

18-008 / HIGHLANDS ELEMENTARY SCHOOL HVAC EQUIPMENT REPLACEMENT PROJECT MANUAL

HVAC EQUIPMENT REPLACEMENT

PITTSBURG UNIFIED SCHOOL DISTRICT

JUNE 27, 2018

Project Manual
of the Material and Labor Required for Construction of

Highlands Elementary School

HVAC Replacement Project
4141 Harbor St.
Pittsburg, CA 94565

Pittsburg Unified School District

2000 Railroad Avenue
Pittsburg, CA 94565

MCCRACKEN & WOODMAN, INC.

Job No. 1632

DSA Backcheck: December 7, 2017
DSA Application No.: 01-116978

DIVISION OF THE STATE ARCHITECT
IDENTIFICATION STAMP

Project Manual
of the Material and Labor Required for Construction of

Highlands Elementary School
HVAC Replacement Project

APPL 01 116978

AC FLS SSS
DATE JUN 27 2018

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SS: EO MEI

Mechanical Engineer:

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Marc A. Woodman, PE



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Roberta Wahl, Architect



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Stephen DeJesse, SE



Electrical Engineer:

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Bret B. Tresidder, P.E.



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APPL 01 116978

AC FLS WSSS in
DATE JUN 27 2018

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NOT USED

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- 09/14/18 & 09/21/18: Advertise for Bid
- 09/17/18: Contract Documents available for Bidders
- 09/26/18: Pre-Bid Conference & Walkthrough @ 2:00 PM at HES
- 10/19/18: Final Due Date for Pre-Bid RFI's @ 5:00 PM
- 10/25/18: Bids Due @ 2:00 PM at District Admin. Bldg.
- 10/30/18: Bid Protest Period Ends @ 5:00 PM
- 10/31/18: Bid Results & Contract Award finalized information due @ 10:00 AM for 11/14/18 School Board Meeting
- 11/14/18: School Board Approval & Contract Award
- 11/15/18: Notice of Award & Contract Issued
- 11/26/18: Notice to Proceed Issued (tentative pending Contract turnaround time)
- 06/10/19: On-Site Construction Work Start Date
- 08/02/19: On-Site Construction Completion Date
- 09/06/19: Contract Completion Date
- 09/25/19 or 10/09/19: School Board Approval to file Notice of Completion

END OF DOCUMENT

NOTICE TO BIDDERS

1. Notice is hereby given that the governing board ("Board") of the Pittsburg Unified School District ("District") will receive sealed bids for the following project, Bid No. 18-008:

Highlands Elementary School HVAC Equipment Replacement

2. The Project consists of:

Replacement of Existing HVAC Equipment, Ductwork & Systems,
including required Hazardous Materials Abatement Work

3. To bid on this Project, the Bidder is required to possess one or more of the following State of California contractors' license(s):

B or C-20

The Bidder's license(s) must remain active and in good standing throughout the term of the Contract.

4. To bid on this Project, the Bidder is required to be registered as a public works contractor with the Department of Industrial Relations pursuant to the Labor Code. The Bidder's registration must remain active throughout the term of the Contract.

5. Contract Documents will be available on or after Monday, September 17, 2018, for review, and/or purchase, at ABC Imaging, 1381 Franquette Avenue, Concord, CA 94520. Phone 925-674-0900, Fax 925-674-0993. In addition, Contract Documents are available for bidders' review at the following Builders' Exchanges:

- A. Bay Area Builder's Exchange (925) 685-8630
- B. Construction Bid Board (800) 424-3996
- C. Dodge Data & Analytics (877) 958-5062
- D. Peninsula Builders Exchange (650) 591-4486
- E. Sacramento Builders Exchange (916) 442-8991
- F. Solano-Napa Builders Exchange (707) 255-2515
- G. Builders of Santa Clara (408) 727-4000
- H. San Francisco Builders Exchange (415) 282-8220
- I. Marin Builders Exchange (415) 462-1220
- J. Builders Exchange of Stockton (209) 478-1005

6. Contract Documents, in hard copy format, are available for purchase for One Hundred Dollars (\$100.00), or in electronic format for Fifty Dollars (\$50.00) at ABC Imaging. This fee is non-refundable. Payment is to be made to ABC Imaging.

7. Sealed bids will be received until **2:00 p.m. (PDT), Thursday, October 25, 2018,** at the **District Administration Office, 2000 Railroad Avenue, Pittsburg, California, 94565** at or after which time the bids will be opened and publicly read aloud. Any bid that is submitted after this time shall be nonresponsive and returned to the bidder. Any claim by a bidder of error in its bid must be made in compliance with section 5100 et seq. of the Public Contract Code.
8. Pursuant to Public Contract Code section 20111.6, only prequalified bidders will be eligible to submit a bid for contracts \$1 million or more using or planning to use state bond funds. Any bid submitted by a bidder who is not prequalified shall be non-responsive and returned unopened to the bidder. Moreover, any bid listing subcontractors holding C-4, C-7, C-10, C-16, C-20, C-34, C-36, C-38, C-42, C-43 or C-46 licenses, if used, who have not been prequalified, shall be deemed nonresponsive and will not be considered. A prequalification application can be obtained from Ms. Liza Bautista at lbautista@pittsburg.k12.ca.us.
9. All bids shall be on the form provided by the District. Each bid must conform and be responsive to all pertinent Contract Documents, including, but not limited to, the Instructions to Bidders.
10. A bid bond by an admitted surety insurer on the form provided by the District, cash, or a cashier's check or a certified check, drawn to the order of the Pittsburg Unified School 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) calendar 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.
11. A mandatory pre-bid conference and site visit will be held on **Wednesday, September 26, 2018, at 2:00 p.m. (PDT)** at **Highlands Elementary School, 4141 Harbor Street, Pittsburg, California**. All participants are required to sign-in in front of the Administration Building. The site visit is expected to take approximately one (1) hour. Failure to attend or tardiness will render bid ineligible.
12. 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.
13. 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.
14. 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 section 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>.

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 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 and within ten (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, Articles 1-5 of the Labor Code.
16. The District has entered into a Project Stabilization Agreement that is applicable to this Project. For questions or assistance concerning the Project Stabilization Agreement, contact Mr. Larry Scott, (925) 473-2438, 3200 Loveridge Road, Pittsburg, California 94565.
17. 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.
18. The Board reserves the right to reject any and all bids and/or waive any irregularity in any bid received. If the District awards the Contract, 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.

END OF DOCUMENT

INSTRUCTIONS TO BIDDERS

Bidders shall follow the instructions in this document, and shall submit all documents, forms, and information required for consideration of a bid.

Pittsburg Unified School 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" or "Contract"):

Highlands Elementary School- HVAC Equipment Replacement

A Bidder and its subcontractors must possess the appropriate State of California contractors' license and must maintain the license throughout the duration of the project. Bidders must also be registered as a public works contractor with the Department of Industrial Relations pursuant to the Labor Code. Bids submitted by a contractor who is not properly licensed or registered shall be deemed nonresponsive and will not be considered.

2. District will receive sealed bids from bidders as stipulated in the Notice to Bidders.
 - a. All bids must be sealed in an envelope, marked with the name and address of the Bidder, name of the Project, the Project Number and/or bid number, and time of bid opening.
 - b. Bids must be submitted to the District Office by date and time shown in the Notice to Bidders.
 - c. Bids must contain all documents as required herein.
3. Bidders are advised that on the date that bids are opened, telephones will not be available at the District Offices for use by bidders or their representatives.
4. Bids will be opened at or after the time indicated for receipt of bids.
5. Bidders must submit bids on the documents titled Bid Form and Proposal, and must submit all other required District forms. Bids not submitted on the District's required forms shall be deemed nonresponsive and shall not be considered. Additional sheets required to fully respond to requested information are permissible.
6. Bidders shall not modify the Bid Form and Proposal or qualify their bids. Bidders shall not submit to the District a re-formatted, re-typed, altered, modified, or otherwise recreated version of the Bid Form and Proposal or other District-provided document.

7. Bids shall be clearly written and without erasure or deletions. District reserves the right to reject any bid containing erasures, deletions, or illegible contents.
8. 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 nonresponsive 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. Site Visit Certification, if a site visit was required.
 - d. Non-Collusion Declaration.
 - e. Iran Contracting Act Certification, if contract value is \$1,000,000 or more.
9. Bidders must submit with their bids cash, a cashier's check or a certified check payable to District, or a bid bond by an admitted surety insurer of not less than ten percent (10%) of amount of Base Bid, plus all additive alternates ("Bid Bond"). If Bidder chooses to provide a Bid Bond as security, Bidder must use the required form of corporate surety provided by District. The Surety on Bidder's 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 nonresponsive and will not be considered.
10. If Bidder to whom the Contract is awarded fails or neglects to enter into the Contract and submit required bonds, insurance certificates, and all other required documents, within **SEVEN (7)** calendar days after the date of the Notice of Award, 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.
11. 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. Failure to submit this list when required by law shall result in bid being deemed nonresponsive and the bid will not be considered.

12. All of the listed subcontractors are required to be registered as a public works contractor with the Department of Industrial Relations pursuant to the Labor Code.
 - 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 pursuant to Public Contract Code section 4107.
13. If a mandatory pre-bid conference and site visit ("Site Visit") is required as referenced in the Notice to Bidders, then Bidders must submit the Site Visit Certification with their Bid. 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.
14. Bidders shall submit the Non-Collusion Declaration with their bids. Bids submitted without the Non-Collusion Declaration shall be deemed nonresponsive and will not be considered.
15. The Contractor and all Subcontractors under the Contractor shall pay all workers on all work performed pursuant to the 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. 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 Department of Industrial Relations, are available upon request at the District's principal office. Prevailing wage rates are also available on the internet at <http://www.dir.ca.gov>.
16. Section 17076.11 of the Education Code requires school districts using funds allocated pursuant to the State of California School Facility Program for the construction and/or modernization of school building(s) to have a participation goal for disabled veteran business enterprises ("DVBE") of at least three percent (3%) per

year of the overall dollar amount expended on projects that receive state funding or demonstrate its good faith effort to solicit DVBE participation in this Contract. In order to meet this requirement by demonstrating a good faith effort, Bidder must advertise for DVBE-certified subcontractors and suppliers before submitting its Bid. For any project that is at least partially state-funded, the lowest responsive responsible Bidder awarded the Contract must submit certification of compliance with the procedures for implementation of DVBE contracting goals with its signed Agreement. DVBE Certification form is attached. Do not submit this form with your Bid.

17. 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 a bid shall constitute the Bidder's express representation to District that Bidder has fully completed the following:
 - a. Bidder has visited the Site, if required, 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(s) thereof by the District is/are 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 Bidder 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 Bidder is required to make such verification as a condition to bidding. In submitting its Bid, Bidder shall rely on the results of its own independent investigation. In submitting its Bid, Bidder shall not rely on District-supplied information regarding above-ground conditions or as-built conditions.
 - (2) As to any subsurface condition shown or indicated in the Contract Documents, Bidder may rely only upon the general accuracy of actual reported depths, actual reported character of materials, actual reported soil types, actual reported water conditions, or actual obstructions shown or indicated. District is not responsible for the completeness of such information for bidding or construction; nor is District responsible in any way for any conclusions or opinions that the Bidder has drawn from such information; nor is the District responsible for subsurface conditions that are not specifically shown (for example, District is not responsible for soil conditions in areas contiguous to areas where a subsurface condition is shown).
- 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.

- (3) These reports and drawings are **not** Contract Documents and, except for any “technical” data regarding subsurface conditions specifically identified in Geotechnical Data and Existing Conditions, and underground facilities data, Bidder may not in any manner rely on the information in these reports and drawings. Subject to the foregoing, Bidder must make its own independent investigation of all conditions affecting the Work and must not rely on information provided by District.
18. Bids shall be based on products and systems specified in Contract Documents or listed by name in Addenda. 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.” Bidder 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. 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 in advance and in writing. 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 notice of request for substitution of a specified item a minimum of **TEN (10)** calendar days prior to bid opening. The Successful Bidder will not be allowed to substitute specified items unless properly noticed.
 - b. Within 35 days after the date of the Notice of Award, the Successful Bidder shall submit data substantiating the request(s) for all substitution(s) containing sufficient information to assess acceptability of product or system and impact on Project, including, without limitation, the requirements specified in the Special Conditions and the Specifications. Insufficient information shall be grounds for rejection of substitution.
 - c. Approved substitutions, if any, 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.
19. 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.
20. All questions about the meaning or intent of the Contract Documents are to be directed via email to the Engineer, Marc Woodman at marc.woodman@mccracken-woodman.com, with a copy to the District to E. Keith Holtlander at kholtlander@pittsburg.k12.ca.us. Interpretations or clarifications considered necessary by the District in response to such questions will be issued in writing by

Addenda and emailed, faxed, mailed, or delivered to all parties recorded by the District as having received the Contract Documents or posted on the District's website at www.pittsburg.k12.ca.us. Questions received less than **SEVEN (7)** calendar 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.

21. Addenda may also be issued to modify other parts of the Contract Documents as deemed advisable by the District.
22. 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.
23. 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.
24. 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 the Notice to Bidders. In the event two or more responsible bidders submit identical bids, the District shall select the Bidder to whom to award the Contract by lot.
25. Time for Completion: District may issue a Notice to Proceed within **NINETY (90)** 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.
 - a. In the event that the District desires to postpone issuing the Notice to Proceed beyond this 90-day period, it is expressly understood that with reasonable notice to the Contractor, the District may postpone issuing the Notice to Proceed.
 - b. 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 beyond a 90-day period. If the Contractor believes that a postponement of issuance of the Notice to Proceed will cause a hardship to the Contractor, the Contractor may terminate the Contract. Contractor's termination due to a postponement beyond this 90-day period shall be by written notice to District within **TEN (10)** calendar days after receipt by Contractor of District's notice of postponement.
 - c. It is further understood by the 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 and which the District had in writing authorized Contractor to perform prior to issuing a Notice to Proceed.

- d. Should the 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.
26. The Bidder to whom Contract is awarded shall execute and submit the following documents by 5:00 p.m. of the **SEVENTH (7th)** calendar day following the date of the Notice of Award. Failure to properly and timely submit these documents entitles District to reject the bid as nonresponsive.
- a. Agreement: To be executed by successful Bidder. Submit four (4) copies, each bearing an original signature.
 - b. Escrow of Bid Documentation: This must include all required documentation. See the document titled Escrow Bid Documentation for more information.
 - c. Performance Bond (100%): On the form provided in the Contract Documents and fully executed as indicated on the form.
 - d. Payment Bond (Contractor's Labor and Material Bond) (100%): On the form provided in the Contract Documents and fully executed as indicated on the form.
 - e. Insurance Certificates and Endorsements as required.
 - f. Workers' Compensation Certification.
 - g. Prevailing Wage and Related Labor Requirements Certification.
 - h. Disabled Veteran Business Enterprise Participation Certification.
 - i. Drug-Free Workplace Certification.
 - j. Tobacco-Free Environment Certification.
 - k. Hazardous Materials Certification.
 - l. Lead-Based Materials Certification.
 - m. Imported Materials Certification.
 - n. Criminal Background Investigation/Fingerprinting Certification.
 - o. Buy American Certification.
 - p. Roofing Project Certification: from Contractor, Material Manufacturer and/or Vendor.
27. Any bid protest by any Bidder regarding any other bid must be submitted in writing to the District, before 5:00 p.m. of the **THIRD (3rd)** business day following bid opening.

- 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 any other basis for protest, an inadvertent error in listing the California contractor's 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 any other basis 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.
28. District reserves the right to reject any or all bids, including without limitation the right to reject any or all nonconforming, nonresponsive, unbalanced, or conditional

bids, to re-bid, and to reject the bid of any bidder if District believes that it would not be in the best interest of the District to make an award to that bidder, whether because 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. District also reserves the right to waive any inconsequential deviations or irregularities in any bid. 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.

29. Discrepancies between written words and figures, or words and numerals, will be resolved in favor of figures or numerals.
30. It is the policy of the District that no qualified person shall be excluded from participating in, be denied the benefits of, or otherwise be subjected to discrimination in any consideration leading to the award of contract, based on race, color, gender, sexual orientation, political affiliation, age, ancestry, religion, marital status, national origin, medical condition or disability. The Successful Bidder and its subcontractors shall comply with applicable federal and state laws, including, but not limited to the California Fair Employment and Housing Act, beginning with Government Code section 12900, and Labor Code section 1735.
31. 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.

END OF DOCUMENT

DOCUMENT 00 21 13.1

BIDDER INFORMATION AND FORMS

- Current Pre-Qualified Contractors Listing

END OF DOCUMENT

PUSD - PREQUALIFIED CONTRACTORS - 2018

Vendor Name	Vendor Type	Type of Work Performed with own forces	License Type	CSLB LICENCE	DIR NUMBER
Alessandro Electric, Inc.	Specialty Contractor	General Electrical, Low Voltage, Communications, Cabling	C-7, C10	867775	1000003067
Alten Construction	General Engineering & Building Contractor	Earthwork, Demolition, Concrete, Framing, Rough Carpentry, Masonry	A, B	705713	1000000530
Arntz Builders, Inc.	General Engineering & Building Contractor	Demolition, Concrete, Rough & Finish Carpentry	A, B	856393	1000003147
Balfour Beatty Construction LLC	General Engineering & Building Contractor	Construction Management & Safety	A, B	979126	1000000529
Bay Cities Fire Protection, Inc.	General Building & Specialty Contractor	Fire Protection	B, C16	731222	1000045613
Bay City Mechanical Inc	Specialty Contractor	Mechanical, HVAC, Sheet Metal, Plumbing	C-4, C20, C36, C43	645126	1000007529
Bayview Environmental Services, Inc.	General Building & Specialty Contractor	Hazardous Materials Abatement & Removal, Demolition	ASB, B, C21, C22, HAZ	684341	1000002423
Bell Products, Inc.	General Engineering, Building & Specialty Contractor	Mechanical, HVAC, Sheet Metal, Plumbing	A, B, C-4, C20, C36, C43	171534	1000000656
Best Contracting Services, Inc.	General Engineering, Building & Specialty Contractor	Roofing, Waterproofing, Sheet Metal, Glazing, Wall Panels	A, B, C17, C39, C43	456263	1000000563
BHM Construction Inc.	General Engineering & Building Contractor	Demolition, Masonry, Carpentry	A, B	900404	1000000064
Bockmon & Woody Electric Co. Inc.	Specialty Contractor	General Electrical, High Voltage, Solar	C10	588308	1000002789
C. Overaa & Co.	General Engineering & Building Contractor	Demolition, Site Grading & Preparation, Excavation, Concrete, Framing, Rough & Finish Carpentry, Cabinetry & Millwork, Mechanical & Piping	A, B	106793	1000000871
Coastal Mountain Electric	Specialty Contractor	General Electrical	C10	507105	1000008522
Collins Electrical Company, Inc.	General Engineering, Building & Specialty Contractor	General Electrical	A, B, C10, C31	115427	1000000184
Color New Co.	General Building & Specialty Contractor	Painting & Minor Renovation Work	B, C33	818650	1000001623
D7 Roofing Services	Specialty Contractor	Roofing	C39	746471	1000008496
DDK Mechanical, Inc.	General Building & Specialty Contractor	HVAC, Sheet Metal, Plumbing	B, C20, C36, C43	855723	1000002411
Del Monte Electric	Specialty Contractor	General Electrical	C10	161955	1000000268
Digital Design Communications	General Building & Specialty Contractor	General Electrical, Low Voltage, Communications	B, C10	785247	1000002624
Dinelli Plumbing Incorporated	Specialty Contractor	General Plumbing	C36	801472	1000000999
Dowdle & Sons Mechanical Inc.	General Engineering, Building & Specialty Contractor	Mechanical, HVAC, Plumbing	A, B, C-4, C-20, C36	542743	1000000606
E. F. Brett & Company, Inc.	General Engineering & Building Contractor	Sewer, Carpentry, General Labor, Concrete, Misc. Specialities	A, B	924636	1000000490
First Service	Specialty Contractor	Indoor & Outdoor Athletic Equipment, Spectator Seating, Scoreboards, Lockers, Projection Screens	C61, D34	823878	1000010190
Flint Builders Inc.	General Engineering & Building Contractor	General Carpentry, Doors, Frames & Hardware	A, B	982487	1000000005
George E. Masker Inc.	Specialty Contractor	Painting, Specialty Coatings, Wallcovering, Intumescent Fireproofing	C33	219160	1000000521

PUSD - PREQUALIFIED CONTRACTORS - 2018

Hydra Ventures, Inc. dba Cal Pacific Systems	General Engineering, Building & Specialty Contractor	Site Utilities, HVAC, Hydronic Systems, Plumbing	A, B, C20, C36	924244	1000004768
JL Modular	Modular Bldgs.	Modular Buildings, Concrete, Rough & Finish Carpentry	B	761270	1000005631
Jeff Luchetti Construction, Inc.	General Contractor	Concrete, Rough & Finish Carpentry	B	761270	1000005631
K.S. Kruse Plumbing Company	Specialty Contractor	General Plumbing	C36	512710	1000000600
Lathrop Construction Associates Inc.	General Engineering & Building Contractor	Carpentry, Concrete Foundations, Specialties	A, B	415981	1000000073
MBS Engineering	General Engineering & Specialty Contractor	Natural Gas Piping, Leak Detection, Repairs, Maintenance	A, C36	990872	1000003509
Martinez Sheet Metal	General Building & Specialty Contractor	HVAC, Sheet Metal, Plumbing, Refrigeration	B, C-4, C20, C36, C38, C43	222277	1000000471
Mar Con Builders, Inc.	General Building & Specialty Contractor	General Construction, Cabinet, Millwork & Finish Carpentry, Drywall, Flooring	B, C-6, C-9, C15	829636	1000049865
McGuire & Hester	General Engineering, Building & Specialty Contractor	Grading, Paving, Concrete, Underground & Landscaping	A, B, C21, C27, C31, HAZ	95879	1000000033
NetXperts, Inc.	Specialty Contractor	Cisco Systems Hardware/Software, Low Voltage	C-7, C10	869161	1000003207
Northern CA Painting	Painting	Painting	C33	649324	1000035581
Opening Technologies, Inc.	Specialty Contractor	Door, Key and Access Control System	C28	835076	1000002569
OWR Mechanical dba Monarch Mechanical	General Building & Specialty Contractor	HVAC, Sheet Metal, Plumbing	B, C20, C36, C43	736565	1000006144
Pacific Coast General Engineering	General Engineering & Specialty Contractor	Grading, Paving, Underground Concrete, Hazardous Materials Removal	A, HAZ	894723	1000003642
Paving Construction Services Inc.	Asphalt Maintenance	Paving	C-12	798808	1000026921
Pacific Metro Electric	General Building & Specialty Contractor	General Electrical	B, C10	701614	1000000586
Point 1 Electrical Systems, Inc	General Building & Specialty Contractor	General Electrical, Low Voltage	B, C-7, C10	745827	1000000897
Presidential Fire Protection, Inc.	General Building & Specialty Contractor	Fire Protection	B, C-16	847133	1000003447
Project Built, Inc. DBA Icon Construction	General Contractor	General Contractor	B	1038439	1000059171
S. W. Allen Construction, Inc.	General Engineering, Building & Specialty Contractor	Demo, Concrete, Roofing & Carpentry	A, ASB, B, C-39	646849	1000001030
San Francisco Fire Protection, Inc.	Fire Alarm	Fire Alarm Installation	C10	806216	1000026919
Sandstone Construction Services	General Engineering Contractor	Demolition, Lead & Mold Abatement and Removal	A	878348	1000019898
Silver Creek Industries, Inc.	General Building & Specialty Contractor	Design and Construction of Modular Buildings	B, C10, C20, C27, C36	855259	1000002864

PUSD - PREQUALIFIED CONTRACTORS - 2018

Smith & Sons Electric Inc.	Specialty Contractor	General Electrical	C10	437138	1000000480
Southwest Construction & Property Management	General Engineering, Building & Specialty Contractor	General Engineering & Construction, Rough & Finish Carpentry, Roofing, Seismic Retrofitting, Minor Alterations	A, ASB, B, C39	751467	1000003460
Sposeto Engineering Inc.	General Building & Specialty Contractor	Site Work, Concrete & Asphalt Paving	A, C-8	310292	1000005234
Swank Construction, Inc.	General Engineering & Building Contractor	Earthwork, Concrete (Structual & Non-Structual), Rough & Finish Carpentry	A, B	559490	1000025388
Swinerton Builders	General Engineering, Building & Specialty Contractor	General Construction, Concrete, Millwork, Doors & Hardware, Framing, Drywall	A, ASB, B, C-2, C-4, C-5, C-6, C-8, C-9, C10, C12, C16, C20, C23, C29, C33, C35, C36, C38, C39, C42, C46, C50, C51, C55, D34	92	1000000296
Trahan Mechanical, Inc.	Specialty Contractor	HVAC, Sheet Metal	C20, C43	774154	1000006155
USS CAL Builders, Inc.	General Contractor	General Construction, Plumbing, Electrical	A, B, C10, C31, C36	654454	1000003215
W.A. Thomas Co. Inc.	General Engineering & Building Contractor	Rough Carpentry, Finish Carpentry, Structural Concrete, Soft Demolition	A, B	285617	1000000299
Walker Telecomm Inc.	Specialty Contractor	Communications , Voice & Data, Low Voltage	C-7, C10	953866	1000000137
Waters Moving & Storage	Specialty Contractor	Moving & Storage	MOVING	CALT 189214	1000008657

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 Pittsburg Unified School District ("District"), its consultants, contractors, and tenants. These documents may, but are not required to, 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 the District offices or the Construction Manager's offices, if any, 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. These reports, documents, and other information do **not** excuse Contractor from fulfilling Contractor's obligation to independently investigate any or all existing conditions or from using reasonable prudent measures to avoid damaging existing improvements.
- c. Information regarding existing conditions may also be included in the Project Manual, but shall **not** be considered part of the Contract Documents.
- d. Prior to commencing this Work, Contractor and the District's representative shall survey the Site to document the condition of the Site. Contractor will record the survey in digital videotape format and provide an electronic copy to the District within fourteen (14) days of the survey.
- e. Contractor may also document any pre-existing conditions in writing, provided that both the Contractor and the District's representative agree on said conditions and sign a memorandum documenting the same.
- f. The reports and other data or information regarding existing conditions and underground facilities at or contiguous to the Project are the following:
 - (1) Original Construction Drawings.
 - (2) Hazardous Material Report(s).

3. Use of Information

- a. Information regarding existing conditions was obtained only for use of District and its consultants, 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 Bidder by the performance of its own independent investigation that Bidder must perform as a condition to bidding and Bidder should not and shall not rely on this information or any other information supplied by District regarding existing conditions.
- d. Any information shown or indicated in the reports and other data supplied herein with respect to existing underground facilities at or contiguous to the Project may be based upon information and data furnished to District by the District's employees and/or consultants or builders of such underground facilities or others. District does not assume responsibility for the completeness of this information, and Bidder is solely responsible for any interpretation or conclusion drawn from this information.
- e. 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 conducting or obtaining 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.
- b. On request, District will provide each Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies, as each Bidder deems necessary for submission of a bid. Bidders must fill all holes and clean up and restore the Site to its former condition upon completion of its explorations, investigations, tests, and studies. Such investigations and

Site examinations may be performed during any and all Site visits indicated in the Notice to Bidders and only under the provisions of the Contract Documents, including, but not limited to, proof of insurance and obligation to indemnify against claims arising from such work, and District's prior approval.

END OF DOCUMENT

BID FORM AND PROPOSAL

Pittsburg Unified School District (“District” or “Owner”)

From: _____
(Proper Name of Bidder)

The undersigned declares that Bidder has read and understands the Contract Documents, including, without limitation, the Notice to Bidders and the Instructions to Bidders, 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. 18-008.

PROJECT: **Highlands Elementary School – HVAC Equipment Replacement**

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

_____ dollars \$ _____
<i>BASE BID</i>
<i>Bidder acknowledges and agrees that the Base Bid accounts for any and all Allowance(s) and Total Cost for Unit Prices.</i>

Additive/Deductive Alternates:

NOT USED

Additional Detail Regarding Calculation of Base Bid

1. **Unit Prices.** The Bidder's Base Bid includes the following unit prices, which the Bidder must provide and the District may, at its discretion, utilize in valuing additive and/or deductive change orders (Unit Prices shall include all labor, materials, services, profit, overhead, insurance, bonds, taxes, and all other incidental costs of Contractor, subcontractors, and suppliers):

SCHEDULE OF UNIT PRICES

<u>Item No.</u>	<u>Description</u>	<u>Unit of Measure</u>	<u>Unit Price</u>	<u>Total Cost = Unit Price x Estimated Quantity (Included in Base Bid)</u>
1	Removal of existing roof mounted exhaust fan with asbestos containing (AC) mastics/sealants	Each	\$	\$
2	Removal of AC expansion joint cloth at mechanical equipment	Each	\$	\$
3	Removal of 12" x 12" non-asbestos containing (NAC) acoustic ceiling tile, NAC ceiling tile mastic, NAC gypsum board, NAC joint compound, AC spray-on acoustic ceiling plaster, NAC gypsum board lath and AC spray-on acoustic overspray and debris. Work includes the application of a bridging encapsulant at newly cut edges of AC spray-on acoustic ceiling plaster and NAC gypsum board lath underlayment. All work shall be performed within a negative pressure enclosure (NPE).	Daily Rate	\$	\$

4	Drill, core, anchor, attach and/or affix to 12" x 12" NAC acoustic ceiling tile, NAC ceiling tile mastic, NAC gypsum board , NAC joint compound, AC spray-on acoustic ceiling plaster and NAC gypsum board lath. All incidental hazardous materials related work (i.e., drilling, coring, anchoring and/or affixing) to the above ceiling finish system shall be performed by using tools and equipment equipped with a shroud and attached to a functioning DOP tested HEPA vacuum during all related operations.	Daily Rate	\$	\$
	Total Unit Cost Bid Amount			\$

Where scope of Work is decreased, all Work pertaining to the item, whether specifically stated or not, shall be omitted, and where scope of Work is increased, all work pertaining to that item required to render same ready for use on the Project in accordance with intentions of the Drawings and Specifications shall be included in the above agreed-upon price amount.

2. **Allowance.** The Bidder's Base Bid and each alternate shall include a **\$25,000.00 Allowance** for any/all unforeseen dry-rot repair.

The above allowance shall only be allocated for unforeseen items relating to the Work. Contractor shall not bill for or be due any portion of this allowance unless the District has identified specific work, Contractor has submitted a price for that work or the District has proposed a price for that work, the District has accepted the cost for that work, and the District has prepared a change order incorporating that work. Contractor hereby authorizes the District to execute a unilateral deductive change order at or near the end of the Project for all or any portion of the allowance not allocated.

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
 - Site Visit Certification
 - Non-Collusion Declaration
 - Iran Contracting Act Certification

Receipt and acceptance of the following Addenda is hereby acknowledged:

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

9. Bidder acknowledges that the license required for performance of the Work is a B or C-20 license.
10. 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.
11. 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 Department of Industrial Relations [and with all requirements of the Project Services Agreement].
12. 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.

13. 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.
14. 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, 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.
15. 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 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.: _____

END OF DOCUMENT

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 Principal ("Principal"),

and _____, as Surety ("Surety"), a corporation organized and existing under and by virtue of the laws of the State of California and authorized to do business as a surety in the State of California, are held and firmly bound unto the Pittsburg Unified School District ("District") of Contra Costa County, State of California, as Obligee, in an amount equal to ten percent (10%) of the Base Bid plus alternates, in the sum of

_____ Dollars (\$ _____)

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 for the following project: **Highlands Elementary School – HVAC Equipment Replacement** ("Project" or "Contract").

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 seven (7) 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 thereunder, 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 duly executed by the Principal and Surety above named, on the _____ day of _____, 20____.

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 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.

END OF DOCUMENT

DESIGNATED SUBCONTRACTORS LIST
(Public Contact Code Sections 4100-4114)

PROJECT: **Highlands Elementary School – HVAC Equipment Replacement**

Bidder acknowledges and agrees that it must clearly set forth below the name, location and California contractor license number of each subcontractor who will perform work or labor or render service to the Bidder in or about the construction of the Work or who will specially fabricate and install a portion of the Work according to detailed drawings contained in the plans and specifications in an amount in excess of one-half of one percent (0.5%) of Bidder’s total Base Bid and the kind of Work that each will perform. Vendors or suppliers of materials only do not need to be listed.

Bidder acknowledges and agrees that, if Bidder fails to list as to any portion of Work, or if Bidder lists more than one subcontractor to perform the same portion of Work, Bidder must 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 of the kind of Work that each subcontractor will perform.

If alternate bid(s) is/are called for and Bidder intends to use subcontractors different from or in addition to those subcontractors listed for work under the Base Bid, Bidder must list subcontractors that will perform Work in an amount in excess of one half of one percent (0.5%) of Bidder’s total Base Bid plus alternate(s).

If further space is required for the list of proposed subcontractors, attach additional copies of page 2 showing the required information, as indicated below.

Subcontractor Name: _____

CA Cont. Lic. #: _____ Location: _____

Portion of Work: _____

Subcontractor Name: _____

CA Cont. Lic. #: _____ Location: _____

Portion of Work: _____

Subcontractor Name: _____

CA Cont. Lic. #: _____ Location: _____

Portion of Work: _____

Subcontractor Name: _____

CA Cont. Lic. #: _____ Location: _____

Portion of Work: _____

Subcontractor Name: _____

CA Cont. Lic. #: _____ Location: _____

Portion of Work: _____

Subcontractor Name: _____

CA Cont. Lic. #: _____ Location: _____

Portion of Work: _____

Subcontractor Name: _____

CA Cont. Lic. #: _____ Location: _____

Portion of Work: _____

Subcontractor Name: _____

CA Cont. Lic. #: _____ Location: _____

Portion of Work: _____

Subcontractor Name: _____

CA Cont. Lic. #: _____ Location: _____

Portion of Work: _____

Subcontractor Name: _____

CA Cont. Lic. #: _____ Location: _____

Portion of Work: _____

Subcontractor Name: _____

CA Cont. Lic. #: _____ Location: _____

Portion of Work: _____

Date: _____
Proper Name of Bidder: _____
Signature: _____
Print Name: _____
Title: _____

END OF DOCUMENT

SITE VISIT CERTIFICATION

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID
IF SITE VISIT WAS MANDATORY

PROJECT: **Highlands Elementary School – HVAC Equipment Replacement**

Check option that applies:

_____ I certify that I visited the Site of the proposed Work and became fully acquainted with the conditions relating to construction and labor. I fully understand the facilities, difficulties, and restrictions attending the execution of the Work under contract.

_____ I certify that _____ (Bidder's representative) visited the Site of the proposed Work and became fully acquainted with the conditions relating to construction and labor. The Bidder's representative fully understood the facilities, difficulties, and restrictions attending the execution of the Work under contract.

Bidder fully indemnifies the Pittsburg Unified School District, its Architect, its Engineer, its Construction Manager, and all of their respective officers, agents, employees, and consultants from any damage, or omissions, related to conditions that could have been identified during my visit and/or the Bidder's representative's visit to the Site.

I certify under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Date: _____

Proper Name of Bidder: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

**NON-COLLUSION DECLARATION
(Public Contract Code Section 7106)**

The undersigned declares:

I am the _____ of _____, the party making the foregoing bid.
[Title] [Name of Firm]

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. 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. All statements contained in the bid are true. 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, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____,
[Date]

at _____, _____.
[City] [State]

Date: _____

Proper Name of Bidder: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

IRAN CONTRACTING ACT CERTIFICATION
(Public Contract Code Sections 2202-2208)

BID NO.: 18-008 between Pittsburg Unified School District ("District") and _____
_____ ("Contractor" or "Bidder") for
Highlands Elementary School – HVAC Equipment Replacement ("Contract" or "Project").

Prior to bidding on or submitting a proposal for a contract for goods or services of \$1,000,000 or more, the bidder/proposer must submit this certification pursuant to Public Contract Code section 2204.

The bidder/proposer must complete **ONLY ONE** of the following two options. To complete OPTION 1, check the corresponding box **and** complete the certification below. To complete OPTION 2, check the corresponding box, complete the certification below, and attach documentation demonstrating the exemption approval.

- OPTION 1.** Bidder/Proposer 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 we are 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.
- OPTION 2.** Bidder/Proposer has received a written exemption from the certification requirement pursuant to Public Contract Code sections 2203(c) and (d). *A copy of the written documentation demonstrating the exemption approval is included with our bid/proposal.*

CERTIFICATION:

I, the official named below, CERTIFY UNDER PENALTY OF PERJURY, that I am duly authorized to legally bind the bidder/proposer to the OPTION selected above. This certification is made under the laws of the State of California.

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

END OF DOCUMENT

WORKERS' COMPENSATION CERTIFICATION

BID NO.: 18-008 between Pittsburg Unified School District ("District") and _____
_____ ("Contractor" or "Bidder") for
Highlands Elementary School – HVAC Equipment Replacement ("Contract" or "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; and/or
- b. By securing from the Director of Industrial Relations a certificate of consent to self-insure, which 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.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

(In accordance with Labor Code sections 1860 and 1861, the above certificate must be signed and filed with the awarding body prior to performing any Work under this Contract.)

END OF DOCUMENT

**PREVAILING WAGE AND
RELATED LABOR REQUIREMENTS CERTIFICATION**

BID NO.: 18-008 between Pittsburg Unified School District ("District") and _____
_____ ("Contractor" or "Bidder") for
Highlands Elementary School – HVAC Equipment Replacement ("Contract" or "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

**DISABLED VETERAN BUSINESS
ENTERPRISE PARTICIPATION CERTIFICATION**

BID NO.: 18-008 between Pittsburg Unified School District ("District") and _____
 _____ ("Contractor" or "Bidder") for
Highlands Elementary School – HVAC Equipment Replacement ("Contract" or "Project").

GENERAL INSTRUCTIONS

Section 17076.11 of the Education Code requires school districts using, or planning to use, funds allocated pursuant to the State of California School Facility Program ("Program") for the construction and/or modernization of school buildings to have a participation goal for disabled veteran business enterprises ("DVBE") of at least three percent (3%) per year of the overall dollar amount expended each year by the school district on projects that receive state funding. Therefore, the lowest responsive responsible Bidder awarded the Contract must submit this document to the District with its executed Agreement, identifying the steps contractor took to solicit DVBE participation in conjunction with this Contract. **Do not submit this form with your bids.**

PART I – Method of Compliance with DVBE Participation Goals. Check the appropriate box to indicate your method of committing the contract dollar amount.

YOUR BUSINESS ENTERPRISE IS:	AND YOU WILL	AND YOU WILL
A. <input type="checkbox"/> Disabled veteran owned and your forces will perform at least 3% of this Contract	Include a copy of your DVBE letter from Office of Small Business and Disabled Veterans Business Enterprise Services ("OSDS")*	Complete Part 1 of this form and the Certification
B. <input type="checkbox"/> Disabled veteran owned but is unable to perform 3% of this Contract with your forces	Use DVBE subcontractors /suppliers to bring the Contract participation to at least 3%	Include a copy of each DVBE's letter from OSDS (including yours, if applicable), and complete Part 1 of this form and the Certification
C. <input type="checkbox"/> NOT disabled veteran owned	Use DVBE subcontractors /suppliers for at least 3% of this Contract	
D. <input type="checkbox"/> Unable to meet the required participation goals	Complete all of this form and the Certification	

* A DVBE letter from OSDS is obtained from the participating DVBE.

You must complete the following table to show the dollar amount of DVBE participation:

	TOTAL CONTRACT PRICE
A. Prime Bidder, if DVBE (own participation)	\$
B. DVBE Subcontractor or Supplier	
1.	
2.	
3.	
4.	
C. Subtotal (A & B)	
D. Non-DVBE	
E. Total Bid	

PART II – Contacts. To identify DVBE subcontractors/suppliers for participation in your contract, you must contact each of the following categories. You should contact several DVBE organizations.

CATEGORY	TELEPHONE NUMBER	DATE CONTACTED	PERSON CONTACTED
1. The District, if any			*
2. OSDS, provides assistance locating DVBEs at https://caleprocure.ca.gov/pages/PublicSearch/supplier-search.aspx	(916) 375-4940		*
3. DVBE Organization (List)			*

*Write "recorded message" in this column, if applicable.

PART III – Advertisement. You must advertise for DVBE participation in both a trade and focus paper. List the advertisement you place to solicit DVBE participation. Advertisements should be published at least fourteen (14) days prior to bid/proposal opening; if you cannot advertise fourteen (14) days prior, advertisements should be published as soon as possible. Advertisements must include that your firm is seeking DVBE participation, the project name and location, and your firm’s name, your contact person, and telephone number. Attach copies of advertisements to this form.

FOCUS/TRADE PAPER NAME	CHECK ONE		DATE OF ADVERTISEMENT
	TRADE	FOCUS	

PART IV – DVBE Solicitations. List DVBE subcontractors/suppliers that were invited to bid. Use the following instructions to complete the remainder of this section (read the three columns as a sentence from left to right). If you need additional space to list DVBE solicitations, please use a separate page and attach to this form.

IF THE DVBE.....	THEN.....	AND.....		
was selected to participate	Check “YES” in the “SELECTED” column	include a copy of their DVBE letter(s) from OSDS		
was NOT selected to participate	Check “NO” in the “SELECTED” column	state why in the “REASON NOT SELECTED” column		
did not respond to your solicitation	Check the “NO RESPONSE” column.			
DVBE CONTACTED	SELECTED		REASON NOT SELECTED	NO RESPONSE
	YES	NO		

A copy of this form must be retained by you and may be subject to a future audit.

CERTIFICATION

I, _____, certify that I am the bidder's _____ and that I have made a diligent effort to ascertain the facts with regard to the representations made herein. In making this certification, I am aware of section 12650 et seq. of the Government Code providing for the imposition of treble damages for making false claims.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

DRUG-FREE WORKPLACE CERTIFICATION

BID NO.: 18-008 between Pittsburg Unified School District ("District") and _____ ("Contractor" or "Bidder") for Highlands Elementary School – HVAC Equipment Replacement ("Contract" or "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 school district under California law and requires all contractors on District projects to comply with the provisions and requirements of 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 the aforementioned Act.

I acknowledge that I am aware of the provisions of 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

TOBACCO-FREE ENVIRONMENT CERTIFICATION

BID NO.: 18-008 between Pittsburg Unified School District ("District") and _____
_____ ("Contractor" or "Bidder") for
Highlands Elementary School – HVAC Equipment Replacement ("Contract" or "Project").

This Tobacco-Free Environment Certification form is required from the successful Bidder.

Pursuant to, without limitation, 20 U.S.C section 6083, Labor Code section 6400 et seq., Health & Safety Code section 104350 et seq., and District Board policies, all District sites, including the Project site, are tobacco-free environments. Smoking and the use of tobacco products by all persons is prohibited on or in District property. District property includes school buildings, school grounds, school-owned vehicles and vehicles owned by others while on District property.

I acknowledge that I am aware of the District's policy regarding tobacco-free environments at District sites, including the Project site and hereby certify that I will adhere to the requirements of that policy and not permit any of my firm's employees, agents, subcontractors, or my firm's subcontractors' employees or agents, to use tobacco and/or smoke on the Project site.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

HAZARDOUS MATERIALS CERTIFICATION

BID NO.: 18-008 between Pittsburg Unified School District ("District") and _____ ("Contractor" or "Bidder")
for Highlands Elementary School – HVAC Equipment Replacement ("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 (0.1%) 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 equipment containing New Hazardous Material 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 titled 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

LEAD-BASED MATERIALS CERTIFICATION

BID NO.: 18-008 between Pittsburg Unified School District ("District") and _____ ("Contractor" or "Bidder")
for Highlands Elementary School – HVAC Equipment Replacement ("Contract" or "Project").

This certification provides notice to the Contractor that:

- (1) Contractor's work may disturb lead-containing building materials.
- (2) Contractor shall notify the District if any work may result in the disturbance of lead-containing building materials.
- (3) Contractor shall comply with the Renovation, Repair and Painting Rule, if lead-based paint is disturbed in a six-square-foot or greater area indoors or a 20-square-foot or greater area outdoors.

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 disburse 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 1978 are presumed to contain some lead-based paint until sampling proves otherwise.

2. Overview of California Law

Education Code section 32240 et seq. is known as the Lead-Safe Schools Protection Act. Under this act, the Department of Health Services is to conduct a sample

survey of schools in the State of California for the purpose of developing risk factors to predict lead contamination in public schools. (Ed. Code, § 32241.)

Any school that undertakes any action to abate existing risk factors for lead is required to utilize trained and state-certified contractors, inspectors, and workers. (Ed. Code, § 32243, subd. (b).) Moreover, lead-based paint, lead plumbing, and solders, or other potential sources of lead contamination, shall not be utilized in the construction of any new school facility or the modernization or renovation of any existing school facility. (Ed. Code, § 32244.)

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 those regulations. The OSHA Regulations define construction work as work for construction, alteration, and/or repair, including painting and decorating. Regulated work 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).

Contractor shall 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 shall be coordinated through the District. A signed copy of this Certification shall be on file prior

to beginning Work on the Project, along with all current insurance certificates.

3. **Renovation, Repair and Painting Rule, Section 402(c)(3) of the Toxic Substances Control Act**

The EPA requires lead safe work practices to reduce exposure to lead hazards created by renovation, repair and painting activities that disturb lead-based paint. Pursuant to the Renovation, Repair and Painting Rule (RRP), renovations in homes, childcare facilities, and schools built prior to 1978 must be conducted by certified renovations firms, using renovators with training by a EPA-accredited training provider, and fully and adequately complying with all applicable laws, rules and regulations governing lead-based materials, including those rules and regulations appearing within title 40 of the Code of Federal Regulations as part 745 (40 CFR 745).

The RRP requirements apply to all contractors who disturb lead-based paint in a six-square-foot or greater area indoors or a 20-square-foot or greater area outdoors. If a DPH-certified inspector or risk assessor determines that a home constructed before 1978 is lead-free, the federal certification is not required for anyone working on that particular building.

4. **Contractor's Liability**

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.

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

IMPORTED MATERIALS CERTIFICATION

BID NO.: 18-008 between Pittsburg Unified School District ("District") and _____
_____ ("Contractor" or "Bidder")
for Highlands Elementary School – HVAC Equipment Replacement ("Contract" or "Project").

This form shall be executed by all entities that, in any way, provide or deliver and/or supply any soils, aggregate, or related materials ("Fill") to the Project Site and shall be provided to the District at least ten (10) days before delivery. 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 Substances Control.

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 Firm: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

CRIMINAL BACKGROUND INVESTIGATION
/FINGERPRINTING CERTIFICATION

BID NO.: 18-008 between Pittsburg Unified School District ("District") and _____
_____ ("Contractor" or "Bidder")
for Highlands Elementary School - HVAC Equipment Replacement ("Contract" or "Project").

The undersigned does hereby certify to the governing board of the District as follows:

That I am a representative of the Contractor currently under contract with the District; that I am familiar with the facts herein certified; and that I am authorized and qualified to execute this certificate on behalf of Contractor.

Contractor certifies that it has taken at least one of the following actions with respect to the construction Project that is the subject of the Contract (check all that apply):

_____ The Contractor has complied with the fingerprinting requirements of Education Code section 45125.1 with respect to all Contractor's employees and all of its Subcontractors' employees who may have contact with District pupils in the course of providing services pursuant to the Contract, and the California Department of Justice has determined that none of those employees has been convicted of a felony, as that term is defined in Education Code section 45122.1. A complete and accurate list of Contractor's employees and of all of its subcontractors' employees who may come in contact with District pupils during the course and scope of the Contract is attached hereto; and/or

_____ Pursuant to Education Code section 45125.2, Contractor has installed or will install, prior to commencement of Work, a physical barrier at the Work Site, that will limit contact between Contractor's employees and District pupils at all times; and/or

_____ Pursuant to Education Code section 45125.2, Contractor certifies that all employees will be under the continual supervision of, and monitored by, an employee of the Contractor who the California Department of Justice has ascertained has not been convicted of a violent or serious felony. The name and title of the employee who will be supervising Contractor's employees and its subcontractors' employees is:

Name: _____

Title: _____

_____ The Work on the Contract is at an unoccupied school site and no employee and/or subcontractor or supplier of any tier of Contract shall come in contact with the District pupils.

Contractor's responsibility for background clearance extends to all of its employees, Subcontractors, and employees of Subcontractors coming into contact with District pupils regardless of whether they are designated as employees or acting as independent contractors of the Contractor.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

BUY AMERICAN CERTIFICATION

BID NO.: 18-008 between Pittsburg Unified School District ("District") and _____
_____ ("Contractor" or "Bidder")
for Highlands Elementary School – HVAC Equipment Replacement ("Contract" or "Project").

Federal regulations require that all of the iron, steel, and manufactured goods used in projects for the construction, installation, repairs, renovation, modernization, or maintenance of a public building or public work funded in part or in whole by federal stimulus funds, with the exception of projects funded by Qualified School Construction Bonds, be produced in the United States of America, unless a federal department waives this requirement because (1) it is inconsistent with the public interest, (2) the goods are not produced in sufficient quantities or of satisfactory quality in the United States, or (3) the requirement would increase the cost of the Project overall by more than twenty-five percent (25%) ("Buy American").

Contractor shall submit this Certification with its executed agreement, identifying the steps Contractor will take to use goods produced in the United States of America in carrying out this Contract. Bidder should not submit this form with its bid.

Contractor shall retain a copy of this form and may be subject to a future audit.

CERTIFICATION

On behalf of Contractor, I represent and covenant that Contractor will use on the Project only iron, steel and manufactured goods produced in the United States of America except goods for which a federal department has waived this requirement.

I, _____, certify that I am the Contractor's _____
_____ and that the representations and covenants made herein are true and correct. In making this certification, I am aware of section 12650 et seq. of the Government Code providing for the imposition of treble damages for making false claims.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

By my signature below, I hereby certify that, to the best of my knowledge, the contents of this disclosure are true, or are believed to be true. I further certify on behalf of the Firm that I am aware of section 3000 et seq. of the California Public Contract Code, and the sections referenced therein regarding the penalties for providing false information or failing to disclose a financial relationship in this disclosure. I further certify that I am authorized to make this certification on behalf of the Firm.

Date: _____

Proper Name of Firm: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

POST BID INTERVIEW

PART 1 – GENERAL

1.01 SUMMARY

If requested by the District, this Section requires the apparent low bidder to attend and participate in a Post Bid Interview with the School District, prior to award of any contract by the District. The Post Bid Interview will be scheduled by the Construction Manager within three (3) calendar days after the date of bid.

1.02 REQUIRED ATTENDANCE

- A. A duly authorized representative of the apparent low bidder is required to attend the Post Bid Interview, in person.
- B. The apparent low bidder's authorized representative must have signatory authority on behalf of the apparent low bidder.
- C. Failure to attend the Post Bid Interview will be considered just cause for the District to reject the Bid.

1.03 POST BID INTERVIEW PROCEDURE

- A. The School District will review the Bid with the attendees.
- B. The School District will review the Contract Documents with the attendees, including but not limited to:
 - (1) Insurance
 - (2) Bonding
 - (3) Addenda
 - (4) Pre-Bid Clarifications
 - (5) Scope of Work
 - (6) Bid Packages Descriptions
 - (7) Bid Alternates
 - (8) Contract Plans
 - (9) Contract Specifications
 - (10) Project Schedule and Schedule Requirements

- (11) Critical Dates Requirement for Other Bid Packages
- (12) Prevailing Wage Requirements
- (13) Liquidated Damages
- (14) Required Documentation for Contract Administration
- (15) Contract Coordination Requirements

1.04 POST BID INTERVIEW DOCUMENTATION

The School District will document the Post Bid Interview on the form attached to this Section. Both the apparent low bidder and the School District are required to sign the Post Bid Interview Documentation.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

POST BID INTERVIEW

SCHOOL DISTRICT

[Name]
[Address 1]
[Address 2]
[Phone]

[Fax]

BIDDER: _____

DATE: _____ TIME: _____ PHONE: _____

I. INTRODUCTIONS:

A. Present

CONTRACTOR

CONTRACTOR

II. PROPOSED CONTRACT:

III. PURPOSE OF INTERVIEW IS TO ASSURE A MUTUAL UNDERSTANDING OF THE FOLLOWING:

- A. Do you acknowledge submission of a complete and accurate bid? Yes No
- B. Do you acknowledge the Bid Document submittal timelines after NOA and NTP and can you meet those timelines? Yes No
- C. Do you acknowledge the requirements for the escrow of bid documents? Yes No
- D. Are you comfortable with your listed subcontractors? Yes No

IV. CONTRACTUAL REQUIREMENTS:

- A. Do you understand you are a prime contractor? Yes No
- B. Can you meet specified insurance requirements? Yes No
 - 1. Do any of your policies that require Additional Insured endorsements exceed the minimum coverage requirements? Yes No
 - 2. Are you requesting that the District accept an Umbrella or Excess Liability Insurance Policy to meet the policy limit? Yes No

3. Will there be a gap between the per occurrence amount of any underlying policy and the start of the coverage under the Umbrella or Excess Liability Insurance Policy? Yes No
- C. Will you provide the Performance Bond and Labor and Material Bond for 100% of the Contract Price as stipulated? Yes No
1. Cost for bond: _____% Yes No
2. Is the cost of your bond in your base bid? Yes No
3. Is your surety licensed to issue bonds in California? Yes No
- D. Do you understand the fingerprinting requirements? Yes No
- E. Is it understood that all workers must be paid prevailing wage? Yes No
- F. Is it understood that all subcontractors of every tier must be registered as a public works contractor with the Department of Industrial Relations? Yes No
- V. SCOPE OF WORK:
- A. Acknowledged Receipt of Addenda #1-___ Yes No
- B. Are the costs for addenda items included in your bid? (if applicable) Yes No
- C. Do you have a complete understanding of your Scope of Work under the proposed Agreement? Yes No
- D. You have re-reviewed the documents and understand the Scope of the Work. Are there any items that require clarification? Yes No
- If yes, please identify them.
1. _____

2. _____

3. _____

- Is (are) there additional cost(s) for the above item(s)? Yes No
- E. Have you reviewed bid alternative(s) #1-___? (if applicable) Yes No
- F. Are the costs for bid alternatives included in your bid? Yes No

- G. Are the plans and specifications clear and understandable to your satisfaction? Yes No
- H. Do you acknowledge that the time to submit notice of requests for substitution of specified materials has expired? Yes No

VI. SCHEDULE:

- A. Do you acknowledge and agree to the stipulated completion dates and milestones in the contract? Yes No
 - 1. Will you provide a detailed construction schedule to _____ within the required ten (10) days of the Notice to Proceed, per the contract? Yes No
 - 2. Can you meet the submittal deadline? Yes No
 - 3. It is understood that the Project schedule is critical and that that weekend and overtime work may be required to meet the milestones. Yes No
 - 4. It is understood that if rain does occur, then all dewatering and protection of work is required, per the contract. Yes No
If not, what do you believe must change and why? _____

- B. Identify critical materials, deliveries, long lead items and other dependencies, including Owner Furnished items that could affect the completion of your work. Yes No
 - 1. _____
 - 2. _____
 - 3. _____
 - 4. _____
 - 5. _____

- C. Do you understand that there is going to be maintenance and other construction taking place on site during the course of the project? Yes No

VII. EXECUTION OF WORK

- A. Do you understand the access to the site? Yes No

- | | | |
|--|-----|----|
| B. Do you understand the staging area restrictions? | Yes | No |
| C. Have you included protection of [asphalt, floors, and roofs]? | Yes | No |
| D. Do you understand that the site is occupied by students, teachers, administrators, parents, etc.? | Yes | No |

VIII. CONTRACTOR COMMENTS/SUGGESTIONS:

1. _____
2. _____
3. _____
4. _____
5. _____

IX. CONTRACTOR

You agree the information contained herein is part of your contractual obligations. Your signature acknowledges your agreement to perform all Work in the Contract Documents, and that costs for all Work are included in your bid.

The foregoing information is true and accurate, and I am authorized to sign as an officer of the company I am representing.

[Company Name]

 Signature _____ Title: _____

Date: _____

X. SCHOOL DISTRICT

Signature _____ Title: _____

Date: _____

Title of Document: POST BID INTERVIEW

Number of Pages: _____

Date of Document: _____

END OF DOCUMENT

NOTICE OF AWARD

Dated: _____ 20__

To: _____ (Contractor)

To: _____
(Address)

From: Governing Board ("Board") of Pittsburg Unified School District ("District" or "Owner")

PROJECT: Highlands Elementary School – HVAC Equipment Replacement, Bid No. 18-008 ("Project").

