3 Paints and coatings.	N/A
Section 5.504.4.4 Carpet systems.	N/A
Section 5.504.4.5 Composite wood products.	N/A
Section 5.504.4.6 Resilient flooring systems.	N/A
Section 5.504.4.7 Thermal insulation.	N/A
Section 5.504.4.8 Acoustical ceilings and wall panels.	N/A
Section 5.504.5.3 Filters (Merv 13).	N/A
5.505 INDOOR MOISTURE CONTROL	
Section 5.505.1 Indoor moisture control per CBC Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls).	N/A
5.506 INDOOR AIR QUALITY	
Section 5.506.1 Outside air delivery per California Energy Code Section 120.1, and Chapter 4 of CCR Title 8	N/A
Section 5.506.3 Carbon dioxide monitoring.	
Section 5.506.2 Carbon Dioxide ($C0_2$) monitoring in classrooms (energy manage control system).	N/A
Section 5.506.3 Carbon Dioxide ($C0_2$) monitoring in classrooms (standalone).	N/A

CALGREEN CODE SUBMITTAL CHECKLIST

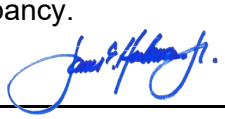
SECTION 5.507 ENVIRONMENTAL COMFORT	
Section 5.507.4 Acoustical control.	
Section 5.507.4.1 Exterior noise transmission prescriptive method (detail STC rating)	N/A
Section 5.507.4.2 Exterior noise transmission performance method (document acoustical analysis)	N/A
Section 5.507.4.3 Interior sound transmission (detail STC rating)	N/A
SECTION 5.508 OUTDOOR AIR QUALITY	
Section 5.508.1 Ozone depletion and greenhouse gas reductions	
Section 5.508.1.1 Chlorofluorocarbons (CFCs).	N/A
Section 5.508.1.1 Halons.	N/A

FOOTNOTES:

1: New construction projects consisting of a total floor area is 50,000 sq. ft. or greater must complete either Section 5.509.2 or Section 5.409.3. Alteration or addition projects consisting of a total floor area of 50,000 sq. ft. or greater must complete Section 5.105.2, 5.409.2, or 5.409.3

Professional in General Responsible Charge Declaration Statement:

As the Professional in General Responsible Charge, I have reviewed the Project Plans and affirm that the documentation submitted is in compliance with the requirements of CALGreen (Title 24, Part 11). Required documentation, applicable worksheets and signed declaration statements are included in the construction documents on the drawing sheet indicated in the completed form. I will verify that all work shown on the DSA approved construction documents necessary for compliance to CALGreen mandatory measures is completed in construction and prior to occupancy.

Signature:  Date: 11/25/2025

Print Full Name: JAMIE E. HICKMAN

REFERENCES:

California Green Building Standards Code Title 24 Part 11, Chapter 6 Referenced Organizations and Standards
California Energy Code Title 24 Part 6
CCR Title 8, Division 1, Chapter 4

CALGREEN CODE SUBMITTAL CHECKLIST

EXHIBIT A
WORKSHEET (WS-3)
5.105.2 BUILDING REUSE

DOCUMENTATION OF COMPLIANCE OF EXISTING BUILDING REUSE

Total Area of Existing Building(s) N/A **SF**

Total Area of Aggregate Addition(s) (if applicable) N/A **SF**

	EXISTING TOTAL AREA (A)	RETAINED TOTAL AREA (B)	% OF RETAINED STRUCTURE (B)/(A)
Primary Structural Elements of Existing Building(s) (foundations; columns, beams, walls, and floors; and lateral elements)	N/A SF	N/A SF	N/A SF
Building Enclosure of Existing Building(s) (roof framing, wall framing and exterior finishes only)	N/A SF	N/A SF	N/A SF