Contractor has been awarded the referenced Contract on _____, 20__,
[CHOOSE ONE: by action of the District's Board **[OR]** by action of the superintendent or superintendent's designee pursuant to a delegation of authority by 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 Notice of Award. 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 **SEVEN (7)** calendar days of the date of this Notice of Award.

The Contractor shall execute and submit the following documents by 5:00 p.m. of the **SEVENTH (7th)** calendar day following the date of the Notice of Award.

- a. Agreement: To be executed by successful Bidder. Submit four (4) copies, each bearing an original signature.
- b. Escrow of Bid Documentation: This must include all required documentation. See the document titled Escrow Bid Documentation for more information.
- c. Performance Bond (100%): On the form provided in the Contract Documents and fully executed as indicated on the form.
- d. Payment Bond (Contractor's Labor & Material Bond) (100%): On the form provided in the Contract Documents and fully executed as indicated on the form.
- e. Insurance Certificates and Endorsements as required.
- f. Workers' Compensation Certification.
- g. Prevailing Wage and Related Labor Requirements Certification.

- h. Disabled Veteran Business Enterprise Participation Certification.
- i. Drug-Free Workplace Certification.
- j. Tobacco-Free Environment Certification.
- k. Hazardous Materials Certification.
- l. Lead-Based Materials Certification.
- m. Imported Materials Certification.
- n. Criminal Background Investigation/Fingerprinting Certification.
- o. Buy American Certification.
- p. Roofing Project Certification: from Contractor, Material Manufacturer and/or Vendor.

Failure to comply with these conditions within the time specified will entitle District to consider your bid abandoned, to annul this Notice of Award, 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.

PITTSBURG UNIFIED SCHOOL DISTRICT

BY: _____

NAME: _____

TITLE: _____

END OF DOCUMENT

AGREEMENT

THIS AGREEMENT IS MADE AND ENTERED INTO THIS _____ DAY OF _____, 20____, by and between the Pittsburg Unified School District ("District") and _____ ("Contractor") ("Agreement").

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 the following project:

Highlands Elementary School – HVAC Equipment Replacement Bid No. **18-008** ("Project" or "Contract" or "Work").

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 and submission of all documents required to secure funding or by the Division of the State Architect for close-out of the Project, 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, valid, written modifications, beginning with the most recent, shall control over this Agreement (if any), which shall control over the Special Conditions, which shall control over any Supplemental Conditions, which shall control over the General Conditions, which shall control over the remaining Division 0 documents, which shall control over Division 1 Documents which shall control over Division 2 through Division 18 documents, which shall control over figured dimensions, which shall control over large-scale drawings, which shall control 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 on or before **August 02, 2019** ("Contract Time") as 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, and such deduction does not constitute a withholding or penalty. 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, provided that Contractor has complied with the claims procedure of the Contract Documents. This provision does not exclude the recovery of damages by either party under other provisions in the Contract Documents.

7. **Loss Or Damage:** The District and its agents and 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 whatsoever; and shall hold the District and its agents and authorized representatives harmless from all liability of every kind and nature arising from accident, negligence, or any cause whatsoever.

8. **Insurance and Bonds:** Prior to issuance of the Notice to Proceed by the District, Contractor shall provide all required certificates of insurance, insurance endorsements, and payment and performance bonds as evidence thereof.

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, Project Inspector, and DSA:** Contractor hereby acknowledges that the Architect(s), the Project Inspector(s), and the Division of the State Architect ("DSA") have authority to approve and/or suspend 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 and regulations. 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 thereunder, may be assigned by the Contractor without the prior 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 or C-20** Contractor's license(s) issued by the State of California, Contractors' State License 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 1771.1.
- 14. Payment of Prevailing Wages:** The Contractor and all Subcontractors 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 Code, 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. No Representations:** No representations have been made other than as set forth in writing in the Contract Documents, including this Agreement. Each of the Parties to this Agreement warrants that it has carefully read and understood the terms and conditions of this Agreement and all Contract Documents, and that it has not relied upon the representations or advice of any other Party or any attorney not its own.
- 18. Entire Agreement:** The Contract Documents, including this Agreement, set forth the entire agreement between the parties hereto and fully supersede any and all prior agreements, understandings, written or oral, between the parties hereto pertaining to the subject matter thereof.
- 19. 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

PITTSBURG UNIFIED SCHOOL 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.

END OF DOCUMENT

NOTICE TO PROCEED

Dated: _____, 20____

TO: _____
("Contractor")

ADDRESS: _____

PROJECT: Highlands Elementary School – HVAC Equipment Replacement

BID NO.: 18-008 between the Pittsburg Unified School 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 **August 02, 2019**.

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 Data, and Samples submittals
- d. Contractor's Safety Plan specifically adapted for the Project.
- e. A complete subcontractors list, including the name, address, telephone number, email address, facsimile number, California State Contractors License number, license classification, Department of Industrial Relations registration number, and monetary value of all Subcontracts.

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

PITTSBURG UNIFIED SCHOOL DISTRICT

BY: _____

NAME: _____

TITLE: _____

END OF DOCUMENT

ESCROW BID DOCUMENTATION

1. Requirement to Escrow Bid Documentation

- a. Contractor shall submit, within **SEVEN (7)** calendar days after the date of the Notice of Award, one copy of all documentary information received or generated by Contractor in preparation of bid prices for this Contract, 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 the 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 claims 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 responsible 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 constitute 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 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. 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, calculations 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, expendable 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 \$10,000, 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 markup, 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)** calendar days after the date of the 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 adjustments 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)** calendar 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)** calendar days' notice, then the District representative may examine the Escrow Bid Documents alone upon an additional **THREE (3)** calendar 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)** calendar 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)** calendar 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 time as the Contract has been completed and final settlement has been achieved.

END OF DOCUMENT

ESCROW AGREEMENT IN LIEU OF RETENTION
(Public Contract Code Section 22300)

(Note: Contractor must use this form.)

This Escrow Agreement in Lieu of Retention ("Escrow Agreement") is made and entered into this _____ day of _____, 20____, by and between the Pittsburg Unified School District ("District"), whose address is 2000 Railroad Avenue, Pittsburg, California, 94565 and _____ ("Contractor"), whose address is _____, and _____ ("Escrow Agent"), a state or federally chartered bank in the state of California, whose address is _____.

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

1. Pursuant to section 22300 of Public Contract Code of the State of California, which is hereby incorporated by reference, Contractor has the following two (2) options:
 - Deposit securities with Escrow Agent as a substitute for retention earnings required to be withheld by District pursuant to the Bid No. **18-008** entered into between District and Contractor for the Highlands Elementary School – HVAC Equipment Replacement Project, in the amount of _____ Dollars (\$_____) dated, _____, 20____, (the "Contract"); **or**
 - On written request of Contractor, District shall make payments of the retention earnings for the above referenced Contract directly to Escrow Agent.

When Contractor deposits the securities as a substitute for Contract earnings (first option), Escrow Agent shall notify District within ten (10) calendar 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 the terms of the Contract between District and Contractor.

Securities shall be held in the name of Pittsburg Unified School District, and shall designate Contractor as beneficial owner.

2. 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.
3. When District makes payment of retentions 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.

4. 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 \$0.00 for each of District's deposits to the escrow account. These expenses and payment terms shall be determined by District, Contractor, and Escrow Agent.
5. 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.
6. 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.
7. District shall have the right to draw upon the securities and/or withdraw amounts from the Escrow Account in the event of default by Contractor. 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.
8. 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.
9. 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.
10. 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:

On behalf of Contractor:

Title

Title

Name

Name

Signature

Signature

2000 Railroad Ave., Pittsburg, CA 94565
Address

Address

On behalf of Escrow Agent:

Title

Name

Signature

Address

At the time that the Escrow Account is opened, District and Contractor shall deliver to Escrow Agent a fully executed copy 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:

On behalf of Contractor:

Title

Title

Name

Name

Signature

Signature

2000 Railroad Ave., Pittsburg, CA 94565
Address

Address

END OF DOCUMENT

PERFORMANCE BOND
(100% of Contract Price)

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

KNOW ALL PERSONS BY THESE PRESENTS:

WHEREAS, the governing board ("Board") of the Pittsburg Unified School 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:

Highlands Elementary School – HVAC Equipment Replacement

("Project" or "Contract") 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, 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:

- Promptly perform all the work required to complete the Project; and
- 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.

Or, at the District's sole discretion and election, the Surety shall obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by the District of the lowest responsible bidder, arrange for a contract between such bidder and the District and make available as Work progresses sufficient funds to pay the cost of completion less the "balance of the Contract Price," and to pay and perform all obligations of Principals under the Contract, including, without limitation, all obligations with respect to warranties, guarantees and the payment of liquidated damages. The term "balance of the Contract Price," as used in this paragraph, shall mean the total amount payable to Principal by the District under the Contract and any modifications thereto, less the amount previously paid by the District to the Principal, less any withholdings by the District allowed under the Contract. District shall not be required or obligated to accept a tender of a completion contractor from the Surety for any or no reason.

The condition of the obligation is such that, if the above bound Principal, 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 its part to be kept and performed at the time and in the intent and meaning, including all contractual guarantees and warranties of materials and workmanship, 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.

Surety expressly agrees that the District may reject any contractor or subcontractor proposed by Surety to fulfill its obligations in the event of default by the Principal. Surety shall not utilize Principal in completing the Work nor shall Surety accept a Bid from Principal for completion of the Work if the District declares the Principal to be in default and notifies Surety of the District's objection to Principal's further participation in the completion of the Work.

As a condition precedent to the satisfactory completion of the Contract, the above obligation shall hold good for a period equal to the warranty and/or guarantee period of the Contract, during which time Surety's obligation shall continue if Contractor shall fail to make full, complete, and satisfactory repair and replacements and totally protect the District from loss or damage resulting from or caused by defective materials or faulty workmanship. The obligations of Surety hereunder shall continue so long as any obligation of Contractor remains. Nothing herein shall limit the District's rights or the Contractor or Surety's obligations under the Contract, law or equity, including, but not limited to, California Code of Civil Procedure section 337.15.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this bond. The Surety also stipulates and agrees that it shall not be exonerated or released from the obligation of this bond by any overpayment or underpayment by the District that is based upon estimates approved by the Architect. The Surety 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__.

_____	_____
Principal	Surety
_____	_____
By	By

	Name of California Agent of Surety

	Address of California Agent of Surety

	Telephone No. of California Agent of Surety

Contractor 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.

END OF DOCUMENT

PITTSBURG UNIFIED SCHOOL DISTRICT
Highlands Elementary School
HVAC Equipment Replacement
McCracken & Woodman, Inc.

PERFORMANCE BOND
DOCUMENT 00 61 13.13-3

PAYMENT BOND
Contractor's Labor & Material Bond
(100% Of Contract Price)

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

KNOW ALL PERSONS BY THESE PRESENTS:

WHEREAS, the governing board ("Board") of the Pittsburg Unified School 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:

Highlands Elementary School – HVAC Equipment Replacement

("Project" or "Contract") 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 one hundred percent (100%) of the Contract price, to secure the claims to which reference is made in sections 9000 through 9510 and 9550 through 9566 of the Civil Code, and division 2, part 7, of the Labor Code.

NOW, THEREFORE, 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 its subcontractors, or their heirs, executors, administrators, successors, or assigns of any, all, or either of them shall fail to pay for any labor, materials, provisions, 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 required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of the Principal or any of his or its subcontractors of any tier under Section 13020 of the Unemployment Insurance Code 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 section 9100 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__.

_____	_____
Principal	Surety
_____	_____
By	By

	Name of California Agent of Surety

	Address of California Agent of Surety

	Telephone No. of California Agent of Surety

Contractor 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.

END OF DOCUMENT

CHANGE ORDER FORM

Pittsburg Unified School District
 2000 Railroad Avenue,
 Pittsburg, CA 94565

CHANGE ORDER NO.:

CHANGE ORDER

Project: Highlands ES – HVAC Equipment Replacement
Bid No.: 18-008

Date:
DSA File No.: 7-36
DSA Appl. No.: 01-116978

The following parties agree to the terms of this Change Order:

Owner:	[Name / Address]	Contractor:	[Name / Address]
Architect:	[Name / Address]	Project Inspector:	[Name / Address]

Reference	Description	Cost	Days Ext.
PCO # Requested by: Performed by: Reason:	[Description of change] [Requester] [Performer] [Reason]	\$	
PCO # Requested by: Performed by: Reason:	[Description of change] [Requester] [Performer] [Reason]	\$	
PCO # Requested by: Performed by: Reason:	[Description of change] [Requester] [Performer] [Reason]	\$	
Contract time will be adjusted as follows: Previous Completion Date: __[Date] _____ [#] Calendar Days Extension (zero unless otherwise indicated) Current Completion Date: __[Date]		Original Contract Amount:	\$
		Amount of Previously Approved Change Order(s):	\$
		Amount of this Change Order:	\$
		Contract Amount:	\$

The undersigned Contractor approves the foregoing as to the changes, if any, to 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 therein, and agrees to furnish all labor, materials and services and perform all work necessary to complete any additional work specified for the consideration stated therein. 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.

This change order is subject to approval by the governing board of this District and must be signed by the District. Until such time as this change order is approved by the District's governing board and executed by a duly authorized District representative, this change order is not effective and not binding.

It is expressly understood that the compensation and time, if any, granted herein represent a full accord and satisfaction for any and all time and cost impacts of the items herein, and Contractor waives any and all further compensation or time extension based on the items herein. The value of the extra work or changes expressly includes any and all of the Contractor's costs and expenses, and its subcontractors, both direct and indirect, resulting from additional time required on the project or resulting from delay to the project. Any costs, expenses, damages or time extensions not included are deemed waived.

Signatures:

District:

Contractor:

[Name]

Date

[Name]

Date

Architect:

Project Inspector:

[Name]

Date

[Name]

Date

END OF DOCUMENT

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 PITTSBURG UNIFIED SCHOOL DISTRICT ("District") and _____ ("Contractor"), whose place of business is _____.

RECITALS:

1. District and Contractor entered into BID NO.: 18-008, Highlands Elementary School – HVAC Equipment Replacement ("Contract" or "Project") in the County of Contra Costa, California.
2. The Work under the Contract was completed on _____, and a Notice of Completion was recorded with the County Recorder on _____.

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

AGREEMENT AND RELEASE

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 (\$_____) 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 and all of its respective agents, employees, trustees, inspectors, assignees, consultants and transferees, except for any Disputed Claim that may be set forth in Paragraph 6 and the 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:

<u>Claim No.</u>	<u>Description of Claim</u>	<u>Amount of Claim</u>	<u>Date Claim Submitted</u>
_____	_____	\$ _____	_____
_____	_____	\$ _____	_____
_____	_____	\$ _____	_____
_____	_____	\$ _____	_____

[If further space is required, attach additional sheets showing the required information.]

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 District.
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 OR HER FAVOR AT THE TIME OF EXECUTING THE RELEASE, WHICH IF KNOWN BY HIM OR HER MUST HAVE MATERIALLY AFFECTED HIS OR HER 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 * * *

PITTSBURG UNIFIED SCHOOL DISTRICT

Signature: _____

Print Name: _____

Title: _____

CONTRACTOR: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

GUARANTEE FORM

_____ ("Contractor") hereby agrees that the _____
_____ ("Work" of Contractor) which Contractor has installed for the Pittsburg
Unified School District ("District") for the following project:

PROJECT: **Highlands Elementary School – HVAC Equipment Replacement**

("Project" or "Contract") 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 **Two (2)** year(s) from the
date of completion as defined in Public Contract Code section 7107, subdivision (c), ordinary
wear and tear and unusual abuse or neglect excepted. The date of completion is
_____, 20____.

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.: _____

Email: _____

END OF DOCUMENT

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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 Adverse Weather: Shall be only weather that satisfies all of the following conditions: (1) unusually severe precipitation, sleet, snow, hail, or extreme temperature conditions in excess of the norm for the location and time of year it occurred based on the closest weather station data averaged over the past five years, (2) that is unanticipated and would cause unsafe work conditions and/or is unsuitable for scheduled work that should not be performed during inclement weather (i.e., exterior finishes), and (3) at the Project.

1.1.2 Approval, Approved, and/or Accepted: Written authorization, unless stated otherwise.

1.1.3 Architect (or "Design Professional in General Charge"): The individual, partnership, corporation, joint venture, or any combination thereof, named as Architect, who will have the rights and authority assigned to the Architect in the Contract Documents. The term Architect means the Design Professional in General Responsible Charge as defined in DSA PR 13-02 on this Project or the Architect's authorized representative.

1.1.4 As-Builts: Reproducible blue line prints of drawings to be prepared on a monthly basis pursuant to the Contract Documents, that reflect changes made during the performance of the Work, recording differences between the original design of the Work and the Work as constructed since the preceding monthly submittal. See **Record Drawings**.

1.1.5 Bidder: A contractor who intends to provide a proposal to the District to perform the Work of this Contract.

1.1.6 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.

1.1.7 Claim: A Dispute that remains unresolved at the conclusion of the all the applicable Dispute Resolution requirements provided herein.

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

1.1.9 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.

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

1.1.11 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:

- 1.1.11.1 Notice to Bidders
- 1.1.11.2 Instructions to Bidders
- 1.1.11.3 Bid Form and Proposal
- 1.1.11.4 Bid Bond
- 1.1.11.5 Designated Subcontractors List
- 1.1.11.6 Site Visit Certification (if a site visit was required)
- 1.1.11.7 Non-Collusion Declaration
- 1.1.11.8 Notice of Award
- 1.1.11.9 Notice to Proceed
- 1.1.11.10 Agreement
- 1.1.11.11 Escrow of Bid Documentation
- 1.1.11.12 Escrow Agreement for Security Deposits in Lieu of Retention (if applicable)
- 1.1.11.13 Performance Bond
- 1.1.11.14 Payment Bond (Contractor's Labor & Material Bond)
- 1.1.11.15 General Conditions
- 1.1.11.16 Special Conditions (if applicable)
- 1.1.11.17 Project Stabilization Agreement (if applicable)
- 1.1.11.18 Hazardous Materials Procedures and Requirements
- 1.1.11.19 Workers' Compensation Certification
- 1.1.11.20 Prevailing Wage Certification
- 1.1.11.21 Disabled Veteran Business Enterprise Participation Certification (if applicable)
- 1.1.11.22 Drug-Free Workplace Certification (if applicable)
- 1.1.11.23 Tobacco-Free Environment Certification
- 1.1.11.24 Hazardous Materials Certification (if applicable)
- 1.1.11.25 Lead-Based Materials Certification (if applicable)
- 1.1.11.26 Imported Materials Certification (if applicable)
- 1.1.11.27 Criminal Background Investigation/Fingerprinting Certification
- 1.1.11.28 Buy American Certification (if applicable)
- 1.1.11.29 Roofing Project Certification (if applicable)
- 1.1.11.30 Iran Contracting Act Certification (if applicable)
- 1.1.11.31 Post Bid Interview
- 1.1.11.32 All Plans, Technical Specifications, and Drawings
- 1.1.11.33 Any and all addenda to any of the above documents
- 1.1.11.34 Any and all change orders or written modifications to the above documents if approved in writing by the District

1.1.12 Contract Price: The total monies payable to the Contractor under the terms and conditions of the Contract Documents.

1.1.13 Contract Time: The time period stated in the Agreement for the completion of the Work.

1.1.14 Contractor: The person or persons identified in the Agreement as contracting to perform the Work to be done under this Contract, or the legal representative of such a person or persons.

1.1.15 Daily Job Report(s): Daily Project reports prepared by the Contractor's employee(s) who are present on Site, which shall include the information required herein.

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

1.1.17 Department of Industrial Relations (or "DIR"): is responsible, among other things, for labor compliance monitoring and enforcement of California prevailing wage laws and regulations for public works contracts.

1.1.18 Design Professional in General Responsible Charge: See definition of **Architect** above.

1.1.19 Dispute: A separate demand by Contractor for a time extension, or 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 Contractor is not otherwise entitled to; or an amount of payment disputed by the District.

1.1.20 District: The public agency or the school 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,

1.1.20.1 Direct the Contractor to communicate with or provide notice to the Construction Manager or the Architect on matters for which the Contract Documents indicate the Contractor will communicate with or provide notice to the District; and/or

1.1.20.2 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.

1.1.21 Drawings (or "Plans"): The graphic and pictorial portions of the Contract Documents showing the design, location, scope and dimensions of the work, generally including plans, elevations, sections, details, schedules, sequence of operation, and diagrams.

1.1.22 DSA: Division of the State Architect.

1.1.23 Force Account Directive: A process that may be used when the District and the Contractor cannot agree on a price for a specific portion of work or before

the Contractor prepares a price for a specific portion of work and whereby the Contractor performs the work as indicated herein on a time and materials basis.

1.1.24 Job Cost Reports: Any and all reports or records detailing the costs associated with work performed on or related to the Project that Contractor shall maintain for the Project. Specifically, Job Cost Reports shall contain, but are not limited by or to, the following information: a description of the work performed or to be performed on the Project; quantity, if applicable, of work performed (hours, square feet, cubic yards, pounds, etc.) for the Project; Project budget; costs for the Project to date; estimated costs to complete the Project; and expected costs at completion. The Job Cost Reports shall also reflect all Contract cost codes, change orders, elements of non-conforming work, back charges, and additional services.

1.1.25 Labor Commissioner's Office (or "Labor Commissioner", also known as the Division of Labor Standards Enforcement ("DLSE")): Division of the DIR responsible for adjudicating wage claims, investigating discrimination and public works complaints, and enforcing Labor Code statutes and Industrial Welfare Commission orders.

1.1.26 Municipal Separate Storm Sewer System (or "MS4"): A system of conveyances used to collect and/or convey storm water, including, without limitation, catch basins, curbs, gutters, ditches, man-made channels, and storm drains.

1.1.27 Plans: See **Drawings**.

1.1.28 Premises: The real property owned by the District on which the Site is located.

1.1.29 Product(s): New material, machinery, components, equipment, fixtures and systems forming the Work, including existing materials or components required and approved by the District for reuse.

1.1.30 Product Data: Illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate a material, product, or system for some portion of the Work.

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

1.1.32 Project: The planned undertaking as provided for in the Contract Documents.

1.1.33 Project Inspector (or "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.

1.1.34 Project Labor Agreement (or "PLA"): a prehire collective bargaining agreement in accordance with Public Contract Code section 2500 *et seq.* that

establishes terms and conditions of employment for a specific construction project or projects and/or is an agreement described in Section 158(f) of Title 29 of the United States Code.

1.1.35 Proposed Change Order (or "PCO"): a written request prepared by the Contractor requesting that the District and the Architect issue a Change Order based upon a proposed change to the Work.

1.1.36 Provide: Shall include "provide complete in place," that is, "furnish and install," and "provide complete and functioning as intended in place" unless specifically stated otherwise.

1.1.37 Qualified SWPPP Practitioners (or "QSP"): certified personnel that attended a State Water Resources Control Board sponsored or approved training class and passed the qualifying exam.

1.1.38 Record Drawings: Reproducible drawings (or Plans) prepared pursuant to the requirements of the Contract Documents that reflect all changes made during the performance of the Work, recording differences between the original design of the Work and the Work as constructed upon completion of the Project. See also **As-Builts**.

1.1.39 Request for Information (or "RFI"): A written request prepared by the Contractor requesting that the Architect provide additional information necessary to clarify or amplify an item in the Contract Documents that the Contractor believes is not clearly shown or called for in the Drawings or Specifications or other portions of the Contract Documents, or to address problems that have arisen under field conditions.

1.1.40 Request for Substitution for Specified Item: A request by Contractor to substitute an equal or superior material, product, thing, or service for a specific material, product, thing, or service that has been designated in the Contract Documents by a specific brand or trade name.

1.1.41 Safety Orders: Written and/or verbal orders for construction issued by the California Division of Industrial Safety ("CalOSHA") or by the United States Occupational Safety and Health Administration ("OSHA").

1.1.42 Safety Plan: Contractor's safety plan specifically adapted for the Project. Contractor's Safety Plan shall comply with all provisions regarding Project safety, including all applicable provisions in these General Conditions.

1.1.43 Samples: Physical examples that illustrate materials, products, equipment, finishes, colors, or workmanship and that, when approved in accordance with the Contract Documents, establish standards by which portions of the Work will be judged.

1.1.44 Shop Drawings: All drawings, prints, diagrams, illustrations, brochures, schedules, and other data that are prepared by the Contractor, a subcontractor, manufacturer, supplier, or distributor, that illustrate how specific portions of the Work shall be fabricated or installed.

1.1.45 Site: The Project site as shown on the Drawings.

1.1.46 Specifications: That portion of the Contract Documents, Division 1 through Division 49, and all technical sections, and addenda to all of these, if any, consisting of written descriptions and requirements of a technical nature of materials, equipment, construction methods and systems, standards, and workmanship.

1.1.47 State: The State of California.

1.1.48 Storm Water Pollution Prevention Plan (or "SWPPP"): A document which identifies sources and activities at a particular facility that may contribute pollutants to storm water and contains specific control measures and time frames to prevent or treat such pollutants.

1.1.49 Subcontractor: A contractor and/or supplier who is under contract with the Contractor or with any other subcontractor, regardless of tier, to perform a portion of the Work of the Project.

1.1.50 Submittal Schedule: The schedule of submittals as provided by Contractor and approved by District.

1.1.51 Surety: The person, firm, or corporation that executes as surety the Contractor's Performance Bond and Payment Bond, and must be a California admitted surety insurer as defined in the Code of Civil Procedure section 995.120.

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

1.2 Laws Concerning the Contract

Contract is subject to all provisions of the Constitution and laws of California and the United States governing, controlling, or affecting District, or the property, funds, operations, or powers of District, and such provisions are by this reference made a part hereof. Any provision required by law to be included in this Contract shall be deemed to be inserted.

1.3 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.

1.4 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. Any assignment of money due or to be come due under this Contract shall be subject to a prior lien for services rendered or material supplied for performance of work called for

under this Contract in favor of all persons, firms, or corporations rendering services or supplying material to the extent that claims are filed pursuant to the Civil Code, Code of Civil Procedure, Government Code, Labor Code, and/or Public Contract Code, and shall also be subject to deductions for liquidated damages or withholding of payments as determined by District in accordance with this Contract. Contractor shall not assign or transfer in any manner to a Subcontractor or supplier the right to prosecute or maintain an action against the District.

1.5 Notice and Service Thereof

1.5.1 Any notice from one party to the other or otherwise under Contract shall be in writing and shall be dated and signed by the party giving notice or by a duly authorized representative of that party. Any notice shall not be effective for any purpose whatsoever unless served in one of the following manners:

1.5.1.1 If notice is given by personal delivery thereof, it shall be considered delivered on the day of delivery.

1.5.1.2 If notice is given by overnight delivery service, it shall be considered delivered on one (1) day after date deposited, as indicated by the delivery service.

1.5.1.3 If notice is given by depositing same in United States mail, enclosed in a sealed envelope, it shall be considered delivered three (3) days after date deposited, as indicated by the postmarked date.

1.5.1.4 If notice is given by registered or certified mail with postage prepaid, return receipt requested, it shall be considered delivered on the day the notice is signed for.

1.5.1.5 Electronic mail may be used for convenience but is not a substitute for the notice and service requirements herein.

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 thereunder, except as may be specifically agreed in writing.

1.7 Substitutions for Specified Items

Unless the Special Conditions contain different provisions, Contractor shall not substitute different items for any items identified in the Contract Documents without prior written approval of the District.

1.8 Materials and Work

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

1.8.2 Unless otherwise specified, all materials shall be new and of the best quality of their respective kinds and grades as noted or specified, workmanship shall be of good quality, and Contractor shall use all diligence to inform itself fully as to the required manufacturer's instructions and to comply therewith.

1.8.3 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 from the elements, theft, vandalism, or other loss or damage as required.

1.8.4 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, functioning as intended. 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.

1.8.5 Contractor shall, after award of Contract by District and after relevant submittals have been approved, place orders for materials and/or equipment as specified so that delivery of same may be made without delays to the Work. Contractor shall, upon demand from District, present documentary evidence showing that orders have been placed.

1.8.6 District reserves the right but has no obligation, in response to Contractor's neglect or failure in complying with the above instructions, to place orders for such materials and/or equipment as the District may deem advisable in order that the Work may be completed at the date specified in the Agreement, and all expenses incidental to the procuring of said materials and/or equipment shall be paid for by Contractor or deducted from payment(s) to Contractor.

1.8.7 Contractor warrants good title to all material, supplies, and equipment installed or incorporated in Work and agrees upon completion of all Work to deliver the Site to District, together with all improvements and appurtenances constructed or placed thereon by it, and free from any claims, liens, or charges. Contractor further agrees that neither it nor any person, firm, or corporation furnishing any materials or labor for any work covered by the Contract shall have any right to lien any portion of the Premises or any improvement or appurtenance thereon, except that Contractor may install metering devices or other equipment of utility companies or of political subdivision, title to which is commonly retained by utility company or

political subdivision. In the event of installation of any such metering device or equipment, Contractor shall advise District as to owner thereof.

1.8.7.1 If a lien or a claim based on a stop payment notice of any nature should at any time be filed against the Work or any District property, by any entity that has supplied material or services at the request of the Contractor, Contractor and Contractor's Surety shall promptly, on demand by District and at Contractor's and Surety's own expense, take any and all action necessary to cause any such lien or a claim based on a stop payment notice to be released or discharged immediately therefrom.

1.8.7.2 If the Contractor fails to furnish to the District within ten (10) calendar days after demand by the District, satisfactory evidence that a lien or a claim based on a stop payment notice has been so released, discharged, or secured, the District may discharge such indebtedness and deduct the amount required therefor, together with any and all losses, costs, damages, and attorney's fees and expense incurred or suffered by District from any sum payable to Contractor under the Contract.

1.8.8 Nothing contained in this Article, however, shall defeat or impair the rights of persons furnishing materials or labor under any bond given by Contractor for their protection or any rights under any law permitting such protection or any rights under any law permitting such persons to look to funds due Contractor in hands of District (e.g., stop payment notices), and this provision shall be inserted in all subcontracts and material contracts and notice of its provisions shall be given to all persons furnishing material for work when no formal contract is entered into for such material.

1.8.9 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. No part of any materials and/or equipment shall be removed from its place of storage except for immediate installation in the Work of this Contract. Should the District, in its discretion, allow the Contractor to store materials and/or equipment for the Work off-site, Contractor will store said materials and/or equipment at a bonded warehouse and with appropriate insurance coverage at no cost to District. Contractor shall keep an accurate inventory of all materials and/or equipment in a manner satisfactory to District or its authorized representative and shall, at the District's request, forward it to the District.

2. [RESERVED]

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 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 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. The Construction Manager 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; the Contractor or Subcontractor's respective agents, employees; or other persons performing any of the Work. The Construction Manager shall have free access to any or all parts of Work at any time.

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 Project Inspector(s), including special Project 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 the building code and monitor compliance with Plans and Specifications for the Project previously approved by the DSA. Duties of Project Inspector(s) are specifically defined in section 4-342 of said part 1 of title 24.

5.1.2 No Work shall be carried on except with the knowledge and under the inspection of the Project Inspector(s). The Project Inspector(s) shall have free

access to any or all parts of Work at any time. Contractor shall furnish Project Inspector(s) reasonable opportunities for obtaining such information as may be necessary to keep Project Inspector(s) fully informed respecting progress and manner of work and character of materials, including, but not limited to, submission of form DSA 156 (or the most current version applicable at the time the Work is performed) to the Project Inspector at least 48 hours in advance of the commencement and completion of construction of each and every aspect of the Work. Forms are available on the DSA's website at: <http://www.dgs.ca.gov/dsa/Forms.aspx>. Inspection of Work shall not relieve Contractor from an obligation to fulfill this Contract. Project Inspector(s) and the DSA are authorized to suspend work whenever the Contractor and/or its Subcontractor(s) are not complying with the Contract Documents. Any work stoppage by the Project Inspector(s) and/or DSA shall be without liability to the District. Contractor shall instruct its Subcontractors and employees accordingly.

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 and DSA approval, 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 a sufficient time in advance of its readiness for required observation or inspection.

5.2.3 The Contractor shall notify the District's representative a sufficient time in advance of the manufacture of material to be supplied under the Contract Documents, which must by terms of the Contract Documents be tested, in order that the District may arrange for the testing of same at the source of supply. This notice shall be, at a minimum, seventy-two (72) hours prior to the manufacture of the material that needs to be tested.

5.2.4 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 into and/or onto the Project.

5.2.5 The District will select the testing laboratory and pay for the cost of all tests and inspections. Contractor shall reimburse the District for any and all laboratory costs or other testing costs for any materials found to be not in compliance with the Contract Documents. At the District's discretion, District may elect to deduct laboratory or other testing costs for noncompliant materials from the Contract Price, and such deduction shall not constitute a withholding.

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 or the District may deduct those expenses from the next Progress Payment.

6. CONTRACTOR

Contractor shall construct and complete, in a good and workmanlike manner, 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 (excluding DSA), fees, licenses, facilities, transportation, taxes, bonds and insurance, and services necessary for the proper execution and completion of the Work, except as indicated herein.

6.1 Status of Contractor

6.1.1 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 and its Subcontractors perform 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 Subcontractors, agents or employees. Contractor assumes exclusively the responsibility for the acts of its agents, and employees as they relate to the services to be provided during the course and scope of their employment. Contractor, its Subcontractors, 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, 9821 Business Park Drive, Sacramento, California 95827, <http://www.cslb.ca.gov>.

6.1.3 As required by law, Contractor and all Subcontractors shall be properly registered as public works contractors by the Department of Industrial Relations at: <https://efiling.dir.ca.gov/PWCR/ActionServlet?action=displayPWCRegistrationForm> or current URL.

6.1.4 Contractor represents that it has no existing interest and will not acquire any interest, direct or indirect, which could conflict in any manner or degree with the performance of Work required under this Contractor and that no person having any such interest shall be employed by Contractor.

6.2 Project Inspection Card(s)

Contractor shall verify that forms DSA 152 (or the current version applicable at the time the Work is performed) are issued for the Project prior to the commencement of construction.

6.3 Contractor's Supervision

6.3.1 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, an experienced and competent project manager and construction superintendent who are employees of the Contractor, to whom the District does not object and at least one of whom shall be fluent in English, written and verbal.

6.3.2 The project manager and construction superintendent shall both speak fluently the predominant language of the Contractor's employees.

6.3.3 Before commencing the Work herein, Contractor shall give written notice to District of the name of its project manager and construction superintendent. Neither the Contractor's project manager nor construction superintendent shall be changed except with prior written notice to District. If the Contractor's project manager and/or construction superintendent proves to be unsatisfactory to Contractor, or to District, any of the District's employees, agents, the Construction Manager, or the Architect, Contractor shall notify District in writing before any change occurs, but no less than two (2) business days prior. Any replacement of the project manager and/or construction superintendent shall be made promptly and must be satisfactory to the District. The Contractor's project manager and construction superintendent shall each represent Contractor, and all directions given to Contractor's project manager and/or construction superintendent shall be as binding as if given to Contractor.

6.3.4 Contractor shall give efficient supervision to Work, using its best skill and attention. Contractor shall carefully study and compare all Contract Documents, Drawings, Specifications, and other instructions and shall at once report to District, Construction Manager, and Architect any error, inconsistency, or omission that Contractor or its employees and Subcontractors may discover, in writing, with a copy to District's Project Inspector(s). The Contractor shall have responsibility for discovery of errors, inconsistencies, or omissions.

6.4 Duty to Provide Fit Workers

6.4.1 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. District may require Contractor to permanently remove unfit persons from Project Site.

6.4.2 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.

6.4.3 The Contractor shall furnish labor that can work in harmony with all other elements of labor employed or to be employed in the Work.

6.4.4 If Contractor intends to make any change in the name or legal nature of the Contractor's entity, Contractor must first notify the District in writing prior to

making any contemplated change. The District shall determine in writing if Contractor's intended change is permissible while performing this Contract.

6.5 Field Office

6.5.1 Contractor shall provide a temporary office on the Work Site for the District's use exclusively, during the term of the Contract.

6.6 Purchase of Materials and Equipment

The Contractor is required to order, obtain, and store materials and equipment sufficiently in advance of its Work at no additional cost or advance payment from District to assure that there will be no delays.

6.7 Documents on Work

6.7.1 Contractor shall at all times keep on the Work Site, or at another location as the District may authorize in writing, one legible copy of all Contract Documents, including Addenda and Change Orders, and Titles 19 and 24 of the California Code of Regulations, the specified edition(s) of the Uniform Building Code, all approved Drawings, Plans, Schedules, and Specifications, and all codes and documents referred to in the Specifications, and made part thereof. 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. Contractor shall be acquainted with and comply with the provisions of these titles as they relate to this Project. (See particularly the duties of Contractor, Title 24, Part 1, California Code of Regulations, section 4-343.) Contractor shall also be acquainted with and comply with all California Code of Regulations provisions relating to conditions on this Project, particularly Titles 8 and 17. Contractor shall coordinate with Architect and Construction Manager and shall submit its verified report(s) according to the requirements of Title 24.

6.7.2 Daily Job Reports.

6.7.2.1 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:

- 6.7.2.1.1** A brief description of all Work performed on that day.
- 6.7.2.1.2** A summary of all other pertinent events and/or occurrences on that day.
- 6.7.2.1.3** The weather conditions on that day.
- 6.7.2.1.4** A list of all Subcontractor(s) working on that day,
- 6.7.2.1.5** A list of each Contractor employee working on that day and the total hours worked for each employee.
- 6.7.2.1.6** A complete list of all equipment on Site that day, whether in use or not.
- 6.7.2.1.7** All complete list of all materials, supplies, and equipment delivered on that day.

6.7.2.1.8 A complete list of all inspections and tests performed on that day.

6.7.2.2 Each day Contractor shall provide a copy of the previous day's Daily Job Report to the District or the Construction Manager.

6.8 Preservation of Records

Contractor shall maintain, and District shall have the right to inspect, Contractor's financial records for the Project, including, without limitation, Job Cost Reports for the Project in compliance with the criteria set forth herein. The District shall have the right to examine and audit all Daily Job Reports or other Project records 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, Job Cost Reports, payroll, payment, timekeeping and tracking documents; all books, estimates, records, contracts, documents, bid documents, bid cost data, 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.

6.9 Integration of Work

6.9.1 Contractor shall do all cutting, fitting, patching, and preparation of Work as required to make its several parts come together properly, to fit it to receive or be received by work of other contractors, and to coordinate tolerances to various pieces of work, showing upon, or reasonably implied by, the Drawings and Specifications for the completed structure, and shall conform them as District and/or Architect may direct.

6.9.2 Contractor shall make its own layout of lines and elevations and shall be responsible for the accuracy of both Contractor's and Subcontractors' work resulting therefrom.

6.9.3 Contractor and all Subcontractors shall take all field dimensions required in performance of the Work, and shall verify all dimensions and conditions on the Site. All dimensions affecting proper fabrication and installation of all Work must be verified prior to fabrication by taking field measurements of the true conditions. If there are any discrepancies between dimensions in drawings and existing conditions which will affect the Work, Contractor shall bring such discrepancies to the attention of the District and Architect for adjustment before proceeding with the Work. In doing so, it is recognized that Contractor is not acting in the capacity of a licensed design professional, and that Contractor's examination is made in good faith to facilitate construction and does not create an affirmative responsibility to detect errors, omissions or inconsistencies in the Contract Documents or to ascertain

compliance with applicable laws, building codes or regulations. Following receipt of written notice from Contractor, the District and/or Architect shall inform Contractor what action, if any, Contractor shall take with regard to such discrepancies.

6.9.4 All costs caused by noncompliant, defective, or delayed Work shall be borne by Contractor, inclusive of repair work.

6.9.5 Contractor shall not endanger any work performed by it or anyone else by cutting, excavating, or otherwise altering work and shall not cut or alter work of any other contractor except with consent of District.

6.10 Notifications

6.10.1 Contractor shall notify the Architect and Project Inspector, in writing, of the commencement of construction of each and every aspect of the Work at least 48 hours in advance by submitting form DSA 156 (or the most current version applicable at the time the Work is performed) to the Project Inspector. Forms are available on the DSA's website at: <http://www.dgs.ca.gov/dsa/Forms.aspx>.

6.10.2 Contractor shall notify the Architect and Project Inspector, in writing, of the completion of construction of each and every aspect of the Work at least 48 hours in advance by submitting form DSA 156 (or current version) to the Project Inspector.

6.11 Obtaining of Permits, Licenses and Registrations

Contractor shall secure and pay for all permits (except DSA), licenses, registrations, approvals and certificates necessary for prosecution of Work, including but not limited to those listed in the Special Conditions, if any, before the date of the commencement of the Work or before the permits, licenses, registrations, approvals and certificates are legally required to continue the Work without interruption. The Contractor shall obtain and pay, only when legally required, for all licenses, registrations, approvals, 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 final permits, licenses, registrations, approvals and certificates shall be delivered to District before demand is made for final payment.

6.12 Royalties and Patents

6.12.1 Contractor shall obtain and pay, only when legally required, all royalties and license fees necessary for prosecution of Work before the earlier of the date of the commencement of the Work or the date that the license is legally required to continue the Work without interruption. Contractor shall defend suits or claims of infringement of patent, copyright, or other rights and shall hold the District, the Architect, and the Construction Manager harmless and indemnify them from loss on account thereof except when a particular design, process, or make or model of product is required by the Contract Documents. However, if the Contractor has reason to believe that the required design, process, or product is an infringement of a patent or copyright, the Contractor shall indemnify and defend the District, Architect and Construction Manager against any loss or damage unless the Contractor promptly informs the District of its information.

6.12.2 The review by the District or Architect of any method of construction, invention, appliance, process, article, device, or material of any kind shall be only its adequacy for the Work and shall not approve use by the Contractor in violation of any patent or other rights of any person or entity.

6.13 Work to Comply With Applicable Laws and Regulations

6.13.1 Contractor shall give all notices and comply with the following specific laws, ordinances, rules, and regulations and all other applicable laws, ordinances, rules, and regulations bearing on conduct of Work as indicated and specified, including but not limited to the appropriate statutes and administrative code sections. If Contractor observes that Drawings and Specifications are at variance therewith, or should Contractor become aware of the development of conditions not covered by Contract Documents that may result in finished Work being at variance therewith, Contractor shall promptly notify District in writing and any changes deemed necessary by District shall be made as provided in Contract for changes in Work.

6.13.1.1 National Electrical Safety Code, U. S. Department of Commerce

6.13.1.2 National Board of Fire Underwriters' Regulations

6.13.1.3 Uniform Building Code, latest addition, and the California Code of Regulations, title 24, and other amendments

6.13.1.4 Manual of Accident Prevention in Construction, latest edition, published by A.G.C. of America

6.13.1.5 Industrial Accident Commission's Safety Orders, State of California

6.13.1.6 Regulations of the State Fire Marshall (title 19, California Code of Regulations) and Pertinent Local Fire Safety Codes

6.13.1.7 Americans with Disabilities Act

6.13.1.8 Education Code of the State of California

6.13.1.9 Government Code of the State of California

6.13.1.10 Labor Code of the State of California, division 2, part 7, Public Works and Public Agencies

6.13.1.11 Public Contract Code of the State of California

6.13.1.12 California Art Preservation Act

6.13.1.13 U. S. Copyright Act

6.13.1.14 U. S. Visual Artists Rights Act

6.13.2 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 Resources Code section 21000 *et seq.*)

6.13.3 If Contractor performs any Work that it knew, or through exercise of reasonable care should have known, to be contrary to any applicable laws, ordinance, rules, or regulations, Contractor shall bear all costs arising therefrom and arising from the correction of said Work.

6.13.4 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 applicable at the time the Work is performed, and as determined by those bodies or agencies.

6.14 Safety/Protection of Persons and Property

6.14.1 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.

6.14.2 The wearing of hard hats will be mandatory at all times for all personnel on Site. Contractor shall supply sufficient hard hats to properly equip all employees and visitors.

6.14.3 Any construction review of the Contractor's performance is not intended to include review of the adequacy of the Contractor's safety measures in, on, or near the Work Site.

6.14.4 Implementation and maintenance of safety programs shall be the sole responsibility of the Contractor.

6.14.5 The Contractor shall furnish to the District a copy of the Contractor's safety plan within the time frame indicated in the Contract Documents and specifically adapted for the Project.

6.14.6 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.

6.14.7 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. Contractor shall furnish, erect, and properly maintain at all times, all necessary safety devices, safeguards, construction canopies, signs, nets, barriers,

lights, and watchmen for protection of workers and the public and shall post danger signs warning against hazards created by such features in the course of construction.

6.14.8 Hazards Control – Contractor shall store volatile wastes in covered metal containers and remove them from the Site daily. Contractor shall prevent accumulation of wastes that create hazardous conditions. Contractor shall provide adequate ventilation during use of volatile or noxious substances.

6.14.9 Contractor shall designate a responsible member of its organization on the Project, whose duty shall be to post information regarding protection and obligations of workers and other notices required under occupational safety and health laws, to comply with reporting and other occupational safety requirements, and to protect the life, safety, and health of workers. Name and position of person so designated shall be reported to District by Contractor.

6.14.10 Contractor shall correct any violations of safety laws, rules, orders, standards, or regulations. Upon the issuance of a citation or notice of violation by the Division of Occupational Safety and Health, Contractor shall correct such violation promptly.

6.14.11 Contractor shall comply with any District storm water requirements that are approved by the District and applicable to the Project, at no additional cost to the District.

6.14.12 In an emergency affecting safety of life or of work or of adjoining property, Contractor, without special instruction or authorization, shall act, at its discretion, to prevent such threatened loss or injury. Any compensation claimed by Contractor on account of emergency work shall be determined by agreement.

6.14.13 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.

6.14.14 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.

6.14.15 Contractor shall provide such heat, covering, and enclosures as are necessary to protect all Work, materials, equipment, appliances, and tools against damage by weather conditions, such as extreme heat, cold, rain, snow, dry winds, flooding, or dampness.

6.14.16 The Contractor shall protect and preserve the Work from all damage or accident, providing any temporary roofs, window and door coverings, boxings, 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. 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.

6.14.17 Contractor shall take adequate precautions to protect existing roads, sidewalks, curbs, pavements, utilities, adjoining property, and structures (including, without limitation, protection from settlement or loss of lateral support), and to avoid damage thereto, and repair any damage thereto caused by construction operations.

6.14.18 Contractor shall confine apparatus, the storage of materials, and the operations of workers to limits indicated by law, ordinances, permits, or directions of Architect, and shall not interfere with the Work or unreasonably encumber Premises or overload any structure with materials. Contractor shall enforce all instructions of District and Architect regarding signs, advertising, fires, and smoking, and require that all workers comply with all regulations while on Project Site.

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

6.14.20 Contractor shall take care to prevent disturbing or covering any survey markers, monuments, or other devices marking property boundaries or corners. If such markers are disturbed, Contractor shall have a civil engineer, registered as a professional engineer in California, replace them at no cost to District.

6.14.21 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.

6.15 Working Evenings and Weekends

Contractor may be required to work increased hours, 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 for any increased or additional Inspector charges as a result of Contractor's increased hours, or evening and/or weekend work.

6.16 Cleaning Up

6.16.1 The Contractor shall provide all services, labor, materials, and equipment necessary for protecting and securing the Work, all school 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 ensure the safety of all school 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.

6.16.2 Contractor at all times shall keep Premises, including property immediately adjacent thereto, free from debris such as waste, rubbish (including personal rubbish of workers, e.g., food wrappers, etc.), and excess materials and equipment caused by the Work. Contractor shall not leave debris under, in, or about the Premises (or surrounding property or neighborhood), but shall promptly remove same from the Premises on a daily basis. If Contractor fails to clean up, District may do so and the cost thereof shall be charged to Contractor. If Contract is for work on an existing facility, Contractor shall also perform specific clean-up on or about the Premises upon request by the District as it deems necessary for the continuing education process. Contractor shall comply with all related provisions of the Specifications.

6.16.3 If the Construction Manager, Architect, or District observes the accumulation of trash and debris, the District will give the Contractor a 24-hour written notice to mitigate the condition.

6.16.4 Should the Contractor fail to perform the required clean-up, or should the clean-up be deemed unsatisfactory by the District, the District will then perform the clean-up. All cost associated with the clean-up work (including all travel, payroll burden, and costs for supervision) will be deducted from the Contract Price, or District may withhold those amounts from payment(s) to Contractor.

7. SUBCONTRACTORS

7.1 Contractor shall provide the District with information for all Subcontracts as indicated in the Contractor's Submittals and Schedules Section herein.

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

7.3 Contractor agrees to bind every Subcontractor by terms of this Contract as far as those terms that are applicable to Subcontractor's work including, without limitation, all labor, wage & hour, apprentice and related provisions and requirements. 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, including Subcontractor caused

Project delays, as it is for acts and omissions of persons directly employed by Contractor. The divisions or sections of the Specifications and/or the arrangement of the drawings are not intended to control the Contractor in dividing the Work among Subcontractors or limit the work performed by any trade.

7.4 District's consent to, or approval of, or failure to object to, any Subcontractor under this Contract shall not in any way relieve Contractor of any obligations under this Contract and no such consent shall be deemed to waive any provisions of this Contract.

7.5 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 including, without limitation, section 1775 and the Contractor's and Subcontractors' obligations and liability for violations of prevailing wage law and other applicable laws.

7.6 No Contractor whose Bid is accepted shall, without consent of the awarding authority and in full compliance with section 4100 *et seq.* of the Public Contract Code, including, without limitation, sections 4107, 4107.5, and 4109 of the Public Contract Code, and section 1771.1 of the Labor Code, either:

7.6.1 Substitute any person as a Subcontractor in place of the Subcontractor designated in the original Bid; or

7.6.2 Permit any Subcontract to be assigned or transferred, or allow any portion of the Work to be performed by anyone other than the original Subcontractor listed in the Bid; or

7.6.3 Sublet or subcontract any portion of the Work in excess of one-half of one percent (0.5%) of the Contractor's total bid as to which his original bid did not designate a Subcontractor.

7.7 The Contractor shall be responsible for the coordination of the trades, Subcontractors, sub-subcontractors, and material or equipment suppliers working on the Project.

7.7.1 If the Contract is valued at \$1 million or more and uses, or plans to use, state bond funds, then Contractor is responsible for ensuring that first tier Subcontractors holding C-4, C-7, C-10, C-16, C-20, C-34, C-36, C-38, C-42, C-43, and/or C-46 licenses are prequalified by the District to work on the Project pursuant to Public Contract Code section 20111.6.

7.7.2 Contractor is responsible for ensuring that all Subcontractors are properly registered as public works contractors by the Department of Industrial Relations.

7.8 Contractor is solely responsible for settling any differences between the Contractor and its Subcontractor(s) or between Subcontractors.

7.9 Contractor must include in all of its subcontracts the assignment provisions as

indicated in the Termination section of these General Conditions.

8. OTHER CONTRACTS/CONTRACTORS

8.1 District reserves the right to let other contracts, and/or to perform work with its own forces, 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.

8.2 In addition to Contractor's obligation to protect its own Work, Contractor shall protect the work of any other contractor that Contractor encounters while working on the Project.

8.3 If any part of Contractor's Work depends for proper execution or results upon work of District or any other contractor, the Contractor shall inspect and, before proceeding with its Work, promptly report to the District in writing any defects in District's or any other contractor's work that render Contractor's Work unsuitable for proper execution and results. Contractor shall be held accountable for damages to District for District's or any other contractor's work that Contractor failed to inspect or should have inspected. Contractor's failure to inspect and report shall constitute Contractor's acceptance of all District's or any other contractor's work as fit and proper for reception of Contractor's Work, except as to defects that may develop in District's or any other contractor's work after execution of Contractor's Work and not caused by execution of Contractor's Work.

8.4 To ensure proper execution of its subsequent work, Contractor shall measure and inspect work already in place and shall at once report to the District in writing any discrepancy between that executed work and the Contract Documents.

8.5 Contractor shall ascertain to its own satisfaction the scope of the Project and nature of District's or any other contracts that have been or may be awarded by District in prosecution of the Project to the end that Contractor may perform this Contract in light of the other contracts, if any.

8.6 Nothing herein contained shall be interpreted as granting to Contractor exclusive occupancy of the Site, the Premises, or of the Project. Contractor shall not cause any unnecessary hindrance or delay to the use and/or school operation(s) of the Premises and/or to District or any other contractor working on the Project. If simultaneous execution of any contract or school operation is likely to cause interference with performance of Contractor's Contract, Contractor shall coordinate with those contractor(s), person(s), and/or entity(s) and shall notify the District of the resolution.

9. DRAWINGS AND SPECIFICATIONS

9.1 A complete list of all Drawings that form a part of the Contract is to be found as an index on the Drawings themselves, and/or may be provided to the Contractor and/or in the Table of Contents.

9.2 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, unless noted otherwise.

9.3 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.

9.4 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 therefor, as per best practices of the trade(s) involved, unless specifically noted otherwise.

9.5 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 with the Contract Documents, Contractor shall promptly notify District and Architect in writing, and any necessary changes shall be made as provided in the Contract Documents.

9.6 In the case of discrepancy or ambiguity in the Contract Documents, the order of precedence in the Agreement shall prevail. However, in the case of discrepancy or ambiguity solely between and among the Drawings and Specifications, the discrepancy or ambiguity shall be resolved in favor of the interpretation that will provide District with the functionally complete and operable Project described in the Drawings and Specifications. In case of ambiguity, conflict, or lack of information, District will furnish clarifications with reasonable promptness.

9.7 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.

9.8 As required by Section 4-317(c), Part 1, Title 24, CCR: "Should any existing conditions such as deterioration or non-complying construction be discovered which is not covered by the DSA-approved documents wherein the finished work will not comply with Title 24, California Code of Regulations, a construction change document, or a

separate set of plans and specifications, detailing and specifying the required repair work shall be submitted to and approved by DSA before proceeding with the repair work.”

9.9 Ownership of Drawings

All copies of Plans, Drawings, Designs, Specifications, and copies of other incidental architectural 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.

10. CONTRACTOR’S SUBMITTALS AND SCHEDULES

Contractor’s submittals shall comply with the provisions and requirements of the Specifications including, without limitation Submittals.

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

10.1.1 Within **TEN (10)** calendar 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 Schedule. A preliminary schedule of construction indicating the starting and completion dates of the various stages of the Work, including any information and following any form as may be specified in the Specifications. Once approved by District, this shall become the Construction Schedule. This schedule shall include and identify all tasks that are on the Project’s critical path with a specific determination of the start and completion of each critical path task as well as all Contract milestones and each milestone’s completion date(s) as may be required by the District.

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. Unless the Special Conditions contain different limits, this 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 Overhead and profit;

- 10.1.1.2.1.2 Supervision;
- 10.1.1.2.1.3 General conditions;
- 10.1.1.2.1.4 Layout;
- 10.1.1.2.1.5 Mobilization;
- 10.1.1.2.1.6 Submittals;
- 10.1.1.2.1.7 Bonds and insurance;
- 10.1.1.2.1.8 Close-out/Certification documentation;
- 10.1.1.2.1.9 Demolition;
- 10.1.1.2.1.10 Installation;
- 10.1.1.2.1.11 Rough-in;
- 10.1.1.2.1.12 Finishes;
- 10.1.1.2.1.13 Testing;
- 10.1.1.2.1.14 Punchlist and acceptance.

10.1.1.2.2 And also 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 2%.

10.1.1.2.4 Closeout documentation shall have a value in the preliminary schedule 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, general conditions costs, and profit, as reflected in the Cost Breakdown, shall be paid 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) calendar 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.

10.1.1.2.7 Once the preliminary schedule of values is approved by the District, this shall become the Schedule of Values. The Schedule of Values shall not be thereafter modified or amended by the Contractor without the prior consent and approval of the District, which may be granted or withheld in the sole discretion of the District.

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. Upon request by the District, Contractor shall provide an electronic copy of all submittals to the District. All submittals shall be submitted no later than 90 days after the Notice to Proceed.

10.1.1.4 Safety Plan. Contractor's Safety Plan specifically adapted for the Project. Contractor's Safety Plan shall comply with the following requirements:

10.1.1.4.1 All applicable requirements of California Division of Industrial Safety ("CalOSHA") and/or of the United States Occupational Safety and Health Administration ("OSHA").

10.1.1.4.2 All provisions regarding Project safety, including all applicable provisions in these General Conditions.

10.1.1.4.3 Contractor's Safety Plan shall be in English and in the language(s) of the Contractor's and its Subcontractors' employees.

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 (e.g., Microsoft Project or Primavera) 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 Monthly Progress Schedule(s)

10.2.1 Contractor shall provide Monthly Progress Schedule(s) to the District. A Monthly Progress Schedule shall update the approved Construction Schedule or the last Monthly Progress Schedule, showing all work completed and to be completed. The monthly Progress Schedule shall be sent within the timeframe requested by the District and shall be in a format acceptable to the District and contain a written narrative of the progress of work that month and any changes, delays, or events that may affect the work. The process for District approval of the Monthly Progress Schedule shall be the same as the process for approval of the Construction Schedule.

10.2.2 Contractor shall submit Monthly Progress Schedule(s) with all payment applications.

10.2.3 Contractor must provide all schedules both in hard copy and electronically, in a format (e.g., Microsoft Project or Primavera) approved in advance by the District.

10.2.4 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.

10.2.5 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.

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

10.3 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.

Prior to commencing the Work, Contractor and the District's representative shall survey the Site to document the condition of the Site. Contractor will record the survey in digital videotape format and provide an electronic copy to the District within fourteen (14) days of the survey. This electronic record shall serve as a basis for determining any damages caused by the Contractor during the Project. The Contractor may also document any pre-existing conditions in writing, provided that both the Contractor and the District's representative agree on said conditions and sign a memorandum documenting the same.

11.2 Soils Investigation Report

11.2.1 When a soils investigation report obtained from test holes at Site or for the Project is available, that report may be available to the Contractor but shall not be a part of this Contract and shall not alleviate or excuse the Contractor's obligation to perform its own investigation. Any information obtained from that report or any information given on Drawings as to subsurface soil condition or to elevations of existing grades or elevations of underlying rock is approximate only, is not guaranteed, does not form a part of this Contract, and Contractor may not rely thereon. By submitting its bid, Contractor acknowledges that it has made visual examination of Site and has made whatever tests Contractor deems appropriate to determine underground condition of soil.

11.2.2 Contractor agrees that no claim against District will be made by Contractor for damages and hereby waives any rights to damages if, during progress of Work, Contractor encounters subsurface or latent conditions at Site materially differing from those shown on Drawings or indicated in Specifications, or for unknown conditions of an unusual nature that differ materially from those ordinarily encountered in the work of the character provided for in Plans and Specifications, except as indicated in the provisions of these General Conditions regarding trenches, trenching, and/or existing utility lines.

11.3 Access to Work

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

11.4 Layout and Field Engineering

11.4.1 All field engineering required for layout of this Work and establishing grades for earthwork operations shall be furnished by Contractor at its expense. This Work shall be done by a qualified, California-registered civil engineer approved in writing by District and Architect. Any required Record and/or As-Built Drawings of Site development shall be prepared by the approved civil engineer.

11.4.2 The Contractor shall be responsible for having ascertained pertinent local conditions such as location, accessibility, and general character of the Site and for having satisfied itself as to the conditions under which the Work is to be performed. Contractor shall follow best practices, including but not limited to potholing to avoid utilities. District shall not be liable for any claim for allowances because of

Contractor's error, failure to follow best practices, or negligence in acquainting itself with the conditions at the Site.

11.4.3 Contractor shall protect and preserve established benchmarks and monuments and shall make no changes in locations without the prior written approval of District. Contractor shall replace any benchmarks or monuments that are lost or destroyed subsequent to proper notification of District and with District's approval.

11.5 Utilities

Utilities shall be provided as indicated in the Specifications.

11.6 Sanitary Facilities

Sanitary facilities shall be provided as indicated in the Specifications.

11.7 Surveys

Contractor shall provide surveys done by a California-licensed civil engineer surveyor to determine locations of construction, grading, and site work as required to perform the Work.

11.8 Regional Notification Center

The Contractor, except in an emergency, shall contact the appropriate regional notification center at least two (2) days prior to commencing any excavation if the excavation will be conducted in an area or in a private easement that is known, or reasonably should be known, to contain subsurface installations other than the underground facilities owned or operated by the District, and obtain an inquiry identification number from that notification center. No excavation shall be commenced and/or carried out by the Contractor unless an inquiry identification number has been assigned to the Contractor or any Subcontractor and the Contractor has given the District the identification number. Any damages arising from Contractor's failure to make appropriate notification shall be at the sole risk and expense of the Contractor. Any delays caused by failure to make appropriate notification shall be at the sole risk of the Contractor and shall not be considered for an extension of the Contract Time.

11.9 Existing Utility Lines

11.9.1 Pursuant to Government Code section 4215, District assumes the responsibility for removal, relocation, and protection of main or trunk utility lines and facilities located on the construction Site at the time of commencement of construction under this Contract with respect to any such utility facilities that are not identified in the Plans and Specifications. Contractor shall not be assessed for liquidated damages for delay in completion of the Project caused by failure of District or the owner of a utility to provide for removal or relocation of such utility facilities.

11.9.2 Locations of existing utilities provided by District shall not be considered exact, but approximate within a reasonable margin and shall not relieve Contractor of responsibilities to exercise reasonable care or costs of repair due to Contractor's

failure to do so. District shall compensate Contractor for the costs of locating, repairing damage not due to the failure of Contractor to exercise reasonable care, and removing or relocating such utility facilities not indicated in the Plans and Specifications with reasonable accuracy, and for equipment necessarily idle during such work.

11.9.3 No provision herein shall be construed to preclude assessment against Contractor for any other delays in completion of the Work. Nothing in this Article shall be deemed to require District to indicate the presence of existing service laterals, appurtenances, or other utility lines, within the exception of main or trunk utility lines or whenever the presence of these utilities on the Site of the construction Project can be inferred from the presence of other visible facilities, such as buildings, meter junction boxes, on or adjacent to the Site of the construction.

11.9.4 If Contractor, while performing Work under this Contract, discovers utility facilities not identified by District in Contract Plans and Specifications, Contractor shall immediately notify the District and the utility in writing. The cost of repair for damage to above-mentioned visible facilities without prior written notification to the District shall be borne by the Contractor.

11.10 Notification

Contractor understands, acknowledges and agrees that the purpose for prompt notification to the District pursuant to these provisions is to allow the District to investigate the condition(s) so that the District shall have the opportunity to decide how the District desires to proceed as a result of the condition(s). Accordingly, failure of Contractor to promptly notify the District in writing, pursuant to these provisions, shall constitute Contractor's waiver of any claim for damages or delay incurred as a result of the condition(s).

11.11 Hazardous Materials

Contractor shall comply with all provisions and requirements of the Contract Documents related to hazardous materials including, without limitation, Hazardous Materials Procedures and Requirements.

11.12 No Signs

Neither the Contractor nor any other person or entity shall display any signs not required by law or the Contract Documents at the Site, fences trailers, offices, or elsewhere on the Site without specific prior written approval of the District.

12. TRENCHES

12.1 Trenches Greater Than Five Feet

Pursuant to Labor Code section 6705, if the Contract Price exceeds \$25,000 and involves the excavation of any trench or trenches five (5) feet or more in depth, the Contractor shall, in advance of excavation, promptly submit to the District and/or a registered civil or structural engineer employed by the District or Architect, a detailed plan, stamped by a licensed engineer retained by the Contractor, showing the design of shoring for

protection from the hazard of caving ground during the excavation of such trench or trenches.

12.2 Excavation Safety

If such plan varies from the Shoring System Standards established by the Construction Safety Orders, the plan shall be prepared by a registered civil or structural engineer, but in no case shall such plan be less effective than that required by the Construction Safety Orders. No excavation of such trench or trenches shall be commenced until said plan has been accepted by the District or by the person to whom authority to accept has been delegated by the District.

12.3 No Tort Liability of District

Pursuant to Labor Code section 6705, nothing in this Article shall impose tort liability upon the District or any of its employees.

12.4 No Excavation without Permits

The Contractor shall not commence any excavation Work until it has secured all necessary permits including the required CalOSHA excavation/shoring permit. Any permits shall be prominently displayed on the Site prior to the commencement of any excavation.

12.5 Discovery of Hazardous Waste and/or Unusual Conditions

12.5.1 Pursuant to Public Contract Code section 7104, if the Work involves digging trenches or other excavations that extend deeper than four feet below the Surface, the Contractor shall promptly, and before the following conditions are disturbed, notify the District, in writing, of any:

12.5.1.1 Material that the Contractor believes may be material that is hazardous waste, as defined in section 25117 of the Health and Safety Code, is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law.

12.5.1.2 Subsurface or latent physical conditions at the Site differing from those indicated.

12.5.1.3 Unknown physical conditions at the Site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract.

12.5.2 The District shall promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or the time required for, performance of any part of the Work, shall issue a Change Order under the procedures described herein.

12.5.3 In the event that a dispute arises between District and the Contractor whether the conditions materially differ, or involve hazardous waste, or cause a

decrease or increase in the Contractor's cost of, or time required for, performance of any part of the Work, the Contractor shall not be excused from any scheduled completion date provided for by the Contract, but shall proceed with all work to be performed under the Contract. The Contractor shall retain any and all rights provided either by Contract or by law that pertain to the resolution of disputes and protests.

13. INSURANCE AND BONDS

13.1 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 the amounts and include the provisions set forth herein.

13.1.1 Commercial General Liability and Automobile Liability Insurance

13.1.1.1 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. This coverage shall be provided in a form at least as broad as Insurance Services (ISO) Form CG 0001 11188. Contractor shall ensure that Products Liability and Completed Operations coverage, Fire Damage Liability, and Any Auto including owned, non-owned, and hired, are included within the above policies and at the required limits, or Contractor shall procure and maintain these coverages separately.

13.1.1.2 Contractor's deductible or self-insured retention for its Commercial General Liability Insurance policy shall not exceed \$25,000 unless approved in writing by District.

13.1.1.3 All such policies shall be written on an occurrence form.

13.1.2 Excess Liability Insurance

13.1.2.1 Contractor may procure and maintain, during the life of this Contract, an Excess Liability Insurance Policy to meet the policy limit requirements of the required policies if Contractor's underlying policy limits are less than required.

13.1.2.2 There shall be no gap between the per occurrence amount of any underlying policy and the start of the coverage under the Excess Liability Insurance Policy. Any Excess Liability Insurance Policy shall be written on a following form and shall protect Contractor, District, State, Construction Manager(s), Project Manager(s), and Architect(s) in amounts and including the provisions as set forth in the Supplementary Conditions (if any) and/or Special Conditions, and that complies with all requirements for Commercial General Liability and Automobile Liability and Employers' Liability Insurance.

13.1.2.3 The District, in its sole discretion, may accept the Excess Liability Insurance Policy that bring Contractor's primary limits to the minimum requirements herein.

13.1.3 Subcontractor(s): Contractor shall require its Subcontractor(s), if any, to procure and maintain Commercial General Liability Insurance, Automobile Liability Insurance, and Excess Liability Insurance (if Subcontractor elects to satisfy, in part the insurance required herein by procuring and maintaining an Excess Liability Insurance Policy) with forms of coverage and limits equal to the amounts required of the Contractor.

13.1.4 Workers' Compensation and Employers' Liability Insurance

13.1.4.1 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.

13.1.4.2 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 employee engaged in Work under this Contract, on or at the Site of the Project, is not protected under the Workers' Compensation Insurance, 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.

13.1.5 Builder's Risk Insurance: Builder's Risk "All Risk" 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, theft, sonic disturbance, earthquake, flood, collapse, wind, rain, dust, 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.

13.1.6 Pollution Liability Insurance

13.1.6.1 Contractor shall procure and maintain Pollution 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, including natural resource damage, cleanup costs, removal, storage, disposal, and/or use of the pollutant arising from operations under this Contract, and defense, including costs and expenses incurred in the investigation, defense, or settlement of claims. Coverage shall apply to sudden and/or gradual pollution conditions resulting from the escape or release of smoke, vapors, fumes, acids, alkalis, toxic chemicals, liquids, or gases, natural gas, waste materials, or other irritants, contaminants, or pollutants, including asbestos. This coverage shall be provided in a form at least as broad as Insurance Services Offices, Inc. (ISO) Form CG 2415, or Contractor shall procure and maintain these coverages separately.

13.1.6.2 Contractor shall warrant that any retroactive date applicable to coverage under the policy predates the effective date of the Contract and that continuous coverage will be maintained or an extended reporting or discovery period will be exercised for a period of three (3) years, beginning from the time that the Work under the Contract is completed.

13.1.6.3 If Contractor is responsible for removing any pollutants from a site, then Contractor shall ensure that Any Auto, including owned, non-owned, and hired, is included within the above policies and at the required limits, to cover its automobile exposure from transporting the pollutants from the site to an approved disposal site. This coverage shall include the Motor Carrier Act Endorsement, MCS 90.

13.1.7 Proof of Insurance and Other Requirements: Endorsements and Certificates

13.1.7.1 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 coverages have been obtained, and the District has approved these documents.

13.1.7.2 Endorsements, certificates, and insurance policies shall include the following:

13.1.7.2.1 A clause stating:

"This policy shall not be amended, canceled or modified and the coverage amounts shall not be reduced until notice has been mailed to District, Architect, and Construction Manager stating date of amendment, modification, cancellation or reduction. Date of amendment, modification, cancellation or reduction may not be less than thirty (30) days after date of mailing notice."

13.1.7.2.2 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.

13.1.7.3 All endorsements, certificates and insurance policies shall state that District, its trustees, employees and agents, the State of California, Construction Manager(s), Project Manager(s), Inspector(s) and Architect(s) are named additional insureds under all policies except Workers' Compensation Insurance and Employers' Liability Insurance.

13.1.7.4 Insurance written on a "claims made" basis shall be retroactive to a date that coincides with or precedes Contractor's commencement of Work, including subsequent policies purchased as renewals or replacements. Said policy is to be renewed by the Contractor and all Subcontractors for a period of five (5) years following completion of the Work or termination of this Agreement. Such insurance must have the same coverage and limits as the policy that was in effect during the term of this Agreement, and will cover the Contractor and all Subcontractors for all claims made.

13.1.7.5 Contractor's and Subcontractors' insurance policy(s) shall be primary and non-contributory to any insurance or self-insurance maintained by District, its trustees, employees and/or agents, the State of California, Construction Manager(s), Project Manager(s), Inspector(s), and/or Architect(s).

13.1.7.6 All endorsements shall waive any right to subrogation against any of the named additional insureds.

13.1.7.7 Unless otherwise stated in the Special Conditions, all of Contractor's insurance shall be with insurance companies with an A.M. Best rating of no less than **A: VII**.

13.1.7.8 The insurance requirements set forth herein shall in no way limit the Contractor's liability arising out of or relating to the performance of the Work or related activities.

13.1.7.9 Failure of Contractor and/or its Subcontractor(s) to comply with the insurance requirements herein shall be deemed a material breach of the Agreement.

13.1.8 Insurance Policy Limits

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

Commercial General Liability	Product Liability and Completed Operations, Fire Damage Liability – Split Limit	\$2,000,000 per occurrence; \$4,000,000 aggregate
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Automobile Liability – Any Auto	Combined Single Limit	\$1,000,000
Workers' Compensation		Statutory limits pursuant to State law
Employers' Liability		\$1,000,000
Builder's Risk (Course of Construction)		Issued for the value and scope of Work indicated herein.
Pollution Liability		\$1,000,000 per claim; \$2,000,000 aggregate

13.2 Contract Security - Bonds

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

13.2.1.1 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.

13.2.1.2 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.

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

13.2.3 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.

14. WARRANTY/GUARANTEE/INDEMNITY

14.1 Warranty/Guarantee

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

14.1.2 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 **Two (2)** years after the later of the following dates, unless a longer period is provided for in the Contract Documents:

14.1.2.1 The acceptance by the District, or its agent, of the Work, subject to these General Conditions, or

14.1.2.2 The date that commissioning for the Project, if any, was completed.

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 **Two (2)** year period from date of completion as defined above, unless a longer period is provided for in the Contract Documents, 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.

14.1.3 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.

14.1.4 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.

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

14.2 Indemnity and Defense

14.2.1 To the furthest extent permitted by California law, the Contractor shall indemnify, keep and hold harmless the District, the Architect, and the Construction Manager, their consultants and separate contractors, and their respective board members, officers, representatives, contractors, agents, and employees, in both individual and official capacities ("Indemnitees"), 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, its Subcontractors, vendors, or suppliers, except to the extent caused by the sole negligence, active negligence, or willful misconduct of the Indemnitees, and/or to any extent that would render these provisions void or unenforceable. This agreement and obligation of the Contractor shall not be construed to negate, abridge, or otherwise reduce any right or obligation of indemnity that would otherwise exist as to any party or person described herein. This indemnification, and hold harmless obligation includes any failure or alleged

failure by Contractor to comply with any provision of law, any failure or alleged failure to timely and properly fulfill all of its obligations under the Contract Documents in strict accordance with their terms, and without limitation, any failure or alleged failure of Contractor's obligations regarding any stop payment notice actions or liens, including Civil Wage and Penalty Assessments and/or Orders by the California Department of Industrial Relations.

14.2.2 Contractor shall also defend, at its own expense, Indemnitees with legal counsel reasonably acceptable to the District, against all suits, claims, allegations, damages, losses, and expenses, including but not limited attorneys' fees, caused by, arising out of, resulting from, or incidental to, the performance of the Work under this Contract by the Contractor, its Subcontractors, vendors, or suppliers, except to the extent caused by the sole negligence, active negligence, or willful misconduct of the Indemnitees, and/or to any extent that would render these provisions void or unenforceable. This obligation of defense is inclusive of fees and costs. This agreement and obligation of the Contractor shall not be construed to negate, abridge, or otherwise reduce any right or obligation of defense that would otherwise exist as to any party or person described herein. This defense obligation extends to any failure or alleged failure by Contractor to comply with any provision of law, any failure or alleged failure to timely and properly fulfill all of its obligations under the Contract Documents in strict accordance with their terms, and without limitation, any failure or alleged failure of Contractor's obligations regarding any stop payment notice actions or liens, including Civil Wage and Penalty Assessments and/or Orders by the California Department of Industrial Relations. The Contractor shall give prompt notice to the District in the event of any injury (including death), loss, or damage included herein. Without limitation of the provisions herein, if the Contractor's agreement to indemnify and hold harmless the Indemnitees or its agreement to defend Indemnitees as provided herein shall be determined to be void or unenforceable, in whole or in part, it is the intention of the parties that these circumstances shall not otherwise affect the validity or enforceability of the Contractor's agreement to indemnify, defend, and hold harmless the rest of the Indemnitees, as provided herein. Further, the Contractor shall be and remain fully liable on its agreements and obligations herein to the fullest extent permitted by law.

14.2.3 Pursuant to Public Contract Code section 9201, the District shall provide timely notification to Contractor of the receipt of any third-party claim relating to this Contract. The District shall be entitled to recover its reasonable costs incurred in providing said notification.

14.2.4 In any and all claims against any of the Indemnitees 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.

14.2.5 The District may retain so much of the moneys due the Contractor as shall be considered necessary, until disposition of any such suit, claims or actions for damages or until the District, Architect and Construction Manager have received written agreement from the Contractor that they will unconditionally defend the

District, Architect and Construction Manager, their officers, agents and employees, and pay any damages due by reason of settlement or judgment.

14.2.6 The defense and indemnification obligations hereunder shall survive the completion of Work, including the warranty/guarantee period, and/or the termination of the Agreement.

15. TIME

15.1 Notice to Proceed

15.1.1 District may issue a Notice to Proceed within ninety (90) 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.

15.1.2 In the event that the District desires to postpone issuing the Notice to Proceed beyond ninety (90) days from the date of the Notice of Award, 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.

15.1.3 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. 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.

15.2 Computation of Time / Adverse Weather

15.2.1 The Contractor will only be allowed a time extension for Adverse Weather conditions if requested by Contractor in compliance with the time extension request procedures and only if all of the following conditions are met:

15.2.1.1 The weather conditions constitute Adverse Weather, as defined herein and further specified in the Special Conditions;

15.2.1.2 Contractor can verify that the Adverse Weather caused delays in excess of five (5) hours of the indicated labor required to complete the scheduled tasks of Work on the day affected by the Adverse Weather;

15.2.1.3 The Contractor's crew is dismissed as a result of the Adverse Weather;

15.2.1.4 Said delay adversely affects the critical path in the Construction Schedule; and

15.2.1.5 The number of days of delay for the month exceeds the following:

January	<u>11</u>	July	<u>0</u>
February	<u>10</u>	August	<u>0</u>
March	<u>10</u>	September	<u>1</u>
April	<u>6</u>	October	<u>4</u>
May	<u>3</u>	November	<u>7</u>
June	<u>1</u>	December	<u>10</u>

15.2.2 If the aforementioned conditions are met, a non-compensable day-for-day extension will only be allowed for those days in excess of those indicated in the Special Conditions.

15.2.3 The Contractor shall work seven (7) days per week, if necessary, irrespective of inclement weather, to maintain access and the Construction Schedule, and to protect the Work under construction from the effects of Adverse Weather, all at no further cost to the District.

15.2.4 The Contract Time has been determined with consideration given to the average climate weather conditions prevailing in the County in which the Project is located.

15.3 Hours of Work

15.3.1 Sufficient Forces

Contractor and Subcontractors shall continuously furnish sufficient and competent work forces with the required levels of familiarity with the Project and skill, training and experience to ensure the prosecution of the Work in accordance with the Construction Schedule.

15.3.2 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.

15.3.3 No Work during State Testing

Contractor shall, at no additional cost to the District and at the District’s request, coordinate its Work to not disturb District students including, without limitation, not performing any Work when students at the Site are taking State or Federally-required tests. The District or District’s Representative will provide Contractor with a schedule of test dates concurrent with the District’s issuance of the Notice to Proceed, or as soon as test dates are made available to the District.

15.4 Progress and Completion

15.4.1 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.

15.4.2 No Commencement Without Insurance or Bonds

The Contractor shall not commence operations on the Project or elsewhere prior to the effective date of insurance and bonds. The date of commencement of the Work shall not be changed by the effective date of such insurance or bonds. If Contractor commences Work without insurance and bonds, all Work is performed at Contractor's peril and shall not be compensable until and unless Contractor secures bonds and insurance pursuant to the terms of the Contract Documents and subject to District claim for damages.

15.5 Schedule

Contractor shall provide to District, Construction Manager, and Architect a schedule in conformance with the Contract Documents and as required in the Notice to Proceed and the Contractor's Submittals and Schedules section of these General Conditions.

15.6 Expeditious Completion

The Contractor shall proceed expeditiously with adequate forces and shall achieve Completion within the Contract Time.

16. EXTENSIONS OF TIME – LIQUIDATED DAMAGES

16.1 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.

16.2 Excusable Delay

16.2.1 Contractor shall not be charged for liquidated damages because of any delays in completion of Work which are not the fault of Contractor or its Subcontractors, including acts of God as defined in Public Contract Code section 7105, acts of enemy, epidemics, and quarantine restrictions. Contractor shall, within five (5) calendar days of beginning of any delay, notify District in writing of causes of delay including documentation and facts explaining the delay and the direct

correlation between the cause and effect. District shall review the facts and extent of any delay and shall grant extension(s) of time for completing Work when, in its judgment, the findings of fact justify an extension. Extension(s) of time shall apply only to that portion of Work affected by delay, and shall not apply to other portions of Work not so affected. An extension of time may only be granted if Contractor has timely submitted the Construction Schedule as required herein.

16.2.2 Contractor shall notify the District pursuant to the claims provisions in these General Conditions of any anticipated delay and its cause. Following submission of a claim, the District may determine whether the delay is to be considered avoidable or unavoidable, how long it continues, and to what extent the prosecution and completion of the Work might be delayed thereby.

16.2.3 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. When requesting time, requests must be submitted with full justification and documentation. If the Contractor fails to submit justification, it waives its right to a time extension at a later date. Such justification must be based on the official Construction Schedule as updated at the time of occurrence of the delay or execution of Work related to any changes to the Scope of Work. Any claim for delay must include the following information as support, without limitation:

16.2.3.1 The duration of the activity relating to the changes in the Work and the resources (manpower, equipment, material, etc.) required to perform the activities within the stated duration.

16.2.3.2 Specific logical ties to the Contract Schedule for the proposed changes and/or delay showing the activity/activities in the Construction Schedule that are affected by the change and/or delay. In particular, Contractor must show an actual impact to the schedule, after making a good faith effort to mitigate the delay by rescheduling the work, by providing an analysis of the schedule ("Schedule Analysis"). Such Schedule Analysis shall describe in detail the cause and effect of the delay and the impact on the critical dates in the Project schedule. (A portion of any delay of seven (7) days or more must be provided.)

16.2.3.3 A recovery schedule must be submitted within twenty (20) calendar days of written notification to the District of causes of delay.

16.3 No Additional Compensation for Delays Within Contractor's Control

16.3.1 Contractor is aware that governmental agencies, including, without limitation, the Division of the State Architect, the Department of General Services, gas companies, electrical utility companies, water districts, and other agencies may have to approve Contractor-prepared drawings or approve a proposed installation. Accordingly, Contractor shall include in its bid, time for possible review of its drawings and for reasonable delays and damages that may be caused by such agencies. Thus, Contractor is not entitled to make a claim for damages or delays arising from the review of Contractor's drawings.

16.3.2 Contractor shall only be entitled to compensation for delay when all of the following conditions are met:

16.3.2.1 The District is responsible for the delay;

16.3.2.2 The delay is unreasonable under the circumstances involved;

16.3.2.3 The delay was not within the contemplation of the District and Contractor; and

16.3.2.4 Contractor timely complies with the claims procedure of the Contract Documents.

16.4 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.

17. CHANGES IN THE WORK

17.1 No Changes Without Authorization

17.1.1 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. District shall not be liable for the cost of any extra work or any substitutions, changes, additions, omissions, or deviations from the Drawings and Specifications unless the District's governing board has authorized the same and the cost thereof has been approved in writing by Change Order or Construction Change Directive in advance of the changed Work being performed. No extension of time for performance of the Work shall be allowed hereunder unless claim for such extension is made at the time changes in the Work are ordered, and such time duly adjusted in writing in the Change Order or Construction Change Directive. Contractor shall be responsible for any costs incurred by the District for professional services and DSA fees and/or delay to the Project Schedule, if any, for DSA to review any request for changes to the DSA approved plans and specifications for the convenience of the Contractor and/or to accommodate the Contractor's means and methods. 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.

17.1.2 Contractor shall perform immediately all work that has been authorized by a fully executed Change Order or Construction Change Directive. Contractor shall be fully responsible for any and all delays and/or expenses caused by Contractor's failure to expeditiously perform this Work.

17.1.3 Should any Change Order result in an increase in the Contract Price or extend the Contract Time, the cost of or length of extension in that Change Order shall be agreed to, in writing, by the District in advance of the Work by Contractor, and shall 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. Under no circumstances shall Contractor be entitled to any claim of additional compensation or time not expressly requested by Contractor in a Proposed Change Order or approved by District in an executed Change Order.

17.1.4 Contractor understands, acknowledges, and agrees that the reason for District authorization is so that District may have an opportunity to analyze the Work and decide whether the District shall proceed with the Change Order or alter the Project so that a change in Work becomes unnecessary.

17.2 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 effected by written Change Order, Construction Change Directive, by Architect's response(s) to RFI(s), or by Architect's Supplemental Instructions ("ASI").

17.3 Change Orders

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

17.3.1.1 A description of a change in the Work;

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

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

17.4 Construction Change Directives

17.4.1 A Construction Change Directive is a written order prepared and issued by the District, the Construction Manager, and/or the Architect and signed by the District and the Architect, 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. The adjustment to the Contract Price or Time, if any, is subject to the provisions of this section regarding Changes in the Work. If all or a portion of the Project is being funded by funds requiring approval by the State Allocation Board ("SAB"), these revisions may be subject to compensation once approval of same is received and funded by the SAB, and funds are released by the Office of Public School Construction ("OPSC"). Any dispute as to the adjustment in the Contract Price, if any, of the Construction Change Directive or timing of payment shall be resolved pursuant to the Payment and Claims and Disputes provisions herein.

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

17.5 Force Account Directives

17.5.1 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.

17.5.2 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.

17.5.3 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.

17.5.4 The Contractor shall be responsible for all cost related to the administration of Force Account Directive. The markup for overhead and profit for Contractor modifications shall be full compensation to the Contractor to administer Force Account Directive, and Contractor shall not be entitled to separately recover additional amounts for overhead and/or profit.

17.5.5 The Contractor shall notify the District or its authorized representative(s) at least twenty-four (24) hours prior to proceeding with any of the force account work. Furthermore, the Contractor shall notify the District when it has consumed eighty percent (80%) of the budget, and shall not exceed the budget unless specifically authorized in writing by the District. The Contractor will not be compensated for force account work in the event that the Contractor fails to timely notify the District regarding the commencement of force account work, or exceeding the force account budget.

17.5.6 The Contractor shall diligently proceed with the work, and on a daily basis, submit a daily force account report on a form supplied by the District no later than 5:00 p.m. each day. The report shall contain a detailed itemization of the daily labor, material, and equipment used on the force account work only. The names of the individuals performing the force account work shall be included on the daily force account reports. The type and model of equipment shall be identified and listed. The District will review the information contained in the reports, and sign the reports no later than the next work day, and return a copy of the report to the Contractor for their records. The District will not sign, nor will the Contractor receive compensation for work the District cannot verify. The Contractor will provide a weekly force account summary indicating the status of each Force Account Directive in terms of percent complete of the not-to-exceed budget and the estimated percent complete of the work.

17.5.7 In the event the Contractor and the District reach a written agreement on a set cost for the work while the work is proceeding based on a Force Account Directive, the Contractor's signed daily force account reports shall be discontinued and all previously signed reports shall be invalid.

17.6 Price Request

17.6.1 Definition of Price Request

A Price Request ("PR") is a written request prepared by the Architect requesting the Contractor to submit to the District and the Architect an estimate of the effect of a proposed change in the Work on the Contract Price and the Contract Time.

17.6.2 Scope of Price Request

A Price 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 Price Request, whether ultimately accepted or not.

17.7 Proposed Change Order

17.7.1 Definition of Proposed Change Order

A Proposed Change Order ("PCO") is a written request prepared by the Contractor requesting that the District and the Architect issue a Change Order based upon a proposed change to the Work.

17.7.2 Changes in Contract Price

A PCO shall include breakdowns and backup documentation pursuant to the revisions herein and sufficient, in the District's judgment, to validate any change in Contract Price. In no case shall Contractor or any of its Subcontractors be permitted to reserve rights for additional compensation for Change Order Work.

17.7.3 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 Construction Schedule 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, and waives any right to request, additional time and/or claim a delay. In no case shall Contractor or any of its Subcontractors be permitted to reserve rights for additional time for Change Order Work. A PCO that leaves the amount of time requested blank, or states that such time requested is "to be determined", is not permitted and shall also constitute a waiver of any right to request additional time and/or claim a delay.

17.7.4 Unknown and/or Unforeseen Conditions

If Contractor submits a PCO requesting an increase in Contract Price and/or Contract Time that is based at least partially on Contractor's assertion that Contractor has encountered unknown and/or unforeseen condition(s) on the Project, then Contractor shall base the PCO on provable information that, beyond a reasonable doubt and to the District's satisfaction, demonstrates that the unknown and/or unforeseen condition(s) were actually unknown and/or unforeseen and that the condition(s) were reasonably unknown and/or unforeseen. If not, the District shall deny the PCO as unsubstantiated, and the Contractor shall complete the Project without any increase in Contract Price and/or Contract Time based on that PCO.

17.7.5 Proposed Change Order Certification

In submitting a PCO, Contractor certifies and affirms that the cost and/or time request is submitted in good faith, that the cost and/or time request is accurate and in accordance with the provisions of the Contract Documents, and the Contractor submits the cost and/or request for extension of time recognizing the significant civil penalties and treble damages which follow from making a false claim or presenting a false claim under Government Code section 12650 *et seq.*

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17.8 Format for Proposed Change Order

17.8.1 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 documentation. Any spaces left blank will be deemed no change to cost or time.

	<u>WORK PERFORMED OTHER THAN BY CONTRACTOR</u>	<u>ADD</u>	<u>DEDUCT</u>
(a)	<u>Material</u> (attach suppliers' invoice or itemized quantity and unit cost plus sales tax)		
(b)	<u>Add Labor</u> (attach itemized hours and rates, fully encumbered)		
(c)	<u>Add Equipment</u> (attach suppliers' invoice)		
(d)	<u>Subtotal</u>		
(e)	<u>Add overhead and profit for any and all tiers of Subcontractor</u> , the total not to exceed ten percent (10%) of Item (d)		
(f)	<u>Subtotal</u>		
(g)	<u>Add Overhead and Profit for Contractor</u> , not to exceed five percent (5%) of Item (f)		
(h)	<u>Subtotal</u>		
(i)	<u>Add Bond and Insurance</u> , not to exceed one and a half percent (1.5%) of Item (h)		
(j)	<u>TOTAL</u>		
(k)	<u>Time</u> (zero unless indicated; "TBD" not permitted)	____ Calendar Days	

	<u>WORK PERFORMED BY CONTRACTOR</u>	<u>ADD</u>	<u>DEDUCT</u>
(a)	<u>Material</u> (attach itemized quantity and unit cost plus sales tax)		
(b)	<u>Add Labor</u> (attach itemized hours and rates, fully encumbered)		
(c)	<u>Add Equipment</u> (attach suppliers' invoice)		
(d)	<u>Subtotal</u>		
(e)	<u>Add Overhead and Profit for Contractor</u> , not to exceed fifteen percent (15%) of Item (d)		
(f)	<u>Subtotal</u>		
(g)	<u>Add Bond and Insurance</u> , not to exceed one and a half percent (1.5%) of Item (f)		
(h)	<u>TOTAL</u>		
(i)	<u>Time</u> (zero unless indicated; "TBD" not permitted)	____ Calendar Days	

17.8.2 Labor. Contractor shall be compensated for the costs of labor actually and directly utilized in the performance of the Work. Such labor costs shall be limited to field labor for which there is a prevailing wage rate classification. Wage rates for labor shall not exceed the prevailing wage rates in the locality of the Site

and shall be in the labor classification(s) necessary for the performance of the Work. Labor costs shall exclude costs incurred by the Contractor in preparing estimate(s) of the costs of the change in the Work, in the maintenance of records relating to the costs of the change in the Work, coordination and assembly of materials and information relating to the change in the Work or performance thereof, or the supervision and other overhead and general conditions costs associated with the change in the Work or performance thereof, including but not limited to the cost for the job superintendent.

17.8.3 Materials. Contractor shall be compensated for the costs of materials necessarily and actually used or consumed in connection with the performance of the change in the Work. Costs of materials may include reasonable costs of transportation from a source closest to the Site of the Work and delivery to the Site. If discounts by material suppliers are available for materials necessarily used in the performance of the change in the Work, they shall be credited to the District. If materials necessarily used in the performance of the change in the Work are obtained from a supplier or source owned in whole or in part by the Contractor, compensation therefor shall not exceed the current wholesale price for such materials. If, in the reasonable opinion of the District, the costs asserted by the Contractor for materials in connection with any change in the Work are excessive, or if the Contractor fails to provide satisfactory evidence of the actual costs of such materials from its supplier or vendor of the same, the costs of such materials and the District's obligation to pay for the same shall be limited to the then lowest wholesale price at which similar materials are available in the quantities required to perform the change in the Work. The District may elect to furnish materials for the change in the Work, in which event the Contractor shall not be compensated for the costs of furnishing such materials or any mark-up thereon.

17.8.4 Equipment. As a precondition for the District's duty to pay for Equipment rental or loading and transportation, Contractor shall provide satisfactory evidence of the actual costs of Equipment from the supplier, vendor or rental agency of same. Contractor shall be compensated for the actual cost of the necessary and direct use of Equipment in the performance of the change in the Work. Use of such Equipment in the performance of the change in the Work shall be compensated in increments of fifteen (15) minutes. Rental time for Equipment moved by its own power shall include time required to move such Equipment to the site of the Work from the nearest available rental source of the same. If Equipment is not moved to the Site by its own power, Contractor will be compensated for the loading and transportation costs in lieu of rental time. The foregoing notwithstanding, neither moving time or loading and transportation time shall be allowed if the Equipment is used for performance of any portion of the Work other than the change in the Work. Unless prior approval in writing is obtained by the Contractor from the Architect, the Project Inspector and the District, no costs or compensation shall be allowed for time while Construction Equipment is inoperative, idle or on standby, for any reason. Contractor shall not be entitled to an allowance or any other compensation for Equipment or tools used in the performance of change in the Work where such Equipment or tools have a replacement value of \$500.00 or less. Equipment costs claimed by the Contractor in connection with the performance of any Work shall not exceed rental rates established by distributors or construction equipment rental agencies in the locality of the Site; any costs asserted which exceed such rental rates shall not be allowed or paid. Unless otherwise specifically approved in writing by the

Architect, the Project Inspector and the District, the allowable rate for the use of Equipment in connection with the Work shall constitute full compensation to the Contractor for the cost of rental, fuel, power, oil, lubrication, supplies, necessary attachments, repairs or maintenance of any kind, depreciation, storage, insurance, labor (exclusive of labor costs of the Equipment operator), and any and all other costs incurred by the Contractor incidental to the use of such Equipment.

17.8.5 Overhead and Profit. The phrase "Overhead and Profit" shall include field and office supervisors and assistants, watchperson, use of small tools, consumable, insurance other than construction bonds and insurance required herein, and general field and home office expenses.

17.9 Change Order Certification

17.9.1 All Change Orders and PCOs must include the following certification by the Contractor:

17.9.1.1 The undersigned Contractor approves the foregoing as to the changes, if any, to 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.

17.9.1.2 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. Contractor is not entitled to separately recover amounts for overhead or other indirect costs. Any costs, expenses, damages, or time extensions not included are deemed waived.

17.10 Determination of Change Order Cost

17.10.1 The amount of the increase or decrease in the Contract Price from a Change Order, if any, shall be determined in one or more of the following ways as applicable to a specific situation and at the District's discretion:

17.10.1.1 District acceptance of a PCO;

17.10.1.2 By unit prices contained in Contractor's original bid;

17.10.1.3 By agreement between District and Contractor.

17.11 Deductive Change Orders

All deductive Change Order(s) must be prepared pursuant to the provisions herein. Where a portion of the Work is deleted from the Contract, the reasonable value of the

deducted work less the value of work performed shall be considered the appropriate deduction. The value submitted on the Schedule of Values shall be used to calculate the credit amount unless the bid documentation is being held in escrow as part of the Contract Documents. Unit Prices, if any, may be used in District's discretion in calculating reasonable value. 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 also include a minimum of five percent (5%) profit and overhead to be deducted with the amount of its deducted work. Any deviation from this provision shall not be allowed.

17.12 Addition or Deletion of Alternate Bid Item(s)

If the Bid Form and Proposal includes proposal(s) for Alternate Bid Item(s), during Contractor's performance of the Work, the District may elect to add or delete any such Alternate Bid Item(s) if not included in the Contract at the time of award. If the District elects to add or delete Alternate Bid Item(s) after Contract award, the cost or credit for such Alternate Bid Item(s) shall be as set forth in the Bid Form and Proposal unless the parties agree to a different price and the Contract Time shall be adjusted by the number of days allocated in the Contract Documents. If days are not allocated in the Contract Documents, the Contract Time shall be equitably adjusted.

17.13 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.

17.14 Accounting Records

With respect to portions of the Work performed by Change Orders and Construction Change Directives, the Contractor shall keep and maintain cost-accounting records satisfactory to the District, including, without limitation, Job Cost Reports as provided in these General Conditions, 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. Such records shall include without limitation hourly records for Labor and Equipment and itemized records of materials and Equipment used that day in connection with the performance of any Work. All records maintained hereunder shall be subject to inspection, review and/or reproduction by the District, the Architect or the Project Inspector upon request. In the event that the Contractor fails or refuses, for any reason, to maintain or make available for inspection, review and/or reproduction such records, the District's reasonable good faith determination of the extent of adjustment to the Contract Price shall be final, conclusive, dispositive and binding upon Contractor.

17.15 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, including the Article on Claims and Disputes. 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. Any change in the Contract Price or extension of the Contract Time resulting from such claim shall be authorized by a Change Order.

17.16 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.

17.17 Alteration to Change Order Language

Contractor shall not alter Change Orders or reserve time in Change Orders. Change Orders altered in violation of this provision, if in conflict with the terms set forth herein, shall be construed in accordance with the terms set forth herein. Contractor shall execute finalized Change Orders and proceed under the provisions herein with proper notice.

17.18 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.

18. REQUEST FOR INFORMATION

18.1 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. The Contractor shall make suggestions and interpretations of the issue raised by each Request for Information. A Request for Information cannot modify the Contract Price, Contract Time, or the Contract Documents. Upon request by the District, Contractor shall provide an electronic copy of the Request for Information in addition to the hard copy.

18.2 The Contractor shall be responsible for any costs incurred for professional services that 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.

19. PAYMENTS

19.1 Contract Price

The Contract Price is stated in the Agreement and, including authorized adjustments, is the total amount payable by the District to the Contractor for performance of the Work under the Contract Documents.

19.2 Applications for Progress Payments

19.2.1 Procedure for Applications for Progress Payments

19.2.1.1 Application for Progress Payment

19.2.1.1.1 Not before the fifth (5th) day of each calendar month during the progress of the Work, Contractor shall submit to the District and the Architect an itemized Application for Payment for operations completed in accordance with the Schedule of Values. Such application shall be notarized, if required, and supported by the following or each portion thereof unless waived by the District in writing:

19.2.1.1.1.1 The amount paid to the date of the Application to the Contractor, to all its Subcontractors, and all others furnishing labor, material, or equipment for its Contract;

19.2.1.1.1.2 The amount being requested under the Application for Payment by the Contractor on its own behalf and separately stating the amount requested on behalf of each of the Subcontractors and all others furnishing labor, material, and equipment under the Contract;

19.2.1.1.1.3 The balance that will be due to each of such entities after said payment is made;

19.2.1.1.1.4 A certification that the As-Built Drawings and annotated Specifications are current;

19.2.1.1.1.5 Itemized breakdown of work done for the purpose of requesting partial payment;

19.2.1.1.1.6 An updated and acceptable construction schedule in conformance with the provisions herein;

19.2.1.1.1.7 The additions to and subtractions from the Contract Price and Contract Time;

19.2.1.1.1.8 A total of the retentions held;

19.2.1.1.1.9 Material invoices, evidence of equipment purchases, rentals, and other support and details of cost as the District may require from time to time;

19.2.1.1.1.10 The percentage of completion of the Contractor's Work by line item;

19.2.1.1.1.11 Schedule of Values updated from the preceding Application for Payment;

19.2.1.1.1.12 A duly completed and executed conditional waiver and release upon progress payment compliant with Civil Code section 8132 from the Contractor and each subcontractor of any tier and supplier to be paid from the current progress payment;

19.2.1.1.1.13 A duly completed and executed unconditional waiver and release upon progress payment compliant with Civil Code section 8134 from the Contractor and each subcontractor of any tier and supplier that was paid from the previous progress payment(s); and

19.2.1.1.1.14 A certification by the Contractor of the following:

The Contractor warrants title to all Work performed as of the date of this payment application has been completed in accordance with the Contract Documents for the Project. The Contractor further warrants that all amounts have been paid for work which previous Certificates for Payment were issued and payments received and 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. 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.*

19.2.1.1.1.15 The Contractor shall be subject to the False Claims Act set forth in Government Code section 12650 *et seq.* for information provided with any Application for Progress Payment.

19.2.1.1.1.16 All remaining certified payroll records ("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. As indicated herein, the District shall not make any payment to Contractor until:

19.2.1.1.1.16.1 Contractor and/or its Subcontractor(s) provide electronic CPRs weekly for all weeks any journeyman, apprentice, worker or other employee was employed in connection with the Work

directly to the DIR, or within ten (10) days of any request by the District or the DIR, and

19.2.1.1.1.16.2 Any delay in Contractor and/or its Subcontractor(s) providing CPRs in a timely manner may directly delay the Contractor's payment.

19.2.1.1.2 Applications received after June 20th will not be paid until the second week of July and applications received after December 12th will not be paid until the first week of January.

19.2.2 Prerequisites for Progress Payments

19.2.2.1 First Payment Request: The following items, if applicable, must be completed before the District will accept and/or process the Contractor's first payment request:

19.2.2.1.1 Installation of the Project sign;

19.2.2.1.2 Installation of field office;

19.2.2.1.3 Installation of temporary facilities and fencing;

19.2.2.1.4 Schedule of Values;

19.2.2.1.5 Contractor's Construction Schedule;

19.2.2.1.6 Schedule of unit prices, if applicable;

19.2.2.1.7 Submittal Schedule;

19.2.2.1.8 Receipt by Architect of all submittals due as of the date of the payment application;

19.2.2.1.9 Copies of necessary permits;

19.2.2.1.10 Copies of authorizations and licenses from governing authorities;

19.2.2.1.11 Initial progress report;

19.2.2.1.12 Surveyor qualifications;

19.2.2.1.13 Written acceptance of District's survey of rough grading, if applicable;

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

19.2.2.1.15 All bonds and insurance endorsements; and

19.2.2.1.16 Resumes of Contractor's project manager, and if applicable, job site secretary, record documents recorder, and job site superintendent.

19.2.2.2 Second Payment Request: The District will not process the second payment request until and unless all submittals and Shop Drawings have been accepted for review by the Architect.

19.2.2.3 No Waiver of Criteria: Any payments made to Contractor where criteria set forth herein have not been met shall not constitute a waiver of said criteria by District. Instead, such payment shall be construed as a good faith effort by District to resolve differences so Contractor may pay its Subcontractors and suppliers. Contractor agrees that failure to submit such items may constitute a breach of contract by Contractor and may subject Contractor to termination.

19.3 Progress Payments

19.3.1 District's Approval of Application for Payment

19.3.1.1 Upon receipt of an Application for Payment, The District shall act in accordance with both of the following:

19.3.1.1.1 Each Application for Payment shall be reviewed by the District as soon as practicable after receipt for the purpose of determining that the Application for Payment is a proper Application for Payment.

19.3.1.1.2 Any Application for Payment determined not to be a proper Application for Payment suitable for payment shall be returned to the Contractor as soon as practicable, but not later than seven (7) days, after receipt. An Application for Payment returned pursuant to this paragraph shall be accompanied by a document setting forth in writing the reasons why the Application for Payment is not proper. The number of days available to the District to make a payment without incurring interest pursuant to this section shall be reduced by the number of days by which the District exceeds this seven-day return requirement.

19.3.1.1.3 An Application for Payment shall be considered properly executed if funds are available for payment of the Application for Payment, and payment is not delayed due to an audit inquiry by the financial officer of the District.

19.3.1.2 The District's review of the Contractor's Application for Payment will be based on the District's and the Architect's observations at the Site and the data comprising the Application for Payment that the Work has progressed to the point indicated and that, to the best of the District's and the Architect's knowledge, information, and belief, the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to:

19.3.1.2.1 Observation of the Work for general conformance with the Contract Documents,

19.3.1.2.2 Results of subsequent tests and inspections,

19.3.1.2.3 Minor deviations from the Contract Documents correctable prior to completion, and

19.3.1.2.4 Specific qualifications expressed by the Architect.

19.3.1.3 District's approval of the certified Application for Payment shall be based on Contractor complying with all requirements for a fully complete and valid certified Application for Payment.

19.3.2 Payments to Contractor

19.3.2.1 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 Architect 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. The value of the Work completed shall be Contractor's best estimate. No inaccuracy or error in said estimate shall operate to release the Contractor, or any Surety upon any bond, from damages arising from such Work, or from the District's right to enforce each and every provision of this Contract, and the District shall have the right subsequently to correct any error made in any estimate for payment.

19.3.2.2 The Contractor shall not be entitled to have any payment requests processed, or be entitled to have any payment made for Work performed, so long as any lawful or proper direction given by the District concerning the Work, or any portion thereof, remains incomplete.

19.3.2.3 If the District fails to make any progress payment within thirty (30) days after receipt of an undisputed and properly submitted Application for Payment from the Contractor, the District shall pay interest to the Contractor equivalent to the legal rate set forth in subdivision (a) of Section 685.010 of the Code of Civil Procedure.

19.3.3 No Waiver

No payment by District hereunder shall be interpreted so as to imply that District has inspected, approved, or accepted any part of the Work. Notwithstanding any payment, the District may enforce each and every provision of this Contract. The District may correct or require correction of any error subsequent to any payment.

19.4 Decisions to Withhold Payment

19.4.1 Reasons to Withhold Payment

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 extent as may be necessary to protect the District from loss because of, but not limited to any of the following:

19.4.1.1 Defective Work not remedied within **FORTY-EIGHT (48)** hours of written notice to Contractor.

19.4.1.2 Stop Payment Notices or other liens served upon the District as a result of the Contract. Contractor agrees that the District may withhold up to 125% of the amount claimed in the Stop Payment Notice to answer the claim and to provide for the District's reasonable cost of any litigation pursuant to the stop payment notice.

19.4.1.3 Liquidated damages assessed against the Contractor.

19.4.1.4 The cost of completion of the Contract if there exists a reasonable doubt that the Work can be completed for the unpaid balance of the Contract Price or by the completion date.

19.4.1.5 Damage to the District or other contractor(s).

19.4.1.6 Unsatisfactory prosecution of the Work by the Contractor.

19.4.1.7 Failure to store and properly secure materials.

19.4.1.8 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.

19.4.1.9 Failure of the Contractor to maintain As-Built Drawings.

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

19.4.1.11 Unauthorized deviations from the Contract Documents.

19.4.1.12 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.

19.4.1.13 Failure to provide acceptable electronic certified payroll records, as required by the Labor Code, by these Contract Documents, or by written request; for each journeyman, apprentice, worker, or other employee employed by the Contractor and/or by each Subcontractor in connection with the Work for the period of the Application for Payment or if payroll records are delinquent or inadequate.

19.4.1.14 Failure to properly pay prevailing wages as required in Labor Code section 1720 *et seq.*, failure to comply with any other Labor Code requirements, and/or failure to comply with labor compliance monitoring and enforcement by the DIR.

19.4.1.15 Failure to comply with any applicable federal statutes and regulations regarding minimum wages, withholding, payrolls and basic records, apprentice and trainee employment requirements, equal employment opportunity requirements, Copeland Act requirements, Davis-Bacon Act and related requirements, Contract Work Hours and Safety Standards Act requirements, if applicable.

19.4.1.16 Failure to properly maintain or clean up the Site.

19.4.1.17 Failure to timely indemnify, defend, or hold harmless the District.

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

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

19.4.1.20 Failure to pay any royalty, license or similar fees.

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

19.4.1.22 Failure to perform any implementation and/or monitoring required by any SWPPP for the Project and/or the imposition of any penalties or fines therefore whether imposed on the District or Contractor.

19.4.2 Reallocation of Withheld Amounts

19.4.2.1 District may, in its discretion, apply any withheld amount to pay outstanding claims or obligations as defined herein. In so doing, District shall make such payments on behalf of Contractor. If any payment is so made by District, then that amount shall be considered a payment made under Contract by District to Contractor and District shall not be liable to Contractor for any payment made in good faith. These payments may be made without prior judicial determination of claim or obligation. District will render Contractor an accounting of funds disbursed on behalf of Contractor.

19.4.2.2 If Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents or fails to perform any provision thereof, District may, after **FORTY-EIGHT (48)** hours' written notice to the Contractor and, without prejudice to any other remedy, make good such deficiencies. The District shall adjust the total Contract Price by reducing the amount thereof by the cost of making good such deficiencies. If District deems it inexpedient to correct Work that is damaged, defective, or not done in accordance with Contract provisions, an equitable reduction in the Contract Price (of at least one hundred fifty percent (150%) of the estimated reasonable value of the nonconforming Work) shall be made therefor.

19.4.3 Payment After Cure

When Contractor removes the grounds for declining approval, payment shall be made for amounts withheld because of them. No interest shall be paid on any retainage or amounts withheld due to the failure of the Contractor to perform in accordance with the terms and conditions of the Contract Documents.

19.5 Subcontractor Payments

19.5.1 Payments to Subcontractors

No later than seven (7) 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.

19.5.2 No Obligation of District for Subcontractor Payment

The District shall have no obligation to pay, or to see to the payment of, money to a Subcontractor except as may otherwise be required by law.

19.5.3 Joint Checks

District shall have the right in its sole discretion, if necessary for the protection of the District, to issue joint checks made payable to the Contractor and Subcontractors and/or material or equipment suppliers. The joint check payees shall be responsible for the allocation and disbursement of funds included as part of any such joint payment. In no event shall any joint check payment be construed to create any contract between the District and a Subcontractor of any tier, or a material or equipment supplier, any obligation from the District to such Subcontractor or a material or equipment supplier, or rights in such Subcontractor or a material or equipment supplier against the District.

20. COMPLETION OF THE WORK

20.1 Completion

20.1.1 District will accept completion of Contract and have the Notice of Completion recorded when the entire Work shall have been completed to the satisfaction of District.

20.1.2 The Work may only be accepted as complete by action of the governing board of the District.

20.1.3 District, at its sole option, may accept completion of Contract and have the Notice of Completion recorded when the entire Work shall have been completed to the satisfaction of District, except for minor corrective items, as distinguished from incomplete items. If Contractor fails to complete all minor corrective items within fifteen (15) days after the date of the District's acceptance of completion, 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.

20.1.4 At the end of the 15-day period, 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.

20.2 Close-Out/Certification Procedures

20.2.1 Punch List

The Contractor shall notify the Architect when Contractor considers the Work complete. Upon notification, 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. Failure to include an item on Punch List does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

20.2.2 Close-Out/Certification Requirements

20.2.2.1 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.

20.2.2.2 Record Drawings and Record Specifications

20.2.2.2.1 Contractor shall provide exact Record Drawings of the Work ("As-Builts") and Record Specifications upon completion of the Project and as a condition precedent to approval of final payment.

20.2.2.2.2 Contractor shall obtain the Inspector's approval of the corrected prints and employ a competent draftsman to transfer the Record Drawings information to the most current version of AutoCAD that is, at that time, currently utilized for plan check submission by either the District, the Architect, OPSC, and/or DSA, and print a complete set of transparent sepias. When completed, Contractor shall deliver corrected sepias and diskette/CD/other data storage device acceptable to District with AutoCAD file to the District.

20.2.2.2.3 Contractor is liable and responsible for any and all inaccuracies in the Record Drawings and Record Specifications, even if inaccuracies become evident at a future date.

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

20.2.2.4 Source Programming: Contractor shall provide all source programming for all items in the Project.

20.2.2.5 Verified Reports: Contractor shall completely and accurately fill out and file forms DSA 6-C or DSA 152 (or current form), as appropriate. Refer to section 4-336 and section 4-343 of Part 1, Title 24 of the California Code of Regulations.

20.3 Final Inspection

20.3.1 Contractor shall comply with Punch List procedures as provided herein, and 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. Under no circumstances shall Contractor demobilize its forces prior to completion of the Punch List without District's prior written approval. Upon receipt of Contractor's written notice that all of the Punch List items have been fully completed and the Work is ready for final inspection and acceptance, Architect and Project Inspector will inspect the Work and shall submit to Contractor and District a final inspection report noting the Work, if any, required in order to complete in accordance with the Contract Documents. Absent unusual circumstances, this report shall consist of the Punch List items not yet satisfactorily completed.

20.3.2 Upon Contractor's completion of all items on the Punch List and any other uncompleted portions of the Work, the Contractor shall notify the District and Architect, who shall again inspect such Work. If the Architect finds the Work complete and acceptable under the Contract Documents, the Architect will notify Contractor, who shall then jointly submit to the Architect and the District its final Application for Payment.

20.3.3 Final Inspection Requirements

20.3.3.1 Before calling for final inspection, Contractor shall determine that the following have been performed:

- 20.3.3.1.1** The Work has been completed.
- 20.3.3.1.2** All life safety items are completed and in working order.
- 20.3.3.1.3** Mechanical and electrical Work are complete and tested, fixtures are in place, connected, and ready for tryout.
- 20.3.3.1.4** Electrical circuits scheduled in panels and disconnect switches labeled.
- 20.3.3.1.5** Painting and special finishes complete.
- 20.3.3.1.6** Doors complete with hardware, cleaned of protective film, relieved of sticking or binding, and in working order.
- 20.3.3.1.7** Tops and bottoms of doors sealed.
- 20.3.3.1.8** Floors waxed and polished as specified.
- 20.3.3.1.9** Broken glass replaced and glass cleaned.

20.3.3.1.10 Grounds cleared of Contractor's equipment, raked clean of debris, and trash removed from Site.

20.3.3.1.11 Work cleaned, free of stains, scratches, and other foreign matter, of damaged and broken material replaced.

20.3.3.1.12 Finished and decorative work shall have marks, dirt, and superfluous labels removed.

20.3.3.1.13 Final cleanup, as provided herein.

20.4 Costs of Multiple Inspections

More than two (2) requests of the District to make a final inspection shall be considered an additional service of District, Architect, Construction Manager, and/or Project Inspector, and all subsequent costs will be invoiced to Contractor and if funds are available, withheld from remaining payments.