Total % Reuse of Required Elements ≥ 45% N/A **%**

CALGREEN CODE SUBMITTAL CHECKLIST

EXHIBIT B
Section 5.409.2 WHOLE BUILDING LIFE CYCLE ASSESSMENT

Whole Building LCA Information			
Model Information required		**Scope of analysis (Enter "Y" of "N")**	
LCA Modeler (Firm name)		Structure (required)	
Date of Model Run (MM/DD/YYYY)		Enclosure (required)	
Software and version used		Interiors (Optional)	
Model floor area (sq. ft.)		Mech., Elec. Plumb. (Optional)	
Calculated percent reduction in global warming potential (GWP)[1]:		Site/landscaping (optional)	
		Fixtures, Furnishings and Equipment (optional)	

Footnote

1) Must be a minimum of 10%

Professional in General Responsible Charge Declaration Statement:

I attest that the Whole Building Life Cycle Analysis has been performed according to the requirements of Title 24, Part 11 (CALGreen), Section 5.409.2 by a minimum 10 percent reduction in global warming potential as compared to a reference baseline building of similar size, function, complexity, type of construction, material specification, and location. Furthermore, I will ensure during construction that the material specifications will be reviewed for substantial conformance with the life cycle assessment indicated on the approved documents so at the close of construction the minimum 10 percent reduction in global warming potential is thereby secured.

Signature:	
Name:	Date:
Address:	License:
City/State/Zip:	Phone:

CALGREEN CODE SUBMITTAL CHECKLIST

EXHIBIT C
Section 5.409.3 PRODUCT GWP COMPLIANCE—PRESCRIPTIVE PATH

Professional in General Responsible Charge Declaration Statement:

I attest that prescriptive compliance has been met according to the requirements of Title 24, Part 11 (CALGreen) Section 5.409.3 and products specified do not exceed the global warming potential as specified in CALGreen Table 5.409.3. Furthermore, I will ensure during construction that the material specifications will be reviewed for substantial conformance with the global warming potential limits indicated on the approved documents.

Signature:	
Name:	Date:
Address:	License:
City/State/Zip:	Phone:

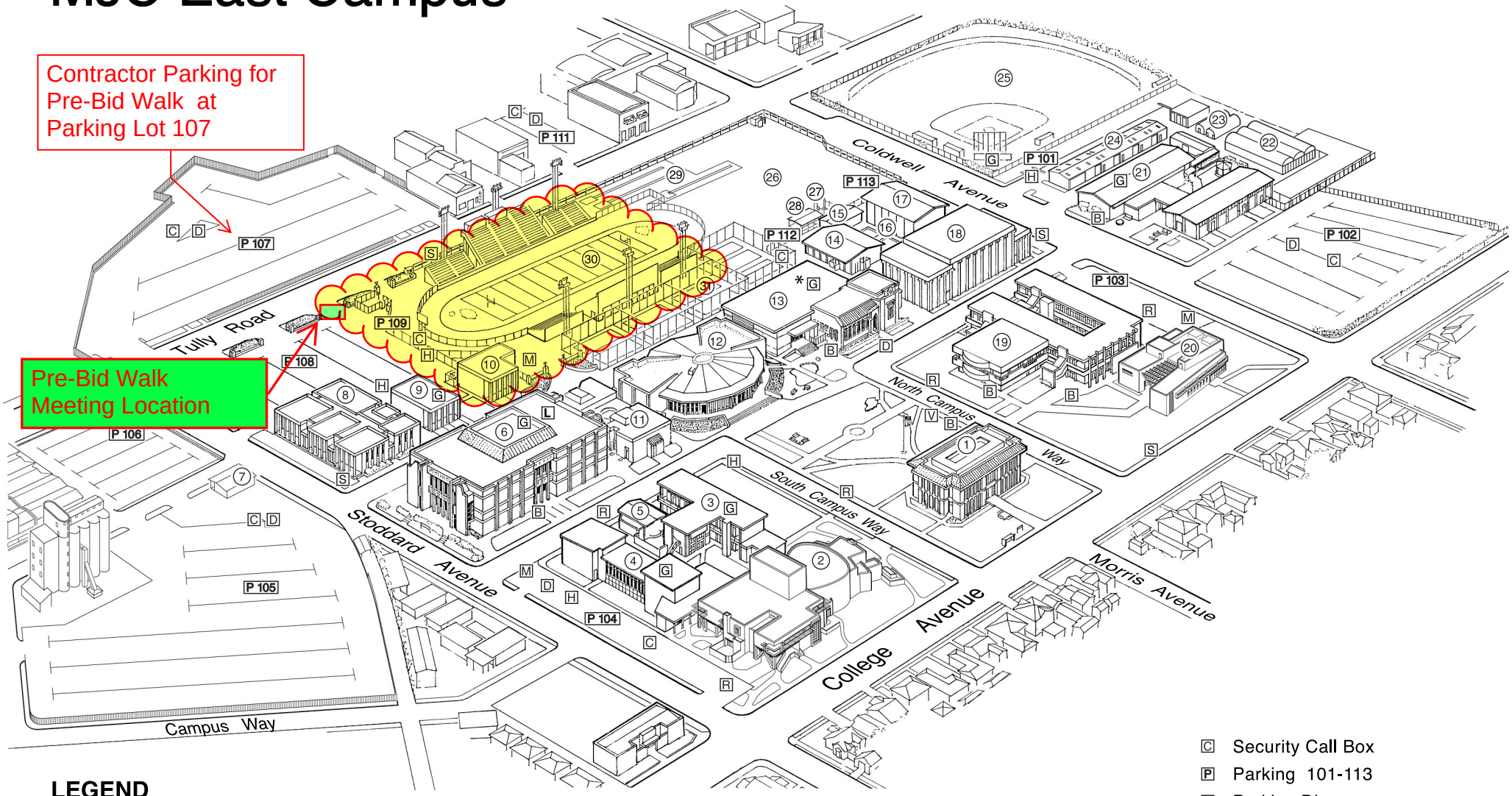
APPENDIX NO. 6

MODESTO JUNIOR COLLEGE

EAST CAMPUS MAP

PRE-BID JOBWALK MEETING LOCATION

MJC East Campus



LEGEND

1 Administration (Morris Memorial)
2 Performing & Media Arts Center
3 Art
4 Music
5 Art Gallery
6 Founders' Hall
7 Facilities Operations
8 Electronics
9 Journalism/ Campus Safety & Disability Services
10 Classroom Annex
11 Forum
12 Student Center
13 Library & Learning Center
14 Physical Education- Men
15 Physical Education Offices
16 Swimming Pool
17 Physical Education- Women
18 Gymnasium
19 Center for Advanced Technologies
20 Student Services
21 Agriculture
22 Greenhouse
23 Propagation House
24 Ag Storage
25 Athletic Field #2
26 Athletic Field #1
27 Hammer Throw
28 P.E. Outdoor Space
29 Jumps Area
30 Stadium
31 Tennis Courts

C Security Call Box
P Parking 101-113
D Parking Dispenser
H Disabled Parking
M Motorcycle Parking
R Reserved Parking
V Visitor Parking
B Bicycle Parking
G Gender-Neutral Restrooms
* Limited Hours, Request Assistance.
L Lactation Room
S Prime Shine - Pirate Express Shuttle