20.5 Partial Occupancy or Use Prior to Completion

20.5.1 District's Rights to Occupancy

The District may occupy or use any completed or partially completed portion of the Work at any stage, and such occupancy shall not constitute the District's Final Acceptance of any part of the Work. 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. In the event that the District occupies or uses any completed or partially completed portion of the Work, the Contractor shall remain responsible 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 unless the Contractor requests in writing, and the District agrees, to otherwise divide those responsibilities. Any dispute as to responsibilities shall be resolved pursuant to the Claims and Disputes provisions herein, with the added provision that during the dispute process, the District shall have the right to occupy or use any portion of the Work that it needs or desires to use.

20.5.2 Inspection Prior to Occupancy or Use

Immediately prior to partial occupancy or use, the District, the Contractor, and the Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

20.5.3 No Waiver

Unless otherwise agreed upon, partial or entire occupancy or use of a portion or portions of the Work shall not constitute beneficial occupancy or acceptance of the Work not complying with the requirements of the Contract Documents.

21. FINAL PAYMENT AND RETENTION

21.1 Final Payment

Upon receipt and approval of a valid and final Application for Payment, the Architect will issue a final Certificate of Payment. The District shall thereupon jointly inspect the Work and either accept the Work as complete or notify the Architect and the Contractor in writing of reasons why the Work is not complete. Upon acceptance of the Work of the Contractor as fully complete by the Governing Board of the District (that, absent unusual circumstances, will occur when the Punch List items have been satisfactorily completed), the District shall record a Notice of Completion with the County Recorder, and the Contractor shall, upon receipt of final payment from the District, pay the amount due Subcontractors.

21.2 Prerequisites for Final Payment

The following conditions must be fulfilled prior to Final Payment:

21.2.1 A full release of all Stop Payment Notices served in connection with the Work shall be submitted by Contractor.

21.2.2 A duly completed and executed conditional waiver and release upon final payment compliant with Civil Code section 8136, from the Contractor and each subcontractor of any tier and supplier to be paid from the final payment.

21.2.3 A duly completed and executed unconditional waiver and release upon progress payment compliant with Civil Code section 8134, from the Contractor and each subcontractor of any tier and supplier that was paid from the previous progress payments.

21.2.4 A duly completed and executed Document 00 65 19.26, "AGREEMENT AND RELEASE OF ANY AND ALL CLAIMS" from the Contractor.

21.2.5 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.

21.2.6 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.

21.2.7 Contractor must have completed all requirements set forth under "Close-Out/Certification Procedures," including, without limitation, submission of an approved set of complete Record Drawings.

21.2.8 Architect shall have issued its written approval that final payment can be made.

21.2.9 The Contractor shall have delivered to the District all manuals and materials required by the Contract Documents, which must be approved by the District.

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

21.3 **Retention**

21.3.1 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:

21.3.1.1 After approval by the Architect of the Application and Certificate of Payment,

21.3.1.2 After the satisfaction of the conditions set forth herein, and

21.3.1.3 After forty-five (45) days after the recording of the Notice of Completion by District.

21.3.2 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.

21.4 **Substitution of Securities**

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

22. **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 Project Inspector, or the Architect, be uncovered for the Project Inspector's or the Architect's observation and be corrected, replaced, and/or recovered at the Contractor's expense without change in the Contract Price or Contract Time.

23. **NONCONFORMING WORK AND CORRECTION OF WORK**

23.1 **Nonconforming Work**

23.1.1 Contractor shall promptly remove from Premises all Work identified by District as failing to conform to the Contract Documents whether incorporated or not. Contractor shall promptly replace and re-execute its own Work to comply with the Contract Documents without additional expense to the District and shall bear the expense of making good all work of other contractors destroyed or damaged by any

removal or replacement pursuant hereto and/or any delays to the District or other Contractors caused thereby.

23.1.2 If Contractor does not remove Work that District has identified as failing to conform to the Contract Documents within a reasonable time, not to exceed **FORTY-EIGHT (48)** hours, District may remove it and may store any material at Contractor's expense. If Contractor does not pay expense(s) of that removal within ten (10) days' time thereafter, District may, upon ten (10) days' written notice, sell any material at auction or at private sale and shall deduct all costs and expenses incurred by the District and/or District may withhold those amounts from payment(s) to Contractor.

23.2 Correction of Work

23.2.1 Correction of Rejected Work

Pursuant to the notice provisions herein, the Contractor shall immediately correct the Work rejected by the District, the Architect, or the Project Inspector 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. The Contractor shall bear costs of correcting the rejected Work, including additional testing, inspections, and compensation for the Inspector's or the Architect's services and expenses made necessary thereby.

23.2.2 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. This obligation hereunder shall survive acceptance of the Work under the Contract and termination of the Contract. The District shall give such notice promptly after discovery of the condition.

23.3 District's Right to Perform Work

23.3.1 If the Contractor should neglect to prosecute the Work properly or fail to perform any provisions of this contract, the District, after **FORTY-EIGHT (48)** hours 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.

23.3.2 If it is found at any time, before or after completion of the Work, that Contractor has varied from the Drawings and/or Specifications, including, but not limited to, variation in material, quality, form, or finish, or in the amount or value of the materials and labor used, District may require at its option:

23.3.2.1 That all such improper Work be removed, remade or replaced, and all work disturbed by these changes be made good by Contractor at no additional cost to the District;

23.3.2.2 That the District deduct from any amount due Contractor the sum of money equivalent to the difference in value between the work performed and that called for by the Drawings and Specifications; or

23.3.2.3 That the District exercise any other remedy it may have at law or under the Contract Documents, including but not limited to the District hiring its own forces or another contractor to replace the Contractor's nonconforming Work, in which case the District shall either issue a deductive Change Order, a Construction Change Directive, or invoice the Contractor for the cost of that work. Contractor shall pay any invoices within thirty (30) days of receipt of same or District may withhold those amounts from payment(s) to Contractor.

24. TERMINATION AND SUSPENSION

24.1 District's Right to Terminate Contractor for Cause

24.1.1 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 any of the following:

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

24.1.1.2 Contractor fails to complete said Work within the time specified or any extension thereof, or

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

24.1.1.4 Contractor persistently or repeatedly refuses 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

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

24.1.1.6 Contractor persistently disregards laws, or ordinances, or instructions of District; or

24.1.1.7 Contractor fails to supply labor, including that of Subcontractors, that is sufficient to prosecute the Work or that can work in harmony with all other elements of labor employed or to be employed on the Work; or

24.1.1.8 Contractor or its Subcontractor(s) is/are otherwise in breach, default, or in substantial violation of any provision of this Contract, including but not limited to a lapse in licensing or registration.

24.1.2 Notification of Termination

24.1.2.1 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, and any and all violation(s) shall cease, or arrangement satisfactory to District for the correction of the condition(s) and/or violation(s) be made, this Contract shall cease and terminate. Upon Termination, Contractor shall not be entitled to receive any further payment until the entire Work is finished.

24.1.2.2 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:

24.1.2.2.1 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

24.1.2.2.2 Commences performance of this Contract within three (3) days from date of serving of its notice to District.

24.1.2.3 Surety shall not utilize Contractor in completing the Project if the District notifies Surety of the District's objection to Contractor's further participation in the completion of the Project. Surety expressly agrees that any contractor which Surety proposes to fulfill Surety's obligations is subject to District's approval. District's approval shall not be unreasonably withheld, conditioned or delayed.

24.1.2.4 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.

24.1.3 Effect of Termination

24.1.3.1 Contractor shall, only if ordered to do so by the District, immediately remove from the Site all or any materials and personal property belonging to Contractor that have not been incorporated in the construction of the Work, or which are not in place in the Work. The District retains the right, but not the obligation, to keep and use any materials and personal property belonging to Contractor that have not been incorporated in the construction of the Work, or which are not in place in the Work. The Contractor and its Surety shall be liable

upon the performance bond for all damages caused to the District by reason of the Contractor's failure to complete the Contract.

24.1.3.2 In the event that the District shall perform any portion of, or the whole of the Work, pursuant to the provisions of the General Conditions, the District shall not be liable nor account to the Contractor in any way for the time within which, or the manner in which, the Work is performed by the District or for any changes the District may make in the Work or for the money expended by the District in satisfying claims and/or suits and/or other obligations in connection with the Work.

24.1.3.3 In the event that the Contract is terminated for any reason, no allowances or compensation will be granted for the loss of any anticipated profit by the Contractor or any impact or impairment of Contractor's bonding capacity.

24.1.3.4 If the expense to the District to finish the Work exceeds the unpaid Contract Price, Contractor and Surety shall pay difference to District within twenty-one (21) days of District's request.

24.1.3.5 The District shall have the right (but shall have no obligation) to assume and/or assign to a general contractor or construction manager or other third party who is qualified and has sufficient resources to complete the Work, the rights of the Contractor under its subcontracts with any or all Subcontractors. In the event of an assumption or assignment by the District, no Subcontractor shall have any claim against the District or third party for Work performed by Subcontractor or other matters arising prior to termination of the Contract. The District or any third party, as the case may be, shall be liable only for obligations to the Subcontractor arising after assumption or assignment. Should the District so elect, the Contractor shall execute and deliver all documents and take all steps, including the legal assignment of its contractual rights, as the District may require, for the purpose of fully vesting in the District the rights and benefits of its Subcontractor under Subcontracts or other obligations or commitments. All payments due the Contractor hereunder shall be subject to a right of offset by the District for expenses and damages suffered by the District as a result of any default, acts, or omissions of the Contractor. Contractor must include this assignment provision in all of its contracts with its Subcontractors.

24.1.3.6 The foregoing provisions are in addition to and not in limitation of any other rights or remedies available to District.

24.1.4 Emergency Termination of Public Contracts Act of 1949

24.1.4.1 This Contract is subject to termination as provided by sections 4410 and 4411 of the Government Code of the State of California, being a portion of the Emergency Termination of Public Contracts Act of 1949.

24.1.4.1.1 Section 4410 of the Government Code states:

In the event a national emergency occurs, and public work, being performed by contract, is stopped, directly or indirectly, because of the freezing or diversion of materials, equipment or labor, as the result of an order or a

proclamation of the President of the United States, or of an order of any federal authority, and the circumstances or conditions are such that it is impracticable within a reasonable time to proceed with a substantial portion of the work, then the public agency and the contractor may, by written agreement, terminate said contract.

24.1.4.1.2 Section 4411 of the Government Code states:

Such an agreement shall include the terms and conditions of the termination of the contract and provision for the payment of compensation or money, if any, which either party shall pay to the other or any other person, under the facts and circumstances in the case.

24.1.4.2 Compensation to the Contractor shall be determined at the sole discretion of District on the basis of the reasonable value of the Work done, including preparatory work. As an exception to the foregoing and at the District's discretion, in the case of any fully completed separate item or portion of the Work for which there is a separate previously submitted unit price or item on the accepted schedule of values, that price shall control. The District, at its sole discretion, may adopt the Contract Price as the reasonable value of the work done or any portion thereof.

24.2 Termination of Contractor for Convenience

24.2.1 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:

24.2.1.1 The actual cost for labor, materials, and services performed that is unpaid and adequately documented through timesheets, invoices, receipts, or otherwise, and

24.2.1.2 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 Contractor's and Subcontractor(s)' mobilization and/or demobilization costs and any anticipated loss profits resulting from termination of the Contractor for convenience.

24.3 Suspension of Work

24.3.1 District in its sole discretion may suspend, delay or interrupt the Work in whole or in part for such period of time as the District may determine upon three (3) days written notice to the Contractor.

24.3.1.1 An adjustment may be made for changes in the cost of performance of the Work caused by any such suspension, delay or interruption. No adjustment shall be made to the extent:

24.3.1.1.1 That performance is, was or would have been so suspended, delayed or interrupted by another cause for which Contractor is responsible; or

24.3.1.1.2 That an equitable adjustment is made or denied under another provision of the Contract; or

24.3.1.1.3 That the suspension of Work was the direct or indirect result of Contractor's failure to perform any of its obligations hereunder.

24.3.1.2 Any adjustments in cost of performance may have a fixed or percentage fee as provided in the section on Format for Proposed Change Order herein. This amount shall be full compensation for all Contractor's and its Subcontractor(s)' changes in the cost of performance of the Contract caused by any such suspension, delay or interruption.

25. CLAIMS PROCESS

25.1 Performance during Claim Process

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

25.2 Definition of Claim

25.2.1 Pursuant to Public Contract Code section 9204, the term "Claim" means a separate demand by the Contractor sent by registered mail or certified mail with return receipt requested, for one or more of the following:

25.2.1.1 A time extension, including without limitation, for relief of damages or penalties for delay assessed by the District under the Contract;

25.2.1.2 Payment by the District 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 to which Contractor is not otherwise entitled to; or

25.2.1.3 An amount of payment disputed by the District.

25.3 Claims Presentation

25.3.1 If Contractor intends to apply for 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 thirty (30) days after the event giving rise to the Claim, give notice of the Claim in writing, including an itemized statement of the details and amounts of its Claim for any increase in the Contract Price of Contract Time, including a Schedule Analysis and any and all other documentation substantiating Contractor's claimed damages. Otherwise, Contractor shall have waived and relinquished its dispute against the District and Contractor's claims for compensation or an extension of time shall be forfeited and invalidated. Likewise,

failure to timely submit a claim and the requisite supporting documentation shall constitute a waiver of such claim.

25.3.2 The Claim shall identify:

25.3.2.1 The issues, events, conditions, circumstances and/or causes giving rise to the dispute, and shall show, in detail, the cause and effect of same;

25.3.2.2 The pertinent dates and/or durations and actual and/or anticipated effects on the Contract Price, Contract Schedule milestones and/or Contract Time adjustments;

25.3.2.3 The line-item costs for labor, material, and/or equipment, if applicable; and

25.3.2.4 A request by Contractor, if any, to waive the claims procedure under Public Contract Code section 9204 and proceed directly to the commencement of a civil action or binding arbitration.

25.3.3 The Claim shall include the following certification by the Contractor:

25.3.3.1 The undersigned Contractor certifies under penalty of perjury that the attached dispute is made in good faith; that the supporting data is accurate and complete to the best of my knowledge and belief; that the amount requested accurately reflects the adjustment for which Contractor believes the District is liable; and that I am duly authorized to certify the dispute on behalf of the Contractor.

25.3.3.2 Furthermore, Contractor understands that the value of the attached dispute expressly includes any and all of the Contractor's costs and expenses, direct and indirect, resulting from the Work performed on the Project, additional time required on the Project and/or resulting from delay to the Project. Contractor may not separately recover for overhead or other indirect costs. Any costs, expenses, damages, or time extensions not included are deemed waived.

25.4 Claim Resolution pursuant to Public Contract Code section 9204

25.4.1 STEP 1:

25.4.1.1 Upon receipt of a Claim by registered or certified mail, return receipt requested, including the documents necessary to substantiate it, the District shall conduct a reasonable review of the Claim and, within a period **not to exceed 45 days**, shall provide the Contractor a written statement identifying what portion of the Claim is disputed and what portion is undisputed. Upon receipt of a Claim, the District and Contractor may, **by mutual agreement, extend the time period** to provide a written statement. If the District needs approval from its governing body to provide the Contractor a written statement identifying the disputed portion and the undisputed portion of the Claim, and the governing body does not meet within the 45 days or within the mutually agreed to extension of time following receipt of Claim sent by registered mail or certified mail, return receipt requested, the District shall have **up to three (3) days following the next duly publicly noticed meeting of the governing body after the 45-day period, or extension**, expires to provide Contractor a written statement identifying the disputed portion and the undisputed portion.

25.4.1.1.1 Any payment due on an undisputed portion of the Claim shall be processed and made within 60 days after the District issues its written statement. Amounts not paid in a timely manner as required by this section, section 25.4, shall bear interest at seven percent (7%) per annum.

25.4.1.2 Upon receipt of a Claim, the parties may mutually agree to waive, in writing, mediation and proceed directly to the commencement of a civil action or binding arbitration, as applicable. In this instance, District and Contractor must comply with the sections below regarding Public Contract Code section 20104 et seq. and Government Code Claim Act Claims.

25.4.1.3 If the District fails to issue a written statement, or to otherwise meet the time requirements of this section, this shall result in the Claim being deemed rejected in its entirety. A Claim that is denied by reason of the District's failure to have responded to a Claim, or its failure to otherwise meet the time requirements of this section, shall not constitute an adverse finding with regard to the merits of the Claim or the responsibility or qualifications of Contractor.

25.4.2 STEP 2:

25.4.2.1 If Contractor disputes the District's written response, or if the District fails to respond to a Claim within the time prescribed, Contractor may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the District shall schedule a meet and confer conference within 30 days for settlement of the dispute. Within 10 business days following the conclusion of the meet and confer conference, if the Claim or any portion of the Claim remains in dispute, the District shall provide the Contractor a written statement identifying the portion of the Claim that remains in dispute and the portion that is undisputed.

25.4.2.1.1.1 Any payment due on an undisputed portion of the Claim shall be processed and made within 60 days after the District issues its written statement. Amounts not paid in a timely manner as required by this section, section 25.4, shall bear interest at seven percent (7%) per annum.

25.4.3 STEP 3:

25.4.3.1 Any disputed portion of the Claim, as identified by Contractor in writing, shall be submitted to nonbinding mediation, with the District and Contractor sharing the associated costs equally. The District and Contractor shall mutually agree to a mediator within 10 business days after the disputed portion of the Claim has been identified in writing. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the Claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, the parts of the Claim remaining in dispute shall be subject to applicable procedures outside this section.

25.4.3.1.1 For purposes of this section, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this section.

25.4.3.2 Unless otherwise agreed to by the District and Contractor in writing, the mediation conducted pursuant to this section shall excuse any further obligation under Public Contract Code section 20104.4 to mediate after litigation has been commenced.

25.4.4 STEP 4:

25.4.4.1 If mediation under this section does not resolve the parties' dispute, the District may, but does not require arbitration of disputes under private arbitration or the Public Works Contract Arbitration Program.

25.5 Subcontractor Pass-Through Claims

25.5.1 If a subcontractor or a lower tier subcontractor lacks legal standing to assert a claim against a District because privity of contract does not exist, the contractor may present to the District a Claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on his or her own behalf or on behalf of a lower tier subcontractor, that Contractor present a Claim for work which was performed by the subcontractor or by a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting that the Claim be presented to the District shall furnish reasonable documentation to support the Claim.

25.5.2 Within 45 days of receipt of this written request from a subcontractor, Contractor shall notify the subcontractor in writing as to whether the Contractor

presented the Claim to the District and, if Contractor did not present the Claim, provide the subcontractor with a statement of the reasons for not having done so.

25.5.3 The Contractor shall bind all its Subcontractors to the provisions of this section and will hold the District harmless against Claims by Subcontractors.

25.6 Government Code Claim Act Claim

25.6.1 If a claim, or any portion thereof, remains in dispute upon satisfaction of all applicable Claim Resolution requirements, including those pursuant to Public Contract Code section 9204, the Contractor shall comply with all claims presentation requirements as provided in Chapter 1 (commencing with section 900) and Chapter 2 (commencing with section 910) of Part 3 of Division 3.6 of Title 1 of Government Code as a condition precedent to the Contractor's right to bring a civil action against the District. For purposes of those provisions, the running of the time within which a claim must be presented to the District shall be tolled from the time Contractor submits its written Claim until the time the Claim is denied, including any time utilized by any applicable meet and confer process.

25.7 Claim Resolution pursuant to Public Contract Code section 20104 et seq.

25.7.1 In the event of a disagreement 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 all claims of three hundred seventy-five thousand dollars (\$375,000) or less which arise between Contractor and District by those procedures set forth in Public Contract Code section 20104, et seq., to the extent applicable.

25.7.1.1 Contractor shall file with the District any written Claim, including the documents necessary to substantiate it, upon the application for final payment.

25.7.1.2 For claims of less than fifty thousand dollars (\$50,000), the District shall respond in writing within forty-five (45) days of receipt of the Claim or may request in writing within thirty (30) days of receipt of the Claim any additional documentation supporting the Claim or relating to defenses or claims the District may have against the Contractor.

25.7.1.2.1 If additional information is required, it shall be requested and provided by mutual agreement of the parties.

25.7.1.2.2 District's written response to the documented Claim shall be submitted to the Contractor within fifteen (15) days after receipt of the further documentation or within a period of time no greater than that taken by the Contractor to produce the additional information, whichever is greater.

25.7.1.3 For claims of over fifty thousand dollars (\$50,000) and less than or equal to three hundred seventy-five thousand dollars (\$375,000), the District shall respond in writing to all written Claims within sixty (60) days of receipt of the claim, or may request, in writing, within thirty (30) days of receipt of the

Claim any additional documentation supporting the Claim or relating to defenses or claims the District may have against the Contractor.

25.7.1.3.1 If additional information is required, it shall be requested and provided upon mutual agreement of the District and the Contractor.

25.7.1.3.2 The District's written response to the Claim, as further documented, shall be submitted to the Contractor within thirty (30) days after receipt of the further documentation, or within a period of time no greater than that taken by the Contractor to produce the additional information or requested documentation, whichever is greater.

25.7.1.4 If Contractor disputes the District's written response, or the District fails to respond within the time prescribed, Contractor 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.

25.7.1.5 Following the meet and confer conference, if the Claim or any portion of it remains in dispute, the Contractor may file a claim as provided in Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code. For purposes of those provisions the running of the time within which a claim must be filed shall be tolled from the time the Contractor submits its written Claim until the time the Claim is denied, including any period of time utilized by the meet and confer process.

25.7.1.6 For any civil action filed to resolve claims filed pursuant to this section, within sixty (60) days, but no earlier than thirty (30) days, following the filing of responsive pleadings, the court shall submit the matter to nonbinding mediation unless waived by mutual stipulation of both parties. The mediation process shall provide for the selection within fifteen (15) days by both parties of a disinterested third person as mediator, shall be commenced within thirty (30) days of the submittal, and shall be concluded within fifteen (15) days from the commencement of the mediation unless a time requirement is extended upon a good cause showing to the court or by stipulation of both parties. If the parties fail to select a mediator within the 15-day period, any party may petition the court to appoint the mediator.

25.7.1.7 If the matter remains in dispute, the case shall be submitted to judicial arbitration pursuant to Chapter 2.5 (commencing with Section 1141.10) of the Title 3 of Part 3 of the Code of Civil Procedure, notwithstanding Section 1141.11 of that code. The Civil Discovery Act of 1986, (Article 3 (commencing with Section 2016) of Chapter 3 of Title 3 of part 4 of the Code of Civil Procedure) shall apply to any proceeding brought under this subdivision consistent with the rules pertaining to judicial arbitration.

25.7.1.8 The District shall not fail to pay money as to any portion of a Claim which is undisputed except as otherwise provided in the Contract Documents. In any suit filed pursuant to this section, the District shall pay interest due at the legal rate on any arbitration award or judgment. Interest shall begin to accrue on the date the suit is filed in a court of law.

25.7.2 Contractor shall bind its Subcontractors to the provisions of this Section and will hold the District harmless against disputes by Subcontractors.

25.8 Claim Resolution Non-Applicability

25.8.1 The procedures for dispute and claim resolutions set forth in this Article shall not apply to the following:

25.8.1.1 Personal injury, wrongful death or property damage claims;

25.8.1.2 Latent defect or breach of warranty or guarantee to repair;

25.8.1.3 Stop payment notices;

25.8.1.4 District's rights set forth in the Article on Suspension and Termination;

25.8.1.5 Disputes arising out of labor compliance enforcement by the Department of Industrial Relations; or

25.8.1.6 District rights and obligations as a public entity set forth in applicable statutes; provided, however, that penalties imposed against a public entity by statutes, including, but not limited to, Public Contract Code sections 20104.50 and 7107, shall be subject to the Claim Resolution requirements provided in this Article.

25.9 Attorney's Fees

25.9.1 Should litigation be necessary to enforce any terms or provisions of this Agreement, then each party shall bear its own litigation and collection expenses, witness fees, court costs and attorney's fees.

26. STATE LABOR, WAGE & HOUR, APPRENTICE, AND RELATED PROVISIONS

26.1 Labor Compliance and Enforcement

Since this Project is subject to labor compliance and enforcement by the Department of Industrial Relations ("DIR"), 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 Code and Title 8 of the California Code of Regulations, including, without limitation, the requirement that the Contractor and all Subcontractors shall timely furnish complete and accurate electronic certified payroll records directly to the DIR. The District may not issue payment if this requirement is not met.

26.2 Wage Rates, Travel, and Subsistence

26.2.1 Pursuant to the provisions of Article 2 (commencing at section 1770), Chapter 1, Part 7, Division 2, of the Labor Code, 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.

26.2.2 Holiday and overtime work, when permitted by law, shall be paid for at the general prevailing rate of per diem wages for holiday and overtime work on file with the Director of the Department of Industrial Relations, 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.

26.2.3 Contractor shall pay and shall cause to be paid each worker engaged in Work on the Project the general prevailing rate of per diem wages determined by the Director of the Department of Industrial Relations, regardless of any contractual relationship which may be alleged to exist between Contractor or any Subcontractor and such workers.

26.2.4 If during the period this bid is required to remain open, the Director of the Department of Industrial Relations determines that there has been a change in any prevailing rate of per diem wages in the locality in which the Work under the Contract is to be performed, such change shall not alter the wage rates in the Notice to Bidders or the Contract subsequently awarded.

26.2.5 Pursuant to Labor Code section 1775, Contractor shall, as a penalty to District, forfeit the statutory amount (believed by the District to be currently up to two hundred dollars (\$200) for each calendar 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 calendar day or portion thereof for which each worker was paid less than the prevailing wage rate shall be paid to each worker by Contractor.

26.2.6 Any worker employed to perform Work on the Project, which Work is not covered by any classification listed in the general prevailing wage rate of per diem wages determined by the Director, shall be paid not less than the minimum rate of wages specified therein for the classification which most nearly corresponds to Work to be performed by him, and such minimum wage rate shall be retroactive to time of initial employment of such person in such classification.

26.2.7 Pursuant to Labor Code section 1773.1, per diem wages are deemed to include employer payments for health and welfare, pension, vacation, travel time,

subsistence pay, and apprenticeship or other training programs authorized by Labor Code section 3093, and similar purposes.

26.2.8 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).

26.3 Hours of Work

26.3.1 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 day's 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.

26.3.2 Contractor shall keep and shall cause each Subcontractor to keep an accurate record showing the name of and actual hours worked each calendar day and each calendar week by each worker employed by Contractor in connection with the Work or any part of the Work contemplated by this Contract. The record shall be kept open at all reasonable hours to the inspection of District and to the Division of Labor Standards Enforcement of the DIR.

26.3.3 Pursuant to Labor Code section 1813, Contractor shall as a penalty to the District forfeit the statutory amount (believed by the District to be currently twenty-five dollars (\$25)) for each worker employed in the execution of this Contract by Contractor or by any Subcontractor for each calendar day during which such worker is required or permitted to work more than eight (8) hours in any one calendar day and forty (40) hours in any one calendar week in violation of the provisions of article 3 (commencing at section 1810), chapter 1, part 7, division 2, of the Labor Code.

26.3.4 Any Work necessary to be performed after regular working hours, or on Sundays or other holidays shall be performed without additional expense to the District.

26.4 Payroll Records

26.4.1 Contractor shall upload, and shall cause each Subcontractor performing any portion of the Work under this Contract to upload, an accurate and complete certified payroll record ("CPR") electronically using DIR's eCPR System by uploading the CPRs by electronic XML file or entering each record manually using the DIR's iform (or current form) online on a weekly basis and within ten (10) days of any request by the District or Labor Commissioner at <http://www.dir.ca.gov/Public-Works/Certified-Payroll-Reporting.html> or current application and URL, showing the

name, address, social security number, work classification, straight-time, and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by the Contractor and/or each Subcontractor in connection with the Work.

26.4.1.1 The CPRs enumerated hereunder shall be filed directly with the DIR on a weekly basis or to the requesting party, whether the District or DIR, within ten (10) days after receipt of each written request. The CPRs from the Contractor and each Subcontractor for each week shall be provided on or before Wednesday of the week following the week covered by the CPRs. District may not make any payment to Contractor until:

26.4.1.1.1 Contractor and/or its Subcontractor(s) provide CPRs acceptable to the DIR; and

26.4.1.1.2 Any delay in Contractor and/or its Subcontractor(s) providing CPRs to the DIR in a timely manner may directly delay Contractor's payment.

26.4.2 All CPRs shall be available for inspection at all reasonable hours at the principal office of Contractor on the following basis:

26.4.2.1 A certified copy of an employee's CPR shall be made available for inspection or furnished to the employee or his/her authorized representative on request.

26.4.2.2 CPRs shall be made available for inspection or furnished upon request to a representative of District, Division of Labor Standards Enforcement, Division of Apprenticeship Standards, and/or the DIR.

26.4.2.3 CPRs shall be made available upon request by the public for inspection or copies thereof made; provided, however, that a request by the public shall be made through the District, Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement. If the requested CPRs have not been provided pursuant to the provisions herein, the requesting party shall, prior to being provided the records reimburse the costs of preparation by Contractor, Subcontractors, and the entity through which the request was made. The public shall not be given access to the records at the principal office of Contractor.

26.4.3 Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by District, Division of Apprenticeship Standards, or Division of Labor Standards Enforcement shall be marked or obliterated in such a manner as to prevent disclosure of an individual's name, address, and social security number. The name and address of Contractor awarded Contract or performing Contract shall not be marked or obliterated.

26.4.4 Contractor shall inform District of the location of the records enumerated hereunder, including the street address, city, and county, and shall, within five (5) working days, provide a notice of change of location and address.

26.4.5 In the event of noncompliance with the requirements of this section, Contractor shall have ten (10) days in which to comply subsequent to receipt of

written notice specifying in what respects Contractor must comply with this section. Should noncompliance still be evident after the ten (10) day period, Contractor shall, as a penalty to District, forfeit up to one hundred dollars (\$100) for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Labor Commissioner, these penalties shall be withheld from progress payments then due.

26.4.6 [RESERVED]

26.5 [RESERVED]

26.6 Apprentices

26.6.1 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.

26.6.2 Apprentices of any crafts or trades may be employed and, when required by Labor Code section 1777.5, shall be employed provided they are properly registered in full compliance with the provisions of the Labor Code.

26.6.3 Every such apprentice shall be paid the standard wage paid to apprentices under the regulations of the craft or trade at which he/she is employed, and shall be employed only at the work of the craft or trade to which she/he is registered.

26.6.4 Only apprentices, as defined in section 3077 of the Labor Code, who are in training under apprenticeship standards and written apprentice agreements under chapter 4 (commencing at section 3070), division 3, of the Labor Code, are eligible to be employed. The employment and training of each apprentice shall be in accordance with the provisions of the apprenticeship standards and apprentice agreements under which he/she is training.

26.6.5 Pursuant to Labor Code section 1777.5, if that section applies to this Contract as indicated above, Contractor and any Subcontractors employing workers in any apprenticeable craft or trade in performing any Work under this Contract shall apply to the applicable joint apprenticeship committee for a certificate approving the Contractor or Subcontractor under the applicable apprenticeship standards and fixing the ratio of apprentices to journeymen employed in performing the Work.

26.6.6 Pursuant to Labor Code section 1777.5, if that section applies to this Contract as indicated above, Contractor and any Subcontractor may be required to make contributions to the apprenticeship program.

26.6.7 If Contractor or Subcontractor willfully fails to comply with Labor Code section 1777.5, then, upon a determination of noncompliance by the Administrator of Apprenticeship, it shall:

26.6.7.1 Be denied the right to bid on any subsequent project for one (1) year from the date of such determination;

26.6.7.2 Forfeit as a penalty to District the full amount as stated in Labor Code section 1777.7. Interpretation and enforcement of these provisions shall be in accordance with the rules and procedures of the California Apprenticeship Council and under the authority of the Chief of the Division of Apprenticeship Standards.

26.6.8 Contractor and all Subcontractors shall comply with Labor Code section 1777.6, which section forbids certain discriminatory practices in the employment of apprentices.

26.6.9 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, 9th floor, San Francisco, California 94102.

26.7 Non-Discrimination

26.7.1 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.

26.7.2 Special requirements for Federally Assisted Construction Contracts: During the performance of this Contract, Contractor agrees to incorporate in all subcontracts the provisions set forth in Chapter 60-1.4(b) of Title 41 published in Volume 33 No. 104 of the Federal Register dated May 28, 1968.

26.8 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.*).

27. [RESERVED]

28. MISCELLANEOUS

28.1 Assignment of Antitrust Actions

28.1.1 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 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, which assignment shall be made and become effective at the time the awarding body tenders final payment to the Contractor, without further acknowledgment by the parties.

28.1.2 Section 4552 of the Government Code states:

In submitting a bid to a public purchasing body, the bidder offers and agrees that if the bid is accepted, it will assign to the purchasing body all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Sec. 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, materials, or services by the bidder for sale to the purchasing body pursuant to the bid. Such assignment shall be made and become effective at the time the purchasing body tenders final payment to the bidder.

28.1.3 Section 4553 of the Government Code states:

If an awarding body or public purchasing body receives, either through judgment or settlement, a monetary recovery for a cause of action assigned under this chapter, the assignor shall be entitled to receive reimbursement for actual legal costs incurred and may, upon demand, recover from the public body any portion of the recovery, including treble damages, attributable to overcharges that were paid by the assignor but were not paid by the public body as part of the bid price, less the expenses incurred in obtaining that portion of the recovery.

28.1.4 Section 4554 of the Government Code states:

Upon demand in writing by the assignor, the assignee shall, within one year from such demand, reassign the cause of action assigned under this part if the assignor has been or may have been injured by the violation of law for which the cause of action arose and (a) the assignee has not been injured thereby, or (b) the assignee declines to file a court action for the cause of action.

28.1.5 Under this Article, "public purchasing body" is District and "bidder" is Contractor.

28.2 **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.

28.3 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.

28.4 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.

28.5 Compliance with Government Reporting Requirements

If this Contract is subject to federal or other governmental reporting requirements because of federal or other governmental financing in whole or in part for the Project of which it is part, or for any other reason, Contactor shall comply with those reporting requirements at the request of the District at no additional cost.

END OF DOCUMENT

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 Resources Code section 21000 *et seq.*)

2. Modernization Projects

2.1 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 school custodian will be allowed to unlock and lock doors in existing building(s). The custodian will be available only while school 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.

2.2 Keys. Upon request, the District may, at its own discretion, provide keys 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 keys are lost or stolen, or if any unauthorized party obtains a copy of the key or access to the school.

2.3 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.

2.4 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.

2.5 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.

2.6 Work during Instructional Time. By submitting its bid, Contractor affirms that Work may be performed during ongoing instruction in existing facilities. If so, Contractor agrees to cooperate to the best of its ability to minimize any

disruption to school operations and any use of school facilities by the public up to, and including, rescheduling specific work activities, at no additional cost to District.

2.7 No Work during Student Testing. Contractor shall, at no additional cost to the District and at the District's request, coordinate its Work to not disturb District students including, without limitation, not performing any Work when students at the Site are taking State or Federally-required tests.

3. Badge Policy for Contractors

All Contractors doing work for the District will provide their workers with identification badges. These badges will be worn by all members of the Contractor's staff who are working in a District facility.

3.1 Badges must be filled out in full and contain the following information:

3.1.1 Name of Contractor

3.1.2 Name of Employee

3.1.3 Contractor's address and phone number

3.2 Badges are to be worn when the Contractor or his/her employees are on site and must be visible at all times. Contractors must inform their employees that they are required to allow District employees, the Architect, the Construction Manager, the Program Manager, or the Project Inspector to review the information on the badges upon request.

3.3 Continued failure to display identification badges as required by this policy may result in the individual being removed from the Project or assessment of fines against the Contractor.

4. Substitution for Specified Items

4.1 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.

4.1.1 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.

4.1.2 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(c); therefore, Contractor shall not be entitled to request a substitution with respect to those materials, products or services.

4.2 A request for a substitution shall be submitted as follows:

4.2.1 Contractor shall notify the District in writing of any request for a substitution at least ten (10) days prior to bid opening as indicated in the Instructions to Bidders.

4.2.2 Requests for Substitutions after award of the Contract shall be submitted within thirty-five (35) days of the date of the Notice of Award.

4.3 Within 35 days after the date of the Notice of Award, Contractor shall provide data substantiating a request for substitution of "an equal" item, including but not limited to the following:

4.3.1 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;

4.3.2 Available maintenance, repair or replacement services;

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

4.3.4 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

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

4.4 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:

4.4.1 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;

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

4.4.3 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;

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

4.4.5 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.

4.5 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.

4.6 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.

4.7 Contractor shall be responsible for any costs the District incurs for professional services, DSA fees, or delay to the Project Schedule, if applicable, while DSA reviews changes for the convenience of Contractor and/or to accommodate Contractor's means and methods. District may deduct those costs from any amounts owing to the Contractor for the review of the request for substitution, even if the request for substitution is not approved. District, at its sole discretion, shall deduct from the payments due to and/or invoice Contractor for all the professional services and/or DSA fees or delay to the Project Schedule, if applicable, while DSA reviews changes for the convenience of Contractor and/or to accommodate Contractor's means and methods arising herein.

5. Insurance Policy Limits

All of Contractor's insurance shall be with insurance companies with an A.M. Best rating of no less than **AAA**. The limits of insurance shall not be less than:

Commercial General Liability	Product Liability and Completed Operations, Fire Damage Liability – Split Limit	[E.G.] Low Risk: \$1,000,000 per occurrence; \$2,000,000 aggregate
		Intermediate Risk: \$2,000,000 per occurrence; \$4,000,000 aggregate
		High Risk: \$5,000,000 per occurrence; \$10,000,000 aggregate]
Automobile Liability – Any Auto	Combined Single Limit	[E.G.] Personal vehicles: \$500,000 Commercial vehicles: \$1,000,000

		Personal vehicles: \$100,000 per person/ \$300,000 per accident]
Workers' Compensation		Statutory limits pursuant to State law
Employers' Liability		[E.G. \$0]
Builder's Risk (Course of Construction)		Issued for the value and scope of Work indicated herein.
Pollution Liability		[E.G. \$0]

6. Permits, Certificates, Licenses, Fees, Approvals

6.1 Payment for Permits, Certificates, Licenses, Fees, and Approvals. As required in the General Conditions, the Contractor shall secure and pay for all permits, licenses, approvals, and certificates necessary for the prosecution of the Work with the exception of the following:

6.1.1 Payment for Permits, Certificates, Licenses, Fees, Approvals

With respect to the above-listed items, Contractor shall be responsible for securing such items; however, District will be responsible for payment of these charges or fees. Contractor shall notify the District of the amount due with respect to such items and to whom the amount is payable. Contractor shall provide the District with an invoice and receipt with respect to such charges or fees.

6.2 General Permit For Storm Water Discharges Associated With Construction and Land Disturbance Activities

6.2.1 Contractor acknowledges that all California school districts are obligated to develop and implement the following requirements for the discharge of storm water to surface waters from its construction and land disturbance activities (storm water requirements), without limitation:

6.2.1.1 Municipal Separate Storm Sewer System (MS4) is a system of conveyances used to collect and/or convey storm water, including, without limitation, catch basins, curbs, gutters, ditches, man-made channels, and storm drains.

6.2.1.2 Storm Water Pollution Prevention Plan ("SWPPP") contains specific best management practices ("BMPs") and establishes numeric effluent limitations at:

6.2.1.2.1 Sites where the District engages in maintenance (e.g., fueling, cleaning, repairing) for transportation activities.

6.2.1.2.2 Construction sites where:

6.2.1.2.2.1 One (1) or more acres of soil will be disturbed, or

6.2.1.2.2.2 The project is part of a larger common plan of development that disturbs more than one (1) acre of soil.

6.2.2 Contractor shall comply with any District storm water requirements that are approved by the District and applicable to the Project, at no additional cost to the District.

6.2.3 At no additional cost to the District, Contractor shall provide a Qualified Storm Water Practitioner who shall be onsite and implement and monitor any and all SWPPP requirements applicable to the Project, including but not limited to:

6.2.3.1 At least forty eight (48) hours prior to a forecasted rain event, implementing the Rain Event Action Plan (REAP) for any rain event requiring implementation of the REAP, including any erosion and sediment control measures needed to protect all exposed portions of the site; and

6.2.3.2 Monitoring any Numeric Action Levels (NALs), if applicable.

7. Project Stabilization Agreement/Payroll Records

The District has entered into a Project Stabilization Agreement ("PSA"), which covers this Project. Accordingly, the following provision is added as Section 26.4.6:

26.4.6 As Contractor and its subcontractors have agreed to be bound by the terms of the PSA entered into by the District on 04/26/2006, Contractor and its subcontractors may be excused from uploading CPRs electronically using DIR's eCPR System by uploading the CPRs by electronic XML file or entering each record manually using the DIR's iform (or current form) online at <http://www.dir.ca.gov/Public-Works/Certified-Payroll-Reporting.html> , or by using a more current application and URL. However, within ten (10) days of any request by the District or Labor Commissioner, Contractor and its subcontractors shall provide CPRs showing the name, address, social security number, work classification, straight time, and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by the Contractor and/or each subcontractor in connection with the Work.

8. As-Builts and Record Drawings

8.1 When called for by Division 1, Contractor shall submit As-Built Drawings pursuant to the Contract Documents consisting of one set of computer-aided design and drafting ("CADD") files in the following format **PDF**, plus one set of As-Built Drawings on bond copy paper.

8.2 Contractor shall submit Record Drawings pursuant to the Contract Documents consisting of one set of computer-aided design and drafting ("CADD")

files in the following format **PDF** plus one set of Record Drawings on bond copy paper.

9. Fingerprinting

Contractor shall comply with the provisions of Education Code section 45125.2 regarding the submission of employee fingerprints to the California Department of Justice and the completion of criminal background investigations of its employees, its subcontractor(s), and its subcontractors' employees. Contractor shall not permit any employee to have any contact with District pupils until such time as Contractor has verified in writing to the governing board of the District, that such employee has not been convicted of a violent or serious felony, as defined in Education Code section 45122.1. Contractor shall fully complete and perform all tasks required pursuant to the Criminal Background Investigation/ Fingerprinting Certification.

10. Disabled Veteran Business Enterprises

This Project uses or may plan to use funds allocated pursuant to the State of California School Facility Program ("Program") for the construction and/or modernization of school buildings. Therefore, Section 17076.11 of the Education Code requires the District to have a participation goal for disabled veteran business enterprises ("DVBE") of at least three percent (3%), per year, of the overall dollar amount expended each year by the District on projects that receive state funding and the Contractor must submit the Disabled Veteran Business Enterprise Participation Certification to the District with its executed Agreement, identifying the steps Contractor took to solicit DVBE participation in conjunction with this Contract.

END OF DOCUMENT

HAZARDOUS MATERIALS
PROCEDURES & REQUIREMENTS

1. Summary

This document includes information applicable to hazardous materials and hazardous waste abatement.

2. Notice of Hazardous Waste or Materials

- a. Contractor shall give notice in writing to the District, the Construction Manager, and the Architect promptly, before any of the following materials are disturbed, and in no event later than twenty-four (24) hours after first observance, of any:
 - (1) Material that Contractor believes may be a material that is hazardous waste or hazardous material, as defined in section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law;
 - (2) Other material that may present a substantial danger to persons or property exposed thereto in connection with Work at the site.
- b. Contractor's written notice shall indicate whether the hazardous waste or material was shown or indicated in the Contract Documents to be within the scope of Work, and whether the materials were brought to the site by Contractor, its Subcontractors, suppliers, or anyone else for whom Contractor is responsible. As used in this section the term "hazardous materials" shall include, without limitation, asbestos, lead, Polychlorinated biphenyl (PCB), petroleum and related hydrocarbons, and radioactive material.
- c. In response to Contractor's written notice, the District shall investigate the identified conditions.
- d. If the District determines that conditions do not involve hazardous materials or that no change in terms of Contract is justified, the District shall so notify Contractor in writing, stating reasons. If the District and Contractor cannot agree on whether conditions justify an adjustment in Contract Price or Contract Time, or on the extent of any adjustment, Contractor shall proceed with the Work as directed by the District.
- e. If after receipt of notice from the District, Contractor does not agree to resume Work based on a reasonable belief it is unsafe, or does not agree to resume Work under special conditions, then District may order such portion of Work that is in connection with such hazardous condition or such affected area to be deleted from the Work, or performed by others, or District may invoke its rights to terminate the Contract in whole or in part. District will determine entitlement to or the amount or extent of an adjustment, if any, in

Contract Price or Contract Time as a result of deleting such portion of Work, or performing the Work by others.

- f. If Contractor stops Work in connection with any hazardous condition and in any area affected thereby, Contractor shall immediately redeploy its workers, equipment, and materials, as necessary, to other portions of the Work to minimize delay and disruption.

3. Additional Warranties and Representations

- a. Contractor represents and warrants that it, its employees, and its subcontractors and their employees, shall at all times have the required levels of familiarity with the Site and the Work, training, and ability to comply fully with all applicable laws and contractual requirements for safe and expeditious performance of the Work, including whatever training is or may be required regarding the activities to be performed (including, but not limited to, all training required to address adequately the actual or potential dangers of Contract performance).
- b. Contractor represents and warrants that it, its employees, and its subcontractors and their employees, shall at all times have and maintain in good standing any and all certifications and licenses required by applicable federal, state, and other governmental and quasi-governmental requirements applicable to the Work.
- c. Contractor represents and warrants that it has studied carefully all requirements of the Specifications regarding procedures for demolition, hazardous waste abatement, or safety practices, specified in the Contract, and prior to submitting its bid, has either (a) verified to its satisfaction that the specified procedures are adequate and sufficient to achieve the results intended by the Contract Documents, or (b) by way of approved "or equal" request or request for clarification and written Addenda, secured changes to the specified procedures sufficient to achieve the results intended by the Contract Documents. Contractor accepts the risk that any specified procedure will result in a completed Project in full compliance with the Contract Documents.

4. Monitoring and Testing

- a. District reserves the right, in its sole discretion, to conduct air monitoring, earth monitoring, Work monitoring, and any other tests (in addition to testing required under the agreement or applicable law), to monitor Contract requirements of safe and statutorily compliant work methods and (where applicable) safe re-entry level air standards under state and federal law upon completion of the job, and compliance of the work with periodic and final inspection by public and quasi-public entities having jurisdiction.
- b. Contractor acknowledges that District has the right to perform, or cause to be performed, various activities and tests including, but not limited to, pre-abatement, during abatement, and post-abatement air monitoring, that District shall have no obligation to perform said activities and tests, and that

a portion of said activities and tests may take place prior to the completion of the Work by Contractor. In the event District elects to perform these activities and tests, Contractor shall afford District ample access to the Site and all areas of the Work as may be necessary for the performance of these activities and tests. Contractor will include the potential impact of these activities or tests by District in the Contract Price and the Scheduled Completion Date.

- c. Notwithstanding District's rights granted by this paragraph, Contractor may retain its own industrial hygiene consultant at Contractor's own expense and may collect samples and may perform tests including, but not limited to, pre-abatement, during abatement, and post-abatement personal air monitoring, and District reserves the right to request documentation of all such activities and tests performed by Contractor relating to the Work and Contractor shall immediately provide that documentation upon request.

5. Compliance with Laws

- a. Contractor shall perform safe, expeditious, and orderly work in accordance with the best practices and the highest standards in the hazardous waste abatement, removal, and disposal industry, the applicable law, and the Contract Documents, including, but not limited to, all responsibilities relating to the preparation and return of waste shipment records, all requirements of the law, delivering of all requisite notices, and obtaining all necessary governmental and quasi-governmental approvals.
- b. Contractor represents that it is familiar with and shall comply with all laws applicable to the Work or completed Work including, but not limited to, all federal, state, and local laws, statutes, standards, rules, regulations, and ordinances applicable to the Work relating to:
 - (1) The protection of the public health, welfare and environment;
 - (2) Storage, handling, or use of asbestos, PCB, lead, petroleum based products, radioactive material, or other hazardous materials;
 - (3) The generation, processing, treatment, storage, transport, disposal, destruction, or other management of asbestos, PCB, lead, petroleum, radioactive material, or hazardous waste materials or other waste materials of any kind; and
 - (4) The protection of environmentally sensitive areas such as wetlands and coastal areas.

6. Disposal

- a. Contractor has the sole responsibility for determining current waste storage, handling, transportation, and disposal regulations for the job Site and for each waste disposal facility. Contractor must comply fully at its sole cost and expense with these regulations and any applicable law. District may, but is

not obligated to, require submittals with this information for it to review consistent with the Contract Documents.

- b. Contractor shall develop and implement a system acceptable to District to track hazardous waste from the Site to disposal, including appropriate "Hazardous Waste Manifests" on the EPA form, so that District may track the volume of waste it put in each landfill and receive from each landfill a certificate of receipt.
- c. Contractor shall provide District with the name and address of each waste disposal facility prior to any disposal, and District shall have the express right to reject any proposed disposal facility. Contractor shall not use any disposal facility to which District has objected. Contractor shall document actual disposal or destruction of waste at a designated facility by completing a disposal certificate or certificate of destruction forwarding the original to the District.

7. Permits

- a. Before performing any of the Work, and at such other times as may be required by applicable law, Contractor shall deliver all requisite notices and obtain the approval of all governmental and quasi-governmental authorities having jurisdiction over the Work. Contractor shall submit evidence satisfactory to District that it and any disposal facility:
 - (1) have obtained all required permits, approvals, and the like in a timely manner both prior to commencement of the Work and thereafter as and when required by applicable law; and
 - (2) are in compliance with all such permits, approvals and the regulations.

For example, before commencing any work in connection with the Work involving asbestos-containing materials, or PCBs, or other hazardous materials subject to regulation, Contractor agrees to provide the required notice of intent to renovate or demolish to the appropriate state or federal agency having jurisdiction, by certified mail, return receipt requested, or by some other method of transmittal for which a return receipt is obtained, and to send a copy of that notice to District. Contractor shall not conduct any Work involving asbestos-containing materials or PCBs unless Contractor has first confirmed that the appropriate agency having jurisdiction is in receipt of the required notification. All permits, licenses, and bonds that are required by governmental or quasi-governmental authorities, and all fees, deposits, tap fees, offsite easements, and asbestos and PCB disposal facilities expenses necessary for the prosecution of the Work, shall be procured and paid for by Contractor. Contractor shall give all notices and comply with the all applicable laws bearing on the conduct of the Work as drawn and specified. If Contractor observes or reasonably should have observed that Plans and Specifications and other Contract Documents are at variance therewith, it shall be responsible for promptly notifying District in writing of such fact. If

Contractor performs any Work contrary to applicable laws, it shall bear all costs arising therefrom.

- b. In the case of any permits or notices held in District's name or of necessity to be made in District's name, District shall cooperate with Contractor in securing the permit or giving the notice, but the Contractor shall prepare for District review and execution upon approval, all necessary applications, notices, and other materials.

8. Indemnification

To the fullest extent permitted by law, the indemnities and limitations of liability expressed throughout the Contract Documents apply with equal force and effect to any claims or liabilities imposed or existing by virtue of the removal, abatement, and disposal of hazardous waste. This includes, but is not limited to, liabilities connected to the selection and use of a waste disposal facility, a waste transporter, personal injury, property damage, loss of use of property, damage to the environment or natural resources, or "disposal" and "release" of materials associated with the Work (as defined in 42 U.S.C. § 9601 *et seq.*).

9. Termination

District shall have an absolute right to terminate for default immediately without notice and without an opportunity to cure should Contractor knowingly or recklessly commit a material breach of the terms of the Contract Documents, or any applicable law, on any matter involving the exposure of persons or property to hazardous waste. However, if the breach of contract exposing persons or property to hazardous waste is due solely to an ordinary, unintentional, and non-reckless failure to exercise reasonable care, then the procedures for termination for cause shall apply without modification.

END OF DOCUMENT

SUMMARY OF WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Site Access Conditions and Requirements;
- B. Special Conditions.

1.02 SUMMARY OF WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of this Contract consists of the following:

Selective demolition and construction necessary for the plumbing, mechanical and/or electrical work as indicated in the Drawings and Specifications in order to replace the existing HVAC Equipment and to furnish & install new ductwork in the permanent classrooms. Project work also includes replacement of existing Fire Alarm System, along with installation of a CO Detection System.

1.03 CONTRACTS

- A. Perform the Work under a single, fixed-price Contract.

1.04 WORK BY OTHERS

- A. Work on the Project that will be performed as a part of the Work of this Contract:
 - (1) Asbestos removal/abatement.
 - (2) Lead paint removal/abatement

1.05 CODES, REGULATIONS, AND STANDARDS

- A. The codes, regulations, and standards adopted by the state and federal agencies having jurisdiction shall govern minimum requirements for this Project. Where codes, regulations, and standards conflict with the Contract Documents, these conflicts shall be brought to the immediate attention of the District and the Architect.
- B. Codes, regulations, and standards shall be as published effective as of date of bid opening, unless otherwise specified or indicated.

1.06 PROJECT RECORD DOCUMENTS

- A. Contractor shall maintain on Site one set of the following record documents; Contractor shall record actual revisions to the Work:
 - (1) Contract Drawings.
 - (2) Specifications.
 - (3) Addenda.
 - (4) Change Orders and other modifications to the Contract.
 - (5) Reviewed shop drawings, product data, and samples.
 - (6) Field test records.
 - (7) Inspection certificates.
 - (8) Manufacturer's certificates.
- B. Contractor shall store Record Documents separate from documents used for construction. Provide files, racks, and secure storage for Record Documents and samples.
- C. Contractor shall record information concurrent with construction progress.
- D. Specifications: Contractor shall legibly mark and record at each product section of the Specifications the description of the actual product(s) installed, including the following:
 - (1) Manufacturer's name and product model and number.
 - (2) Product substitutions or alternates utilized.
 - (3) Changes made by Addenda and Change Orders and written directives.

1.07 EXAMINATION OF EXISTING CONDITIONS

- A. Contractor shall be held to have examined the Project Site and acquainted itself with the conditions of the Site and of the streets or roads approaching the Site.
- B. Prior to commencement of Work, Contractor shall survey the Site and existing buildings and improvements to observe existing damage and defects such as cracks, sags, broken, missing or damaged glazing, other building elements and Site improvements, and other damage.
- C. Should Contractor observe cracks, sags, and other damage to and defects of the Site and adjacent buildings, paving, and other items not indicated in the Contract Documents, Contractor shall immediately report same to the District and the Architect.

1.08 CONTRACTOR'S USE OF PREMISES

- A. If unoccupied and only with District's prior written approval, Contractor may use the building(s) at the Project Site without limitation for its operations, storage, and office facilities for the performance of the Work. If the District chooses to beneficially occupy any building(s), Contractor must obtain the District's written approval for Contractor's use of spaces and types of operations to be performed within the building(s) while so occupied. Contractor's access to the building(s) shall be limited to the areas indicated.
- B. If the space at the Project Site is not sufficient for Contractor's operations, storage, office facilities and/or parking, Contractor shall arrange and pay for any additional facilities needed by Contractor.
- C. Contractor shall not interfere with use of or access to occupied portions of the building(s) or adjacent property.
- D. Contractor shall maintain corridors, stairs, halls, and other exit-ways of building clear and free of debris and obstructions at all times.
- E. No one other than those directly involved in the demolition and construction, or specifically designated by the District or the Architect shall be permitted in the areas of work during demolition and construction activities.
- F. The Contractor shall install the construction fence and maintain that it will be locked when not in use. Keys to this fencing will be provided to the District.

1.09 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

- A. The Drawings show above-grade and below-grade structures, utility lines, and other installations that are known or believed to exist in the area of the Work. Contractor shall locate these existing installations before proceeding with excavation and other operations that could damage same; maintain them in service, where appropriate; and repair damage to them caused by the performance of the Work. Should damage occur to these existing installations, the costs of repair shall be at the Contractor's expense and made to the District's satisfaction.
- B. Contractor shall be alert to the possibility of the existence of additional structures and utilities. If Contractor encounters additional structures and utilities, Contractor will immediately report to the District for disposition of same as indicated in the General Conditions.

1.10 UTILITY SHUTDOWNS AND INTERRUPTIONS

- A. Contractor shall give the District a minimum of three (3) days written notice in advance of any need to shut off existing utility services or to effect equipment interruptions. The District will set exact time and duration for shutdown, and will assist Contractor with shutdown. Work required to re-establish utility services shall be performed by the Contractor.

- B. Contractor shall obtain District's written approval as indicated in the General Conditions in advance of deliveries of material or equipment or other activities that may conflict with District's use of the building(s) or adjacent facilities.

1.11 STRUCTURAL INTEGRITY

- A. Contractor shall be responsible for and supervise each operation and work that could affect structural integrity of various building elements, both permanent and temporary.
- B. Contractor shall include structural connections and fastenings as indicated or required for complete performance of the Work.

PART 2 – PRODUCTS Not Used.

PART 3 – EXECUTION Not Used.

END OF DOCUMENT

ALTERNATES AND UNIT PRICING

PART 1 – ALTERNATES

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions;
- B. Special Conditions;
- C. Bid Form and Proposal;
- D. Instruction to Bidders.

1.02 DESCRIPTION

The items of work indicated below propose modifications to, substitutions for, additions to and/or deletions from the various parts of the Work specified in other Sections of the Specifications. The acceptance or rejection of any of the alternates is strictly at the option of the District subject to District's acceptance of Contractor's stated prices contained in this Proposal.

1.03 GENERAL

Where an item is omitted, or scope of Work is decreased, all Work pertaining to the item whether specifically stated or not, shall be omitted and where an item is added or modified or where scope of Work is increased, all Work pertaining to that required to render same ready for use on the Project in accordance with intention of Drawings and Specifications shall be included in an agreed upon price amount.

1.04 BASE BID

The Base Bid includes all work required to construct the Project completely and in accordance with the Contract Documents.

1.05 ALTERNATES

NOT USED

PART 2 – UNIT PRICING

2.01 GENERAL

Contractor shall completely state all required figures based on Unit Prices listed below. Where scope of Work is decreased, all Work pertaining to the item, whether specifically stated or not, shall be omitted and where scope of Work is increased, all

work pertaining to that item required to render same ready for use on the Project in accordance with intention of Drawings and Specifications shall be included in an agreed upon price amount.

2.02 UNIT PRICES

Furnish unit prices for each of the named items on a square foot, lineal foot, or per each basis, as applies. Unit prices shall include all labor, materials, services, profit, overhead, insurance, bonds, taxes, and all other incidental costs of Contractor, subcontractors, and supplier(s).

1. Removal of existing roof mounted exhaust fan with asbestos containing (AC) mastics / sealants.
2. Removal of AC expansion joint cloth at mechanical equipment.
3. Removal of 12"x12" non-asbestos containing (NAC) acoustic ceiling tile, NAC ceiling tile mastic, NAC gypsum board, NAC joint compound, AC spray-on acoustic ceiling plaster, NAC gypsum board lath and AC spray-on acoustic overspray and debris. Work includes the application of a bridging encapsulant at newly cut edges of AC spray-on acoustic ceiling plaster and NAC gypsum board lath underlayment. All work shall be performed within a negative pressure enclosure (NPE).
4. Drill, core, anchor, attach and / or affix to 12"x12" NAC acoustic ceiling tile, NAC ceiling tile mastic, NAC gypsum board, NAC joint compound, AC spray-on acoustic ceiling plaster and NAC gypsum board lath. All incidental hazardous materials related work (i.e. drilling, coring, anchoring, attaching, affixing) to the above ceiling finish system shall be performed by using tools and equipment equipped with a shroud and attached to a functioning DOP tested HEPA vacuum during all related operations.

END OF DOCUMENT

DOCUMENT 01 25 13
PRODUCT OPTIONS AND SUBSTITUTIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. Instructions to Bidders;
- B. General Conditions, including, without limitation, Substitutions For Specified Items; and
- C. Special Conditions.

1.02 SUBSTITUTIONS OF MATERIALS AND EQUIPMENT

- A. Catalog numbers and specific brands or trade names followed by the designation "or equal" are used in conjunction with material and equipment required by the Specifications to establish the standards of quality, utility, and appearance required. Substitutions which are equal in quality, utility, and appearance to those specified may be reviewed subject to the provisions of the General Conditions.
- B. Wherever more than one manufacturer's product is specified, the first-named product is the basis for the design used in the work and the use of alternative-named manufacturers' products or substitutes may require modifications in that design. If such alternatives are proposed by Contractor and are approved by the District and/or the Architect, Contractor shall assume all costs required to make necessary revisions and modifications of the design resulting from the substitutions requested by the Contractor.
- C. When materials and equipment are specified by first manufacturer's name and product number, second manufacturer's name and "or approved equal," supporting data for the second product, if proposed by Contractor, shall be submitted in accordance with the requirements for substitutions. The District's Board has found and determined that certain item(s) shall be used on this Project based on the purpose(s) indicated pursuant to Public Contract Code section 3400(c). These findings, as well as the products and brand or trade names, have been identified in the Notice to Bidders.
- D. The Contractor will not be allowed to substitute specified items unless the request for substitution is submitted as follows:
 - (1) District must receive any notice of request for substitution of a specified item a minimum of ten (10) calendar days prior to bid opening.

- (2) Within 35 days after the date of the Notice of Award, the Contractor shall submit data substantiating the request(s) for all substitution(s) containing sufficient information to assess acceptability of product or system and impact on Project, including, without limitation, the requirements specified in the Special Conditions and the technical Specifications. Insufficient information shall be grounds for rejection of substitution.
- E. If the District and/or Architect, in reviewing proposed substitute materials and equipment, require revisions or corrections to be made to previously accepted Shop Drawings and supplemental supporting data to be resubmitted, Contractor shall promptly do so. If any proposed substitution is judged by the District and/or Architect to be unacceptable, the specified material or equipment shall be provided.
- F. Samples may be required. Tests required by the District and/or Architect for the determination of quality and utility shall be made at the expense of Contractor, with acceptance of the test procedure first given by the District.
- G. In reviewing the supporting data submitted for substitutions, the District and/or Architect will use for purposes of comparison all the characteristics of the specified material or equipment as they appear in the manufacturer's published data even though all the characteristics may not have been particularly mentioned in the Contract Documents. If more than two (2) submissions of supporting data are required, the cost of reviewing the additional supporting data shall be borne by Contractor, and the District will deduct the costs from the Contract Price. The Contractor shall be responsible for any re-design costs occasioned by District's acceptance and/or approval of any substitute.
- H. 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. 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.
- I. 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.

PART 2 – PRODUCTS Not Used.

PART 3 – EXECUTION Not Used.

END OF DOCUMENT

DOCUMENT 01 26 00

CHANGES IN THE WORK

CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE PROVISIONS IN THE AGREEMENT, GENERAL CONDITIONS, AND SPECIAL CONDITIONS, IF USED, RELATED TO CHANGES AND/OR REQUESTS FOR CHANGES.

END OF DOCUMENT

DOCUMENT 01 29 00

**APPLICATION FOR PAYMENT AND
CONDITIONAL AND UNCONDITIONAL WAIVER AND RELEASE FORMS**

**CONTRACTOR SHALL COMPLY WITH ALL PROVISIONS IN THE GENERAL
CONDITIONS RELATED TO APPLICATIONS FOR PAYMENT AND/OR PAYMENTS.**

PITTSBURG UNIFIED SCHOOL DISTRICT
Highlands Elementary School
HVAC Equipment Replacement
McCracken & Woodman, Inc.

**APPLICATION FOR PAYMENT AND
CONDITIONAL AND UNCONDITIONAL
WAIVER AND RELEASE FORMS**

DOCUMENT 01 29 00-1

**CONDITIONAL WAIVER AND RELEASE
ON PROGRESS PAYMENT
(CIVIL CODE SECTION 8132)**

NOTICE: THIS DOCUMENT WAIVES THE CLAIMANT'S LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS EFFECTIVE ON RECEIPT OF PAYMENT. A PERSON SHOULD NOT RELY ON THIS DOCUMENT UNLESS SATISFIED THAT THE CLAIMANT HAS RECEIVED PAYMENT.

Name of Claimant: _____

Name of Customer: _____

Job Location: _____

Owner: _____

Through Date: _____

Conditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job through the Through Date of this document. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. This document is effective only on the claimant's receipt of payment from the financial institution on which the following check is drawn:

Maker of Check: _____

Amount of Check: \$_____

Check Payable to: _____

Exceptions

This document does not affect any of the following:

- (1) Retentions.
- (2) Extras for which the claimant has not received payment.
- (3) The following progress payments for which the claimant has previously given a conditional waiver and release but has not received payment:

Date(s) of waiver and release: _____

PITTSBURG UNIFIED SCHOOL DISTRICT
Highlands Elementary School
HVAC Equipment Replacement
McCracken & Woodman, Inc.

**APPLICATION FOR PAYMENT AND
CONDITIONAL AND UNCONDITIONAL
WAIVER AND RELEASE FORMS**

Amount(s) of unpaid progress payment(s): \$_____

- (4) Contract rights, including (A) a right based on rescission, abandonment, or breach of contract, and (B) the right to recover compensation for work not compensated by the payment.

Claimant's Signature: _____

Claimant's Title: _____

Date of Signature: _____

**UNCONDITIONAL WAIVER AND RELEASE
ON PROGRESS PAYMENT
(CIVIL CODE SECTION 8134)**

NOTICE TO CLAIMANT: THIS DOCUMENT WAIVES AND RELEASES LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND 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 WAIVER AND RELEASE FORM.

Name of Claimant: _____

Name of Customer: _____

Job Location: _____

Owner: _____

Through Date: _____

Unconditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job through the Through Date of this document. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. The claimant has received the following progress payment: \$_____

Exceptions

This document does not affect any of the following:

- (1) Retentions.
- (2) Extras for which the claimant has not received payment.
- (3) Contract rights, including (A) a right based on rescission, abandonment, or breach of contract, and (B) the right to recover compensation for work not compensated by the payment.

Claimant's Signature: _____

Claimant's Title: _____

Date of Signature: _____

PITTSBURG UNIFIED SCHOOL DISTRICT
Highlands Elementary School
HVAC Equipment Replacement
McCracken & Woodman, Inc.

**APPLICATION FOR PAYMENT AND
CONDITIONAL AND UNCONDITIONAL
WAIVER AND RELEASE FORMS**

**CONDITIONAL WAIVER AND RELEASE
ON FINAL PAYMENT
(CIVIL CODE SECTION 8136)**

NOTICE: THIS DOCUMENT WAIVES THE CLAIMANT'S LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS EFFECTIVE ON RECEIPT OF PAYMENT. A PERSON SHOULD NOT RELY ON THIS DOCUMENT UNLESS SATISFIED THAT THE CLAIMANT HAS RECEIVED PAYMENT.

Name of Claimant: _____

Name of Customer: _____

Job Location: _____

Owner: _____

Conditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. This document is effective only on the claimant's receipt of payment from the financial institution on which the following check is drawn:

Maker of Check: _____

Amount of Check: \$ _____

Check Payable to: _____

Exceptions

This document does not affect any of the following: _____

Disputed claims for extras in the amount of: \$ _____

Claimant's Signature: _____

Claimant's Title: _____

Date of Signature: _____

PITTSBURG UNIFIED SCHOOL DISTRICT
Highlands Elementary School
HVAC Equipment Replacement
McCracken & Woodman, Inc.

**APPLICATION FOR PAYMENT AND
CONDITIONAL AND UNCONDITIONAL
WAIVER AND RELEASE FORMS**

**UNCONDITIONAL WAIVER AND RELEASE
ON FINAL PAYMENT
(CIVIL CODE SECTION 8138)**

NOTICE TO CLAIMANT: THIS DOCUMENT WAIVES AND RELEASES LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND 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 WAIVER AND RELEASE FORM.

Name of Claimant: _____

Name of Customer: _____

Job Location: _____

Owner: _____

Unconditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for all labor and service provided, and equipment and material delivered, to the customer on this job. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. The claimant has been paid in full.

Exceptions

This document does not affect any of the following: _____

Disputed claims for extras in the amount of: \$_____

Claimant's Signature: _____

Claimant's Title: _____

Date of Signature:

PROJECT MEETINGS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions; and
- B. Special Conditions.

1.02 PROGRESS MEETINGS:

- A. Contractor shall schedule and hold regular weekly progress meetings after a minimum of one week's prior written notice of the meeting date and time to all Invitees as indicated below.
- B. Location: Contractor's field office.
- C. The Contractor shall notify and invite the following entities ("Invitees"):
 - (1) District Representative.
 - (2) Contractor.
 - (3) Contractor's Project Manager.
 - (4) Contractor's Superintendent.
 - (5) Subcontractors, as appropriate to the agenda of the meeting.
 - (6) Suppliers, as appropriate to the agenda of the meeting.
 - (7) Construction Manager, if any.
 - (8) Architect
 - (9) Engineer(s), if any and as appropriate to the agenda of the meeting.
 - (10) Others, as appropriate to the agenda of the meeting.
- D. The District's and/or the Architect's Consultants will attend at their discretion, in response to the agenda.
- E. The District representative, the Construction Manager, and/or another District Agent shall take and distribute meeting notes to attendees and other concerned parties. If exceptions are taken to anything in the meeting notes,

those exceptions shall be stated in writing to the District within five (5) working days following District's distribution of the meeting notes.

1.03 PRE-INSTALLATION/PERFORMANCE MEETING:

- A. Contractor shall schedule a meeting prior to the start of each of the following portions of the Work: cutting and patching of plaster and roofing, and other weather-exposed and moisture-resistant products. Contractor shall invite all Invitees to this meeting, and others whose work may affect or be affected by the quality of the cutting and patching work.
- B. Contractor shall review in detail prior to this meeting, the manufacturer's requirements and specifications, applicable portions of the Contract Documents, Shop Drawings, and other submittals, and other related work. At this meeting, invitees shall review and resolve conflicts, incompatibilities, or inadequacies discovered or anticipated.
- C. Contractor shall review in detail Project conditions, schedule, requirements for performance, application, installation, and quality of completed Work, and protection of adjacent Work and property.
- D. Contractor shall review in detail means of protecting the completed Work during the remainder of the construction period.

PART 2 - PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

SCHEDULING OF WORK

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions;
- B. Special Conditions;
- C. Summary of Work; and
- D. Submittals.

1.02 SECTION INCLUDES

- A. Scheduling of Work under this Contract shall be performed by Contractor in accordance with requirements of this Section.
 - (1) Development of schedule, cost and resource loading of the schedule, monthly payment requests, and project status reporting requirements of the Contract shall employ computerized Critical Path Method ("CPM") scheduling ("CPM Schedule").
 - (2) CPM Schedule shall be cost loaded based on Schedule of Values as approved by District.
 - (3) Submit schedules and reports as specified in the General Conditions.
- B. Upon Award of Contract, Contractor shall immediately commence development of Initial and Original CPM Schedules to ensure compliance with CPM Schedule submittal requirements.

1.03 CONSTRUCTION SCHEDULE

- A. Within ten (10) days of being awarded the Contract and before request for first progress payment, the Contractor shall prepare and submit to the Project Manager a construction progress schedule conforming to the Milestone Schedule below.
- B. The Construction Schedule shall be continuously updated, and an updated schedule shall be submitted with each application for progress payment. Each revised schedule shall indicate the work actually accomplished during the previous period and the schedule for completion of the remaining work.

C. Milestone Schedule:

ACTIVITY DESCRIPTION

REQUIRED COMPLETION

**ON-SITE CONSTRUCTION STARTS
ON-SITE CONSTRUCTION COMPLETION
FINAL PROJECT COMPLETION**

**June 10, 2019
August 02, 2019
September 06, 2019**

1.04 QUALIFICATIONS

- A. Contractor shall employ experienced scheduling personnel qualified to use the latest version of [i.e., Primavera Project Planner]. Experience level required is set forth below. Contractor may employ such personnel directly or may employ a consultant for this purpose.
- (1) The written statement shall identify the individual who will perform CPM scheduling.
 - (2) Capability and experience shall be verified by description of construction projects on which individual has successfully applied computerized CPM.
 - (3) Required level of experience shall include at least two (2) projects of similar nature and scope with value not less than three fourths ($\frac{3}{4}$) of the Total Bid Price of this Project. The written statement shall provide contact persons for referenced projects with current telephone and address information.
- B. District reserves the right to approve or reject Contractor's scheduler or consultant at any time. District reserves the right to refuse replacing of Contractor's scheduler or consultant, if District believes replacement will negatively affect the scheduling of Work under this Contract.

1.06 GENERAL

- A. Progress Schedule shall be based on and incorporate milestone and completion dates specified in Contract Documents.
- B. Overall time of completion and time of completion for each milestone shown on Progress Schedule shall adhere to times in the Contract, unless an earlier (advanced) time of completion is requested by Contractor and agreed to by District. Any such agreement shall be formalized by a Change Order.
- (1) District is not required to accept an early completion schedule, i.e., one that shows an earlier completion date than the Contract Time.
 - (2) Contractor shall not be entitled to extra compensation in event agreement is reached on an earlier completion schedule and Contractor completes its Work, for whatever reason, beyond completion date shown in its early completion schedule but within the Contract Time.

- (3) A schedule showing the work completed in less than the Contract Time, and that has been accepted by District, shall be considered to have Project Float. The Project Float is the time between the scheduled completion of the work and the Completion Date. Project Float is a resource available to both District and the Contractor.
- C. Ownership Project Float: Neither the District nor Contractor owns Project Float. The Project owns the Project Float. As such, liability for delay of the Completion Date rests with the party whose actions, last in time, actually cause delay to the Completion Date.
- (1) For example, if Party A uses some, but not all of the Project Float and Party B later uses remainder of the Project Float as well as additional time beyond the Project Float, Party B shall be liable for the time that represents a delay to the Completion Date.
 - (2) Party A would not be responsible for the time since it did not consume the entire Project Float and additional Project Float remained; therefore, the Completion Date was unaffected by Party A.
- D. Progress Schedule shall be the basis for evaluating job progress, payment requests, and time extension requests. Responsibility for developing Contract CPM Schedule and monitoring actual progress as compared to Progress Schedule rests with Contractor.
- E. Failure of Progress Schedule to include any element of the Work, or any inaccuracy in Progress Schedule, will not relieve Contractor from responsibility for accomplishing the Work in accordance with the Contract. District's acceptance of schedule shall be for its use in monitoring and evaluating job progress, payment requests, and time extension requests and shall not, in any manner, impose a duty of care upon District, or act to relieve Contractor of its responsibility for means and methods of construction.
- F. Software: Use **Primavera P6 Scheduling** software. Such software shall be compatible with Windows operating system. Contractor shall transmit contract file to District on compact disk at times requested by District.
- G. Transmit each item under the form approved by District.
- (1) Identify Project with District Contract number and name of Contractor.
 - (2) Provide space for Contractor's approval stamp and District's review stamps.
 - (3) Submittals received from sources other than Contractor will be returned to the Contractor without District's review.

1.07 INITIAL CPM SCHEDULE

- A. Initial CPM Schedule submitted for review at the pre-construction conference shall serve as Contractor's schedule for up to ninety (90) calendar days after the Notice to Proceed.
- B. Indicate detailed plan for the Work to be completed in first ninety (90) days of the Contract; details of planned mobilization of plant and equipment; sequence of early operations; procurement of materials and equipment. Show Work beyond ninety (90) calendar days in summary form.
- C. Initial CPM Schedule shall be time scaled.
- D. Initial CPM Schedule shall be cost and resource loaded. Accepted cost and resource loaded schedule will be used as basis for monthly progress payments until acceptance of the Original CPM Schedule. Use of Initial CPM Schedule for progress payments shall not exceed ninety (90) calendar days.
- E. District and Contractor shall meet to review and discuss the Initial CPM Schedule within seven (7) calendar days after it has been submitted to District.
 - (1) District's review and comment on the schedule shall be limited to Contract conformance (with sequencing, coordination, and milestone requirements).
 - (2) Contractor shall make corrections to schedule necessary to comply with Contract requirements and shall adjust schedule to incorporate any missing information requested by District. Contractor shall resubmit Initial CPM Schedule if requested by District.
- F. If, during the first ninety (90) days after Notice to Proceed, the Contractor is of the opinion that any of the Work included on its Initial CPM Schedule has been impacted, the Contractor shall submit to District a written Time Impact Evaluation ("TIE") in accordance with Article 1.12 of this Section. The TIE shall be based on the most current update of the Initial CPM Schedule.

1.08 ORIGINAL CPM SCHEDULE

- A. Submit a detailed proposed Original CPM Schedule presenting an orderly and realistic plan for completion of the Work in conformance with requirements as specified herein.
- B. Progress Schedule shall include or comply with following requirements:
 - (1) Time scaled, cost and resource (labor and major equipment) loaded CPM schedule.
 - (2) No activity on schedule shall have duration longer than fifteen (15) work days, with exception of submittal, approval, fabrication and procurement activities, unless otherwise approved by District.

- (a) Activity durations shall be total number of actual work days required to perform that activity.
- (3) The start and completion dates of all items of Work, their major components, and milestone completion dates, if any.
- (4) District furnished materials and equipment, if any, identified as separate activities.
- (5) Activities for maintaining Project Record Documents.
- (6) Dependencies (or relationships) between activities.
- (7) Processing/approval of submittals and shop drawings for all material and equipment required per the Contract. Activities that are dependent on submittal acceptance or material delivery shall not be scheduled to start earlier than expected acceptance or delivery dates.
 - (a) Include time for submittals, re-submittals and reviews by District. Coordinate with accepted schedule for submission of Shop Drawings, samples, and other submittals.
 - (b) Contractor shall be responsible for all impacts resulting from re-submittal of Shop Drawings and submittals.
- (8) Procurement of major equipment, through receipt and inspection at jobsite, identified as separate activity.
 - (a) Include time for fabrication and delivery of manufactured products for the Work.
 - (b) Show dependencies between procurement and construction.
- (9) Activity description; what Work is to be accomplished and where.
- (10) The total cost of performing each activity shall be total of labor, material, and equipment, excluding overhead and profit of Contractor. Overhead and profit of the General Contractor shall be shown as a separate activity in the schedule. Sum of cost for all activities shall equal total Contract value.
- (11) Resources required (labor and major equipment) to perform each activity.
- (12) Responsibility code for each activity corresponding to Contractor or Subcontractor responsible for performing the Work.
- (13) Identify the activities which constitute the controlling operations or critical path. No more than twenty-five (25%) of the activities shall be critical or near critical. Near critical is defined as float in the range of one (1) to (10) days.

- (14) Twenty (20) workdays for developing punch list(s), completion of punch-list items, and final clean-up for the Work or any designated portion thereof. No other activities shall be scheduled during this period.
 - (15) Interface with the work of other contractors, District, and agencies such as, but not limited to, utility companies.
 - (16) Show detailed Subcontractor Work activities. In addition, furnish copies of Subcontractor schedules upon which CPM was built.
 - (a) Also furnish for each Subcontractor, as determined by District, submitted on Subcontractor letterhead, a statement certifying that Subcontractor concurs with Contractor's Original CPM Schedule and that Subcontractor's related schedules have been incorporated, including activity duration, cost and resource loading.
 - (b) Subcontractor schedules shall be independently derived and not a copy of Contractor's schedule.
 - (c) In addition to Contractor's schedule and resource loading, obtain from electrical, mechanical, and plumbing Subcontractors, and other Subcontractors as required by District, productivity calculations common to their trades, such as units per person day, feet of pipe per day per person, feet of wiring per day per person, and similar information.
 - (d) Furnish schedule for Contractor/Subcontractor CPM schedule meetings which shall be held prior to submission of Original CPM schedule to District. District shall be permitted to attend scheduled meetings as an observer.
 - (17) Activity durations shall be in Work days.
 - (18) Submit with the schedule a list of anticipated non-Work days, such as weekends and holidays. The Progress Schedule shall exclude in its Work day calendar all non-Work days on which Contractor anticipates critical Work will not be performed.
- C. Original CPM Schedule Review Meeting: Contractor shall, within sixty (60) days from the Notice to Proceed date, meet with District to review the Original CPM Schedule submittal.
- (1) Contractor shall have its Project Manager, Project Superintendent, Project Scheduler, and key Subcontractor representatives, as required by District, in attendance. The meeting will take place over a continuous one (1) day period.

- (2) District's review will be limited to submittal's conformance to Contract requirements including, but not limited to, coordination requirements. However, review may also include:
 - (a) Clarifications of Contract Requirements.
 - (b) Directions to include activities and information missing from submittal.
 - (c) Requests to Contractor to clarify its schedule.
- (3) Within five (5) days of the Schedule Review Meeting, Contractor shall respond in writing to all questions and comments expressed by District at the Meeting.

1.09 ADJUSTMENTS TO CPM SCHEDULE

- A. Adjustments to Original CPM Schedule: Contractor shall have adjusted the Original CPM Schedule submittal to address all review comments from original CPM Schedule review meeting and resubmit network diagrams and reports for District's review.
 - (1) District, within ten (10) days from date that Contractor submitted the revised schedule, will either:
 - (a) Accept schedule and cost and resource loaded activities as submitted, or
 - (b) Advise Contractor in writing to review any part or parts of schedule which either do not meet Contract requirements or are unsatisfactory for District to monitor Project's progress, resources, and status or evaluate monthly payment request by Contractor.
 - (2) District may accept schedule with conditions that the first monthly CPM Schedule update be revised to correct deficiencies identified.
 - (3) When schedule is accepted, it shall be considered the "Original CPM Schedule" which will then be immediately updated to reflect the current status of the work.
 - (4) District reserves right to require Contractor to adjust, add to, or clarify any portion of schedule which may later be discovered to be insufficient for monitoring of Work or approval of partial payment requests. No additional compensation will be provided for such adjustments, additions, or clarifications.
- B. Acceptance of Contractor's schedule by District will be based solely upon schedule's compliance with Contract requirements.

- (1) By way of Contractor assigning activity durations and proposing sequence of Work, Contractor agrees to utilize sufficient and necessary management and other resources to perform work in accordance with the schedule.
 - (2) Upon submittal of schedule update, updated schedule shall be considered "current" CPM Schedule.
 - (3) Submission of Contractor's schedule to District shall not relieve Contractor of total responsibility for scheduling, sequencing, and pursuing Work to comply with requirements of Contract Documents, including adverse effects such as delays resulting from ill-timed Work.
- C. Submittal of Original CPM Schedule, and subsequent schedule updates, shall be understood to be Contractor's representation that the Schedule meets requirements of Contract Documents and that Work shall be executed in sequence indicated on the schedule.
- D. Contractor shall distribute Original CPM Schedule to Subcontractors for review and written acceptance, which shall be noted on Subcontractors' letterheads to Contractor and transmitted to District for the record.

1.10 MONTHLY CPM SCHEDULE UPDATE SUBMITTALS

- A. Following acceptance of Contractor's Original CPM Schedule, Contractor shall monitor progress of Work and adjust schedule each month to reflect actual progress and any anticipated changes to planned activities.
- (1) Each schedule update submitted shall be complete, including all information requested for the Original CPM Schedule submittal.
 - (2) Each update shall continue to show all Work activities including those already completed. These completed activities shall accurately reflect "as built" information by indicating when activities were actually started and completed.
- B. A meeting will be held on approximately the twenty-fifth (25th) of each month to review the schedule update submittal and progress payment application.
- (1) At this meeting, at a minimum, the following items will be reviewed: Percent (%) complete of each activity; Time Impact Evaluations for Change Orders and Time Extension Request; actual and anticipated activity sequence changes; actual and anticipated duration changes; and actual and anticipated Contractor delays.
 - (2) These meetings are considered a critical component of overall monthly schedule update submittal and Contractor shall have appropriate personnel attend. At a minimum, these meetings shall be attended by Contractor's General Superintendent and Scheduler.

- (3) Contractor shall plan on the meeting taking no less than four (4) hours.
- C. Within five (5) working days after monthly schedule update meeting, Contractor shall submit the updated CPM Schedule update.
- D. Within five (5) work days of receipt of above noted revised submittals, District will either accept or reject monthly schedule update submittal.
 - (1) If accepted, percent (%) complete shown in monthly update will be basis for Application for Payment by the Contractor. The schedule update shall be submitted as part of the Contractor's Application for Payment.
 - (2) If rejected, update shall be corrected and resubmitted by Contractor before the Application for Payment is submitted.
- E. Neither updating, changing or revising of any report, curve, schedule, or narrative submitted to District by Contractor under this Contract, nor District's review or acceptance of any such report, curve, schedule or narrative shall have the effect of amending or modifying in any way the Completion Date or milestone dates or of modifying or limiting in any way Contractor's obligations under this Contract.

1.11 SCHEDULE REVISIONS

- A. Updating the Schedule to reflect actual progress shall not be considered revisions to the Schedule. Since scheduling is a dynamic process, revisions to activity durations and sequences are expected on a monthly basis.
- B. To reflect revisions to the Schedule, the Contractor shall provide District with a written narrative with a full description and reasons for each Work activity revised. For revisions affecting the sequence of work, the Contractor shall provide a schedule diagram which compares the original sequence to the revised sequence of work. The Contractor shall provide the written narrative and schedule diagram for revisions two (2) working days in advance of the monthly schedule update meeting.
- C. Schedule revisions shall not be incorporated into any schedule update until the revisions have been reviewed by District. District may request further information and justification for schedule revisions and Contractor shall, within three (3) days, provide District with a complete written narrative response to District's request.
- D. If the Contractor's revision is still not accepted by District, and the Contractor disagrees with District's position, the Contractor has seven (7) calendar days from receipt of District's letter rejecting the revision to provide a written narrative providing full justification and explanation for the revision. The Contractor's failure to respond in writing within seven (7) calendar days of District's written rejection of a schedule revision shall be contractually

interpreted as acceptance of District's position, and the Contractor waives its rights to subsequently dispute or file a claim regarding District's position.

- E. At District's discretion, the Contractor can be required to provide Subcontractor certifications of performance regarding proposed schedule revisions affecting said Subcontractors.

1.12 RECOVERY SCHEDULE

- A. If the Schedule Update shows a completion date twenty-one (21) calendar days beyond the Contract Completion Date, or individual milestone completion dates, the Contractor shall submit to District the proposed revisions to recover the lost time within seven (7) calendar days. As part of this submittal, the Contractor shall provide a written narrative for each revision made to recapture the lost time. If the revisions include sequence changes, the Contractor shall provide a schedule diagram comparing the original sequence to the revised sequence of work.
- B. The revisions shall not be incorporated into any schedule update until the revisions have been reviewed by District.
- C. If the Contractor's revisions are not accepted by District, District and the Contractor shall follow the procedures in paragraph 1.09.C, 1.09.D and 1.09.E above.
- D. At District's discretion, the Contractor can be required to provide Subcontractor certifications for revisions affecting said Subcontractors.

1.13 TIME IMPACT EVALUATION ("TIE") FOR CHANGE ORDERS, AND OTHER DELAYS

- A. When Contractor is directed to proceed with changed Work, the Contractor shall prepare and submit within fourteen (14) calendar days from the Notice to Proceed a TIE which includes both a written narrative and a schedule diagram depicting how the changed Work affects other schedule activities. The schedule diagram shall show how the Contractor proposes to incorporate the changed Work in the schedule and how it impacts the current schedule-update critical path. The Contractor is also responsible for requesting time extensions based on the TIE's impact on the critical path. The diagram must be tied to the main sequence of schedule activities to enable District to evaluate the impact of changed Work to the scheduled critical path.
- B. Contractor shall be required to comply with the requirements of Paragraph 1.09.A for all types of delays such as, but not limited to, Contractor/Subcontractor delays, adverse weather delays, strikes, procurement delays, fabrication delays, etc.
- C. Contractor shall be responsible for all costs associated with the preparation of TIEs, and the process of incorporating them into the current schedule update. The Contractor shall provide District with four (4) copies of each TIE.

- D. Once agreement has been reached on a TIE, the Contract Time will be adjusted accordingly. If agreement is not reached on a TIE, the Contract Time may be extended in an amount District allows, and the Contractor may submit a claim for additional time claimed by contractor.

1.14 TIME EXTENSIONS

- A. The Contractor is responsible for requesting time extensions for time impacts that, in the opinion of the Contractor, impact the critical path of the current schedule update. Notice of time impacts shall be given in accord with the General Conditions.
- B. Where an event for which District is responsible impacts the projected Completion Date, the Contractor shall provide a written mitigation plan, including a schedule diagram, which explains how (e.g., increase crew size, overtime, etc.) the impact can be mitigated. The Contractor shall also include a detailed cost breakdown of the labor, equipment, and material the Contractor would expend to mitigate District-caused time impact. The Contractor shall submit its mitigation plan to District within fourteen (14) calendar days from the date of discovery of the impact. The Contractor is responsible for the cost to prepare the mitigation plan.
- C. Failure to request time, provide TIE, or provide the required mitigation plan will result in Contractor waiving its right to a time extension and cost to mitigate the delay.
- D. No time will be granted under this Contract for cumulative effect of changes.
- E. District will not be obligated to consider any time extension request unless the Contractor complies with the requirements of Contract Documents.
- F. Failure of the Contractor to perform in accordance with the current schedule update shall not be excused by submittal of time extension requests.
- G. If the Contractor does not submit a TIE within the required fourteen (14) calendar days for any issue, it is mutually agreed that the Contractor does not require a time extension for said issue.

1.15 SCHEDULE REPORTS

- A. Submit four (4) copies of the following reports with the Initial CPM Schedule, the Original CPM Schedule, and each monthly update.
- B. Required Reports:
 - (1) Two activity listing reports: one sorted by activity number and one by total Project Float. These reports shall also include each activity's early/late and actual start and finish dates, original and remaining duration, Project Float, responsibility code, and the logic relationship of activities.

- (2) Cost report sorted by activity number including each activity's associated cost, percentage of Work accomplished, earned value- to date, previous payments, and amount earned for current update period.
- (3) Schedule plots presenting time-scaled network diagram showing activities and their relationships with the controlling operations or critical path clearly highlighted.
- (4) Cash flow report calculated by early start, late start, and indicating actual progress. Provide an exhibit depicting this information in graphic form.
- (5) Planned versus actual resource (i.e., labor) histogram calculated by early start and late start.

C. Other Reports:

In addition to above reports, District may request, from month to month, any two of the following reports. Submit four (4) copies of all reports.

- (1) Activities by early start.
- (2) Activities by late start.
- (3) Activities grouped by Subcontractors or selected trades.
- (4) Activities with scheduled early start dates in a given time frame, such as fifteen (15) or thirty (30) day outlook.

D. Furnish District with report files on compact disks containing all schedule files for each report generated.

1.16 PROJECT STATUS REPORTING

- A. In addition to submittal requirements for CPM scheduling identified in this Section, Contractor shall provide a monthly project status report (i.e., written narrative report) to be submitted in conjunction with each CPM Schedule as specified herein. Status reporting shall be in form specified below.
- B. Contractor shall prepare monthly written narrative reports of status of Project for submission to District. Written status reports shall include:
 - (1) Status of major Project components (percent (%) complete, amount of time ahead or behind schedule) and an explanation of how Project will be brought back on schedule if delays have occurred.
 - (2) Progress made on critical activities indicated on CPM Schedule.
 - (3) Explanations for any lack of work on critical path activities planned to be performed during last month.

- (4) Explanations for any schedule changes, including changes to logic or to activity durations.
- (5) List of critical activities scheduled to be performed next month.
- (6) Status of major material and equipment procurement.
- (7) Any delays encountered during reporting period.
- (8) Contractor shall provide printed report indicating actual versus planned resource loading for each trade and each activity. This report shall be provided on weekly and monthly basis.
 - (a) Actual resource shall be accumulated in field by Contractor, and shall be as noted on Contractor's daily reports. These reports will be basis for information provided in computer-generated monthly and weekly printed reports.
 - (b) Contractor shall explain all variances and mitigation measures.
- (9) Contractor may include any other information pertinent to status of Project. Contractor shall include additional status information requested by District at no additional cost.
- (10) Status reports, and the information contained therein, shall not be construed as claims, notice of claims, notice of delay, or requests for changes or compensation.

1.17 WEEKLY SCHEDULE REPORT

At the Weekly Progress Meeting, the Contractor shall provide and present a time-scaled three (3) week look-ahead schedule that is based and correlated by activity number to the current schedule (i.e., Initial, Original CPM, or Schedule Update).

1.18 DAILY CONSTRUCTION REPORTS

On a daily basis, Contractor shall submit a daily activity report to District for each workday, including weekends and holidays when worked. Contractor shall develop the daily construction reports on a computer-generated database capable of sorting daily Work, manpower, and man-hours by Contractor, Subcontractor, area, sub-area, and Change Order Work. Upon request of District, furnish computer disk of this data base. Obtain District's written approval of daily construction report data base format prior to implementation. Include in report:

- A. Project name and Project number.
- B. Contractor's name and address.
- C. Weather, temperature, and any unusual site conditions.

- D. Brief description and location of the day's scheduled activities and any special problems and accidents, including Work of Subcontractors. Descriptions shall be referenced to CPM scheduled activities.
- E. Worker quantities for its own Work force and for Subcontractors of any tier.
- F. Equipment, other than hand tools, utilized by Contractor and Subcontractors.

1.19 PERIODIC VERIFIED REPORTS

Contractor shall complete and verify construction reports on a form prescribed by the Division of the State Architect and file reports on the first day of February, May, August, and November during the preceding quarter year; at the completion of the Contract; at the completion of the Work; at the suspension of Work for a period of more than one (1) month; whenever the services of Contractor or any of Contractor's Subcontractors are terminated for any reason; and at any time a special verified report is required by the Division of the State Architect. Refer to section 4-336 and section 4-343 of Part 1, Title 24 of the California Code of Regulations.

PART 2 – PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

SUBMITTALS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Contractor's Submittals and Schedules, Drawings and Specifications;
- B. Special Conditions.

1.02 SECTION INCLUDES:

- A. Definitions:
 - (1) Shop Drawings and Product Data are as indicated in the General Conditions and include, but are not limited to, fabrication, erection, layout and setting drawings, formwork and falsework drawings, manufacturers' standard drawings, descriptive literature, catalogues, brochures, performance and test data, wiring and control diagrams. In addition, there are other drawings and descriptive data pertaining to materials, equipment, piping, duct and conduit systems, and methods of construction as may be required to show that the materials, equipment or systems and all positions conform to the requirement of the Contract Documents, including, without limitation, the Drawings.
 - (2) "Manufactured" applies to standard units usually mass-produced; "fabricated" means specifically assembled or made out of selected materials to meet design requirements. Shop Drawings shall establish the actual detail of manufactured or fabricated items, indicated proper relation to adjoining work and amplify design details of mechanical and electrical equipment in proper relation to physical spaces in the structure.
 - (3) Manufacturer's Instructions: Where any item of Work is required by the Contract Documents to be furnished, installed, or performed, at a minimum, in accordance with a specified product manufacturer's instructions, the Contractor shall procure and distribute copies of these to the District, the Architect, and all other concerned parties and shall furnish, install, or perform the work, at a minimum, in accordance with those instructions.

- B. Samples, Shop Drawings, Product Data, and other items as specified, in accordance with the following requirements:
- (1) Contractor shall submit all Shop Drawings, Product Data, and Samples to the District, the Architect, the Project Inspector, and the Construction Manager.
 - (2) Contractor shall comply with all time frames herein and in the General Conditions and, in any case, shall submit required information in sufficient time to permit proper consideration and action before ordering any materials or items represented by such Shop Drawings, Product Data, and/or Samples.
 - (3) Contractor shall comply with all time frames herein and in the General Conditions and, in any case, shall allow sufficient time so that no delay occurs due to required lead time in ordering or delivery of any item to the Site. Contractor shall be responsible for any delay in progress of Work due to its failure to observe these requirements.
 - (4) Time for completion of Work shall not be extended on account of Contractor's failure to promptly submit Shop Drawings, Product Data, and/or Samples.
 - (5) Reference numbers on Shop Drawings shall have Architectural and/or Engineering Contract Drawings reference numbers for details, sections, and "cuts" shown on Shop Drawings. These reference numbers shall be in addition to any numbering system that Contractor chooses to use or has adopted as standard.
 - (6) When the magnitude or complexity of submittal material prevents a complete review within the stated time frame, Contractor shall make this submittal in increments to avoid extended delays.
 - (7) Contractor shall certify on submittals for review that submittals conform to Contract requirements. In event of any variance, Contractor shall specifically state in transmittal and on Shop Drawings, portions vary and require approval of a substitute. Also certify that Contractor-furnished equipment can be installed in allocated space.
 - (8) Unless specified otherwise, sampling, preparation of samples, and tests shall be in accordance with the latest standard of the American Society for Testing and Materials.
 - (9) Upon demand by Architect or District, Contractor shall submit samples of materials and/or articles for tests or examinations and consideration before Contractor incorporates same in Work. Contractor shall be solely responsible for delays due to sample(s) not being submitted in time to allow for tests. Acceptance or rejection will be expressed in writing. Work shall be equal to approved samples in every respect. Samples that are of value after testing will remain the property of Contractor.

- C. Submittal Schedule:
- (1) Contractor shall prepare its proposed submittal schedule that is coordinated with the proposed construction schedule and submit both to the District within ten (10) days after the date of the Notice to Proceed. Contractor's proposed schedules shall become the Project Construction Schedule and the Project Submittal Schedule after each is approved by the District.
 - (2) Contractor is responsible for all lost time should the initial submittal be rejected, marked "revise and resubmit", etc.
 - (3) 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.

1.03 SHOP DRAWINGS:

- A. Contractor shall submit one reproducible transparency and six (6) opaque reproductions. The District will review and return the reproducible copy and one (1) opaque reproduction to Contractor.
- B. Before commencing installation of any Work, the Contractor shall submit and receive approval of all drawings, descriptive data, and material list(s) as required to accomplish Work.
- C. Review of Shop Drawings is regarded as a service to assist Contractor and in all cases original Contract Documents shall take precedence as outlined under General Conditions.
- D. No claim for extra time or payment shall be based on work shown on Shop Drawings unless the claim is (1) noted on Contractor's transmittal letter accompanying Shop Drawings and (2) Contractor has complied with all applicable provisions of the General Conditions, including, without limitation, provisions regarding changes and payment, and all required written approvals.
- E. District shall not review Shop Drawings for quantities of materials or number of items supplied.
- F. District's and/or Architect's review of Shop Drawing will be general. District and/or Architect review does not relieve Contractor of responsibility for dimensions, accuracy, proper fitting, construction of Work, furnishing of materials, or Work required by Contract Documents and not indicated on Shop Drawings. The District's and/or Architect's review of Shop Drawings is not to be construed as approving departures from Contract Documents.
- G. Review of Shop Drawings and Schedules does not relieve Contractor from responsibility for any aspect of those Drawings or Schedules that is a violation

of local, County, State, or Federal laws, rules, ordinances, or rules and regulations of commissions, boards, or other authorities or utilities having jurisdiction.

- H. Before submitting Shop Drawings for review, Contractor shall check Shop Drawings of its subcontractors for accuracy, and confirm that all Work contiguous with and having bearing on other work shown on Shop Drawings is accurately drawn and in conformance with Contract Documents.
- I. Submitted drawings and details must bear stamp of approval of Contractor:
 - (1) Stamp and signature shall clearly certify that Contractor has checked Shop Drawings for compliance with Drawings.
 - (2) If Contractor submits a Shop Drawing without an executed stamp of approval, or whenever it is evident (despite stamp) that Drawings have not been checked, the District and/or Architect will not consider them and will return them to the Contractor for revision and resubmission. In that event, it will be deemed that Contractor has not complied with this provision and Contractor shall bear risk of all delays to same extent as if it had not submitted any Shop Drawings or details.
- J. Submission of Shop Drawings (in either original submission or when resubmitted with correction) constitutes evidence that Contractor has checked all information thereon and that it accepts and is willing to perform Work as shown.
- K. Contractor shall pay for cost of any changes in construction due to improper checking and coordination. Contractor shall be responsible for all additional costs, including coordination. Contractor shall be responsible for costs incurred by itself, the District, the Architect, the Project Inspector, the Construction Manager, any other Subcontractor or contractor, etc., due to improperly checked and/or coordination of submittals.
- L. Shop Drawings must clearly delineate the following information:
 - (1) Project name and address.
 - (2) Specification number and description.
 - (3) Architect's name and project number.
 - (4) Shop Drawing title, number, date, and scale.
 - (5) Names of Contractor, Subcontractor(s) and fabricator.
 - (6) Working and erection dimensions.
 - (7) Arrangements and sectional views.

- (8) Necessary details, including complete information for making connections with other Work.
 - (9) Kinds of materials and finishes.
 - (10) Descriptive names of materials and equipment, classified item numbers, and locations at which materials or equipment are to be installed in the Work. Contractor shall use same reference identification(s) as shown on Contract Drawings.
- M. Contractor shall prepare composite drawings and installation layouts when required to solve tight field conditions.
- (1) Shop Drawings shall consist of dimensioned plans and elevations and must give complete information, particularly as to size and location of sleeves, inserts, attachments, openings, conduits, ducts, boxes, structural interferences, etc.
 - (2) Contractor shall coordinate these composite Shop Drawings and installation layouts in the field between itself and its Subcontractor(s) for proper relationship to the Work, the work of other trades, and the field conditions. The Contractor shall check and approve all submittal(s) before submitting them for final review.

1.04 PRODUCT DATA OR NON REPRODUCIBLE SUBMITTALS:

- A. Contractor shall submit manufacturer's printed literature in original form. Any fading type of reproduction will not be accepted. Contractor must submit a minimum of six (6) each, to the District. District shall return one (1) to the Contractor, who shall reproduce whatever additional copies it requires for distribution.
- B. Contractor shall submit six (6) copies of a complete list of all major items of mechanical, plumbing, and electrical equipment and materials in accordance with the approved Submittal Schedule, except as required earlier to comply with the approved Construction Schedule. Other items specified are to be submitted prior to commencing Work. Contractor shall submit items of like kind at one time in a neat and orderly manner. Partial lists will not be acceptable.
- C. Submittals shall include manufacturer's specifications, physical dimensions, and ratings of all equipment. Contractor shall furnish performance curves for all pumps and fans. Where printed literature describes items in addition to that item being submitted, submitted item shall be clearly marked on sheet and superfluous information shall be crossed out. If highlighting is used, Contractor shall mark all copies.
- D. Equipment submittals shall be complete and include space requirements, weight, electrical and mechanical requirements, performance data, and supplemental information that may be requested.

- E. Imported Materials Certification must be submitted at least ten (10) days before material is delivered.

1.05 SAMPLES:

- A. Contractor shall submit for approval Samples as required and within the time frame in the Contract Documents. Materials such as concrete, mortar, etc., which require on-site testing will be obtained from Project Site.
- B. Contractor shall submit four (4) samples except where greater or lesser number is specifically required by Contract Documents including, without limitation, the Specifications.
 - (1) Samples must be of sufficient size and quality to clearly illustrate functional characteristics, with integrally related parts and attachment devices.
 - (2) Samples must show full range of texture, color, and pattern.
- C. Contractor shall make all Submittals, unless it has authorized Subcontractor(s) to submit and Contractor has notified the District in writing to this effect.
- D. Samples to be shipped prepaid or hand-delivered to the District.
- E. Contractor shall mark samples to show name of Project, name of Contractor submitting, Contract number and segment of Work where representative Sample will be used, all applicable Specifications Sections and documents, Contract Drawing Number and detail, and ASTM or FS reference, if applicable.
- F. Contractor shall not deliver any material to Site prior to receipt of District's and/or Architect's completed written review and approval. Contractor shall furnish materials equal in every respect to approved Samples and execute Work in conformance therewith.
- G. District's and/or Architect's review, acceptance, and/or approval of Sample(s) will not preclude rejections of any material upon discovery of defects in same prior to final acceptance of completed Work.
- H. After a material has been approved, no change in brand or make will be permitted.
- I. Contractor shall prepare its Submittal Schedule and submit Samples of materials requiring laboratory tests to specified laboratory for testing not less than ninety (90) days before such materials are required to be used in Work.
- J. Samples which are rejected must be resubmitted promptly after notification of rejection and be marked "Resubmitted Sample" in addition to other information required.

- K. Field Samples and Mock-Ups are to be removed by Contractor at District's direction:
 - (1) Size: As Specified.
 - (2) Furnish catalog numbers and similar data, as requested.

1.06 REVIEW AND RESUBMISSION REQUIREMENTS:

- A. The District will arrange for review of Sample(s), Shop Drawing(s), Product Data, and other submittal(s) by appropriate reviewer and return to Contractor as provided below within twenty-one (21) days after receipt or within twenty-one (21) days after receipt of all related information necessary for such review, whichever is later.
- B. One (1) copy of product or materials data will be returned to Contractor with the review status.
- C. Samples to be incorporated into the Work will be returned to Contractor, together with a written notice designating the Sample with the appropriate review status and indicating errors discovered on review, if any. Other Samples will not be returned, but the same notice will be given with respect thereto, and that notice shall be considered a return of the Sample.
- D. Contractor shall revise and resubmit any Sample(s), Shop Drawing(s), Product Data, and other submittal(s) as required by the reviewer. Such resubmittals will be reviewed and returned in the same manner as original Sample(s), Shop Drawing(s), Product Data, and other submittal(s), within fourteen (14) days after receipt thereof or within fourteen (14) days after receipt of all related information necessary for such review. Such resubmittal shall not delay the Work.
- E. Contractor may proceed with any of the Work covered by Sample(s), Shop Drawing(s), Product Data, and other submittal(s) upon its return if designated as no exception taken, or revise as noted, provided the Contractor proceeds in accordance with the District and/or the Architect's notes and comments.
- F. Contractor shall not begin any of the work covered by a Sample(s), Shop Drawing(s), Product Data, and other submittal(s), designated as revise and resubmit or rejected, until a revision or correction thereof has been reviewed and returned to Contractor.
- G. Sample(s), Shop Drawing(s), Product Data, and other submittal(s) designated as revise and resubmit or rejected and requiring resubmittal, shall be revised or corrected and resubmitted to the District no later than fourteen (14) days or a shorter period as required to comply with the approved Construction Schedule, after its return to Contractor.
- H. Neither the review nor the lack of review of any Sample(s), Shop Drawing(s), Product Data, and other submittal(s) shall waive any of the requirements of the Contract Documents, or relieve Contractor of any obligation thereunder.

- I. District's and/or Architect's review of Shop Drawings does not relieve the Contractor of responsibility for any errors that may exist. Contractor is responsible for the dimensions and design of adequate connections and details and for satisfactory construction of all the Work.

PART 2 – PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

SITE STANDARDS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including without limitation, Site Access, Conditions, and Regulations;
- B. Special Conditions;
- C. Drug-Free Workplace Certification;
- D. Tobacco-Free Environment Certification;
- E. Criminal Background Investigation/Fingerprinting Certification;
- F. Temporary Facilities and Controls.

1.02 REQUIREMENTS OF THE DISTRICT:

- A. Drug-Free Schools and Safety Requirements:
 - (1) All school sites and other District Facilities have been declared "Drug-Free Zones." No drugs, alcohol and/or smoking are allowed at any time in any buildings and/or grounds on District property. No students, staff, visitors, or contractors are to use drugs on these sites.
 - (2) Smoking and the use of tobacco products by all persons is prohibited on or in District property. District property includes school buildings, school grounds, school-owned vehicles and vehicles owned by others while on District property. Contractor shall post: "Non-Smoking Area" in a highly visible location in each work area, staging area, and parking area. Contractor may designate a smoking area outside of District property within the public right-of-way, provided that this area remains quiet and unobtrusive to adjacent neighbors. This smoking area is to be kept clean at all times.
 - (3) Contractor shall ensure that no alcohol, firearms, weapons, or controlled substances enter or are used at the Site. Contractor shall immediately remove from the Site and terminate the employment of any employee(s) found in violation of this provision.

- B. Language: Profanity or other unacceptable and/or loud language will not be tolerated, "Cat calls" or other derogatory language toward students, staff, volunteers, parents or public will not be allowed.
- C. Disturbing the Peace (Noise and Lighting):
- (1) Contractor shall observe the noise ordinance of the Site at all times including, without limitation, all applicable local, city, and/or state laws, ordinances, and/or regulations regarding noise and allowable noise levels.
 - (2) The use of radios, etc., shall be controlled to keep all sound at a level that cannot be heard beyond the immediate area of use. District reserves the right to prohibit the use of radios at the Site, except for mobile phones or other handheld communication radios.
 - (3) If portable lights are used after dark, all light must be located so as not to direct light into neighboring property.
- D. Traffic:
- (1) Driving on the Premises shall be limited to periods when students and public are not present. If driving or deliveries must be made during the school hours, two (2) or more ground guides shall lead the vehicle across the area of travel. In no case shall driving take place across playgrounds or other pedestrian paths during recess, lunch, and/or class period changes. The speed limit on-the Premises shall be five (5) miles per hour (maximum) or less if conditions require.
 - (2) All paths of travel for deliveries, including without limitation, material, equipment, and supply deliveries, shall be reviewed and approved by District in advance. Any damage will be repaired to the pre-damaged condition by the Contractor.
 - (3) District shall designate a construction entry to the Site. If Contractor requests, District determines it is required, and to the extent possible, District shall designate a staging area so as not to interfere with the normal functioning of school facilities. Location of gates and fencing shall be approved in advance with District and at Contractor's expense.
 - (4) Parking areas shall be reviewed and approved by District in advance. No parking is to occur under the drip line of trees or in softscape areas that could otherwise be damaged.
- E. All of the above shall be observed and complied with by the Contractor and all workers on the Site. Failure to follow these directives could result in individual(s) being suspended or removed from the work force at the discretion of the District. The same rules and regulations shall apply equally to delivery personnel, inspectors, consultants, and other visitors to the Site.

PART 2 - PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Obtaining of Permits, Licenses and Registrations and Work to Comply with All Applicable Laws and Regulations;
- B. Special Conditions; and
- C. Quality Control.

1.02 DESCRIPTION:

This section covers the general requirements for regulatory requirements pertaining to the Work and is supplementary to all other regulatory requirements mentioned or referenced elsewhere in the Contract Documents.

1.03 REQUIREMENTS OF REGULATORY AGENCIES:

- A. All statutes, ordinances, laws, rules, codes, regulations, standards, and the lawful orders of all public authorities having jurisdiction over the Work, are hereby incorporated into these Contract Documents as if repeated in full herein and are intended to be included in any reference to Code or Building Code, unless otherwise specified, including, without limitation, the references in the list below. Contractor shall make available at the Site copies of all the listed documents applicable to the Work as the District and/or Architect may request, including, without limitation, applicable portions of the California Code of Regulations ("CCR").
 - (1) Building Standards Administrative Code, Part 1, Title 24, CCR.
 - (2) California Building Code (CBC), Part 2, Title 24, CCR; (Uniform Building code volumes 1-3 and California Amendments).
 - (3) California Electrical Code (CEC), Part 3, Title 24, CCR; (National Electrical Code and California Amendments).
 - (4) California Mechanical Code (CMC), Part 4, Title 24, CCR; (Uniform Mechanical Code and California Amendments).
 - (5) California Plumbing Code (CPC), Part 5, Title 24, CCR; (Uniform Plumbing Code and California Amendments).

- (6) California Fire Code (CFC), Part 9, Title 24, CCR; (Fire Plumbing Code and California Amendments).
- (7) California Referenced Standards Code, Part 12, Title 24, CCR.
- (8) State Fire Marshal Regulations, Public Safety, Title 19, CCR.
- (9) Partial List of Applicable National Fire Protection Association (NFPA) Standards:
 - (a) NFPA 13 - Automatic Sprinkler System.
 - (b) NFPA 14 - Standpipes Systems.
 - (c) NFPA 17A - Wet Chemical System
 - (d) NFPA 24 - Private Fire Mains.
 - (e) (California Amended) NFPA 72 - National Fire Alarm Codes.
 - (f) NFPA 253 - Critical Radiant Flux of Floor Covering System.
 - (g) NFPA 2001 - Clean Agent Fire Extinguishing Systems.
- (10) California Division of the State Architect interpretation of Regulations ("DSA IR"), including, without limitation:
 - (a) DSA IR A-6 — Construction Change Document Submittal and Approval Processes.
 - (b) DSA IR A-7 — Project Inspector Certification and Approval.
 - (c) DSA IR A-8 — Project Inspector and Assistant Inspector Duties and Performance.
 - (d) DSA IR A-12 — Assistant Inspector Approval.
- (11) DSA Procedures ("DSA PR")
 - (a) DSA PR 13-01 – Construction Oversight Process
 - (b) DSA PR 13-02 – Project Certification Process

B. This Project shall be governed by applicable regulations, including, without limitation, the State of California's Administrative Regulations for the Division of the State Architect-Structural Safety (DSA/SS), Chapter 4, Part 1, Title 24, CCR, and the most current version on the date the bids are opened and as it pertains to school construction including, without limitation:

- (1) Test and testing laboratory per Section 4-335. District shall pay for the testing laboratory.

- (2) Special inspections per Section 4-333(c).
- (3) Deferred Approvals per section 4-317(g).
- (4) Verified reports per Sections 4-365 & 4-343(c).
- (5) Duties of the Architect & Engineers shall be per Sections 4-333(a) and 4-341.
- (6) Duties of the Contractor shall be per Section 4-343.
- (7) Duties of Project Inspector shall be per Section 4-334.
- (8) Addenda and Construction Changes per Section 4-338.

Contractor shall keep and make available a copy of Part 1 and 2 of the most current version of Title 24 at the Site during construction.