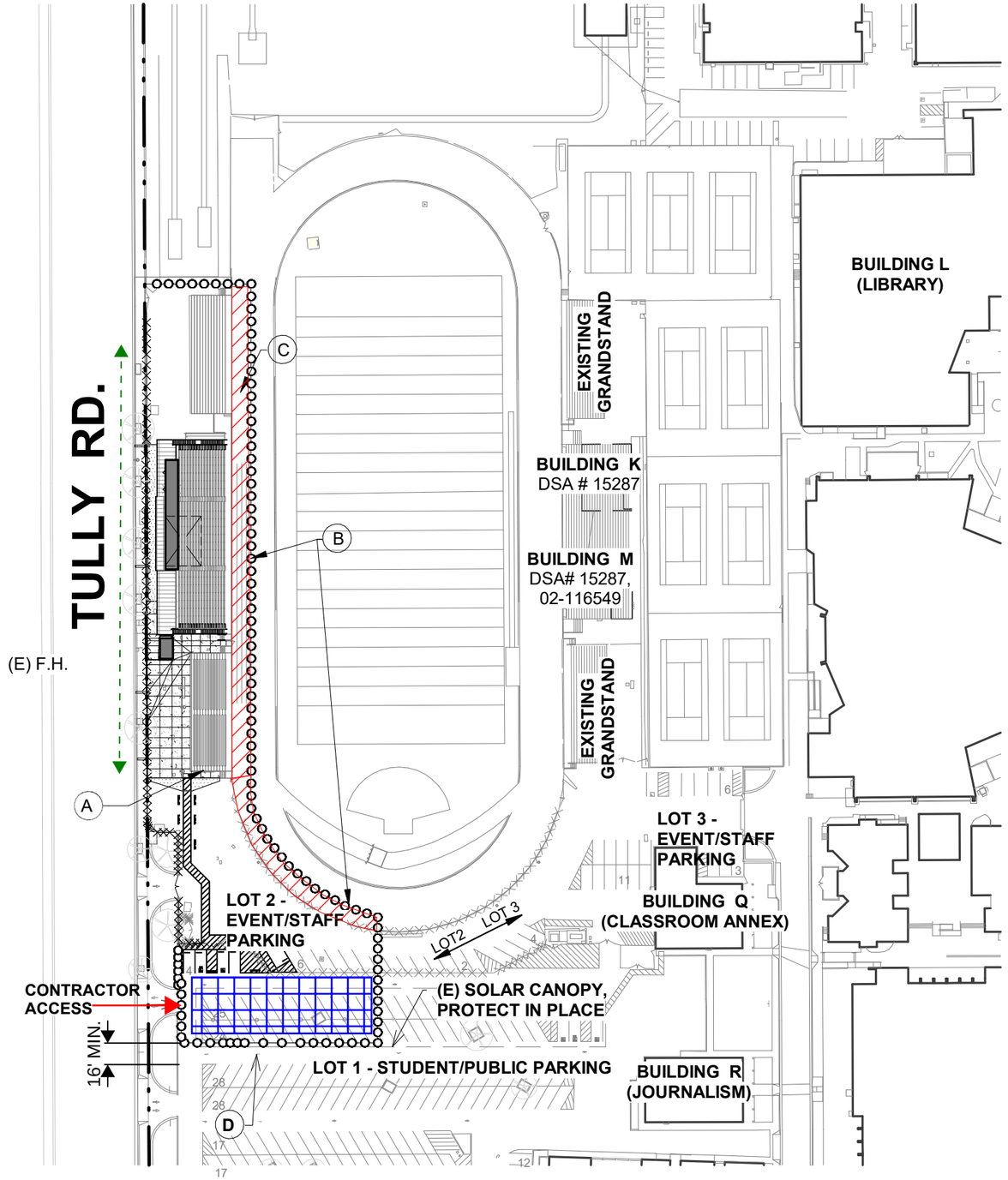
APPENDIX NO. 7

MODESTO JUNIOR COLLEGE – EAST CAMPUS

FOOTBALL FIELD: SITE LOGISTICS SITE PLAN

INCLUDES: CONTRACTOR LAYDOWN, STORAGE AREA, VEHICLE ACCESS LOCATION AND EXTENT OF TEMPORARY FENCING

APPENDIX 07



KEYNOTES:

- (A) CONTRACTOR TO ALLOW ACCESS TO GROUNDS STORAGE BELOW BLEACHERS. DO NOT BLOCK.
- (B) EXTENT OF TEMPORARY FENCING WITH WIND SCREENS.
- (C) PROTECT ENTIRE TRACK WITHIN TEMPORARY FENCED AREA.
- (D) DRIVE AISLE MINIMUM 16' CLEAR. DO NOT BLOCK

LEGEND:

- CONTRACTOR TO PROVIDE TRAFFIC CONTROLS AND FLAG MEN AT BOTH ENDS OF ROUTE. CONTRACTOR TO COORDINATE WITH CITY FOR ANY ROAD CLOSURES, PERMITS, AND APPROVALS.
- CONTRACTOR STAGING AND PARKING AREA
- TEMPORARY FENCING WITH WIND SCREENS
- EXISTING TRACK SHOWN HATCHED TO BE PROTECTED.

NORTH

TETER

YCCD - MJC E
NEW PRESSBOX AND ELEVATOR INSTALLATION
MODESTO, CA

PROJECT #:24-12111

SITE LOGISTICS SITE PLAN

DATE: 09/11/26