- C. Items of deferred approval shall be clearly marked on the first sheet of the Architect's and/or Engineer's approved Drawings. All items later submitted for approval shall be per Title 24 requirements to the DSA.
- (1) Contractor shall submit the following to Architect for review and endorsement:
 - (a) Product information on proposed material/system supplier.
 - (b) Drawings, specifications, and calculations prepared, signed, and stamped by an architect or engineer licensed in the State of California for that portion of the Work.
 - (c) All other requirements as may be required by DSA.
 - (2) Cost of preparing and submitting documentation per DSA Deferred Approval requirements including required modifications to Drawings and Specifications, whether or not indicated in the Contract Documents, shall be borne by Contractor.
 - (3) Contractor shall not begin fabrication and installation of deferred approval items without first obtaining DSA approval of Drawings and Specifications.
 - (4) Schedule of Work Subject to DSA Deferred Approval: Window wall systems exceeding 10 feet in span.

PART 2 – PRODUCTS Not Used.

PART 3 – EXECUTION Not Used.

END OF DOCUMENT

ABBREVIATIONS AND ACRONYMS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions including without limitation, Definitions;
- B. Special Conditions.

1.02 DOCUMENT INCLUDES:

- A. Abbreviations used throughout the Contract Documents.
- B. Reference to a technical society, organization, or body is by abbreviation, as follows:

1.	AA	The Aluminum Association
2.	AAMA	American Architectural Manufacturers Association
3.	AASHTO	American Association of State Highway and Transportation Officials
4.	ABPA	Acoustical and Board Products Association
5.	ACI	American Concrete Institute
6.	AGA	American Gas Association
7.	AGC	Associated General Contractors of America
8.	AHC	Architectural Hardware Consultant
9.	AI	Asphalt Institute
10.	AIA	American Institute of Architects
11.	AIEE	American Institute of Electrical Engineers
12.	AISC	American Institute of Steel Construction
13.	AISI	American Iron and Steel Institute
14.	AMCA	Air Moving and Conditioning Association
15.	ANSI	American National Standards Institute
16.	APA	American Plywood Association
17.	ARI	Air Conditioning and Refrigeration Institute
18.	ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
19.	ASME	American Society of Mechanical Engineers
20.	ASSE	American Society of Structural Engineers
21.	ASTM	American Society of Testing and Materials
22.	AWPB	American Wood Preservers Bureau
23.	AWPI	American Wood preservers Institute
24.	AWS	American Welding Society
25.	AWSC	American Welding Society Code
26.	AWI	Architectural Woodwork Institute

27.	AWWA	American Water Works Association
28.	BIA	Brick Institute of America
29.	CCR	California Code of Regulations
30.	CLFMI	Chain Link Fence Manufacturers Institute
31.	CMG	California Masonry Guild
32.	CRA	California Redwood Association
33.	CRSI	Concrete Reinforcing Steel Institute
34.	CS	Commercial Standards
35.	CSI	Construction Specifications Institute
36.	CTI	Cooling Tower Institute
37.	FGMA	Flat Glass Manufacturer's Association
38.	FIA	Factory Insurance Association
39.	FM	Factory Mutual
40.	FS	Federal Specification
41.	FTI	Facing Title Institute
42.	GA	Gypsum Association
43.	ICC	International Code Council
44.	IEEE	Institute of Electrical and Electronic Engineers
45.	IES	Illumination Engineering Society
46.	LIA	Lead Industries Association
47.	MIA	Marble Institute of America
48.	MLMA	Metal Lath Manufacturers Association
49.	MS	Military Specifications
50.	NAAMM	National Association of Architectural Metal Manufacturers
51.	NBHA	National Builders Hardware Association
52.	NBFU	National Board of Fire Underwriters
53.	NBS	National Bureau of Standards
54.	NCMA	National Concrete Masonry Association
55.	NEC	National Electrical Code
56.	NEMA	National Electrical Manufacturers Association
57.	NFPA	National Fire Protection Association/National Forest Products Association
58.	NMWIA	National Mineral Wool Insulation Association
59.	NTMA	National Terrazzo and Mosaic Association
60.	NWMA	National Woodwork Manufacturer's Association
61.	ORS	Office of Regulatory Services (California)
62.	OSHA	Occupational Safety and Health Act
63.	PCI	Precast Concrete Institute
64.	PCA	Portland Cement Association
65.	PDCA	Painting and Decorating Contractors of America
66.	PDI	Plumbing Drainage Institute
67.	PEI	Porcelain Enamel Institute
68.	PG&E	Pacific Gas & Electric Company
69.	PS	Product Standards
70.	SDI	Steel Door Institute; Steel Deck Institute
71.	SJI	Steel Joist Institute
72.	SSPC	Steel Structures Painting Council
73.	TCA	Tile Council of America
74.	TPI	Truss Plate Institute
75.	UBC	Uniform Building Code

76.	UL	Underwriters Laboratories Code
77.	UMC	Uniform Mechanical Code
78.	USDA	United States Department of Agriculture
79.	VI	Vermiculite Institute
80.	WCLA	West Coast Lumberman's Association
81.	WCLB	West Coast Lumber Bureau
82.	WEUSER	Western Electric Utilities Service Engineering Requirements
83.	WIC	Woodwork Institute of California
84.	WPOA	Western Plumbing Officials Association

PART 2 - PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

DEFINITIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions including without limitation, Definitions;
- B. Special Conditions.

1.02 QUALITY ASSURANCE

- A. For products or workmanship specified by association, trade, or Federal Standards, Contractor shall comply with requirements of the standard, except when more rigid requirements are specified in the Contract Documents, or are required by applicable codes.
- B. Contractor shall conform to current reference standard publication date in effect on the date of bid opening.
- C. Contractor shall obtain copies of standards unless specifically required not to by the Contract Documents.
- D. Contractor shall maintain a copy of all standards at jobsite during submittals, planning, and progress of the specific Work, until final completion, unless specifically required not to by the Contract Documents.
- E. Should specified reference standards conflict with Contract Documents, Contractor shall request clarification from the District and/or the Architect before proceeding.
- F. The contractual relationship of the parties to the Contract shall not be altered from the contractual relationship as indicated in the Contract Documents by mention or inference otherwise in any referenced document.
- G. Governing Codes shall be as shown in the Contract Documents including, without limitation, the Specifications.

END OF DOCUMENT

REFERENCES**PART 1 - GENERAL****1.01 SCHEDULE OF REFERENCES:**

The following information is intended only for the general assistance of the Contractor, and the District does not represent that all of the information is current. It is the Contractor's responsibility to verify the correct information for each of the entities listed.

AA	The Aluminum Association 1400 Crystal Drive, Suite 430 Arlington, VA 22202 www.aluminum.org	703/358-2960
AABC	Associated Air Balance Council 1518 K Street, NW, Suite 503 Washington, DC 20005 www.aabc.com	202/737-0202
AAMA	American Architectural Manufacturers Association 1827 Walden Office Sq., Suite 550 Schaumburg, IL 60173-4268 www.aamanet.org	847/303-5664
AASHTO	American Association of State Highway and Transportation Officials 444 N Capitol St. NW - Suite 249 Washington, DC 20001 www.transportation.org	202/624-5800
AATCC	American Association of Textile Chemists and Colorists P.O. Box 12215 One Davis Drive Research Triangle Park, NC 27709 2215 www.aatcc.org	919/549-8141
ACA	American Coatings Association 1500 Rhode Island Ave., NW Washington DC, 20005 www.paint.org	202/462-6272

ACI	American Concrete Institute 38800 Country Club Dr. Farmington Hills, MI 48331-3439 www.concrete.org	248/848-3700
ACPA	American Concrete Pipe Association 8445 Freeport Parkway, Suite 350 Irving, TX 75063-2595 www.concrete-pipe.org	972/506-7216
ADC	Air Duct Council 1901 N. Roselle Road, Suite 800 Schaumburg, Illinois 60195 www.flexibleduct.org	847/706-6750
AF&PA	American Forest and Paper Association 1101 K Street, NW, Suite 700 Washington, DC 20005 www.afandpa.org	202/463-2700
AGA	American Gas Association 400 North Capitol Street, NW Washington, DC 20001 www.aga.org	202/824-7000
AGC	Associate General Contractors of America 2300 Wilson Blvd., Suite 300 Arlington, VA 22201 www.agc.org	703/548-3118
AHA	American Hardboard Association 1210 West Northwest Highway Palatine, IL 60067 domensino.com/AHA/default.htm	847/934-8800
AI	Asphalt Institute 2696 Research Park Drive Lexington, KY 40511-8480 www.asphaltinstitute.org	859/288-4960
AIA	The American Institute of Architects 1735 New York Ave., NW Washington, DC 20006-5292 www.aia.org	202/626-7300
AISC	American Institute of Steel Construction 130 East Randolph Street Suite 2000 Chicago, IL 60601 www.aisc.org	312.670.2400

AIA	American Insurance Association (formerly the National Board of Fire Underwriters) 555 12th St, NW, Suite 550 Washington DC 20004 www.aiadc.org	202/828-7100
AISI	American Iron and Steel Institute 25 Massachusetts Ave., NW, Suite 800 Washington, DC 20001 www.steel.org	202/452.7100
AITC	American Institute of Timber Construction 7012 S. Revere Parkway Suite 140 Centennial, CO 80112 www.aitc-glulam.org	503/639.0651
ALI	Associated Laboratories, Inc. P.O. Box 152837 Dallas, TX 75315 www.assoc-labs.com	214/565-0593
ALSC	American Lumber Standards Committee, Inc. 7470 New Technology Way, Suite F Frederick, MD 21703 www.alsc.org	301/972-1700
AMCA	Air Movement and Control Association International, Inc. 30 W. University Drive Arlington Heights, IL 60004 www.amca.org	847/394-0150
ANLA	American Nursery & Landscape Association (now AmericanHort) 525 9 th St NW, Suite 80 Washington, DC 20004 www.americanhort.org	202/789-2900
ANSI	American National Standards Institute 1899 L Street, NW, 11th Floor Washington, DC, 20036 www.ansi.org	202/293.8020
APA	APA-The Engineered Wood Association 7011 S. 19th Street Tacoma, WA 98466-5333 www.apawood.org	253/565-6600

APA	Architectural Precast Association 325 John Know Rd, Ste L103 Tallahassee, FL 32303 www.archprecast.org	850/205.5637
ARI	Air Conditioning and Refrigeration Institute (now Air-Conditioning, Heating, & Refrigeration Institute) 2111 Wilson Blvd, Suite 500 Arlington, VA 22201 www.ahrinet.org	703/524-8800
ARMA	Asphalt Roofing Manufacturers Association Public Information Department 750 National Press Building 529 14th Street, NW Washington, DC 20045 www.asphaltroofing.org	202/591-2450
ASA	The Acoustical Society of America ASA Office Manager Suite 1N01 2 Huntington Quadrangle Melville, NY 11747-4502 http://asa.aip.org	516/576-2360
ASCE	American Society of Civil Engineers 1801 Alexander Bell Drive Reston, VA 20191 www.asce.org	800/548-2723 703/295-6300
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers 1791 Tullie Circle, NE Atlanta, GA 30329-2305 www.ashrae.org	800/527-4723 404/636-8400
ASLA	American Society of Landscape Architects 636 Eye Street, NW Washington, DC 20001-3736 www.asla.org	202/898-2444
ASME	American Society of Mechanical Engineers Three Park Avenue New York, NY 10016-5990 www.asme.org	800/434-2763

ASPE	American Society of Plumbing Engineers 2980 S River Rd. Des Plaines, IL 60018 http://aspe.org	847/296-0002
ASQ	American Society for Quality P.O. Box 3005 Milwaukee, WI 53201-3005 or 600 North Plankinton Avenue Milwaukee, WI 53203 http://asq.org	800/248-1946 414/272-8575
ASSE	American Society of Sanitary Engineering 901 Canterbury, Suite A Westlake, Ohio 44145 www.asse-plumbing.org	440/835-3040
ASTM	ASTM International 100 Barr Harbor Drive PO Box C700 West Conshohocken, PA, 19428-2959 www.astm.org	610/832-9500
AWCI	Association of the Wall and Ceiling Industry 513 West Broad Street, Suite 210 Falls Church, VA 22046 www.awci.org	703/538-1600
AWPA	American Wood Protection Association P.O. Box 361784 Birmingham, AL 35236-1784 www.awpa.com	205/733-4077
AWPI	American Wood Preservers Institute 2750 Prosperity Ave. Suite 550 Fairfax, VA 22031-4312 www.arcata.com	800/356-AWPI 703/204-0500
AWS	American Welding Society 8669 Doral Boulevard, Suite 130 Doral, Florida 33166 www.aws.org	800/443-9353 305/443-9353
AWI	Architectural Woodwork Institute 46179 Westlake Drive, Suite 120 Potomac Falls, VA 20165-5874 www.awinet.org	571/323-3636

AWWA	American Water Works Association 6666 West Quincy Avenue Denver, CO 80235 www.awwa.org	800/926-7337 303/794 7711
BHMA	Builders Hardware Manufacturers Association 355 Lexington Avenue, 15th floor New York, NY 10017 www.buildershardware.com	212/297-2122
BIA	The Brick Industry Association 1850 Centennial Park Drive, Suite 301 Reston, VA 20191 www.gobrick.com	703/620-0010
CGA	Compressed Gas Association 14501 George Carter Way, Suite 103 Chantilly VA 20151-2923 www.cganet.com	703/788-2700
CISCA	Ceilings & Interior Systems Construction Association 1010 Jorie Blvd, Suite 30 Oak Brook, IL 60523 www.cisca.org	630/584-1919
CISPI	Cast Iron Soil Pipe Institute 1064 Delaware Avenue SE Atlanta, GA 30316 www.cispi.org	404/622-0073
CLFMI	Chain Link Fence Manufacturers Institute 10015 Old Columbia Road, Suite B-215 Columbia, MD 21046 www.associationsites.com/main-pub.cfm?usr=clfma	410/290-6267
CPA	Composite Panel Association 19465 Deerfield Avenue, Suite 306 Leesburg, VA 20176 www.compositepanel.org	703/724-1128
CPSC	Consumer Product Safety Commission 4330 East West Highway Bethesda, MD 20814 www.cpsc.gov	301/504-7923 800/638-2772
CRA	California Redwood Association 405 Enfrente Drive, Suite 200 Novato, CA 94949 www.calredwood.org	415/382-0662

CRI	Carpet and Rug Institute P.O. Box 2048 Dalton, Georgia 30722-2048 www.carpet-rug.org	706/278-3176
CRSI	Concrete Reinforcing Steel Institute 933 N. Plum Grove Road Schaumburg, IL 60173 4758 www.crsi.org	847/517-1200
CSI	The Construction Specifications Institute 110 South Union Street, Suite 100 Alexandria VA 22314 www.csinet.org	800/689-2900
CTIOA	Ceramic Tile Institute of America 12061 Jefferson Blvd. Culver City, CA 90230-6219 www.ctioa.org	310/574-7800
DHI	Door and Hardware Institute (formerly National Builders Hardware Association) 14150 Newbrook Dr. Chantilly, VA 20151 www.dhi.org	703/222-2010
DIPRA	Ductile Iron Pipe Research Association 2000 2nd Avenue, South Suite 429 Birmingham, AL 35233 www.dipra.org	205/402-8700
DOC	U.S. Department of Commerce 1401 Constitution Ave., NW Washington, D.C. 20230 www.commerce.gov	202/482-2000
DOT	U.S. Department of Transportation 1200 New Jersey Avenue, SE Washington, DC 20590 www.dot.gov	855/368-4200
EJMA	Expansion Joint Manufacturers Association, Inc. 25 North Broadway Tarrytown, NY 10591 www.ejma.org	914/332-0040

EPA	Environmental Protection Agency Ariel Rios Building 1200 Pennsylvania Avenue, N.W. Washington, DC 20460 www.epa.gov	202/272-0167
FCICA	Floor Covering Installation Contractors Association 7439 Millwood Drive West Bloomfield, MI 48322 www.fcica.com	248/661-5015 877/TO-FCICA
FM Global	Factory Mutual Insurance Company Amy Daley Global Practice Leader – Education, Public Entities, Health Care FM Global 270 Central Avenue Johnston, RI 02919-4949 www.fmglobal.com	401/275-3000 401/275-3029
FS	General Services Administration (GSA) Index of Federal Specifications, Standards and Commercial Item Descriptions 470 East L'Enfant Plaza, SW, Suite 8100 Washington, DC 20407 www.gsa.gov	202/619-8925
GA	The Gypsum Association 6525 Belcrest Road, Suite 480 Hyattsville, MD 20782 www.gypsum.org	301/277-8686
GANA	Glass Association of North America 800 SW Jackson St., Suite 1500 Topeka, KS 66612-1200 www.glasswebsite.com	785/271-0208
HMA	Hardwood Manufacturers Association 665 Rodi Road, Suite 305 Pittsburgh, PA 15235 http://hmamembers.org	412/244-0440
HPVA	Hardwood Plywood & Veneer Association 1825 Michael Faraday Drive Reston, Virginia 20190 www.hpva.org	703/435-2900

IAPMO	International Association of Plumbing and Mechanical Officials (formerly the Western Plumbing Officials Association) 4755 E. Philadelphia St. Ontario, CA 91761 www.iapmo.org	909/472-4100
ICC	International Code Council 500 New Jersey Avenue, NW, 6th Floor Washington, DC 20001 www.iccsafe.org	888/422-7233
IEEE	Institute of Electrical and Electronics Engineers 3 Park Avenue, 17th Floor New York, NY 10016-5997 www.ieee.org	212/419-7900
IES	Illuminating Engineering Society 120 Wall Street, Floor 17 New York, NY 10005-4001 www.ies.org	212/248-5000
ITRK	Intertek Testing Services 3933 US Route 11 Cortland, NY 13045 www.intertek.com	607/753-6711
MCAA	Mechanical Contractors Association of America 1385 Piccard Drive Rockville, MD 20850 www.mcaa.org	301/869-5800
MIA	Marble Institute of America 28901 Clemens Rd, Ste 100 Cleveland, OH 44145 www.marble-institute.com	440/250-9222
MMPA (formerly WMMPA)	Moulding & Millwork Producers Association (formerly Wood Moulding & Millwork Producers Association) 507 First Street Woodland, CA 95695 www.wmmpa.com	530/661-9591 800/550-7889

MSS	Manufacturers Standardization Society (MSS) of the Valve and Fittings Industry 127 Park Street, NE Vienna, VA 22180-4602 http://mss-hq.org	703/281-6613
NAAMM	National Association of Architectural Metal Manufacturers 800 Roosevelt Rd. Bldg. C, Suite 312 Glen Ellyn, IL 60137 www.naamm.org	630/942-6591
NAIMA	North American Insulation Manufacturers Association 44 Canal Center Plaza, Suite 310 Alexandria, VA 22314 www.naima.org	703/684-0084
NAPA	National Asphalt Pavement Association 5100 Forbes Blvd. Lanham, MD USA 20706-4407 www.asphaltpavement.org	888/468-6499 301/731-4748
NCSPA	National Corrugated Steel Pipe Association 14070 Proton Road, Suite 100 LB9 Dallas, TX 75244 www.ncspa.org	972/850-1907
NCMA	National Concrete Masonry Association 13750 Sunrise Valley Drive Herndon, VA 20171-4662 www.ncma.org	703/713-1900
NEBB	National Environmental Balancing Bureau 8575 Grovemont Circle Gaithersburg, MD 20877 www.nebb.org	301/977-3698
NECA	National Electrical Contractors Association 3 Bethesda Metro Center, Suite 1100 Bethesda, MD 20814 www.necanet.org	301/657-3110
NEMA	National Electrical Manufacturers Association 1300 North 17th Street, Suite 1752 Rosslyn, Virginia 22209 www.nema.org	703/841-3200

NEII	National Elevator Industry, Inc. 1677 County Route 64 P.O. Box 838 Salem, New York 12865-0838 www.neii.org	518/854-3100
NFPA	National Fire Protection Association 1 Batterymarch Park Quincy, Massachusetts USA 02169-7471 www.nfpa.org	617/770-3000
NHLA	National Hardwood Lumber Association PO Box 34518 Memphis, TN 38184 www.nhla.com	901/377-1818
NIA	National Insulation Association 12100 Sunset Hills Road, Suite 330 Reston, VA 20190 www.insulation.org	703/464-6422
NRCA	National Roofing Contractors Association 10255 W. Higgins Road, Suite 600 Rosemont, IL 60018-5607 www.nrca.net	847/299-9070
NSF	NSF International P.O. Box 130140 789 N. Dixboro Road Ann Arbor, MI 48113-0140, USA www.nsf.org	800/673-6275 734/769-8010
NTMA	National Terrazzo and Mosaic Association PO Box 2605 Fredericksburg, TX 78624 www.ntma.com	800/323-9736
OSHA	Occupational Safety and Health Act U.S. Department of Labor Occupational Safety & Health Administration 200 Constitution Ave., NW Washington, D.C. 20210 www.osha.gov	800/321-OSHA (6742)

PCA	Portland Cement Association 5420 Old Orchard Road Skokie, IL 60077 or 500 New Jersey Ave., N.W. 7 th Floor Washington, D.C. 20001 www.cement.org	847/966-6200 202/408-9494
PCI	Precast/Prestressed Concrete Institute 200 W. Adams St. #2100 Chicago, IL 60606 www.pci.org	312/786-0300
PDCA	Painting and Decorating Contractors of America 2316 Millpark Drive, Ste 220 Maryland Heights, MO 63043 www.pdca.com	800/332-PDCA (7322) 314/514-7322
PDI	Plumbing & Drainage Institute 800 Turnpike Street, Suite 300 North Andover, MA 01845 http://pdionline.org	978/557-0720 800/589-8956
PEI	Porcelain Enamel Institute, Inc. P.O. Box 920220 Norcross, GA 30010 www.porcelainenamel.com	770/676-9366
PG&E	Pacific Gas & Electric Company www.pge.com	800/743-5000
PLANET	Professional Landcare Network 950 Herndon Parkway, Suite 450 Herndon, Virginia 20170 www.landcarenetwork.org	703/736-9666 800/395-2522 703/736-9668
RFCI	Resilient Floor Covering Institute 115 Broad Street, Suite 201 La Grange GA 30240 www.rfci.com	706/882-3833
RIS	Redwood Inspection Service 818 Grayson Road, Suite 201 Pleasant Hill, CA 94523 www.redwoodinspection.com	925/935-1499
SDI	Steel Deck Institute P.O. Box 25 Fox River Grove, IL 60021 www.sdi.org	847/458-4647

SDI	Steel Door Institute 30200 Detroit Road Westlake, Ohio 44145 www.steeldoor.org	440/899-0010
SJI	Steel Joist Institute 234 W. Cheves Street Florence, SC 29501 http://steeljoist.org	843/407-4091
SMA	Stucco Manufacturers Association 500 East Yale Loop Irvine, CA 92614 www.stuccomfgassoc.com	949/387.7611
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association 4201 Lafayette Center Drive Chantilly, Virginia 20151-1219 www.smacna.org	703/803-2980
SPI	SPI: The Plastics Industry Trade Association, Inc. 1667 K St., NW, Suite 1000 Washington, DC 20006 www.plasticsindustry.org	202/974-5200
SSPC	Society for Protective Coatings (formerly the Steel Structures Painting Council) 40 24th St 6th Fl Pittsburgh, PA 15222 www.sspc.org	412/281-2331 877/281-7772
TCA	The Tile Council of North America 100 Clemson Research Blvd. Anderson, SC 29625 www.tcnatile.com	864/646-8453
TPI	Truss Plate Institute 218 North Lee Street, Suite 312 Alexandria, VA 22314 www.tpinst.org	703/683-1010
TPI	Turfgrass Producers International 2 East Main Street East Dundee, IL 60118 www.turfgrassod.org	800/405-8873 847/649-5555

TCIA	Tree Care Industry Association (formerly the National Arborist Association) 136 Harvey Road, Suite 101 Londonderry, NH 03053 www.tcia.org	800/733-2622
TVI	The Vermiculite Institute c/o The Schundler Company 150 Whitman Avenue Edison, NJ. 08817 www.vermiculiteinstitute.org	732/287-2244
UL	Underwriters Laboratories Inc. 333 Pfingsten Road Northbrook, IL 60062-2096 www.ul.com	847/272-8800 877/854-3577
UNI	Uni-Bell PVC Pipe Association 2711 LBJ Freeway, Suite 1000 Dallas, TX 75234 www.uni-bell.org	972/243-3902
USDA	U.S. Department of Agriculture 1400 Independence Ave., S.W. Washington, DC 20250 www.usda.gov	202/720-2791
WA	Wallcoverings Association 401 North Michigan Avenue Suite 2200 Chicago, IL 60611 www.wallcoverings.org	312/321-5166

WCLIB	West Coast Lumber Inspection Bureau P.O. Box 23145 Portland, OR 97281 or 6980 S.W. Varns Tigard, OR 97223 www.wclib.org	503/639-0651
WCMA	Window Covering Manufacturers Association 355 Lexington Avenue 15th Floor New York, New York 10017 www.wcmanet.org	212/297-2122
WDMA	Window & Door Manufacturers Association 401 N. Michigan Avenue, Suite 2200 Chicago, IL 60611 or 2025 M Street, NW, Ste. 800 Washington, D.C. 20036-3309 www.wdma.com	312/321-6802 202/367-1157
WI	Woodwork Institute P.O. Box 980247 West Sacramento, CA 95798 www.wicnet.org	916/372-9943
WRI	Wire Reinforcement Institute 942 Main Street Hartford, CT 06103 www.wirereinforcementinstitute.org	860/240-9545
WWCA	Western Wall & Ceiling Contractors Association 1910 N. Lime St. Orange, California 92865 www.wwcca.org	714/221-5520
WWPA	Western Wood Products Association 522 SW Fifth Ave., Suite 500 Portland, OR 97204-2122 www2.wwpa.org	503/224-3930

PART 2 - PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Purchase of Materials and Equipment;
- B. Special Conditions;
- C. Imported Materials Certification.

1.02 MATERIAL AND EQUIPMENT

- A. Only items approved by the District and/or Design Professional shall be used.
- B. Contractor shall submit lists of products and other product information in accordance with the Contract Documents, including, without limitation, the provisions regarding the submittals.

1.03 MATERIAL AND EQUIPMENT COLORS

- A. The District and/or Architect will provide a schedule of colors.
- B. No individual color selections will be made until after approval of all pertinent materials and equipment and after receipt of appropriate samples in accordance with the Contract Documents, including, without limitation, the provisions regarding the submittals.
- C. Contractor shall request priority in writing for any item requiring advance ordering to maintain the approved Construction Schedule.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Contractor shall deliver manufactured materials in original packages, containers, or bundles (with seals unbroken), bearing name or identification mark of manufacturer.
- B. Contractor shall deliver fabrications in as large assemblies as practicable; where specified as shop-primed or shop-finished, package or crate as required to preserve such priming or finish intact and free from abrasion.
- C. Contractor shall store materials in such a manner as necessary to properly protect them from damage. Materials or equipment damaged by handling, weather, dirt, or from any other cause will not be accepted.

- D. Materials are not acceptable that have been warehoused for long periods of time, stored or transported in improper environment, improperly packaged, inadequately labeled, poorly protected, excessively shipped, deviated from normal distribution pattern, or reassembled.
- E. Contractor shall store material so as to cause no obstructions of sidewalks, roadways, access to the Site or buildings, and underground services. Contractor shall protect material and equipment furnished under Contract.
- F. Contractor may store materials on Site with prior written approval by the District, all material shall remain under Contractor's control and Contractor shall remain liable for any damage to the materials. Should the Project Site not have storage area available, the Contractor shall provide for off-site storage at a bonded warehouse and with appropriate insurance coverage at no cost to District.
- G. When any room in Project is used as a shop or storeroom, the Contractor shall be responsible for any repairs, patching, or cleaning necessary due to that use. Location of storage space shall be subject to prior written approval by District.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers listed in various sections of Contract Documents are names of those manufacturers that are believed to be capable of supplying one or more of items specified therein.
- B. The listing of a manufacturer does not imply that every product of that manufacturer is acceptable as meeting the requirements of the Contract Documents.

2.02 FACILITIES AND EQUIPMENT

Contractor shall provide, install, maintain, and operate a complete and adequate facility for handling, the execution, disposal, and distribution of material and equipment as required for proper and timely performance of Work connected with Contract.

2.03 MATERIAL REFERENCE STANDARDS

Where material is specified solely by reference to "standard specifications" and if requested by District, Contractor shall submit for review data on actual material proposed to be incorporated into Work of Contract listing name and address of vendor, manufacturer, or producer, and trade or brand names of those materials, and data substantiating compliance with standard specifications.

PART 3 - EXECUTION

3.01 WORKMANSHIP

- A. Where not more specifically described in any other Contract Documents, workmanship shall conform to methods and operations of best standards and accepted practices of trade or trades involved and shall include items of fabrication, construction, or installation regularly furnished or required for completion (including finish and for successful operation, as intended).
- B. Work shall be executed by tradespersons skilled in their respective lines of Work. When completed, parts shall have been durably and substantially built and present a neat appearance.

3.02 COORDINATION

- A. Contractor shall coordinate installation of Work so as to not interfere with installation of others. Adjustment or rework because of Contractor's failure to coordinate will be at no additional cost to District.
- B. Contractor shall examine in-place work for readiness, completeness, fitness to be concealed or to receive other work, and in compliance with Contract Documents. Concealing or covering Work constitutes acceptance of additional cost which will result should in-place Work be found unsuitable for receiving other Work or otherwise deviating from the requirements of the Contract Documents.

3.03 COMPLETENESS

Contractor shall provide all portions of the Work, unless clearly stated otherwise, installed complete and operational with all elements, accessories, anchorages, utility connections, etc., in manner to assure well-balanced performance, in accordance with manufacturer's recommendations and by Contract Documents. For example, electric water coolers require water, electricity, and drain services; roof drains require drain system; sinks fit within countertop, etc. Terms such as "installed complete," "operable condition," "for use intended," "connected to all utilities," "terminate with proper cap," "adequately anchored," "patch and refinish," "to match similar," should be assumed to apply in all cases, except where completeness of functional or operable condition is specifically stated as not required.

3.04 APPROVED INSTALLER OR APPLICATOR

Installation by a manufacturer's approved installer or applicator is an understood part of Specifications and only approved installer or applicator is to provide on-site Work where specified manufacturer has on-going program of approving (i.e. certifying, bonding, re-warranting) installers or applicators. Newly established relationships between a manufacturer and an installer or applicator who does not have other approved applicator work in progress or completed is not approved for this Project.

3.05 MANUFACTURER'S RECOMMENDATIONS

All installations shall be in accordance with manufacturer's published recommendations and specific written directions of manufacturer's representative. Should Contract Documents differ from recommendations of manufacturer or directions of his representative, Contractor shall analyze differences, make recommendations to the District and the Architect in writing, and shall not proceed until interpretation or clarification has been issued by the District and/or the Architect.

END OF DOCUMENT

QUALITY CONTROL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Inspector, Inspections and Tests, Uncovering of Work and Non-conforming of Work and Correction of Work;
- B. Special Conditions.

1.02 RELATED CODES:

- A. The Work is governed by requirements of Title 24, California Code of Regulations ("CCR"), and the Contractor shall keep a copy of these available at the job Site for ready reference during construction.
- B. The Division of the State Architect ("DSA") shall be notified at or before the start of construction.

1.03 OBSERVATION AND SUPERVISION:

- A. The District and Architect or their appointed representatives will review the Work and the Contractor shall provide facilities and access to the Work at all times as required to facilitate this review. Administration by the Architect and any consulting Structural Engineer will be in accordance with applicable regulations, including, without limitation, CCR, Part 1, Title 24, Section 4-341.
- B. One or more Project Inspector(s) approved by DSA and employed by or in contract with the District, referred to hereinafter as the "Project Inspector", will observe the work in accordance with CCR, Part 1, Title 24, Sections 4-333(b) and 4-342:
 - (1) The Project Inspector and Special Inspector(s) shall have access to the Work wherever it is in preparation or progress for ascertaining that the Work is in accordance with the Contract Documents and all applicable code sections. The Contractor shall provide facilities and operation of equipment as needed, and access as required and shall provide assistance for sampling or measuring materials.
 - (2) The Project Inspector will notify the District and Architect and call the attention of the Contractor to any observed failure of Work or material to conform to Contract Documents.

- (3) The Project Inspector shall observe and monitor all testing and inspection activities required.

The Contractor shall conform with all applicable laws as indicated in the Contract Documents, including, without limitation, to CCR, Part 1, Title 24, Section 4-343. The Contractor shall supervise and direct the Work and maintain a competent superintendent on the job who is authorized to act in all matters pertaining to the Work. The Contractor's superintendent shall also inspect all materials, as they arrive, for compliance with the Contract Documents. Contractor shall reject defective Work or materials immediately upon delivery or failure of the Work or material to comply with the Contract Documents. The Contractor shall submit verified reports as indicated in the Contract Documents, including, without limitation, the Specifications and as required by Part 1, Title 24, Section 4-336.

1.04 TESTING AGENCIES:

- A. Testing agencies and tests shall be in conformance with the General Documents and the requirements of Part 1, Title 24, Section 4- 335.
- B. Testing and inspection in connection with earthwork shall be under the direction of the District's consulting soils engineer, if any, referred to hereinafter as the "Soils Engineer."
- C. Testing and inspection of construction materials and workmanship shall be performed by a qualified laboratory, referred to hereinafter as the "Testing Laboratory." The Testing Laboratory shall be under direction of an engineer registered in the State of California, shall conform to requirements of ASTM E329, and shall be employed by or in contract with the District.

1.05 TESTS AND INSPECTIONS:

- A. The Contractor shall be responsible for notifying the District and Project Inspector of all required tests and inspections. Contractor shall notify the District and Project Inspector at least seventy-two hours (72) hours in advance of performing any Work requiring testing or inspection.
- B. The Contractor shall provide access to Work to be tested and furnish incidental labor, equipment, and facilities to facilitate all inspections and tests.
- C. The District will pay for first inspections and tests required by the "CCR", and other inspections or tests that the District and/or the Architect may direct to have made, including the following principal items:
 - (1) Tests and observations for earthwork and paving.
 - (2) Tests for concrete mix designs, including tests of trial batches.
 - (3) Tests and inspections for structural steel work.
 - (4) Field tests for framing lumber moisture content.

- (5) Additional tests directed by the District that establish that materials and installation comply with the Contract Documents.
- (6) Tests and observations of welding and expansion anchors.
- D. The District may at its discretion, pay and then back charge the Contractor for:
 - (1) Retests or reinspections, if required, and tests or inspections required due to Contractor error or lack of required identifications of material.
 - (2) Uncovering of work in accordance with Contract Documents.
 - (3) Testing done on weekends, holidays, and overtime will be chargeable to the Contractor for the overtime portion.
 - (4) Testing done off Site.
- E. Testing and inspection reports and certifications:
 - (1) If initially received by Contractor, Contractor shall provide to each of the following a copy of the agency or laboratory report of each test or inspection or certification.
 - (a) The District;
 - (b) The Construction Manager, if any;
 - (c) The Architect;
 - (d) The Consulting Engineer, if any;
 - (e) Other engineers on the Project, as appropriate;
 - (f) The Project Inspector; and
 - (g) The Contractor.
 - (2) When the test or inspection is one required by the CCR, a copy of the report shall also be provided to the DSA.

PART 2 - PRODUCTS

2.01 TYPE OF TESTS AND INSPECTIONS

- A. Testing and inspection shall be in accordance with DSA Form 103 (or current version)
- B. Slump Test
ASTM C 143
- C. Concrete Tests

Testing agency shall test concrete used in the work per the following paragraphs:

- (1) Compressive Strength:
 - (a) Minimum number of tests required: One (1) set of three (3) cylinders for each 100 cubic yards (Sec. 2604(h) 01) of concrete or major fraction thereof, placed in one (1) day. See Title 24, Section 2605(g).
 - (b) Two cylinders of each set shall be tested at twenty-eight (28) days. One (1) cylinder shall be held in reserve and tested only when directed by the Architect or District.
 - (c) Concrete shall test the minimum ultimate compressive strength in twenty-eight 28 days, as specified on the structural drawings.
 - (d) In the event that the twenty-eight (28) day test falls below the minimum specified strength, the effective concrete in place shall be tested by taking cores in accordance with UBC Standard No. 26-13 and tested as required for cylinders.
 - (e) In the event that the test on core specimens falls below the minimum specified strength, the concrete will be deemed defective and shall be removed and replaced upon such direction of the Architect, and in a manner acceptable to the Division of the State Architect.

D. Reinforcing, Steel

E. Structural Steel Per Title 24 and as noted:

- (1) Material: Steel per Table in Title 24, Section 2712.
- (2) Qualification of Welders (UBC Std. 27-6).
- (3) Shop fabrication (Section 2712(d). Structural steel only).
- (4) Shop and field welding (Section 2712(e)).

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

TEMPORARY FACILITIES AND CONTROLS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions;
- B. Special Conditions;
- C. Site Standards; and
- D. Construction Waste Management and Disposal.

1.02 TEMPORARY UTILITIES:

- A. Electric Power and Lighting:
 - (1) Contractor will pay for power during the course of the Work. To the extent power is available in the building(s) or on the Site, Contractor may use the District's existing utilities by making prearranged payments to the District for the utilities used by Contractor and all Subcontractors. Contractor shall be responsible for providing temporary facilities required to deliver that power service from its existing location in the building(s) or on the Site to point of intended use.
 - (2) Contractor shall verify characteristics of power available in building(s) or on the Site. Contractor shall take all actions required to make modifications where power of higher voltage or different phases of current are required. Contractor shall be fully responsible for providing that service and shall pay all costs required therefor.
 - (3) Contractor shall furnish, wire for, install, and maintain temporary electrical lights wherever it is necessary to provide illumination for the proper performance and/or observation of the Work: a minimum of 20 foot-candles for rough work and 50 foot-candles for finish work.
 - (4) Contractor shall be responsible for maintaining existing lighting levels in the project vicinity should temporary outages or service interruptions occur.
- B. Heat and Ventilation:

- (1) Contractor shall provide temporary heat to maintain environmental conditions to facilitate progress of the Work, to meet specified minimum conditions for the installation and curing of materials, and to protect materials and finishes from damage due to improper temperature and humidity conditions. Portable heaters shall be standard units complete with controls.
- (2) Contractor shall provide forced ventilation and dehumidification, as required, of enclosed areas for proper installation and curing of materials, to disperse humidity, and to prevent hazardous accumulations of dust, fumes, vapors, and gases.
- (3) Contractor shall pay the costs of installation, maintenance, operation, and removal of temporary heat and ventilation, including costs for fuel consumed, required for the performance of the Work.

C. Water:

- (1) Contractor shall pay for water used during the course of the Work. Contractor shall coordinate and pay for installation or use of water meter in compliance with local water agency requirements. To the extent water is then available in the building(s) or on the Site, Contractor may use the District's existing utilities by making prearranged payments to the District for the utilities used by Contractor and all Subcontractors. Contractor shall be responsible for providing temporary facilities required to deliver such utility service from its existing location in the building(s), on the Site, or other location approved by the local water agency, to point of intended use.
- (2) Contractor shall use backflow preventers on water lines at point of connection to District's water supply. Backflow preventers shall comply with requirements of Uniform Plumbing Code.
- (3) Contractor shall make potable water available for human consumption.

D. Sanitary Facilities:

- (1) Contractor shall provide sanitary temporary facilities in no fewer numbers than required by law and such additional facilities as may be directed by the Inspector for the use of all workers. The facilities shall be maintained in a sanitary condition at all times and shall be left at the Site until removal is directed by the Inspector or Contractor completes all other work at the Site.
- (2) Use of toilet facilities in the Work under construction shall not be permitted except by consent of the Inspector and the District.

E. Telephone Service:

- (1) Contractor shall arrange with local telephone service company for telephone service as required for the performance of the Work.

Contractor shall, at a minimum, provide in its field office one line for telephone and one line for fax machine.

- (2) Contractor shall pay the costs for telephone and fax lines installation, maintenance, service, and removal.

F. Fire Protection:

- (1) Contractor shall provide and maintain fire extinguishers and other equipment for fire protection. Such equipment shall be designated for use for fire protection only and shall comply with all requirements of the California Fire, State Fire Marshall and/or its designee.
- (2) Where on-site welding and burning of steel is unavoidable, Contractor shall provide protection for adjacent surfaces.

G. Trash Removal:

- (1) Contractor shall provide trash removal on a timely basis. Under no circumstance shall Contractor use District trash service.

H. Field Office:

- (1) If Contractor chooses to provide a field office, it shall be an acceptable construction trailer that is well-lit and ventilated. The construction trailer shall be equipped with shelves, desks, filing cabinet, chairs, and such other items of equipment needed. Trailer and equipment are the property of the Contractor and must be removed from the Site upon completion of the Work.
- (2) Contractor shall provide any additional electric lighting and power required for the trailer. Contractor shall make adequate provisions for heating and cooling as required.

1.03 CONSTRUCTION AIDS:

A. Plant and Equipment:

- (1) Contractor shall furnish, operate, and maintain a complete plant for fabricating, handling, conveying, installing, and erecting materials and equipment; and for conveyances for transporting workers. Include elevators, hoists, debris chutes, and other equipment, tools, and appliances necessary for performance of the Work.
- (2) Contractor shall maintain plant and equipment in safe and efficient operating condition. Damages due to defective plant and equipment, and uses made thereof, shall be repaired by Contractor at no expense to the District.

- B. None of the District's tools and equipment shall be used by Contractor for the performance of the Work.

1.04 BARRIERS AND ENCLOSURES:

- A. Contractor shall obtain the District's written permission for locations and types of temporary barriers and enclosures, including fire-rated materials proposed for use, prior to their installation.
- B. Contractor shall provide and maintain temporary enclosures to prevent public entry and to protect persons using other buildings and portions of the Site and/or Premises, the public, and workers. Contractor shall also protect the Work and existing facilities from the elements, and adjacent construction and improvements, persons, and trees and plants from damage and injury from demolition and construction operations.
- C. Contractor shall provide site access to existing facilities for persons using other buildings and portions of the Site, the public, and for deliveries and other services and activities.
- D. Tree and Plant Protection:
 - (1) Contractor shall preserve and protect existing trees and plants on the Premises that are not designated or required to be removed, and those adjacent to the Premises.
 - (2) Contractor shall provide barriers to a minimum height of 4'-0" around drip line of each tree and plant, around each group of trees and plants, as applicable, in the proximity of demolition and construction operations, or as denoted on the Plans.
 - (3) Contractor shall not park trucks, store materials, perform Work or cross over landscaped areas. Contractor shall not dispose of paint thinners, water from cleaning, plastering or concrete operations, or other deleterious materials in landscaped areas, storm drain systems, or sewers. Plant materials damaged as a result of the performance of the Work shall, at the option of the District and at Contractor's expense, either be replaced with new plant materials equal in size to those damaged or by payment of an amount representing the value of the damaged materials as determined by the District.
 - (4) Contractor shall remove soil that has been contaminated during the performance of the Work by oil, solvents, and other materials which could be harmful to trees and plants, and replace with good soil, at Contractor's expense.
 - (5) Excavation around Trees:
 - (a) Excavation within drip lines of trees shall be done only where absolutely necessary and with written permission from the District.
 - (b) Where trenching for utilities is required within drip lines, tunneling under and around roots shall be by hand digging and

shall be approved by the District. Main lateral roots and taproots shall not be cut. All roots 2 inches in diameter and larger shall be tunneled under and heavily wrapped with wet burlap so as to prevent scarring or excessive drying. Smaller roots that interfere with installation of new work may be cut with prior approval by the District. Roots must first be cut with a Vermeer, or equivalent, root cutter prior to any trenching.

- (c) Where excavation for new construction is required within drip line of trees, hand excavation shall be employed to minimize damage to root system. Roots shall be relocated in backfill areas wherever possible. If encountered immediately adjacent to location of new construction, roots shall be cut approximately 6 inches back from new construction.
- (d) Approved excavations shall be carefully backfilled with the excavated materials approved for backfilling. Backfill shall conform to adjacent grades without dips, sunken areas, humps, or other surface irregularities. Do not use mechanical equipment to compact backfill. Tamp carefully using hand tools, refilling and tamping until Final Acceptance as necessary to offset settlement.
- (e) Exposed roots shall not be allowed to dry out before permanent backfill is placed. Temporary earth cover shall be provided, or roots shall be wrapped with four layers of wet, untreated burlap and temporarily supported and protected from damage until permanently relocated and covered with backfill.
- (f) Accidentally broken roots should be sawed cleanly 3 inches behind ragged end.

1.05 SECURITY:

The Contractor shall be responsible for project security for materials, tools, equipment, supplies, and completed and partially completed Work.

1.06 TEMPORARY CONTROLS:

A. Noise Control:

- (1) Contractor acknowledges that adjacent facilities may remain in operation during all or a portion of the Work period, and it shall take all reasonable precautions to minimize noise as required by applicable laws and the Contract Documents.
- (2) Notice of proposed noisy operations, including without limitation, operation of pneumatic demolition tools, concrete saws, and other equipment, shall be submitted to the District a minimum of forty-eight (48) hours in advance of their performance.

B. Noise and Vibration:

- (1) Equipment and impact tools shall have intake and exhaust mufflers.
- (2) Contractor shall cooperate with District to minimize and/or cease the use of noisy and vibratory equipment if that equipment becomes objectionable by its longevity.

C. Dust and Dirt:

- (1) Contractor shall conduct demolition and construction operations to minimize the generation of dust and dirt, and prevent dust and dirt from interfering with the progress of the Work and from accumulating in the Work and adjacent areas including, without limitation, occupied facilities.
- (2) Contractor shall periodically water exterior demolition and construction areas to minimize the generation of dust and dirt.
- (3) Contractor shall ensure that all hauling equipment and trucks carrying loads of soil and debris shall have their loads sprayed with water or covered with tarpaulins, and as otherwise required by local and state ordinance.
- (4) Contractor shall prevent dust and dirt from accumulating on walks, roadways, parking areas, and planting, and from washing into sewer and storm drain lines.

D. Water:

- (1) Contractor shall not permit surface and subsurface water, and other liquids, to accumulate in or about the vicinity of the Premises. Should accumulation develop, Contractor shall control the water or other liquid, and suitably dispose of it by means of temporary pumps, piping, drainage lines, troughs, ditches, dams, or other methods.

E. Pollution:

- (1) No burning of refuse, debris, or other materials shall be permitted on or in the vicinity of the Premises.
- (2) Contractor shall comply with applicable regulatory requirements and anti-pollution ordinances during the conduct of the Work including, without limitation, demolition, construction, and disposal operations.

F. Lighting:

- (1) If portable lights are used after dark, all light must be located so as not to direct light into neighboring property.

1.07 JOB SIGN(S):

A. General:

- (1) Contractor shall provide and maintain a Project identification sign with the design, text, and colors designated by the District and/or the Design Professional; locate sign as approved by the District.
- (2) Signs other than the specified Project sign and or signs required by law, for safety, or for egress, shall not be permitted, unless otherwise approved in advance by the District.

B. Materials:

- (1) Structure and Framing: Structurally sound, new or used wood or metal; wood shall be nominal 3/4-inch exterior grade plywood.
- (2) Sign Surface: Minimum 3/4-inch exterior grade plywood.
- (3) Rough Hardware: Galvanized.
- (4) Paint: Exterior quality, of type and colors selected by the District and/or the Design Professional.

C. Fabrication:

- (1) Contractor shall fabricate to provide smooth, even surface for painting.
- (2) Size: 4'-0" x 8'-0", unless otherwise indicated.
- (3) Contractor shall paint exposed surfaces of supports, framing, and surface material with exterior grade paint: one coat of primer and one coat of finish paint.
- (4) Text and Graphics: As indicated.

1.08 PUBLICITY RELEASES:

- A. Contractor shall not release any information, story, photograph, plan, or drawing relating information about the Project to anyone, including press and other public communications medium, including, without limitation, on website(s) without the written permission of the District.

PART 2 – PRODUCTS Not used.

PART 3 – EXECUTION Not used.

END OF DOCUMENT

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions;
- B. Special Conditions; and
- C. Temporary Facilities and Controls.

1.02 SECTION INCLUDES:

- A. Administrative and procedural requirements for the following:
 - (1) Salvaging non-hazardous construction waste.
 - (2) Recycling non-hazardous construction waste.
 - (3) Disposing of non-hazardous construction waste.

1.03 DEFINITIONS:

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. 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.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.04 PERFORMANCE REQUIREMENTS:

- A. General: Develop waste management plan that results in end-of Project rates for salvage/recycling of fifty percent (50%) by weight (or by volume, but not a combination) of total waste generated by the Work.

1.05 SUBMITTALS:

- A. Waste Management Plan: Submit waste management plan within 30 days of date established for commencement of the Work.
- B. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit copies of report. Include the following information:
 - (1) Material category.
 - (2) Generation point of waste.
 - (3) Total quantity of waste in tons or cubic yards.
 - (4) Quantity of waste salvaged, both estimated and actual in tons or cubic yards.
 - (5) Quantity of waste recycled, both estimated and actual in tons or cubic yards.
 - (6) Total quantity of waste recovered (salvaged plus recycled) in tons or cubic yards.
 - (7) Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.
- C. Waste Reduction Calculations: Before request for final payment, submit copies of calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.
- D. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.
- E. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.
- F. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- G. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

- H. CHPS Submittal: CHPS letter template for Credit ME2.0 and ME2.1, signed by Contractor, tabulating total waste material, quantities diverted and means by which it is diverted, and statement that requirements for the credit have been met.
- I. Qualification Data: For Waste Management Coordinator.
- J. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.
- K. Submittal procedures and quantities are specified in Document 01 33 00.

1.06 QUALITY ASSURANCE:

- A. Waste Management Coordinator Qualifications: LEED Accredited Professional by U.S. Green Building Council.
- B. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Waste Management Conference: Conduct conference at Project site to comply with requirements. Review methods and procedures related to waste management including, but not limited to, the following:
 - (1) Review and discuss waste management plan including responsibilities of Waste Management Coordinator.
 - (2) Review requirements for documenting quantities of each type of waste and its disposition.
 - (3) Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
 - (4) Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
 - (5) Review waste management requirements for each trade.

1.07 WASTE MANAGEMENT PLAN:

- A. General: Develop plan consisting of waste identification, waste reduction work plan, and cost/revenue analysis. Indicate quantities by weight or volume, but use same units of measurement throughout waste management plan.
- B. Waste Identification: Indicate anticipated types and quantities of site-clearing and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.

- C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
- (1) Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
 - (2) Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
 - (3) Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
 - (4) Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
 - (5) Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
 - (6) Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be located.

PART 2 - PRODUCTS Not Used.

PART 3 - EXECUTION

3.01 PLAN IMPLEMENTATION:

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
- (1) Comply with Document 01 50 00 for operation, termination, and removal requirements.
- B. **[Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan. Coordinator shall be present at Project site full time for duration of Project.]**

- C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.
 - (1) Distribute waste management plan to everyone concerned within 3 days of submittal return.
 - (2) Distribute waste management plan to entities when they first begin work on site. Review plan procedures and locations established for salvage, recycling, and disposal.
- D. 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 of Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
 - (2) Comply with Document 01 50 00 for controlling dust and dirt, environmental protection, and noise control.

3.02 RECYCLING CONSTRUCTION WASTE:

- A. General: Recycle paper and beverage containers used by on-site workers.
- B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to the Contractor.
- C. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.
 - (1) Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project Site. Include list of acceptable and unacceptable materials at each container and bin.
 - (a) Inspect containers and bins for contamination and remove contaminated materials if found.
 - (2) Stockpile processed materials on site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - (3) Stockpile materials away from construction area. Do not store within drip line of remaining trees.
 - (4) Store components off the ground and protect from the weather.

- (5) Remove recyclable waste off District property and transport to recycling receiver or processor.
- D. Packaging:
 - (1) Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
 - (2) Polystyrene Packaging: Separate and bag material.
 - (3) Pallets: As much as possible, require deliveries using pallets to remove pallets from Project Site. For pallets that remain on Site, break down pallets into component wood pieces and comply with requirements for recycling wood.
 - (4) Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.
- E. Site-Clearing Wastes: Chip brush, branches, and trees on site.
- F. Wood Materials:
 - (1) Clean Cut-Offs of Lumber: Grind or chip into small pieces.
 - (2) Clean Sawdust: Bag sawdust that does not contain painted or treated wood.
- G. Gypsum Board: Stack large clean pieces on wood pallets and store in a dry location.
 - (1) Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.

3.03 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: Transport waste materials off District property and legally dispose of them.

END OF SECTION

FIELD OFFICES

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions;
- B. Special Conditions; and
- C. Temporary Facilities and Controls.

1.02 SECTION INCLUDES:

- A. Requirements for Field Offices and Field Office Trailers.

1.03 SUMMARY:

- A. General: Contractor shall provide District's Field Office Trailer and contents, for District's use exclusively, during the term of the Contract.
- B. Property: Trailer, furniture, furnishings, equipment, and the like, supplied by the Contractor with the Office Trailer shall remain the property of the Contractor; District property items installed, delivered, and the like by District within the Office Trailer will remain District's property.
- C. Modifications: District reserves the right to modify the trailer or contents, or both, as may be deemed proper by District.
- D. Condition: Trailer and contents shall be clean, neat, substantially finished, in good, proper, and safe condition for use, operation, and the like; the trailer and contents shall not be required to be new.
- E. Installation Timing: Provide safe, fully furnished, functional, proper, complete, and finished trailer properly ready for entire use, within fourteen (14) calendar days of District's notification of the issuance of Notice to Proceed.

1.04 SUBMITTALS:

- A. General: Submit submittals to District in quantity, format, type, and the like, as specified herein.
- B. Office Trailer Data: One (1) copy of manufacturer's descriptive data, technical descriptions, regulatory compliance, industry standards, installation, removal, and maintenance instructions.

- C. Equipment Data: Two (2) copies of manufacturer data for each type of equipment, if directed by District.
- D. Furniture and Furnishings Data: Two (2) copies of manufacturer data for each type of equipment, if directed by District.
- E. Plans: One (1) reproducible copy of appropriately scaled plans of trailer layout. Plans shall include, but not be limited to: lighting; furniture; equipment; telephone and electrical outlets; and the like.
- F. Product Samples: One (1) complete and entire unit of each type, if directed by District.

1.05 QUALITY ASSURANCE

- A. Standards: In the event that provisions of codes, regulations, safety orders, Contract Documents, referenced manufacturer's specifications, manufacturer's instructions, industry standards, and the like, are in conflict, the more restrictive and higher quality shall govern.
- B. Installer: Installer or Installers engaged by Contractor must have a minimum of five (5) years of documented and properly authenticated successful experience of specialization in the installation of the items or systems, or both, specified herein.
- C. Manufacturer: Contractor shall obtain products from nationally and industry recognized Manufacturer with five (5) years minimum, of immediately recent, continuous, documented and properly authenticated successful experience of specialization in the manufacture of the product specified herein.
- D. State Personnel Training: Provide proper training for maintenance and operations, including emergency procedures, and the like, as directed by District.
- E. Units: Shall be sound and free of defects, and shall not include any damage or defect that will impair the safety, installation, performance, or the durability of the entire Office Trailer and appurtenant systems.

1.06 REGULATORY REQUIREMENTS

- A. General: Work shall be executed in accordance with applicable Codes, Regulations, Statutes, Enactments, Rulings, Laws, each authority having jurisdiction, and including, but not limited to, Regulatory Requirements specified herein.
- B. California Building Standards Code ("CBSC").
- C. California Code of Regulations, Title 25, Chapter 3, Sub Chapter 2, Article 3 ("CCR").

- D. Coach Insignia: Trailer shall display California Commercial Coach Insignia; such insignia shall be deemed to show that the trailer is in accordance with the Construction and Fire Safety requirements of CCR.

PART 2 – PRODUCTS

2.01 FIELD OFFICE TRAILER

- A. General: Provide entire Field Office Trailer of type, function, operation, capacity, size, complete with controls, safety devices, accessories, and the like, for proper and durable installation. Partitions, walls, ceiling, and other interior and exterior surfaces shall be appropriately finished, including, but not limited to, trim, painting, wall base, floor covering, suspended or similar ceiling, and the like; provide systems, components, units, nuts, bolts, screws, anchoring devices, fastening devices, washers, accessories, adhesives, sealants, and other items of type, grade, and class required for the particular use, not identified but required for a complete, weather-tight, appropriately operating, and finished installation.
- B. Manufacturers: General Electric Capital Modular Space; The Space Place, Inc.; or equal.
- C. Program: Provide a wheel-mounted trailer with stairs, landings, platforms, ramps, and the like, in good, proper, safe, clean, and properly finished condition; with proper heavy duty locks, and other proper and effective security at all doors, windows, and the like. Trailer shall be maintained in good, proper, safe, clean, and properly finished condition during the Contract.
 - (1) Nominal Trailer Size: Four hundred eighty (480) square feet, minimum.
 - (2) Stairs, Platform: Properly finished stairs, platforms, and ramps.
 - (3) Doors: Two (2), three (3) foot wide exterior doors with locksets; finished ramp, steps, and entry platform at each exterior door.
 - (4) Keys: Submit five (5) keys for each door, window, furniture unit, and the like. There shall be no other key copies or originals available; each key shall be identified for District; and shall be labeled, or tagged or both, as directed by District.
 - (5) HVAC: Typical HVAC Unit that comes standard with Office Trailer.
 - (6) Lighting: Sixty-five (65) foot-candles illumination minimum at any point, at thirty (30) inches above finished floor throughout from fluorescent light source, exclusively, or as directed by District.
 - (7) Electrical Outlets: One (1) duplex outlet evenly spaced every twelve (12) linear horizontal feet of wall face, and electrical service ready for use.

- (8) Telephones and Telephone Outlets: Two (2) telephone lines wired, connected to telephone utility service, and ready for use, and two (2) telephone instruments, each with two (2)-line capability, speed dial and hands-free feature. Locate each outlet as directed by District.
- (9) Voicemail Messaging System or Answering Machine: One (1) unit, two (2)-line; digital.

2.02 FIELD OFFICE TRAILER ITEMS

- A. General: Provide the Field Office Trailer with the following arranged into two (2) workstations:
 - (1) Desks: Two (2) desks: thirty-six (36) inches by sixty (60) inches; steel, laminated plastic top; locking, one (1) or two (2) file drawers single pedestal; steel; provide five (5) keys to District.
 - (2) Tables: Two (2) tables; thirty-six (36) inches by sixty (60) inches; twenty-nine (29) inches high; steel, laminated plastic top tables; one (1) at each desk.
 - (3) Chairs: Two (2) chairs: swivel; steel; with seat cushion and arms; one (1) at each desk.
 - (4) Waste Baskets: Two (2) waste baskets, one at each desk.
- B. Furniture and Equipment: Provide in the space located to effect efficient and logical use.
 - (1) File cabinet: One (1); four (4) drawer; lateral; steel locking.
 - (2) Plan Table: One (1) plan table: thirty-six (36) inches deep by seventy-two (72) inches wide by forty-two (42) inches high; adjustable; wood or steel; with lockable plan and pencil drawers.
 - (3) Drafting Stool: One (1) drafting stool; swiveling; steel; padded; adjustable; with footrest and casters.
 - (4) Bookshelf: One (1) bookshelf: thirty-six (36) inches deep by seventy-two (72) inches wide by forty-two (42) inches high; adjustable; wood or steel; with lockable plan and pencil drawer.
 - (5) Plan Rack: One (1) wheel mounted plan rack.
 - (6) Waste Baskets: One (1) large waste basket.
 - (7) Coat/Hat Hanger: Wall mounted with minimum capacity for four (4) garments and ten (10) hats.

- (8) Document Management System: Shall include an integrated high-volume printer, copier, and facsimile machine, including stand, base, and storage cabinet; and shall include the following features:
- (a) Type: Laser, dry electrostatic transfer, plain paper, digital, multi-function imaging system.
 - (b) Network: Ethernet or Token Ring network ready, Plug-and-Play.
 - (c) Print, send/receive facsimile from any connected workstation.
 - (d) Resolution: Six hundred (600) dots per inch by six hundred (600) dots per inch, minimum.
 - (e) Print Speed: Twenty (20) pages per minute, minimum.
 - (f) Copies: Twenty (20) copies per minute, minimum.
 - (g) Document Handler: Forty (40) sheet, minimum
 - (h) Collator: Forty (40) bin, minimum, with stapling.
 - (i) Duplexing: Capable.
 - (j) Paper Size: Capable of handling paper sizes to eleven (11) inches by seventeen (17) inches.
 - (k) Paper Cassettes: One (1) each for eight and one half (8.5) inches by eleven (11) inches, eight and one half (8.5) inches by fourteen (14) inches, and eleven (11) inches by seventeen (17) inches paper sizes; minimum two hundred fifty (250) sheets per cassette.
 - (l) Reduction/Enlargement: Capable of reduction to twenty-five percent (25%) and enlargement to two hundred percent (200%).
 - (m) Facsimile Electronic Storage: Capable of storing minimum of fifty (50) speed dial numbers, group faxing and broadcast faxing.
 - (n) Facsimile Scanning: Capable of scanning into memory a minimum of one hundred (100) pages with maximum scan time of three (3) seconds per page.
 - (o) Halftone: Sixty-four (64) levels.
 - (p) Redial: Automatic and Manual.

- (9) Maintenance: Contractor shall purchase service agreements for each unit of equipment for the duration of the project plus two (2) months, and shall maintain all equipment in proper working condition. Service agreements shall include provision for replacement of toner cartridges and other items required to effect proper unit use. Service agreements shall also provide for:
 - (a) Unlimited Service Calls.
 - (b) Same Day Response.
 - (c) All parts, labor, preventative maintenance and mileage.
 - (d) All chemicals, such as toner, fixing agent, and the like.
 - (e) System training and setup.
- (10) Portable Toilets: Two (2); each shall include a urinal; each unit shall be a properly enclosed chemical unit conforming to ANSI Z4.3.
 - (a) Location: As directed by District.
 - (b) Maintenance: Maintain each unit and surrounding areas in a clean, hygienic and orderly manner, at all time. Empty, clean, and sanitize each unit each day at a location and time as directed by District.
 - (c) Removal: Relocate, or remove from the site, each Portable Toilet. Upon such directive by District, the Contractor shall forthwith relocate or remove each Portable Toilet and submit the affected areas to a condition which existed prior to the installation of each Portable Toilet, within three (3) calendar days, or as directed by District in writing, at no cost to District.

2.03 UTILITY AND SERVICES

- A. Telephone Service: Contractor shall provide and interface the entire telephone service, and shall properly and timely pay for telephone service for District's non-long-distance use.
- B. Electrical Service: Provide all proper connections and continuously pay for service for the duration of the Work.

2.04 FINISHES

- A. General: Manufacturer standard finish system over surfaces properly cleaned, pretreated, and prepared to obtain proper bond; all visible surfaces shall be coated.
- B. Finish: Color as selected by District from manufacturer standard palette.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. General: Properly prepare area and affected items to receive the Work. Set Work accurately in location, alignment, and elevation; rigidly, securely, and firmly anchor to appropriate structure; install plumb, straight, square, level, true, without racking, rigidly anchored to proper solid blocking, substrate, and the like; provide appropriate type and quantity of reinforcements, fasteners, adhesives, self-adhesive and other tapes; lubricants, coatings, accessories, and the like, as required for a complete, structurally rigid, stable, sound, and appropriately finished installation, in accordance with manufacturer's published instructions, and as indicated. The more restrictive and higher quality requirement shall govern. Moving parts shall be properly secured, without binding, looseness, noise, and the like.
- B. Installation: Install in accordance with 25 CCR 3.2.3 and as directed by District; jack up trailer and level both ways; mount on proper concrete piers with all load off wheels; provide required tie down and accessories per Section 4368 of referenced CCR, and as directed by District.
- C. Rejected Work: Work, materials, unit, items, systems, and the like, not accepted by District shall be deemed rejected, and shall forthwith be removed and replaced with proper and new Work, materials, unit, items, systems, and the like at no cost to District.
- D. Standard: Comply with manufacturer's published instructions, or with instructions as shown or indicated; the more restrictive and higher quality requirement shall govern.
- E. Location: As directed by District.
- F. Fire Resistance: Construct and install in accordance with UL requirements.
- G. Maintenance: Contractor shall maintain trailer and adjacent areas in a safe, clean and hygienic condition throughout the duration of the Work, and as directed by District. Properly repair or replace furniture or other items, as directed by District. Properly remove unsafe, damaged, or broken furniture, or similar items, and replace with safe and proper items. Contractor shall pay cost of all services, repair, and maintenance, or replacement of each item.
- H. Janitorial Service: Provide professional janitorial services, including, but not limited to, trash, waste paper baskets, fill paper dispensers; clean and dust all furniture, files, and the like; sweep and mop resilient and similar flooring; and vacuum carpeting and similar flooring.
 - (1) Frequency: Two (2) times per week, minimum.
- I. Removal: Properly remove the Office Trailer and contents from the Site upon completion of the Contract, or as directed by District in writing. Forthwith properly patch and repair affected areas; replace damaged items with new

items. Carefully and properly inventory, clean, pack, store, and protect District property; submit District property to District at a date, time and location as directed by District.

END OF DOCUMENT

OWNER-FURNISHED PRODUCTS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions;
- B. Special Conditions; and
- C. Materials and Equipment.

1.02 SECTION INCLUDES

- A. Requirements for the following:
 - (1) Installing Owner-furnished materials and equipment.
 - (2) Providing necessary utilities, connections and rough-ins.

1.03 DEFINITIONS

- A. Owner: District, who is providing/furnishing materials and equipment.
- B. Installing Contractor: Contractor, who is installing the materials and equipment furnished by the Owner.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Receive, store and handle products in accordance with the manufacturer's instructions.
- B. Protect equipment items as required to prevent damage during storage and construction.

PART 2 – PRODUCTS

2.01 GENERAL PRODUCT REQUIREMENTS

- A. Installing Contractor's Responsibilities:
 - (1) Verify mounting and utility requirements for Owner-furnished materials and equipment items.
 - (2) Provide mounting and utility rough in for all items where required.

- (a) Rough in locations, sizes, capacities, and similar type items shall be as indicated and required by product manufacturer.
- B. Owner and Installing Contractor(s) Responsibilities:
- (1) Owner-Furnished/Contractor Installed ("OFCI"): Furnished by the Owner; installed by the Installing Contractor.
 - (a) General: Owner and Installing Contractor(s) will coordinate deliveries of materials and equipment to coincide with the construction schedule.
 - (b) Owner will furnish specified materials and equipment delivered to the site. Owner/vendor's representative shall be present on Site at the time of delivery to comply with the contract requirements and Specifications Section 01 43 00, Materials and Equipment, Article 1.04.
 - (c) The Owner furnishing specified materials and equipment is responsible to provide manufacturer guarantees as required by the Contract to the Installing Contractor.
 - (d) The Installing Contractor shall:
 - 1) Review, verify and accept the approved manufacturer's submittal/Shop Drawings for all materials and equipment required to be installed by the Installer Contractor and furnished by the Owner. Any discrepancies, including but not limited to possible space conflicts, should be brought to the attention of the Project Manager and/or Program Manager, if applicable.
 - 2) Coordinate timely delivery. Installing Contractor shall receive materials and equipment at Site when delivered and give written receipt at time of delivery, noting visible defects or omissions; if such declaration is not given, the Installing Contractor shall assume responsibility for such defects and omissions.
 - 3) Store materials and equipment until ready for installation and protect from loss and damage. Installing Contractor is responsible for providing adequate storage space.
 - 4) Coordinate with other bid package contractors and field measurement to ensure complete installation.
 - 5) Uncrate, assemble, and set in place.
 - 6) Provide adequate supports.

- 7) Install materials and equipment in accordance with manufacturer's recommendations, instructions, and Shop Drawings, supply labor and material required, and make mechanical, plumbing, and electrical connections required to operate equipment.
- 8) Be certified by equipment manufacturer for installation of the specific equipment supplied by the Owner.
- 9) Provide anchorage and/or bracing as required for seismic restraint per Title 24, UBC Standard 27-11 and all other applicable codes.
- 10) Provide the contract-required warranty and guarantee for all work, materials and equipment, and installation upon its completion and acceptance by the District. Guarantee includes all costs associated with the removal, shipping to and from the Site, and re-installation of any equipment found to be defective.

C. Compatibility with Space and Service Requirements:

- (1) Equipment items shall be compatible with space limitations indicated and as shown on the Contract Documents and specified in other sections of the Specifications.
- (2) Modifications to equipment items required to conform to space limitations specified for rough in shall not cause additional cost to the District.

D. Manufacturer's printed descriptions, specifications, and instructions shall govern the Work unless specifically indicated or specified otherwise.

2.02 FURNISHED MATERIALS AND EQUIPMENT

- A. All furnished materials and equipment are indicated or scheduled on the Contract Documents.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install equipment items in accordance with the manufacturer's instructions.
- B. Set equipment items securely in place, rigidly or flexibly mounted in accordance with manufacturers' directions.
- C. Make electrical and mechanical connections as indicated and required.
- D. Touch-up and restore damaged or defaced finishes to the Owner's satisfaction.

3.02 CLEANING AND PROTECTION

- A. Repair or replace items not acceptable to the Architect or Owner.
- B. Upon completion of installation, clean equipment items in accordance with manufacturer's recommendations, and protect from damage until final acceptance of the Work by the Owner.

END OF DOCUMENT

SECTION 01 66 00

PRODUCT DELIVERY, STORAGE AND HANDLING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Site Access, Conditions and Requirements;
- B. Special Conditions.

1.02 PRODUCTS

- A. Products are as defined in the General Conditions.
- B. Contractor shall not use and/or reuse materials and/or equipment removed from existing Premises, except as specifically permitted by the Contract Documents.
- C. Contractor shall provide interchangeable components of the same manufacturer, for similar components.

1.03 TRANSPORTATION AND HANDLING

- A. Contractor shall transport and handle Products in accordance with manufacturer's instructions.
- B. Contractor shall promptly inspect shipments to confirm that Products comply with requirements, quantities are correct, and products are undamaged.
- C. Contractor shall provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.

1.04 STORAGE AND PROTECTION

- A. Contractor shall store and protect Products in accordance with manufacturer's instructions, with seals and labels intact and legible. Contractor shall store sensitive products in weather-tight, climate controlled enclosures.
- B. For exterior storage of fabricated Products, Contractor shall place on sloped supports, above ground.
- C. Contractor shall provide off-site storage and protection when Site does not permit on-site storage or protection.

- D. Contractor shall cover products subject to deterioration with impervious sheet covering and provide ventilation to avoid condensation.
- E. Contractor shall store loose granular materials on solid flat surfaces in a well-drained area and prevent mixing with foreign matter.
- F. Contractor shall provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.
- G. Contractor shall arrange storage of Products to permit access for inspection and periodically inspect to assure Products are undamaged and are maintained under specified conditions.

PART 2 – PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

FIELD ENGINEERING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Site Investigation, and Soils Investigation Report;
- B. Special Conditions;
- C. Site-Visit Certification.

1.02 REQUIREMENTS INCLUDED:

- A. Contractor shall provide and pay for field engineering services by a California-registered engineer, required for the project, including, without limitations:
 - (1) Survey work required in execution of the Project.
 - (2) Civil or other professional engineering services specified, or required to execute Contractor's construction methods.

1.03 QUALIFICATIONS OF SURVEYOR OR ENGINEERS:

Contractor shall only use a qualified licensed engineer or registered land surveyor, to whom District makes no objection.

1.04 SURVEY REFERENCE POINTS:

- A. Existing basic horizontal and vertical control points for the Project are those designated on the Drawings.
- B. Contractor shall locate and protect control points prior to starting Site Work and preserve all permanent reference points during construction. In addition Contractor shall:
 - (1) Make no changes or relocation without prior written notice to District and Architect.
 - (2) Report to District and Architect when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
 - (3) Require surveyor to replace Project control points based on original survey control that may be lost or destroyed.

1.05 RECORDS:

Contractor shall maintain a complete, accurate log of all control and survey work as it progresses.

1.06 SUBMITTALS:

- A. Contractor shall submit name and address of Surveyor and Professional Engineer to District and Architect prior to its/their work on the Project.
- B. On request of District and Architect, Contractor shall submit documentation to verify accuracy of field engineering work, at no additional cost to the District.
- C. Contractor shall submit a certificate signed by registered engineer or surveyor certifying that elevations and locations of improvements are in conformance or nonconformance with Contract Documents.

PART 2 – PRODUCTS Not Used.

PART 3 - EXECUTION

3.01 COMPLIANCE WITH LAWS:

Contractor is responsible for meeting all applicable codes, OSHA, safety and shoring requirements.

3.02 NONCONFORMING WORK:

Contractor is responsible for any re-surveying required by correction of nonconforming work.

END OF DOCUMENT

CUTTING AND PATCHING

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Inspector, Inspections, and Tests, Integration of Work, Nonconforming Work, and Correction of Work, and Uncovering Work;
- B. Special Conditions;
- C. Hazardous Materials Procedures and Requirements;
- D. Hazardous Materials Certification;
- E. Lead-Based Paint Certification;
- F. Imported Materials Certification.

1.02 CUTTING AND PATCHING:

- A. Contractor shall be responsible for all cutting, fitting, and patching, including associated excavation and backfill, required to complete the Work or to:
 - (1) Make several parts fit together properly.
 - (2) Uncover portions of Work to provide for installation of ill-timed Work.
 - (3) Remove and replace defective Work.
 - (4) Remove and replace Work not conforming to requirements of Contract Documents.
 - (5) Remove Samples of installed Work as specified for testing.
 - (6) Provide routine penetrations of non-structural surfaces for installation of piping and electrical conduit.
 - (7) Attaching new materials to existing remodeling areas – including painting (or other finishes) to match existing conditions.
- B. In addition to Contract requirements, upon written instructions from the District, Contractor shall uncover Work to provide for observations of covered Work in accordance with the Contract Documents; remove samples of

installed materials for testing as directed by District; and remove Work to provide for alteration of existing Work.

- C. Contractor shall not cut or alter Work, or any part of it, in such a way that endangers or compromises the integrity of the Work, the Project, or work of others.

1.03 SUBMITTALS:

- A. Prior to any cutting or alterations that may affect the structural safety of Project, or work of others, and well in advance of executing such cutting or alterations, Contractor shall submit written notice to District pursuant to the applicable notice provisions of the Contract Documents, requesting consent to proceed with the cutting or alteration, including the following:
 - (1) The work of the District or other trades.
 - (2) Structural value or integrity of any element of Project.
 - (3) Integrity or effectiveness of weather-exposed or weather-resistant elements or systems.
 - (4) Efficiency, operational life, maintenance or safety of operational elements.
 - (5) Visual qualities of sight-exposed elements.
- B. Contractor's Request shall also include:
 - (1) Identification of Project.
 - (2) Description of affected Work.
 - (3) Necessity for cutting, alteration, or excavations.
 - (4) Effects of Work on District, other trades, or structural or weatherproof integrity of Project.
 - (5) Description of proposed Work:
 - (a) Scope of cutting, patching, alteration, or excavation.
 - (b) Trades that will execute Work.
 - (c) Products proposed to be used.
 - (d) Extent of refinishing to be done.
 - (6) Alternates to cutting and patching.
 - (7) Cost proposal, when applicable.

- (8) The scheduled date the Contractor intends to perform the Work and the duration of time to complete the Work.
- (9) Written permission of District or other District contractor(s) whose work will be affected.

1.04 QUALITY ASSURANCE:

- A. Contractor shall ensure that cutting, fitting, and patching shall achieve security, strength, weather protection, appearance for aesthetic match, efficiency, operational life, maintenance, safety of operational elements, and the continuity of existing fire ratings.
- B. Contractor shall ensure that cutting, fitting, and patching shall successfully duplicate undisturbed adjacent profiles, materials, textures, finishes, colors, and that materials shall match existing construction. Where there is dispute as to whether duplication is successful or has been achieved to a reasonable degree, the District's decision shall be final.

1.05 PAYMENT FOR COSTS:

- A. Cost caused by ill-timed or defective Work or Work not conforming to Contract Documents, including costs for additional services of the District, its consultants, including but not limited to the Construction Manager, the Architect, the Project Inspector(s), Engineers, and Agents, will be paid by Contractor and/or deducted from the Contract by the District.
- B. District shall only pay for cost of Work if it is part of the original Contract Price or if a change has been made to the contract in compliance with the provisions of the General Conditions. Cost of Work performed upon instructions from the District, other than defective or nonconforming Work, will be paid by District on approval of written Change Order. Contractor shall provide written cost proposals prior to proceeding with cutting and patching.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Contractor shall provide for replacement and restoration of Work removed. Contractor shall comply with the Contract Documents and with the Industry Standard(s), for the type of Work, and the Specification requirements for each specific product involved. If not specified, Contractor shall first recommend a product of a manufacturer or appropriate trade association for approval by the District.
- B. Materials to be cut and patched include those damaged by the performance of the Work.

PART 3 – EXECUTION

3.01 INSPECTION:

- A. Contractor shall inspect existing conditions of the Site and the Work, including elements subject to movement or damage during cutting and patching, excavating and backfilling. After uncovering Work, Contractor shall inspect conditions affecting installation of new products.
- B. Contractor shall report unsatisfactory or questionable conditions in writing to District as indicated in the General Conditions and shall proceed with Work as indicated in the General Conditions by District.

3.02 PREPARATION:

- A. Contractor shall provide shoring, bracing and supports as required to maintain structural integrity for all portions of the Project, including all requirements of the Project.
- B. Contractor shall provide devices and methods to protect other portions of Project from damage.
- C. Contractor shall, provide all necessary protection from weather and extremes of temperature and humidity for the Project, including without limitation, any work that may be exposed by cutting and patching Work. Contractor shall keep excavations free from water.

3.03 ERECTION, INSTALLATION AND APPLICATION:

- A. With respect to performance, Contractor shall:
 - (1) Execute fitting and adjustment of products to provide finished installation to comply with and match specified tolerances and finishes.
 - (2) Execute cutting and demolition by methods that will prevent damage to other Work, and provide proper surfaces to receive installation of repairs and new Work.
 - (3) Execute cutting, demolition excavating, and backfilling by methods that will prevent damage to other Work and damage from settlement.
- B. Contractor shall employ original installer or fabricator to perform cutting and patching for:
 - (1) Weather-exposed surfaces and moisture-resistant elements such as roofing, sheet metal, sealants, waterproofing, and other trades.
 - (2) Sight-exposed finished surfaces.
- C. Contractor shall execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances,

and finishes as shown or specified in the Contract Documents including, without limitation, the Drawings and Specifications.

- D. Contractor shall fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces. Contractor shall conform to all Code requirements for penetrations or the Drawings and Specifications, whichever calls for a higher quality or more thorough requirement. Contractor shall maintain integrity of both rated and non-rated fire walls, ceilings, floors, etc.
- E. Contractor shall restore Work which has been cut or removed. Contractor shall install new products to provide completed Work in accordance with requirements of the Contract Documents and as required to match surrounding areas and surfaces.
- F. Contractor shall refinish all continuous surfaces to nearest intersection as necessary to match the existing finish to any new finish.

END OF DOCUMENT

ALTERATION PROJECT PROCEDURES

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Integration of Work, Purchase of Materials and Equipment, Uncovering of Work and Non-conforming Work and Correction of Work and Trenches;
- B. Special Conditions.

PART 2 - PRODUCTS

2.01 PRODUCTS FOR PATCHING AND EXTENDING WORK:

- A. New Materials: As specified in the Contract Documents including, without limitation, in the Specifications, Contractor shall match existing products, conditions, and work for patching and extending work.
- B. Type and Quality of Existing Products: Contractor shall determine by inspection, by testing products where necessary, by referring to existing conditions and to the Work as a standard.

PART 3 - EXECUTION

3.01 EXAMINATION:

- A. Contractor shall verify that demolition is complete and that areas are ready for installation of new Work.
- B. By beginning restoration Work, Contractor acknowledges and accepts the existing conditions.

3.02 PREPARATION:

- A. Contractor shall cut, move, or remove items as necessary for access to alterations and renovation Work. Contractor shall replace and restore these at completion.
- B. Contractor shall remove unsuitable material not as salvage unless otherwise indicated in the Contract Documents. Unsuitable material may include, without limitation, rotted wood, corroded metals, and deteriorated masonry and concrete. Contractor shall replace materials as specified for finished Work.

- C. Contractor shall remove debris and abandoned items from all areas of the Site and from concealed spaces.
- D. Contractor shall prepare surface and remove surface finishes to provide for proper installation of new Work and finishes.
- E. Contractor shall close openings in exterior surfaces to protect existing work from weather and extremes of temperature and humidity. Contractor shall insulate ductwork and piping to prevent condensation in exposed areas. Contractor shall insulate building cavities for thermal and/or acoustical protection, as detailed.

3.03 INSTALLATION:

- A. Contractor shall coordinate Work of all alternations and renovations to expedite completion and to accommodate District occupancy.
- B. Designated Areas and Finishes: Contractor shall complete all installations in all respects, including operational, mechanical work and electrical work.
- C. Contractor shall remove, cut, and patch Work in a manner to minimize damage and to provide a means of restoring Products and finishes to original or specified condition.
- D. Contractor shall refinish visible existing surfaces to remain in renovated rooms and spaces, to specified condition for each material, with a neat and square or straight transition to adjacent finishes.
- E. Contractor shall install products as specified in the Contract Documents, including without limitation, the Specifications.

3.04 TRANSITIONS:

- A. Where new Work abuts or aligns with existing, Contractor shall perform a smooth and even transition. Patched Work must match existing adjacent work in texture and appearance.
- B. When finished surfaces are cut so that a smooth transition with new Work is not possible, Contractor shall terminate existing surface along a straight line at a natural line of division and make a recommendation for resolution to the District and the Architect for review and approval.

3.05 ADJUSTMENTS:

- A. Where removal of partitions or walls results in adjacent spaces becoming one, Contractor shall rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
- B. Where a change of plane of 1/4 inch or more occurs, Contractor shall submit a recommendation for providing a smooth transition to the District and the Architect for review and approval.

- C. Contractor shall trim and seal existing wood doors and shall trim and paint metal doors as necessary to clear new floor finish and refinish trim as required.
- D. Contractor shall fit Work at penetrations of surfaces.

3.06 REPAIR OF DAMAGED SURFACES:

- A. Contractor shall patch or replace portions of existing surfaces, which are damaged, lifted, discolored, or showing other imperfections, in the area where the Work is performed.
- B. Contractor shall repair substrate prior to patching finish.

3.07 CULTIVATED AREAS AND OTHER SURFACE IMPROVEMENTS:

- A. Cultivated or planted areas and other surface improvements which are damaged by actions of the Contractor shall be restored by Contractor to their original condition or better, where indicated.
- B. Contractor shall protect and replace, if damaged, all existing guard posts, barricades, and fences.
- C. Contractor shall give special attention to avoid damaging or killing trees, bushes and/or shrubs on the Premises and/or identified in the Contract Documents, including without limitation, the Drawings.

3.08 FINISHES:

- A. Contractor shall finish surfaces as specified in the Contract Documents, including without limitations, the provisions of all Divisions of the Specifications.
- B. Contractor shall finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, Contractor shall refinish entire surface to nearest intersections.

3.09 CLEANING:

- A. Contractor shall continually clean the Site and the Premises as indicated in the Contract Documents, including without limitation, the provisions in the General Conditions and the Specifications regarding cleaning.

END OF DOCUMENT

CONTRACT CLOSEOUT AND FINAL CLEANING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Completion of Work;
- B. Special Conditions;
- C. Temporary Facilities and Controls.

1.02 CLOSEOUT PROCEDURES

Contractor shall comply with all closeout provisions as indicated in the General Conditions.

1.03 FINAL CLEANING

- A. Contractor shall execute final cleaning prior to final inspection.
- B. Contractor shall clean interior and exterior glass and all surfaces exposed to view; remove temporary labels, tape, stains, and foreign substances, polish transparent and glossy surfaces, wax and polish new vinyl floor surfaces, vacuum carpeted and soft surfaces.
- C. Contractor shall clean equipment and fixtures to a sanitary condition.
- D. Contractor shall replace filters of operating equipment.
- E. Contractor shall clean debris from roofs, gutters, down spouts, and drainage systems.
- F. Contractor shall clean Site, sweep paved areas, and rake clean landscaped surfaces.
- G. Contractor shall remove waste and surplus materials, rubbish, and construction facilities from the Site and surrounding areas.

1.04 ADJUSTING

Contractor shall adjust operating products and equipment to ensure smooth and unhindered operation.

1.05 RECORD DOCUMENTS AND SHOP DRAWINGS

- A. Contractor shall legibly mark each item to record actual construction, including:
 - (1) Measured depths of foundation in relation to finish floor datum.
 - (2) Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permit surface improvements.
 - (3) Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - (4) Field changes of dimension and detail.
 - (5) Details not on original Contract Drawings
 - (6) Changes made by modification(s).
 - (7) References to related Shop Drawings and modifications.
- B. Contractor will provide one set of Record Drawings to District.
- C. Contractor shall submit all required documents to District and/or Architect prior to or with its final Application for Payment.

1.06 INSTRUCTION OF DISTRICT PERSONNEL

- A. Before final inspection, at agreed upon times, Contractor shall instruct District's designated personnel in operation, adjustment, and maintenance of products, equipment, and systems.
- B. For equipment requiring seasonal operation, Contractor shall perform instructions for other seasons within six months or by the change of season.
- C. Contractor shall use operation and maintenance manuals as basis for instruction. Contractor shall review contents of manual with personnel in detail to explain all aspects of operation and maintenance.
- D. Contractor shall prepare and insert additional data in Operation and Maintenance Manual when the need for such data becomes apparent during instruction.
- E. Contractor shall review contents of manual with personnel in detail to explain all aspects of operation and maintenance.

1.07 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Contractor shall provide products, spare parts, maintenance, and extra materials in quantities specified in the Specifications and in Manufacturer's recommendations.

- B. Contractor shall provide District with all required Operation and Maintenance Data at one time. Partial or piecemeal submissions of Operation and Maintenance Data will not be accepted.

PART 2 – PRODUCTS Not Used.

PART 3 – EXECUTION Not Used.

END OF DOCUMENT

OPERATION AND MAINTENANCE DATA

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Completion of the Work;
- B. Special Conditions.

1.02 QUALITY ASSURANCE:

Contractor shall prepare instructions and data by personnel experienced in maintenance and operation of described products.

1.03 FORMAT:

- A. Contractor shall prepare data in the form of an instructional manual entitled "OPERATIONS AND MAINTENANCE MANUAL & INSTRUCTIONS" ("Manual").
- B. Binders: Contractor shall use commercial quality, 8-1/2 by 11 inch, three-side rings, with durable plastic covers; two inch maximum ring size. When multiple binders are used, Contractor shall correlate data into related consistent groupings.
- C. Cover: Contractor shall identify each binder with typed or printed title "OPERATION AND MAINTENANCE MANUAL & INSTRUCTIONS"; and shall list title of Project and identify subject matter of contents.
- D. Contractor shall arrange content by systems process flow under section numbers and sequence of Table of Contents of the Contract Documents.
- E. Contractor shall provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- F. Text: The content shall include Manufacturer's printed data, or typewritten data on 24 pound paper.
- G. Drawings: Contractor shall provide with reinforced punched binder tab and shall bind in with text; folding larger drawings to size of text pages.

1.04 CONTENTS, EACH VOLUME:

- A. Table of Contents: Contractor shall provide title of Project; names, addresses, and telephone numbers of the Architect, any engineers, subconsultants,

Subcontractor(s), and Contractor with name of responsible parties; and schedule of products and systems, indexed to content of the volume.

- B. For Each Product or System: Contractor shall list names, addresses, and telephone numbers of Subcontractor(s) and suppliers, including local source of supplies and replacement parts.
- C. Product Data: Contractor shall mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- D. Drawings: Contractor shall supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Contractor shall not use Project Record Documents as maintenance drawings.
- E. Text: Contractor shall include any and all information as required to supplement product data. Contractor shall provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.
- F. Warranties and Bonds: Contractor shall bind in one copy of each.

1.05 MANUAL FOR MATERIALS AND FINISHES:

- A. Building Products, Applied Materials, and Finishes: Contractor shall include product data, with catalog number, size, composition, and color and texture designations. Contractor shall provide information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Contractor shall include Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture Protection and Weather Exposed Products: Contractor shall include product data listing applicable reference standards, chemical composition, and details of installation. Contractor shall provide recommendations for inspections, maintenance, and repair.
- D. Additional Requirements: Contractor shall include all additional requirements as specified in the Specifications.
- E. Contractor shall provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

1.06 MANUAL FOR EQUIPMENT AND SYSTEMS:

- A. Each Item of Equipment and Each System: Contractor shall include description of unit or system, and component parts and identify function, normal operating characteristics, and limiting conditions. Contractor shall

include performance curves, with engineering data and tests, and complete nomenclature, and commercial number of replaceable parts.

- B. Panelboard Circuit Directories: Contractor shall provide electrical service characteristics, controls, and communications.
- C. Contractor shall include color coded wiring diagrams as installed.
- D. Operating Procedures: Contractor shall include start-up, break-in, and routine normal operating instructions and sequences. Contractor shall include regulation, control, stopping, shut-down, and emergency instructions. Contractor shall include summer, winter, and any special operating instructions.
- E. Maintenance Requirements: Contractor shall include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- F. Contractor shall provide servicing and lubrication schedule, and list of lubricants required.
- G. Contractor shall include manufacturer's printed operation and maintenance instructions.
- H. Contractor shall include sequence of operation by controls manufacturer.
- I. Contractor shall provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- J. Contractor shall provide control diagrams by controls manufacturer as installed.
- K. Contractor shall provide Contractor's coordination drawings, with color coded piping diagrams as installed.
- L. Contractor shall provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- M. Contractor shall provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- N. Additional Requirements: Contractor shall include all additional requirements as specified in Specification(s).
- O. Contractor shall provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

1.07 SUBMITTAL:

- A. Contractor shall submit to the District for review two (2) copies of preliminary draft or proposed formats and outlines of the contents of the Manual within thirty (30) days of Contractor's start of Work.
- B. For equipment, or component parts of equipment put into service during construction and to be operated by District, Contractor shall submit draft content for that portion of the Manual within ten (10) days after acceptance of that equipment or component.
- C. Contractor shall submit two (2) copies of a complete Manual in final form prior to final Application for Payment. Copy will be returned with Architect/Engineer comments. Contractor must revise the content of the Manual as required by District prior to District's approval of Contractor's final Application for Payment.
- D. Contractor must submit two (2) copies of revised Manual in final form within ten (10) days after final inspection.

PART 2 – PRODUCTS Not Used.

PART 3 – EXECUTION Not Used.

END OF DOCUMENT

WARRANTIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Warranty/Guarantee Information;
- B. Special Conditions.

1.02 FORMAT

- A. Binders: Contractor shall use commercial quality, 8-1/2 by 11 inch, three-side rings, with durable plastic covers; two inch maximum ring size.
- B. Cover: Contractor shall identify each binder with typed or printed title "WARRANTIES" and shall list title of Project.
- C. Table of Contents: Contractor shall provide title of Project; name, address, and telephone number of Contractor and equipment supplier; and name of responsible principal. Contractor shall identify each item with the number and title of the specific Specification, document, provision, or section in which the name of the product or work item is specified.
- D. Contractor shall separate each warranty with index tab sheets keyed to the Table of Contents listing, providing full information and using separate typed sheets as necessary. Contractor shall list each applicable and/or responsible Subcontractor(s), supplier(s), and/or manufacturer(s), with name, address, and telephone number of each responsible principal(s).

1.03 PREPARATION:

- A. Contractor shall obtain warranties, executed in duplicate by each applicable and/or responsible subcontractor(s), supplier(s), and manufacturer(s), within ten (10) days after completion of the applicable item or work. Except for items put into use with District's permission, Contractor shall leave date of beginning of time of warranty blank until the date of completion is determined.
- B. Contractor shall verify that documents are in proper form, contain full information, and are notarized, when required.
- C. Contractor shall co-execute submittals when required.

D. Contractor shall retain warranties until time specified for submittal.

1.04 TIME OF SUBMITTALS:

- A. For equipment or component parts of equipment put into service during construction with District's permission, Contractor shall submit a draft warranty for that equipment or component within ten (10) days after acceptance of that equipment or component.
- B. Contractor shall submit for District approval all warranties and related documents within ten (10) days after date of completion. Contractor must revise the warranties as required by the District prior to District's approval of Contractor's final Application for Payment.
- C. For items of work delayed beyond date of completion, Contractor shall provide an updated submittal within ten (10) days after acceptance, listing the date of acceptance as start of warranty period.

PART 2 - PRODUCTS Not Used.

PART 3 – EXECUTION Not Used.

END OF DOCUMENT

RECORD DOCUMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Documents on Work;
- B. Special Conditions.

PART 2 - RECORD DRAWINGS

2.01 GENERAL:

- A. As indicated in the Contract Documents, the District will provide Contractor with one set of reproducible, full size original Contract Drawings (mylars).
- B. Contractor shall maintain at each Project Site one set of marked-up plans and shall transfer all changes and information to those marked-up plans, as often as required in the Contract Documents, but in no case less than once each month. Contractor shall submit to the Project Inspector one set of reproducible vellums of the Project Record Drawings ("As-Builts") showing all changes incorporated into the Work since the preceding monthly submittal. The As-Builts shall be available at the Project Site. The Contractor shall submit reproducible vellums at the conclusion of the Project following review of the blueline prints.
- C. Label and date each Record Drawing "RECORD DOCUMENT" in legibly printed letters.
- D. All deviations in construction, including but not limited to pipe and conduit locations and deviations caused by without limitation Change Orders, Construction Claim Directives, RFI's, and Addenda, shall be accurately and legibly recorded by Contractor.
- E. Locations and changes shall be done by Contractor in a neat and legible manner and, where applicable, indicated by drawing a "cloud" around the changed or additional information.

2.02 RECORD DRAWING INFORMATION:

- A. Contractor shall record the following information:

- (1) Locations of Work buried under or outside each building, including, without limitation, all utilities, plumbing and electrical lines, and conduits.
- (2) Actual numbering of each electrical circuit to match panel schedule.
- (3) Locations of significant Work concealed inside each building whose general locations are changed from those shown on the Contract Drawings.
- (4) Locations of all items, not necessarily concealed, which vary from the Contract Documents.
- (5) Installed location of all cathodic protection anodes.
- (6) Deviations from the sizes, locations, and other features of installations shown in the Contract Documents.
- (7) Locations of underground work, points of connection with existing utilities, changes in direction, valves, manholes, catch basins, capped stubouts, invert elevations, etc.
- (8) Sufficient information to locate Work concealed in each building with reasonable ease and accuracy.

In some instances, this information may be recorded by dimension. In other instances, it may be recorded in relation to the spaces in the building near which it was installed.

- B. Contractor shall provide additional drawings as necessary for clarification.
- C. Contractor shall provide reproducible record drawings, made from final Shop Drawings marked "No Exceptions Taken" or "Approved as Noted."
- D. After review and approval of the marked-up specifications by the Project Inspector, Contractor shall provide electronic copies of the drawings (in PDF format) with one file with all of the sheets and one set of individual sheet files at the conclusion of the Project.

PART 3 - RECORD SPECIFICATIONS

3.01 GENERAL:

- A. Contractor shall mark each section legibly to record manufacturer, trade name, catalog number, and supplier of each Product and item of equipment actually installed.
- B. After review and approval of the marked-up specifications by the Project Inspector, Contractor shall provide one electronic copy of the specifications (in PDF format) at the conclusion of the Project.

PART 4 - MAINTENANCE OF RECORD DOCUMENTS

4.01 GENERAL

- A. Contractor shall store Record Documents apart from documents used for construction as follows:
 - (1) Provide files and racks for storage of Record Documents.
 - (2) Maintain Record Documents in a clean, dry, legible condition and in good order.
- B. Contractor shall not use Record Documents for construction purposes.

PART 5 – PRODUCTS Not Used.

END OF DOCUMENT

SELECTIVE BUILDING DEMOLITION

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Remove materials, systems, components, fixtures and equipment as designated and as required for completion of remodeling work indicated.
- B. Coordinate selective demolition for remodeling with mechanical civil, structural and electrical demolition; cap and identify active utilities where not otherwise identified under Division 15 and 16 work.
- C. Contractor shall make efforts to recycle demolished materials rather than landfill materials. Architect will provide a list of recycling companies and locations upon request.

1.2 RELATED WORK

- A. See Hazardous Material Abatement documents by School District's Consultant prior to initiating any demolition.
- B. Not used
- C. Section 01 50 00: Temporary Facilities and Controls
- D. Section 23 00 00: Heating, Ventilating, and Air Conditioning Systems
- E. Section 26 00 00: Electrical Systems

1.3 SUBMITTALS

- A. Submit the following in accordance with Section 01 50 13 Construction Waste Management and Disposal.
 - 1. Waste Management Plan.
 - 2. Demolition procedures and operational sequence for review and acceptance by Architect.
- B. Reports: Submit typewritten reports of surveys conducted with the Owner before and after performance of demolition operations.
- C. Salvageable Items: Submit typewritten list of items to be salvaged, for Owner's approval.

1.4 QUALITY ASSURANCE

- A. Perform demolition in conformance with ANSI A10.6.

1.5 EXISTING CONDITIONS

- A. Site Surveys:

1. Prior to start of demolition operations, conduct survey of existing conditions as specified in Section 01 71 23 Field Engineering. On such survey, list items specified and indicated to be salvaged.
2. Following performance of demolition, inspect and report defects and structural weaknesses of construction and improvements partially demolished, cut, and removed; of construction and improvements remaining; and of adjacent construction and improvements.

- B. Protection: Protect the structural integrity of existing construction and improvements to remain.

1.6 PROTECTION

- A. Do not interfere with use of adjacent building spaces; maintain free and safe passage to and from.

1. Cover and protect existing materials when demolition work is performed in areas where existing materials have not been removed.

- B. Prevent movement of adjacent construction, provide and place bracing and be responsible for safety and support of adjacent construction.

1. Assume liability for such movement, damage and injury.

- C. Cease operation and notify Architect immediately if safety of structure appears to be endangered; take precautions to properly support structure.

1. Do not resume operation until safety is restored.

1.7 EXISTING SERVICES

- A. Disconnect or remove utility services as required for completion of Project; disconnect, stub off, and cap utility service lines not required for new construction.

1. Do not remove utilities discovered during demolition but not indicated without first determining purpose for utility.

- B. Do not disrupt services to adjacent building areas not in Project.

- C. Place markers to indicate location of disconnected services; identify service lines and capping locations on Project Record Documents.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General:

1. Remove and recycle or dispose of items and materials not designated to be salvaged. Disposal shall be at the legal dump site for the material to be disposed.
2. If, in the course of removing designated items and materials, the condition of other materials or the structure so exposed appears to be damaged or of otherwise questionable condition, immediately notify the Architect, who will determine if the other materials or structure shall be removed, and if so to what extent.
3. Recycle or dispose of removed items and materials not indicated or designated for salvage.
4. Nothing to be removed from the site shall be stored, sold, or burned on the site without the Owner's prior written consent.
5. Remove and recycle or dispose of all debris found in each unit at start of work.

B. Items to be Salvaged:

1. Carefully remove materials indicated to be retained by Owner; deliver and store where directed.
 - a. Coordinate extent of existing materials to be retained by Owner with Owner's Representative prior to beginning selective demolition.
2. Carefully disconnect, remove, and protect items indicated and designated to be salvaged, as well as any additional items so directed by the Architect.
3. Package salvaged items that are in satisfactory condition for reinstallation in cardboard and label as to contents. Should a question arise as to whether or not certain items are of suitable condition for reinstallation, consult the Architect for determination.
4. Deliver salvaged items at time and to location directed by the Owner.
5. Reinstall salvaged items in locations indicated, or as designated by the Architect.
6. Salvaged items not indicated or designated for reinstallation in the Work shall remain in storage.
7. Obtain approved list of items to be salvaged, prior to beginning demolition operations. Salvage the following items unless otherwise indicated or directed by the Architect, and transport items to storage site designated by the Contracting Officer:
 - a. Toilets.
 - b. Faucets, removed from sinks.
 - c. Lavatories.
 - d. Toilet partition hardware.
 - e. Exterior and interior doors and hardware; tag hardware and identify.

- f. Window operating hardware and hinges.
- g. Smoke detectors.
- h. Light fixture lenses and globes.
- i. Bronze thresholds at entry doors.
- j. Doors and hardware.

8. Salvaged items rejected by the Contracting Officer shall become the Contractor's property.

C. Mechanical Items Intended for Demolition: Specified in Section 15100.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that conditions are satisfactory for beginning selective building demolition. If unsatisfactory conditions exist, do not begin demolition operations until such conditions have been corrected.

3.2 PREPARATION

- A. Prior to start of demolition operations, prepare a proposed layout and sequence for the Work; coordinate with related Work which requires cutting and sawing.
- B. Review proposed layout and sequence with the Owner and Architect prior to starting demolition operations.
- C. Cap and protect utility lines prior to start of demolition operations.

3.3 GENERAL

- A. As demolition progresses, continuously inspect for damage. Should signs of damage arise, immediately notify the Architect, and stop demolition operations in the affected location until advised as to how to proceed.
- B. Remove items designated for demolition, and as required for the performance of the Work. If in doubt as to whether an item is to be demolished, contact the Architect for a decision prior to proceeding with its demolition.
- C. Remove items carefully; provide for neat and structurally sound junctions between existing and new materials.
- D. Remove all wood members damaged with dry rot to at least 2'-0" beyond apparent damage into sound wood.
- E. As applicable, remove miscellaneous items and fastenings associated with items to be demolished.
- F. Demolish concrete in small sections.

- G. No blasting shall be permitted.
- H. Clean surfaces affected by the demolition operations of all residual adhesives, bitumen, and other adhering materials, as required to afford suitable substrates for the application of new materials.
- I. Demolish indicated appurtenances in an orderly and careful manner.
 - 1. Use methods which do not damage materials indicated to remain.
 - 2. Cut concrete and masonry using masonry saws and hand tools; provide sharp clean cuts requiring minimal patching for new construction.
 - 3. Use impact tools only where specifically approved in advance for areas where operations do not disturb building occupancy.
- J. Perform demolition in accordance with authorities having jurisdiction.
- K. Remove demolished materials from site, unless otherwise directed.
 - 1. Remove from site, contaminated, vermin infested, and dangerous materials encountered and disposed of by safe means so as not to endanger health of workers or public.
- L. Remove tools and equipment upon completion of work; leave area in condition acceptable to Architect.

3.4 CUTTING AND CORING

- A. Make new openings neat, as close as possible to profiles indicated, and only to the extent required to accommodate new Work.
- B. Do not cut or alter structural members without the prior written consent of the Architect.
- C. At concrete, masonry, and other materials where edges of cuts and holes will remain exposed in the completed Work, perform cutting and coring with power equipment.

3.2 REPAIR

- A. Repair damage to adjacent construction caused as result of this work.

END OF DOCUMENT

SITE PREPARATION & PLANT PROTECTION

PART 1 – GENERAL

1.1 DESCRIPTION:

- A. Protecting improvements and vegetation to remain.
- B. Clearing and grubbing.
- C. Removal of existing site improvements including but not limited to concrete, utilities, curbs, fencing, and irrigation system.
- D. Preserve and protect adjoining properties during removal work, site preparation work and construction.
- E. Generally, this project includes renovation of the existing concrete walkway including but not limited to: Protection of existing improvements, demolition, staking, site preparation, storm drainage, earthwork, concrete work, asphalt work, site furnishings, irrigation, and all reasonably incidental and related work as shown on plans and as specified.

1.2 RELATED SECTIONS:

- A. Section 02335, Subgrade Preparation & Base Material

1.3 QUALITY ASSURANCE:

- A. Stipulations – Site Preparation and Demolition
 - 1. Work is in accordance with the Drawings and specifications and includes but is not necessarily limited to the following:
 - a. Clearing and grubbing.
 - b. Identification and protection of vegetation indicated to remain.
 - c. Removal of existing site improvements, such as, paving and bases, concrete curbs, fences, footings, foundations, irrigation system, underground pipes and utilities and structures.
 - 2. Locate and identify existing utility services and protect or disconnect, remove and cap as required for new work.
 - 3. Remove, clean, store and protect all items designated and directed to be salvaged to Owner.

4. Remove, store and protect all items designated and directed to be reinstalled.
5. Obtain and pay for permits required for execution of this work.

1.4 SUBMITTALS:

- A. Photographers or videotape, sufficiently detailed, of existing conditions of adjacent streets, adjacent parking areas, trees and plantings, adjoining construction, and site improvements that might be misconstrued as damage caused by site demolition.
- B. The Contractor is to submit a letter with the relevant material submittals certifying that the products used by the Contractor are consistent with the Environmental Safety Policy of the San Francisco Unified School District.

1.5 PROJECT CONDITIONS:

- A. Coordination : Coordinate this work with the work of other Sections to avoid delay and interference with other work. Refer to the Demolition Plan for site work requirements.
- B. Nuisances: Keep dirt, dust, noise and other objectionable nuisance to a minimum. Use temporary enclosures, coverings and sprinkling, and combinations thereof, as necessary to limit dust to lowest practicable level, except do not use water to the extent that it causes or contaminated run-off.
- C. Traffic: Conduct work to ensure minimum interference with vehicular and pedestrian traffic, and to permit unencumbered access to the school property located outside of the project areas.
 - 1 Do not close or obstruct streets, sidewalks, or other public passageway without permission from authorities having jurisdiction.
 - 2 If required, by governing authorities, provide alternate routes around closed and obstructed traffic ways.
 - 3 Do not drive any type of vehicle or store products on the existing track surfacing or on asphalt that is curing unless the area has been protected per California Track instructions. Vehicles and storage areas are limited to the areas of thickened asphalt pavement section as shown on the drawings or as designated by the District Representative. Protect existing track surfacing per manufacturer's instructions. Submit a protection plan to the District for approval prior to start of demolition work.
- D. Dispose of cleared, grubbed, and removed material that will not be salvaged or recycled on Site.

- E. Salvable Improvements: Carefully remove items indicated to be salvaged and store where designed by the District Representative. Avoid damaging salvage material.
- F. Protections:
 - 1 Prevent movement and settlement of adjacent structures. Install temporary barriers, fences, guard rails, enclosures, shoring, bracing, planking, warning signs and other protections required to protect structures, utilities, landscaping and other items that are to remain in place.
 - 2 Protect benchmarks, monuments and reference points from displacement and damage; and if displaced or damaged, replace at no cost to the Owner.
 - 3 Install and maintain required bracing, shoring and supports when removing structural elements and be responsible for safety and support of structure. If safety of structure appears to be endangered, cease operations and immediately notify the District Representative. Do not resume operations until safety is restored.

PART 2 – PRODUCTS

2.1 SOILS MATERIALS:

- A. Satisfactory Soil Materials. See Section 02300, Earthwork for satisfactory soil material for backfilling excavations and depressions resulting from site clearing.

PART 3 – EXECUTION

3.1 EXAMINATION:

- A. Examine areas in which work is to be performed. Report in writing to the District's Representative all prevailing conditions that will adversely affect satisfactory execution of work. Do not proceed with work until unsatisfactory conditions have been corrected.
- B. Starting work constitutes acceptance of the existing conditions and the Contractor shall then, at his expense, be responsible for correcting unsatisfactory and defective work encountered.
- C. For the duration the project, provide a construction fence at the perimeter of project(s) as required to secure the project from trespass and provide a safe construction site. Field verify the perimeter and gate locations with the Construction Manager. The fence location may be adjusted as the project progresses based on the approval of the District's Representative.

3.2 CLEARING:

- A. Remove designated trees, stumps, rubbish, undergrowth and deadwood as well as fences and incidental structures that interfere with the construction as shown on the Drawings and as specified. Obtain verification from project inspector prior to removal.

3.3 GRUBBING:

- A. Remove all stumps and roots in their entirety, brush, organic materials and debris. When indicated, such materials as topsoil and leaf mold, or other organic materials above the ground surface suitable for use as mulch or topsoil, shall be salvaged and stockpiled.
- B. Remove grasses and weeds. Apply systemic weed killer and confirm weed kill prior to removal.

3.4 TOPSOIL STRIPPING – As required

- A. Coordinate with Section 02300, Earthwork, Drawings and Section 02335, Subgrade Preparation & Base Material. Strip topsoil to required depths in a manner to prevent intermingling with underlying subsoil or other waste materials.

3.5 UTILITIES:

- A. Contract local utility companies 48 hours minimum prior to start of demolition work. Confirm verbal notices and written notices. Verify locations of all utilities entering site and their locations on site.
- B. Cooperate with the District's Representative, utility companies, adjacent property owners, and other building trades in maintaining, protecting, re-routing or extending utilities passing through work areas which serve structures located on project site and on adjacent properties.
- C. Verify that utilities that are to be removed, capped or abandoned are turned off, or are disconnected, or are re-routed to new locations before starting demolition.

3.6 REMOVAL:

- A. General:
 - 1 Remove materials in an orderly and careful manner.
 - 2 Repair or replace all removal work performed in excess to that required at no cost to the District. Repair or replacement shall match and equal construction, condition and finish existing at time of award of Contract.
- B. Remove the following from locations to the extent required or directed for new construction.

- 1 Fencing, including posts, fabric and footings. Backfill voids if required from removed footings with clean fill as defined in Section 02300, Earthwork. Be careful of soil caving due to presence of groundwater intrusion.
 - 2 Electric underground wires and conduits occurring within removal areas except those shown as reused on Electrical Drawings. Refer to Utility Drawings and Specifications.
 - 3 Miscellaneous structural elements that interfere with the new construction as directed.
 - 4 Paving: remove asphalt and concrete paving including aggregate base rock completely to the minimum depth required for subgrade of new improvements. Dispose of demolished concrete, asphalt and base rock at a material recycling facility. Existing aggregate base may be reused on site if it meets requirements of Section 02335, Subgrade Preparation & Base Material and the approval of the Geotechnical Engineer.
 - 5 Underground pipes and utilities.
 - 6 Other items noted on the drawings and required to be removed to install the new improvements.
- C. Cutting asphalt, concrete curbs and concrete pavement:
- 1 All lines shall be marked and accepted by District's Representative before the cutting operation.
 - 2 Cut edges of pavement at 90-degree angle to the surface in a true and straight line in accordance with dimensions shown on the Drawings. Make cuts with a concrete saw, to a 1-1/2" minimum depth.
- D. Not used
- E. Rough grade site within removal areas to meet adjacent contours and to provide positive drainage. Leave site in clean condition acceptable for performance of subsequent construction operations.

3.7 CLEANUP AND DISPOSAL, per Section 01740:

- A. Transport trash, rubbish and debris daily from site and legally dispose of:
- 1 Demolish and waste materials encountered.
 - 2 Remove and promptly dispose of contaminated, vermin-infested and dangerous materials encountered.
 - 3 Do not burn or bury materials on site.

- B. Clean excess soil may be distributed on site as accepted by the Project Inspector, if it does not adversely affect specified finish grades. Coordinate with Drawings and Section 02 33 50, Subgrade Preparation & Base Material.
- C. Excess soil may need to be legally disposed of off site. Coordinate with Drawings and Section 02 33 50, Subgrade Preparation & Base Material.
- D. Upon completion of work under this Section, remove all tools, equipment and temporary enclosures and structures.

END OF SECTION

SUBGRADE PREPARATION & BASE MATERIAL

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. Provide subgrade preparation and the base material installation complete, including clearing, grading, excavation, filling and compaction and dewatering.
- B. Subgrade is that area on which pavement, surfacing, base, sub-base, or layer of any other material which may be specified is to be placed.

1.2 QUALITY ASSURANCE:

- A. Reference Standards
 - 1. Perform all work in accordance with all applicable laws, codes, and regulations required by the State of California, the local County.
 - 2. Reference to "Standard Specifications" shall mean the Standard Specifications of the State of California, Business and Transportation Agency, Department of Transportation, CAL TRANS.
 - 3. Lime treatment of subgrade shall be performed by a Contractor who is experienced in this aspect of construction and has the proper equipment to perform this work.
- B. Related work specified elsewhere includes:
 - 1. Section 01 11 00, Summary of Work
 - 2. Section 02765, Site Concrete
- C. Stipulations
 - 1. The finished surface of the subgrade, at any point, shall not vary more than 0.05' above or below the elevation indicated on the drawings.
- D. ASTM Standards.
 - 1. Relative compaction will be determined in general accordance with ASTM Test Methods D1557 and D2167, or D6938.
- E. Inspection and Testing
 - 1. The Contractor shall satisfy himself as to the quality and nature of the materials which are required to be graded during this work.

1.3 PROJECT CONDITIONS:

- A. Coordination: Coordinate this work with the work of other Sections to avoid delay and interference with other work.

PART 2 - MATERIALS

2.1 FILL MATERIAL:

- A. General Non-organic material, soil and rock materials obtained from on-site excavations may be used as fill as specified herein.
- B. Select Fill Select fill material shall be soil and rock, which is free of perishable material, rubble and building debris, and shall conform to the following requirements.

<u>Size</u>	<u>Percent Finer</u>
6 inch	100
4inch	90-100
No.200	10-90

Plasticity Index 20 percent maximum

Select fill shall be used in all fills intended to support structures, roads, and utilities and in all fills used for landslide repair, buttresses, or remedial grading.

- C. Random Fill - Random fill shall be soil and rock material from on-site excavation which does not meet the requirements for "select fill".

Random fill may be used in non-structural locations. Random fill material may be used only in specific locations approved in advance by the Geotechnical Engineer.

2.2 AGGREGATE BASE- CLASS II:

- A. Aggregate base shall be Class II and free from vegetable matter or other deleterious substances. The percentage composition by weight & aggregate base shall conform to Section 26 of the Standard Specifications.

2.3 RECYCLED AGGREGATE BASE- CLASS II:

- A. Subject to the approval of the Geotechnical Engineer, recycled aggregate base shall be Class II, and free from vegetable matter or other deleterious substances, The percentage composition by weight of aggregate base shall conform to Section 26 of the Standard Specifications. Existing material may be reused if it meets the specifications for Aggregate Base-Class II and the required compaction and the approval of the Geotechnical Engineer.

PART 3 - EXECUTION

3.1 SUBGRADE PREPARATION:

- A. Refer to Section 02200, Site Preparation & Plant Protection for topsoil stripping.
- B. Scarify subgrade to a depth of at least 8" below the final subgrade elevation, harrow, dry roll, and break clods to achieve a finely divided condition.
- C. The subgrade and till material shall be moisture conditioned by watering or drying and mixing as needed, to a moisture content near the optimum moisture content. Where so designated, the moisture content before compaction shall be within the specified range.
- D. Harrow the earth to mix the wet earth with the dry beneath, until the whole mass of loose material is at the proper state of moisture for compaction.
- E. All fill material shall be placed in horizontal layers eight inches or less in loose thickness. Fill material shall be compacted with a sheepsfoot roller or other approved equipment to achieve at least 90 percent relative compaction, unless otherwise specified. The upper 8 inches of subgrade shall be compacted to at least 95 percent relative compaction.
- F. Field density tests will be performed by the Engineer to determine the degree of compaction obtained. Where compaction is less than that required, additional comp active effort will be required by the Contractor, Contractor shall make adjustment
- G. The Contractor shall be responsible for placing and compacting approved fill material in accordance with the specifications. Should the Contractor fail to meet the density requirements, he shall reduce his rate of haul, furnish additional spreading and/or compaction equipment, remove and replace the fill material, adjust the soil moisture content, use different compaction equipment or make any other adjustments necessary to achieve a satisfactorily compacted fill.
- H. The finished subgrade surface shall be firm and unyielding under the weight of a loaded water truck traveling over the surface.
- I. No fill shall be compacted during periods of rain nor on ground which is saturated or has standing water. Loose soil, which has been stockpiled and wetted by rain or any other means, shall not be used until the moisture content is within limits required by the Geotechnical Engineer.
- J. All non-slope fill surfaces shall be graded smooth, low spots filled in, and the surface sloped for drainage and rolled with rubber-tired equipment to seal it against excessive infiltration of water. Stockpile areas and haul roads shall be restored to the original ground contours and condition using

compacted fill. Excess eat and all other unsuitable material shall be removed from the site.

3.2 AGGREGATE BASE:

- A. Deliver to site as a uniform mixture and spread each layer in one operation without segregation.
- B. Class II Aggregate base shall be readily compacted and spread with equipment that will provide a uniform layer conforming to the planned section, as specified in Section 26 of the Standard Specifications.
- C. The aggregate base shall be compacted to at least 95 percent relative compaction.
- D. Proof roll and mark spots for additional compaction or correction. Proof rolling operations must be performed in the presence of the Geotechnical Engineer.

3.1 CLEANUP per Section 01740:

END OF SECTION

SITE CONCRETE

The General Conditions, Supplementary Conditions and Division 1 General Requirements are hereby made a part of this Section as fully as if repeated herein.

PART 1 – GENERAL

1.01 DESCRIPTION:

- A. Concrete curbs, and curb and gutter.
- B. Concrete pavement, sidewalks, ramps and drives.

1.02 REFERENCES:

- A. ASTM C33 – Standard Specification for Concrete Aggregates.
- A. ASTM C150 – Standard Specification for Portland Cement.
- B. ACI 318 – Building Code Requirements for Structural Concrete.
- C. ASTM C94 – Standard Specification for Ready-Mixed Concrete.
- D. ACI 304R – Guide for Measuring, Mixing, Transporting and Placing Concrete.
- E. ACI 305R – Hot Weather Concreting.
- F. ACI 306R – Cold Weather Concreting.
- G. California Building Code, International Conference of Building Officials (ICBO), current edition.
- H. ASTM C31 – Standard Practice for Making and Curing Test Specimens in the Field.
- I. ASTM C39 – Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
- J. ASTM C138 – Standard Test Method for Unit Weight, Yield, and Air Content (Gravimetric) of concrete.

- K. ASTM C143 – Standard Test Method for Slump of Hydraulic Cement Concrete.
- L. ASTM C172 – Standard Method for Sampling Freshly Mixed Concrete.
- M. ASTM C173 – Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
- O. ANSI/ASTM A185 - Welded Steel Wire Fabric or Concrete Reinforcement.
- P. ANSI/ASTM D1751 - Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction.
- Q. ASTM A615 - Deformed and Plain Billet-Steel for Concrete Reinforcement.
- R. ASTM C260 - Air-Entraining Admixtures for Concrete.
- S. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete.
- T. ASTM C494 - Chemical Admixtures for Concrete.
- U. FS TT-C-800 - Curing Compound, Concrete, for New and Existing Surfaces.

1.03. SUBMITTALS:

- A. Comply with requirements of Shop Drawings, Product Data and Samples under Section 01 33 00 Submittals .

1.04 JOB CONDITIONS:

- A. Weather Limitations: Construct concrete surface course only when atmospheric temperature is above 40 degrees F., when the underlying base is dry, and when weather is not rainy.
- B. Grade Control: Establish and maintain the required lines and grades, including cross-slope during construction operations.

1.05 QUALITY CONTROL:

- A. Standard Specifications: The American Concrete Institute (ACI) "Specifications for Structural Concrete", ACI 301, shall be used as standard specification. All cast-in-place concrete shall conform to this standard specification except as modified by the requirements specified herein and/or detailed on the Drawings.

- B. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is saturated or frozen.

PART 2 – PRODUCTS

2.01 MATERIALS:

- A. Poured-in-Place Concrete: Concrete sidewalks, curbs, curb and gutter, ramps, drives, manhole bases and thrust blocks for water systems and fire systems shall be Class A conforming to Section 90 of State Specifications with a minimum 28 day compressive strength of 3000 psi.
 - 1. Cement – Type II modified conforming to ASTM C150, Portland cement.
 - 2. Aggregate – Maximum size ¾-inch diameter.
- B. Extruded Curbs, and Curb and Gutter: 3000-lb. Concrete; special no slump design mix.
- C. Expansion Joints Joint fill shall be a preformed non-extruded resilient filler, saturated with bituminous materials and conforming to ASTM D 1751. Products shall be equivalent to Burke "Fiber Expansion Joint", W.R. Meadows "Fibrated Expansion Joint Filler", or approved equal and as detailed on the Drawings.

2.02 REINFORCEMENT:

- A. Reinforcing Steel and Wire Fabric: Type specified in Section 03200.
- B. Welded Steel Wire Fabric: 6 x 6 – w1.4 x w1.4 wwf flat sheets; unfinished.
- C. Dowels: ASTM A615; smooth plain steel, unfinished.

2.03 CONCRETE MIX – BY PERFORMANCE CRITERIA:

- A. Cast-in-Place Concrete 03300.

2.04 SUB-GRADE:

- A. Unless otherwise noted on the Drawings, provide minimum 4" AB with 90% relative compaction over 8" non-expansive material with 90% relative compaction.

PART 3 – EXECUTION

3.01 EXAMINATION:

- A. Verify gradients and elevations of substrate are correct.

- B. Verify that substrate is level, smooth, and capable of supporting curbs, and curb and gutter sections.
- C. Verify compacted subgrade is acceptable and ready to support paving and imposed loads.

3.02 INSTALLATION – REINFORCING:

- A. Reinforcing is to be held firmly in place during concrete placement.
- B. Place reinforcement at mid-height of slabs-on-grade.
- C. Interrupt reinforcement at expansion joints.

3.03 INSTALLATION – CONCRETE:

- A. Space expansion joints as shown on the drawings for flatwork for adjacent curbs, curb and gutters, and valley gutters. Align expansion joints.
- B. Exterior Walks:
 - 1. Place expansion joints at maximum of 20 foot intervals where not otherwise indicated on Drawings. Align curb, gutter and sidewalk joints.
 - 2. Place joint filler between componets and building or other appurtenances. Recess top of filler ¼" for sealer placement per Section 07920.
 - 3. Provide minimum ¼" deep score joints (unless otherwise indicated on Drawings) in sidewalks at 5 foot intervals.
- C. Do not sawcut score lines.

3.04 FINISHES:

- A. Medium Broom Finishes (heavy broom finish only at concrete ramps greater than 6% slope): After trowel finishing, draw a fine hair push broom over the surface at the time when such broom marks shall produce a medium uniform texture on the surface. Unless indicated otherwise, direction of brooming shall be perpendicular to direction of walk. Provide three-foot square sample panels with color and finishes for review by the Architect. After concrete has set, wash samples for approval prior to construction of pavement. Walks with inadequate amounts of texture shall be rejected. Flatwork shall be poured during the same operation. Areas of poor workmanship, as determined by the Architect, shall be removed and redone at Contractor's expense.

3.05 FIELD QUALITY CONTROL:

- A. Testing firm will take cylinders and perform slump and air entrainment tests in accordance with SSCDOT and the DSA Testing and Inspection Form. A set of test cylinders shall be taken for each individual pour or placement of concrete and, in no case, shall a set of cylinders represent more than 200 cubic yards of concrete placed.

3.06 PROTECTION:

- A. Immediately after placement, protect concrete from premature drying, excessive hot or cold temperatures, and mechanical injury.

END OF SECTION

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Design Mixtures: For each concrete mixture.
- C. Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and placement.

1.3 QUALITY ASSURANCE

- A. 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.

1.4 FIELD CONDITIONS

- A. Cold-Weather Placement: Comply with ACI 306.1.
 - 1. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- B. Hot-Weather Placement: Comply with ACI 301 and ACI 305.1.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

- A. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 - 1. ACI 301.
 - 2. ACI 117.

2.2 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

2.3 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
- B. 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."

2.4 CONCRETE MATERIALS

- A. Cementitious Materials:
 - 1. Portland Cement: ASTM C 150/C 150M, Type I or Type II, gray.
 - 2. Fly Ash: ASTM C 618, Class F.
- B. Normal-Weight Aggregates: ASTM C 33/C 33M, graded.
 - 1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
 - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Air-Entraining Admixture: ASTM C 260/C 260M.
- D. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
- E. Water: ASTM C 94/C 94M and potable.

2.5 CURING MATERIALS

- A. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. BASF Corp. - Construction Chemicals.
 - b. Euclid Chemical Company (The); an RPM company.
 - c. W.R. Meadows, Inc.

2.6 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.

- B. Cementitious Materials: Use fly ash as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 25 percent.
- C. Admixtures: Use admixtures according to manufacturer's written instructions.
 - 1. Use water-reducing 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 and concrete with a w/c ratio below 0.50.

2.7 CONCRETE MIXTURES

- A. Normal-Weight Concrete:
 - 1. Minimum Compressive Strength: 3000 psi at 28 days.
 - 2. Maximum W/C Ratio: 0.50.
 - 3. Slump Limit: 4 inches, plus or minus 1 inch.

2.8 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.9 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.

PART 3 - EXECUTION

3.1 FORMWORK INSTALLATION

- 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.
- C. Chamfer exterior corners and edges of permanently exposed concrete.

3.2 EMBEDDED ITEM INSTALLATION

- 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.

3.3 STEEL REINFORCEMENT INSTALLATION

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
 - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

3.4 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.
- B. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is 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. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.

3.5 FINISHING FORMED SURFACES

- A. 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 all formed concrete surfaces.

3.6 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraighening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. 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 restraighening until surface is left with a uniform, smooth, granular texture.
 - 1. Apply float finish to surfaces to receive trowel finish.
- C. 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.
 - 1. Apply a trowel finish to surfaces exposed to view.
 - 2. Finish and measure surface, so gap at any point between concrete surface and an unlevelled, freestanding, 10-ft.- long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/8 inch.

3.7 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 305.1 for hot-weather protection during curing.
- B. 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 remainder of curing period.
- C. Cure concrete according to ACI 308.1.
 - 1. 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.

3.8 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

3.9 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

END OF SECTION

ROUGH CARPENTRY

PART 1 GENERAL

1.1 WORK INCLUDED

- A. Provide miscellaneous wood backing as indicated and as required for completion of Project as indicated.
- B. Provide plywood panel boards.
- C. Provide miscellaneous wall, floor, and ceiling framing where required.
- D. Preservative treated / fire-retardant treated wood members as indicated.

1.2 RELATED SECTIONS

- A. Section 06400: Architectural Woodwork
- B. Section 07262: Building Papers

1.3 QUALITY ASSURANCE

A. Regulatory Agencies:

- 1. Rough carpentry shall conform to the 2013 California Building Code (CBC) Title 24, Part 2, Chapter 23.
- 2. Framing anchors and powder driven fasteners shall be furnished and installed in accordance with the manufacturer's current ICC Evaluation Report.

Lumber: Provide visible grade stamp of an agency certified by NFPA.

B. Grade Marks:

- 1. Identify each piece of structural lumber, including timber 4 inches by 4 inches in size and larger, by the official grade mark of WCLIB, or WWPA. Provide qualified lumber grader at the site to stamp members that are not mill stamped.
- 2. Identify plywood by the official grade mark of APA.
- 3. Identify pressure preservative treated lumber and plywood with the official grade make of AWPA. Grade stamp shall state retention; statements on grade stamp such as "or to refusal" are not permitted.
- 4. Identify fire treated lumber with appropriate classification marking of Underwriters Laboratories, Inc., U.S. Testing, Timber Products Inspection or other testing and inspection agencies acceptable to the State Fire Marshall.

- C. Lumber Standard: Comply with US Product Standard PS20 for each indicated use, including moisture content and actual sizes relate to indicated nominal sizes.
- D. Qualifications for Pneumatic (Machine) Nailing: Pneumatic (machine) mailing shall be subject to a satisfactory Project Site demonstration and approval by the Architect and the Division of the State Architect (DSA). The approval is subject to continued satisfactory performance.

1.4 REFERENCES

- A. The editions of the specifications and standards referenced herein, published by the following organizations:

National Forest Products Association (NFPA) National Design Specification for Stress Grade Lumber and its Fastening.
American Plywood Association (APA)
American Society for testing and Materials (ASTM)
American Wood-Preservers' Association
US Department of Commerce Product Standard (PS)
West Coast Lumber Inspection Bureau (WCLIB)
Western Wood Products Association (WWPA)

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Copies of current ICC Evaluation Reports for the framing anchors, powder driven fasteners, and expansion anchors.
- C. Wood Treatment Data: Wood treatment certification and instructions for proper use of each type of treated material. Fire-retardant treatment product fire test data.
- D. Shop Drawings: Where rough carpentry is required by other sections of the Specifications, include rough carpentry items in the shop drawings for items specified in other Specification sections. Rough carpentry shop drawings to include details of fabrication and installation, dimensioned plans, elevations, sections, details and methods of attachment including backing and nailers. Reference architectural details, plans, sections and elevations. Indicate adjacent construction.

1.6 DELIVERY, STORAGE, AND HANDLING:

- A. Deliver materials to the site in an undamaged condition.
- B. Store lumber and plywood at the site under cover or otherwise protected against exposure to weather, raised above the ground and out of contact with other damp or wet surfaces. Stack lumber and plywood and provide for air circulation within and around the stacks and under temporary coverings. For pressure

treated lumber and plywood, provide spacers between courses to permit air circulation.

- C. For materials stored on suspended floors, store materials in a manner that will not overload the floor or exceed its structural capacity. Verify capacity of existing and new floor construction. Engage the services of a professional engineer to review and assess proposed storage of materials on suspended floors as required.

PART 2 PRODUCTS

2.1 GENERAL

- A. Rough carpentry work and miscellaneous items and their related components are not necessarily individually described. The most important features and those requiring detail descriptions are mentioned. Furnish rough carpentry work and miscellaneous items not mentioned or described and install in accordance with intent of the drawings and specifications and as required to complete the work.
- B. Pressure-preservatives are to be used on all wood in contact with concrete or masonry, exposed to the weather, or prone to insect attack, in conjunction with roofing, under parapet caps, vapor barriers and waterproofing – sills, sleepers, furring, blocking, and stripping).
- C. No wood products treated with (a) pentachlorophenol, (b) arsenic compounds, and/or (c) creosote shall be used. For exterior applications, provide wood treated with Alkaline/Copper/Quaternary (ACQ), waterborne preservative system containing no arsenic and no chromium and complying with AWPA Standard U1 and T1. Provide Chemical Specialties 800.421.8661 "ACQ Preserve", Wolman E Copper Azole; Architectural Treatment Technologies, Inc.; Universal Forest Products, Inc. or approved equal. For interior applications and wood in contact with concrete, provide Borate treatment.

2.2 LUMBER

- A. Lumber Standards: Manufacture lumber to comply with PS 20-94 "American Softwood Lumber Standard" and with applicable grading rules of inspection agencies specified herein.
- B. Moisture Content at Time of Placing:
 - 1. Untreated Lumber: Maximum 15 percent.
 - 2. Treated Lumber: Maximum 15 percent.
- C. Virgin redwood is not permitted.
- D. Sizing and Surfacing: Sizes indicated are nominal; provide actual sizes in accordance with PS 20-94. Provide dressed lumber, S4S except as otherwise indicated.

- E. Dimensional Lumber: Provided lumber of the grades and species listed below for the various purposes, graded in accordance with WCLIB "Standard Grading Rules No. 17" or WWPAA "Western Lumber Grading Rules 98."
1. Cants, Roof Nailers, and Roof Curbs: Standard or better grade Light Framing; No.2 or better grade Structural Light Framing; or Stud grade of and commercial softwood species. All lumber used for cants, roof nailers, and roof curbs shall be pressure preservative treated.
 2. Sill Plates: No.1 Grade, or better, pressure preservative treated Douglas Fir / Larch.
 3. Blocking, Nailers, and Bracing: Standard or better grade Light Framing; No.2 or better grade Structural Light Framing; or Stud grade of and commercial softwood species.
 4. Studs and Top Plates: No.1 Grade Douglas Fir / Larch.
 5. Joists, Headers, and Ledgers: No. 1 or better grade Joists and Planks of Douglas Fir / Larch.
 6. Beams, Girders, and Stringers: No. 1 Grade Beams and Stringers of Douglas Fir/Larch.
 7. Columns and Posts: No.1 Grade Posts and Timbers of Douglas Fir / Larch.

2.3 PLYWOOD

- A. Plywood Standards: Manufacturer plywood to comply with PS 1-83 "U.S. Product Standard for Construction and Industrial Plywood."
- B. Shear Walls: APA Rated Sheathing, Structural I, Exposure 1 durability classification, minimum thickness 1/2 inch unless otherwise indicated.
- C. Wall Sheathing: APA Rated Sheathing, C-D grade, Exposure 1 durability classification, 1/2 inch thick, unless otherwise indicated.
- D. Roof Sheathing: APA rated, B-C grade, preservative treated, exterior exposure durability classification. Minimum thickness 3/4 inch unless otherwise indicated.
- E. Subflooring: APA rated C-D grade, exterior exposure durability classification. Minimum thickness 3/4 inch unless otherwise indicated.
- F. Plywood Backing Panels: For mounting electrical or telephone equipment, provide fire-retardant-treated plywood panels designation, A-B grade, exposure 1 durability classification, 3/4 inch thick unless otherwise indicated.

2.4 MISCELLANEOUS MATERIALS

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Highlands Elementary School
HVAC Equipment Replacement
McCracken & Woodman, Inc.

ROUGH CARPENTRY
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- A. Building Paper: As specified in Section 07262 Building Papers.
- B. Hardware: Furnish items of rough hardware, connections, bolts, required to complete the work.
 - 1. Where carpentry work is exposed to weather, in ground contact, or in areas of high relative humidity, provide nails, bolts, nuts, washers, and other fasteners with a hot-dipped zinc coating in accordance with ASTM A 153-00.
 - 2. Nails: Conform to Federal Specifications FF-S-606 and FF-N-105. Non-exposed to framing nails shall be steel common wire nails (not box nails or sinkers). Nails are to be stainless steel at pressure-treated lumber.
 - 3. Bolts: Grade A, conforming to ASTM A307.
 - 4. Washers: Washers for bearing against wood shall be provided under all bolt heads and nuts. Malleable iron or steel plate having an area equal to 16 times the area of bolt or lag screw. Steel washers shall have a thickness of not less than 1/10 the length of the washer's longest side. Malleable iron washers shall have a thickness of not less than one-half the bolt or lag screw diameter and having a bearing surface for the nut or head equal in diameter to not less than the long diameter of the nut or head.
 - 5. Powder Driven Fasteners: Provide fastener systems complete with all necessary washers, nuts, and other appurtenances. Acceptable manufacturers or equal: Hilti, Inc.; Powder Power Tool Corp., Drive-It; Ramset Fastening Systems, Ramset.
 - 6. Expansion Anchors: Provide wedge type anchor systems complete with all necessary washers, nuts, and other appurtenances. Acceptable manufacturers include Hilti, Inc., Simpson Strong Tie, or approved equal. At concrete, provide Kwik Bolt TZ; Hilti [ICC ESR 1917], Strong Bolt Wedge Anchors; Simpson Strong Tie [ICC ESR 1771], or approved equal. At grouted concrete masonry, provide Kwik Bolt 3; Hilti [ICC ESR 1385], or Wedge All Anchors; Simpson Strong Tie [ICC ESR 1396], or approved equal.
- C. Framing Connectors: Fabricated sheet metal timber framing connectors shall be manufactured from hot-dipped galvanized steel by Simpson Strong Tie Company Inc., K.C. Metal Products; Union Steel Connectors, or approved equal, and as identified on the Drawings. Connectors shall be a least 16-gage material (1/8 inch plate materials where welded), unless otherwise noted, punched for nailing. Nails and nailing shall conform to the manufacturer's instructions with a nail provided for each punched hole.

2.5 WOOD TREATMENT

- A. Preservative Treatment: Treat lumber and plywood to comply with applicable requirements of AWPA C2. Incising of Douglas fir will be required where necessary to achieve the specified retention. Complete fabrication of treated

items before treatments, where possible. Cuts and holes shall be retreated in accordance with AWWA H-84.

- B. Fire Retardant Treatment: Comply with AWWA standards for pressure impregnation with fire-retardant chemical to achieve flame-spread rating of not more than 25 in accordance with ASTM E84 or UL Test 723.
 - 1. Treat blocking and plywood panel boards; comply with AWWA C20 and C27, Interior Type A, and identify with FRTW.
 - a. Exterior Type: Where indicated for exterior applications, provide fire treated wood passing ASTM D2898 rain test.
 - 2. Provide UL label on each piece of fire-retardant wood and plywood.
 - 3. Kiln-dry treated items to maximum moisture content of 15 percent.
- C. Complete fabrication of treated items prior to treatment, wherever possible; if cut after treatment, coat cut surfaces with heavy brush coat of same chemical used for treatment.
- D. Inspect each piece after drying and discard damaged and defective pieces.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

- A. All framing operations shall conform to the requirements of the CBC.
- B. Set horizontal and sloped members with crown up. Do not notch, bore or cut members for pipes, ducts, conduits or any other reason except as shown on the drawings or as specifically approved by the Architect/Engineer. Make all bearings full and all blocking solid unless otherwise indicated on the drawings. Finish all bearing surfaces on which structural members are to rest so as to give sure and even support. Where framing members slope, cut or notch the ends as required to give uniform bearing surface.
- C. Remove all wood, including form lumber, scrap lumber, shavings and sawdust in contact with ground. Leave no wood buried in any fill or backfill.
- D. Lumber not grade stamped, and lumber of improper grade, shall be removed from the job site and immediately replaced by grade stamped lumber of the proper grade.
- E. Other materials: All other lumber materials, not specifically described but required for the proper completion of the work, shall be new, first quality of their respective kinds and subject to the approval of the Architect or Structural Engineer and the Division of the State Architect.

- F. Predrill holes as required to prevent splitting.
- G. Mount plywood so the manufacturer's stamps remain visible from the front side.

3.2 PLACEMENT

- A. Place rough carpentry true to lines and levels.
- B. Correlate location so attached work will comply with design requirements and be properly located.
- C. Construct members of continuous pieces of longest possible lengths.
- D. Fit carpentry work to other work; scribe and cope as required for accurate fit.
- E. Achieve full bearing on concrete or masonry by smooth concrete or by setting in wet grout.
- F. Securely attach carpentry work to substrates by anchoring and fastening as required by recognized standards.
 - 1. Provide washers under bolt heads and nuts in contact with wood.
- G. Wood Blocking: Provide blocking lumber not less than 1 1/2" wide and of thickness required to provide adequate support or to properly locate attached material. Install backing/blocking per plan details at all locations noted on plans.
 - 1. Provide attachment to other work: form to shapes shown.
 - 2. Countersink bolts and nuts flush with surfaces.
 - 3. Remove temporary blocking when no longer needed.
 - 4. Anchor to formwork before concrete placement.
- H. Plywood Structural Sheathing:
 - 1. Plywood thickness and nailing shall be as required on the Drawings. All nails shall be common wire nails.
 - 2. Block all unsupported edges of plywood sheets; blocking shall be minimum 2 x 3 between framing members.
 - 3. Minimum sheet width shall be 16 inches.
 - 4. Fasten plywood backboards to the structural members of the building using only approved fasteners. Plywood backboards shall not be anchored to gypsum wallboard.

END OF DOCUMENT

SHEATHING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Roof sheathing.

PART 2 - PRODUCTS

2.1 ROOF SHEATHING

- A. Plywood Sheathing Exposure 1, Structural I sheathing.

2.2 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.
- B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.
- C. Securely attach to substrate by fastening as indicated, complying with the Drawings.
- D. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

3.2 WOOD STRUCTURAL PANEL INSTALLATION

- A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.
- B. Fastening Methods: Fasten panels as indicated on Drawings.

END OF SECTION

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McCracken & Woodman, Inc.

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SECTION 09 10 00

METAL SUPPORT SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes: Light gauge metal framing and furring systems for interior non-load bearing gypsum board partitions, and suspension and furring systems for gypsum board ceilings and soffits.
- B. Related Sections:
 - 1. Section 09250 – Gypsum Board

1.03 REFERENCES

- A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the work only to the extent specified by the reference. Refer to Section 01090 for information concerning availability and use of references.

American Society for Testing and Materials (ASTM)
American Iron and Steel Institute (AISI)
Western Lath/Plaster/Drywall Industries Association (WLPDIA)
Steel Stud Manufacturers Association (SSMA)

1.04 SUBMITTALS

- A. General: Submit the following according to the Conditions of Contract and Division 1 Specification Sections.
- B. Product Data: Submit framing manufacturer's literature, including a current ICC-ES Evaluation Report, showing tabulation of structural properties, load capacities, dimensions, metal gauges and type of coating for all framing and furring members. Submit powder driven fastener manufacturer's current ICC Evaluation Report.

1.05 QUALITY ASSURANCE

- A. Support Framing for walls and ceilings shall conform to the California Building Code (CBC) Title 24, Part 2, Chapter 25 – Gypsum Board and Plaster. Support framing for fire resistive walls, partitions and ceilings shall also conform to CBC Title 24, Part 2, Chapter 7 – "Fire Resistant Materials and Construction, and which are listed in the current UL "Fire Resistance Directory".

- B. Furnish and install wall framing and power-driven fasteners in accordance with the framing and fastener manufacturer's current ICC-ES Evaluation Reports.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - 1. Angeles Metal Systems.
 - 2. Allied American Studco, Inc.
 - 3. California Expanded Metal Products Co.
 - 4. Unimast, Inc..
 - 5. Western Metal Lath Co.
 - 6. Chicago Metallic.

2.02 MATERIALS

- A. Hot-dip Zinc Coated Steel: rated heavy-duty as per ASTM A653, designation G60.
- B. Carbon Steel: ASTM A 568. Provide framing components with electro-galvanized finish, conforming to ASTM A 633, Type RS or shop-applied red-oxide, zinc chromate or other similar primer.
- C. Expansion Anchors: As indicated. Acceptable manufacturer's or equal:
 - 1. Hilti Corp.:
 - 2. ITW/Ramset/Red Head
- D. Screws: No. 8 by 3/8 inch, minimum size unless otherwise noted, cadmium or zinc coated TEKS screws with pan heads.
- E. Concrete inserts, expansion anchors, powder driven fasteners, flange clips, and bolts for attachments of hanger wires to overhead construction shall have a rated capacity equal to that of the hanger wire.
- F. Wire for Hangers and Ties: ASTM A641, Class 1 zinc coating, soft temper.

2.03 WALL FRAMING AND FURRING MEMBERS:

- A. Framing for Non-Load Bearing Interior Partitions: Fabricate framing members in accordance with ASTM C 645-00 from hot dip zinc coated steel, of thickness indicated. All studs shall be rolled from new steel sheet material and shall not be produced from re-rolled steel. Sizes as indicate in accordance with ICC-ES ER-4943P and the Metal Stud Manufacturer's Association.

- B. Furring Channels: Hat-shaped, ASTM C 645, from hot dip zinc coated steel minimum 0.0179 inch thick.
- C. Backing Plates: Steel, gauge as indicated not lighter than 16 gauge, or proper size to accommodate fastening.
- D. Slip Track: SLP-TRK 14 gauge (68 mils), G60 galvanized coating by Dietrich Metal Framing or approved equal. Width as required for stud size.
- E. Track runners: G60 galvanized, width to accommodate the scheduled stud size and gauge shall be a minimum of 68 thousands of an inch.

2.04 SUSPENSION SYSTEM FOR REPAIR OF EXISTING CHANNEL SUSPENDED CEILINGS:

- A. Channels: Cold-rolled steel, protected with rust-inhibitive paint or galvanized complying with ASTM A 653-01a with G60 coating.
 - 1. Main Runners: 1-1/2 inches deep by 7/16-inch wide flanges, weighing not less than 475 pounds per 1000 lineal feet.
 - 2. Furring Channels: 1-1/2 inch and 3/4 inch deep as required, by 7/16 inch flanges, weighing not less than 475 pounds and 300 pounds per 1000 lineal feet, respectively.
 - 3. Hat-shaped Furring Channels: ASTM C 645-99a, minimum 0.0179 inch thick.
- B. Provide galvanized channels for exterior installations.

2.05 SUSPENSION SYSTEM FOR NEW GYPSUM BOARD CEILINGS:

- A. Suspension System: Tee bar type; Model 660-C by Chicago Metallic double web complying with ASTM C 635- Heavy Duty.
 - 1. Main Runners: Furring Tees made from 0.020 thick steel, 1-3/8 inch face by 1-1/2 inches deep.
 - 2. Cross Runners: Cross Tees made from 0.020 thick steel, 15/16 inch face by 1-1/2 inches deep.
 - 3. Wall Track: Made from 0.020 thick steel 1-9/16 inch high with a 1 inch top and bottom flange.
 - 4. Hanger and Brace Wires: ASTM C853, composition 1010, soft annealed, light zinc coated finish, 0.1055 inches in diameter, 9 gauge.

PART 3 - EXECUTION

3.01 INSTALLATION OF WALL FRAMING:

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 Highlands Elementary School
 HVAC Equipment Replacement
 McCracken & Woodman, Inc.

METAL SUPPORT SYSTEMS
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- A. General: Comply with requirements in ASTM C 1063 for applications indicated, except as specified herein.
- B. Runner Installation: Align runners accurately at the floor and ceiling. Where partitions abut underside of steel or concrete construction, maintain a minimum of 1/2 inch clearance receiving side of the slip track and the top of the stud. Securely anchor all runners to the structure approximately 2 inches from runner ends and not more than 12 inches on center between ends for slip tracks and 16 inches on center for all other track runners. Attach runners to concrete with powder driven fasteners. At sound retardant partitions, set runners in two beads of acoustical sealant or two strips of acoustical tape as specified in Section 07900.
- C. Stud Installation: Position studs vertically and engage floor and ceiling runners. Space studs not to exceed 16 inches on center and anchor studs top and bottom to adjoining runner. Anchorage shall consist of one screw at each stud flange each side of the runner. Provide tripled studs at partition corners and intersections. Frame both sides of expansion and control joints with separate studs. Do not bridge expansion and control joints with components of stud system.
- D. Reinforce and stiffen partitions with 3/4 inch (or larger as necessary) steel channels placed horizontally not more than 4'-6" apart. Wire-tie or bolt stiffeners to inside surfaces of studs.
- E. Framing at Doors: Unless otherwise indicated, provide not lighter than 20 gauge studs at each side of all doors or other openings through partitions. Over metal door frames, place a cut-to-length section of runner with a web-flange bent at each end and fastened to adjacent vertical studs with 2 screws in each flange. Position a cut-to-length stud at the location of vertical joints over door frame header extending to the ceiling. Install a horizontal stiffener channel above each door extending to engage first stud beyond each jamb stud and attach channel to each stud.
- F. Blocking and Reinforcing for Wall Hung Items: Provide cut sections of not lighter than 20 gauge runner channel or zinc coated steel backing plates and other items as indicated for the support of wall hung fixtures, shelving, cabinets, hand rails, and toilet accessories. Cut ends of runner and backing plates to each stud. Fasten studs carrying the weight of wall hung items to the bottom runner channel. Where the type of supplementary support is not otherwise indicated comply with the stud manufacturer's recommendations and industry standards. In each case consider the weight and load resulting from the item supported.

3.02 INSTALLATION OF SUSPENDED CEILING CHANNEL FRAMING:

- A. Hangers: Space 9-gauge hanger wires at 48 inches on center to carry 1-1/2 inch main runners spaced 36 inches apart, or space 9-gauge hanger wires at 36 inches on center to carry 1-1/2 inch main runners spaced 48 inches apart. Locate a hanger wire within 6 inches of the end of main runners. Saddle tie wires securely around main runners, using at least two turns then wrap the wire around itself in three tight wraps within 1-1/2 inches.

- B. Hanger Attachment to Steel Framing: Wrap the wire around or through the steel member or bolt or clip the wire to the steel member.
- C. Main Runners: Install 1-1/2 inch main runners and adjust so that furring is in true and accurately level planes. Lap main runners at least 12 inches at splices, with flanges interlocked, and securely tie together with 18-gauge wire, double wrapped at 2 inches from each end of splice. Do not permit runners to be let into nor contact abutting partitions. Locate main runners within 6 inches of walls to support ends of cross furring channels.
- D. Cross Furring Channels for Plaster Soffits: Install cross furring channels at right angles to the main runners. Space cross furring channels not over 24 inches on center where main runners are spaced 36 inches apart and not over 12 inches on center where main runners are spaced 48 inches apart. Securely attach cross furring to main runners by saddle-tying with not less than one strand of No. 16 or two strands of No. 18 gauge tie wire. Lap furring channels 8 inches minimum at splices, with flanges interlocked, and tie with a double-wrap of tie wire within 2 inches of each end of splice.
- E. Hat-shaped Furring Channels for Gypsum Board Ceilings and Soffits: Install hat-shaped furring channels at right angles to the main runners. Space hat-shaped cross furring channels not over 24 inches on center where main runners are spaced 36 inches apart and not over 12 inches on center where main runners are spaced 48 inches apart. Securely attach cross furring to main runners by saddle-tying with not less than one strand of No. 16 or two strands of No. 18 gauge tie wire. Lap furring channels 8 inches minimum at splices, with flanges interlocked, and tie with a double-wrap of tie wire within 2 inches of each end of splice.
- F. Compression struts: Attach to main runners at cross runner intersections. They shall be adequate to resist the vertical the vertical component induced by the bracing wires, and shall not be more than one (horizontal) in six (vertical) out of plumb. Spacing to comply with DSA IR 25-2.13, Table 1 for Lateral Force Brace Assembly Spacing.

3.03 INSTALLATION OF SUSPENSION SYSTEM FOR NEW GYPSUM BOARD CEILINGS

- A. General: Comply with requirements in ASTM C 754-04, with DSA, IR 25-3.13, and CBC Section 2504A and 2511A, except as indicated and specified herein.
- B. Hanger wires and brace wires: Hanger wires shall be spaced at 3 feet on center along main runner. Brace wires incline shall not be placed greater than 45 degrees from the horizontal plan and spaced as indicated.
- C. Compression struts: Attach to main runners at cross runner intersections. They shall be adequate to resist the vertical the vertical component induced by the bracing wires, and shall not be more than one (horizontal) in six (vertical) out of plumb. Spacing to comply with DSA IR 25-3.13, Table 1 for Lateral Force Brace Assembly Spacing.

3.04 CLEANING AND PROTECTION

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- A. Perform clean-up of premises as specified in 01 77 00 Contract Closeout and Final Cleaning.

END OF SECTION

GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Requirements for furnishing and installing gypsum board systems and associated accessories.
- B. Related Sections:
 - 1. Section 09 10 00 – Metal Support Systems.
 - 2. Section 09 90 00 – Paints and Coatings

1.2 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of Section 01600.
- B. Deliver fire-rated materials bearing the testing authority's label and fire-rating classification.
- C. Stack sheets so that long lengths are not over short lengths.
- D. Handle sheets carefully to avoid damaging faces and edges.

1.3 ENVIRONMENTAL REQUIREMENTS

- A. Temperature: Maintain ambient air temperature between 55 and 70 degrees F for 24 hours before, during, and after gypsum board and joint treatment application.
- B. Ventilation: Provide ventilation during and after adhesive and joint treatment applications; use temporary air circulators in areas lacking natural ventilation.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Materials shall all be the products of the same manufacturer, or be recommended by the gypsum board manufacturer for use with his products.

2.2 GYPSUM BOARD

- A. Gypsum Board: ASTM C 630 Type 'X', with tapered and wrapped long edges; 5/8-inch thickness unless otherwise indicated, containing recycled gypsum core

and 100% recycled paper facing. Use at all gypsum board locations unless otherwise indicated.

- B. Water-Resistant Gypsum Board: ASTM C 630 Type 'X', with tapered and wrapped long edges; 5/8-inch thickness unless otherwise indicated. Use at toilet room locations.
- C. Noise-Reducing Gypsum Board: ASTM C840 Type "X", with tapered and wrapped long edges; 5/8-inch thickness unless otherwise indicated, containing recycled gypsum core and 100% recycled paper facing. Use at panel closures between windows and partitions where indicated.

2.3 SOUND ISOLATION MATERIALS

- A. Acoustical Sealant: ASTM C919, type recommended for use in conjunction with gypsum board.
 - 1. Type: paintable, non-shrinking and non-cracking where exposed, nondrying, nonskinning, nonstaining, and nonbleeding where concealed.
- B. Compressible Tape: Closed-cell neoprene tape with adhesive back, Norton "Norseal V-730," Pemko "Weatherstrip Tape," or equal, of width and thickness required for the conditions of installation.

2.4 ACCESSORIES

- A. Fasteners, Corrosion-Resistant: ASTM C 954, bugle-head, Type S screws, of length to penetrate supporting metal members less than 3/8 inch nor more than 1/2 inch.
- B. Metal Trim: ASTM B 633, Type GS, standard type galvanized steel fabrications as follows, unless otherwise indicated.
 - 1. Corner Beads: Fine mesh, expanded-flange type, USG No. 800, or equal.
 - 2. Edge Trim: Channel type casing bead, 1/2-inch or 5/8-inch size, as required for thickness of gypsum board with which used, USG No. 801-A or 801-B, or equal.
- C. Joint-Treatment Materials: ASTM C 475-12e1; perforated joint tape; lime joint compound – all-purpose joint compound containing inert fillers and natural binder; prefill joint compound in conformance with CBC 2013, Chapter 25, Section 2506, Table 2506.2.
- D. Trim Adhesive: Type recommended by metal trim manufacturer.
- E. Fiberglass Reinforcing Tape: Self-adhering type.
- F. Miscellaneous Materials: Furnish all miscellaneous materials necessary for a complete installation, whether or not such products are specifically indicated or specified.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that conditions are satisfactory for installation of gypsum board. If unsatisfactory conditions exist, do not begin installation until such conditions have been corrected.

3.2 PREPARATION

- A. Repair or replace improperly spaced and aligned framing, twisted and otherwise defective framing, and improperly placed and defective door frames.
- B. Fill gaps with compressible neoprene tape where gypsum board partitions abut window mullions or other surfaces, as indicated.

3.3 APPLICATION

- A. General: Apply materials in conformance with CBC Chapter 25, CBC Table 2506.2, the manufacturers' printed instructions, and as indicated.
- B. Gypsum Board:
 - 1. Not used.
 - 2. Requirements of rated wall assemblies supercede any requirements indicated in this section.
 - 3. Apply sheets to framing using sheets of maximum size practical to minimize joints, neatly fitting edges and staggering joints.
 - 4. Cut and fit neatly around penetrations, locating back-to-back penetrations a minimum of one stud space apart to provide for the installation of insulation.
 - 5. For vertical surfaces, apply sheets with long edges parallel to supporting studs, centering abutting edges on a stud. Locate edge joints on different studs for sheets on opposite sides of partitions, and for successive layers of double-layer construction.
 - 6. For horizontal surfaces, apply sheets with long edges perpendicular to supporting studs, centering abutting ends on a joist, and staggering end joints in adjacent rows.
 - 7. Seal penetrations and cuts in acoustical partitions with a full bead of acoustical sealant at perimeter. Seal electrical boxes, washing machine boxes, and telephone plates on the back side with a sheet sealant pad; where wires enter boxes, seal openings airtight around wires and knockout openings.
 - 8. Provide perimeter relief where gypsum board abuts other construction; finish edge of gypsum board with metal casing bead, sealing space between casing bead and structure with continuous sealant bead; seal at base of sheets as indicated.
 - 9. Clean and prime existing steel subframes at jambs and head of existing windows prior to installation of gypsum board and sealant to allow bonding of sealant to frame. No part of existing steel subframes shall be exposed to view at the jambs and head.

C. Accessories:

1. Locate fasteners not more than 3/8 inch from edges and ends of sheets. Drive shanks perpendicular to surface of sheets, using power driver. Install screws using guns with magnetic bit and depth locator; do not hammer screws.
2. Set fastener heads slightly below surface of sheets, taking care not to break or strip paper face of sheets around fasteners. Stagger fasteners opposite each other on adjacent ends and edges. Omit fasteners at edges where metal edge trim will be installed.
3. Use floating-type interior angle construction for partitions where indicated or recommended by gypsum board manufacturer.
4. Locate fasteners along perimeter edge bearings and field bearings at not more than 12 inches on centers; do not locate fasteners on any bearing closer than 8 inches below top tracks of partitions secured to overhead structures.
5. Install metal trim at vertical and horizontal external corners and angles, junctions of gypsum board with other materials, unless otherwise indicated, and at exposed edges.
6. Apply fiberglass reinforcing tape at wall and corner junctures where new gypsum board abuts existing plaster.

D. Tolerances:

1. There shall be no measurable variation in any two-foot direction in gypsum board application, nor a maximum variation exceeding 1/8 inch in ten feet when a straightedge is laid on the surface in any direction.
2. Planes of abutting sheets shall not exceed a 1/16 inch offset.

E. Taping and Finishing:

1. Mix and apply joint compounds. Center joint tape over joint, embedding tape in a uniform layer of joint compound sufficiently thick and wide to ensure complete bond; apply skim coat while embedding tape.
2. Apply tape and metal trim to corners and angles, positioning straight and true to line.
3. Allow a minimum of 24 hours' drying time between applications of joint and finishing compounds.
4. Apply three coats minimum finishing compound over joint compound and tape, applying as many coats as necessary to ensure that joints and depressions will be invisible after application of finish.
 - a. Apply first coat of finishing compound evenly, feathering out beyond edges of tape and joint compound.
 - b. After first coat has dried, apply second coat, feathering edges out beyond edges of preceding coat.
 - c. Apply third coat in same manner as specified for second coat.

5. Apply one coat of joint compound and two coats minimum of finishing compound to dimples at fastener heads and marred spots on face of sheets; apply in same manner as previously specified.
6. Conceal exposed flanges of metal trim with two coats minimum of finishing compound, extending compound 8 to 10 inches on each side of trim piece.
7. Lightly sand joints after each application of joint and finishing compound has dried.
8. Finished surfaces shall be plumb and even within specified tolerances.
9. Provide a smooth level 5 finish per GA-214-07.

3.4 COMPLETION

- A. After completion of installation, maintain temperature and humidity conditions in accordance with the gypsum board manufacturer's printed instructions.

END OF DOCUMENT

PAINTS AND COATINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Furnishing of materials and equipment and completion of painting and painter's finish on new and existing exposed exterior and interior surfaces as required to complete the painting and finishing as indicated and specified.
- B. Not used
- C. All existing painted surfaces and any new items installed are to receive paint with the following exceptions:
 - 1. Factory-finished items, unless otherwise specified.
 - 2. Surfaces scheduled to be unfinished or exposed.
 - 3. Wall and ceiling surfaces permanently concealed from view, and adjacent concealed ducts, pipes, and conduit.
 - 4. Stainless steel, bronze, aluminum, and chromium plate, unless otherwise specified.
 - 5. Nameplates.
 - 6. Other items specified herein and in the individual Specification Sections.
- D. For additional information, contact:

Maintenance and Operations
Maintenance Supervisor
Tel.: (925) 473-2328

1.2 SUBMITTALS

- A. Comply with requirements of Section 01300.
- B. Product Data: Manufacturer's technical information, including paint label analysis and application instructions for each material.
- C. Samples: Prepare samples of colors and textures based upon the Architect's selections and submit them for review.

1. Concrete: Two 4" square samples for each color and finish.
2. Concrete Masonry: Two 4"x8" samples of masonry, with mortar joint in the middle, for each color and finish.
3. Wallboard: Two 8" x 8" samples on hardboard for each type, color and finish texture paint selected in a stair step manner so all required coats show.
4. Painted Wood: Two 1" by 4" by 24" long strips on wood of type to be used for the work, for each stain color and finish selected, arranged in a stair step manner so all required coats show.
5. Ferrous Metal: Provide two 4-inch- (100-mm-) square samples of flat metal and two 8-inch- (200-mm-) long samples of solid metal for each color and finish.
6. Cement Plaster: Two 12" x 12" samples on cement plaster for each type, color and finish texture paint selected in a stair step manner so all required coats show.

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements: Amount of volatile organic compounds released into the atmosphere from paint materials shall comply with applicable air quality requirements of the Bay Area Air Quality Management District, Federal or State guidelines, whichever is more strict.
- B. Paint for interior application shall be rated Class II when tested in accordance with ASTM E 84.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of Section 01 66 00 Product Delivery Storage and Handling.
- B. Deliver paint in manufacturer's labeled and sealed containers. Labels shall include manufacturer's name, brand, type, batch number, date of manufacture, color of paint and instructions for reducing. Thin only in accordance with printed directions of manufacturer. Thinning shall comply with the regulations of the air pollution control district having jurisdiction.
- C. Storage and Handling: Store paint materials and equipment, when not in actual use, in places specifically assigned for that purpose. Ventilate storage space and provide fire protection. Mix and handle paint in these assigned areas; use metal containers for mixing and handling and designed for safety. Remove paint materials, including rags, tarpaulins, mixers, and empty containers and filled or partially filled containers from the building areas at the close of each working day.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Follow manufacturers' printed instructions for environmental conditions for application of materials.
- B. Provide ventilation for interior application of materials.
- C. Do not apply materials in spaces in which open flames are used, in which welding is being performed, and in which dust is being generated.
- D. Do not apply materials to exterior surfaces when fog, mist, or rain is present. Do not apply paint when relative humidity exceeds 85 percent; or to damp or wet surfaces.
- E. Apply water-base paints when temperature of surfaces and surrounding air are between 50 and 90 degrees F.
- F. Apply solvent-thinned paints when temperature of surfaces and surrounding air are between 45 and 95 degrees F.
- G. Painting may be continued during inclement weather if areas to be painted are enclosed and heated within temperature limits specified.

1.6 EXTRA MATERIALS

- A. Furnish extra paint materials from the same production run as the materials applied and in the quantities described below. Package with protective covering for storage and identify with labels describing contents. Deliver extra materials to Owner.
- B. Quantity: Furnish Owner with an additional 3 percent, but not less than one gallon or one case, as appropriate, of each material and color applied.

1.7 WARRANTY

- A. In addition to the warranty and correction of work requirements of the General Conditions, warrant painting and finishing against peeling, fading, cracking, blistering, or crazing for a period of 2 years from the date of "Notice of Completion". The written warranty shall include materials and labor. The warranty shall be signed by the paint manufacturer, the painter and the Contractor and shall be submitted in accordance with Section 01770.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Substitutions: Materials will be considered for substitution subject to requirements specified in Division 1. Submit written justification for the substitution. Submit chemical formulations of materials proposed for substitution to demonstrate that formulation of substitution is similar to formulation of

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specified product; or results test showing that performance of substitution is equivalent to performance of specified product.

- B. See paint schedule for acceptable manufacturers and specific products. See Appendix A at the end of this Section for Kelly Moore Paints California Cross Reference 2001 chart indicating equivalent paint systems for other manufacturers.
- C. General-Purpose Filler: Spackling compound, gypsum board joint compound, or latex patching compound, all of standard manufacture.
- D. Wood Filler: Type recommended by paint manufacturer for type of wood and paint to be used.
- E. Other Materials: Types recommended by paint manufacturer for his/her particular products and conditions of use.

2.2 COLOR SELECTION

- A. Paint colors and textures shall match existing adjacent materials where so specified. Should a question arise as to quality of match, the Architect's decision shall be final.
- B. Colors: Custom colors as selected by the Architect
- C. Paint shall be already color-mixed when delivered to the Project site; no color-mixing shall be permitted at the Project site.
- D. Primers shall be color tinted to match color of finish.
- E. After the actual painting and finishing has started, the Architect retains the right to make minor modifications in tone and shade on various surfaces to suit the actual lighting conditions encountered. Submit additional samples, as required, to assist the Architect in his final selection.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to be painted before beginning painting operations. Construction of other trades that has been left or installed in a condition not suitable to receive paint, stain or other specified finish shall be repaired or corrected by the applicable trade before painting.
- B. Start of painting work indicates acceptance of surfaces and conditions of surfaces and conditions within any particular area.

3.2 PREPARATION

- A. General: Remove finish hardware, switch plates, nameplates, gauges, lighting and fixtures and similar items prior to start of painting; replace removed items only after paint has completely dried. Use only workers skilled in the trades involved for removing and connecting above items. For items not reasonable to remove and replace, protect by masking or other means.

- B. Existing Materials:
 - 1. General:
 - a. Surface preparation of existing materials shall be such that substrate shall be as smooth as that of new materials, and coatings applied thereto shall achieve appearance as satisfactory as if applied on new materials.
 - b. If examination of existing surfaces to be refinished shows that surface conditions are not suitable to receive specified first coat, apply one coat of surface conditioner recommended by coating manufacturer for the substrate and conditions involved; or, if determined by coating manufacturer, prepare as specified hereinafter.
 - c. Clean mildew with water spray containing bleach and trisodium phosphate.
 - 2. Wood Trim:
 - a. Clean surfaces of loose dirt and dust. Remove loose paint by sanding, wire brushing or scraping.
 - b. With specified wood filler, fill holes, cracks, and areas not exceeding 3/8 inch in depth where wood is missing; sand flush and smooth when filler is dry. For areas exceeding 3/8 inch in depth where wood is missing, replace with new wood, neatly cut in at a 45-degree angle and glued with non-staining, non-bleeding, waterproof glue; sand flush and smooth when glue is dry.
 - 3. Cement Plaster Repair:
 - a. Prepare by removing efflorescence, chalk, dirt, grease, oils, and by roughening as required to remove glaze.
 - 1) Determine alkalinity and moisture content of surfaces to be painted.
 - 2) If surfaces are found to be sufficiently alkaline to cause blistering and burning of finish paint, neutralize before application of paint.
 - 3) Do not paint over surfaces where moisture content exceeds manufacturer's printed directions.
 - b. Cracks More Than 1/4-inch Wide: Groove top of cracks, and cut out to sound material or to backing paper, ensuring that backing paper is not damaged. Remove dust, dirt, loose particles, and foreign materials by brushing or other means that will not damage material.

- c. Dampen cleaned concrete surfaces and apply flexible patching compound manufactured by V.I.P., or equal.
 - d. Cracks ¼-inch Wide or Less: Apply flexible patching compound.
 - e. Apply flexible patching compound in accordance with the manufacturer's printed instructions and finish to match adjacent concrete.
 - f. Follow manufacturer's printed instructions for curing patching compound.
4. Concrete: Areas where ceramic tile is indicated for removal.
- a. Mechanically remove all mortar or tile grout prior to bead blasting.
 - b. Protect all surfaces not indicated for bead blasting.
 - c. Test Area: Bead blast a 10 foot by 10 foot area for review by the Architect prior to commencing blasting work. Test different shot material to determine best shot type and technique to achieve intended results.
 - e. Bead blast concrete surface to achieve a uniform texture. Blast the least amount possible to achieve a uniform surface texture. Do not over blast. Avoid gouging the concrete.
5. Tile: Areas where existing ceramic tile is indicated to remain and receive paint finish.
- a. Tile surfaces shall be cured, firm, dry and cleaned free of dust, dirt, oil, grease, wax, chalky or loose pain, rust, loose mill scale, bond breakers and curing compounds, efflorescence, asphalt stains, mildew or other contamination or condition that would adversely affect the performance of the of the coating.
 - b. Sand tile surfaces.
 - c. Fill holes and voids with patching compound as recommended by coating manufacturer. Match surface profiles.
- C. New Materials:
- 1. General: Surfaces shall be clean and dry before painting and finishing. Remove dirt and dust by stiff bristle brush and wipe with cloths. Remove oil and grease by cleaning using a materials and methods recommended by the paint manufacturer. Thoroughly rinse surfaces with water that have been contaminated with chemicals. Apply the first coat of paint as soon as possible after cleaning and drying the surfaces.
 - 2. Metal: Remove mill scale, rust, and other foreign material by wire brushing, scraping, sandblasting, or chemical means; remove oil, grease, dirt, and dust

by use of mineral spirits. Pretreat galvanized metal with phosphoric acid or vinyl wash; apply primer the same day as surface is prepared.

3. Galvanized handrails to receive high performance coating: Steam clean surfaces, then roughen by abrasive blasting, using an abrasive not larger than 30 mesh. Take care not to damage galvanizing. Etch with etching product approved by paint or coating manufacturer.
4. Gypsum Plaster: Fill narrow, shallow cracks, and small holes and depressions with general-purpose filler; rake deep, wide cracks and deep holes, then fill with thin applications of general-purpose filler. Allow filler to dry, then sand flush and smooth, taking care not to remove or raise nap of paper facing.
5. Cement Plaster: Fill narrow, shallow cracks, and small holes and depressions with general-purpose filler; rake deep, wide cracks and deep holes, then fill with thin applications of general-purpose filler. Allow filler to dry, then sand flush and smooth, taking care not to remove or raise nap of facing.
6. Concrete: Thoroughly clean form oil and other deposits from form surfaces and remove laitance and powder. Do not start painting operations until surfaces are clean and sound and thoroughly cured and dried.
7. Wood: Clean soiled surfaces, then sand smooth. Fill cracks, holes, and depressions with specified wood filler; sand flush and smooth when filler is dry.

3.3 APPLICATION

- A. Application: Apply paints by brush or roller except as otherwise specified. Use paint of proper consistency for each coat, well brushed out or flowed on to obtain a uniform finish free from holidays, brush marks, sags, crawls or other defects.
- B. Apply materials in accordance with the manufacturer's printed instructions and as specified. Accomplish thinning required in the manner and with the type of reducer recommended by manufacturer.
- C. Add mildew retardant to exterior paint in accordance with directions of SFUSD Buildings and Grounds.
- D. Coats and Textures:
 1. The number of coats specified is the minimum number required; if complete and even coverage is not achieved with the number of coats specified, as determined by the Architect, apply additional coats until the required finish has been achieved; materials and application of such additional coats shall be at no increase in Contract Price.
 2. Color tint sealers and undercoats to correspond with finish color. Vary color of successive coats sufficiently to distinguish between coats. Tint undercoats

to colors selected by the Architect, increasing the depth of shade in successive coats.

3. Allow each coat to completely dry before application of each succeeding coat, following manufacturer's recommendations for drying time between coats.
 4. Sand between each coat to remove defects visible from a distance of five feet.
 5. Smooth or textured finish is indicated on the Drawings.
- E. Sand enamel and varnish coats smooth before recoating. Repair defects and unevenness in previously applied coatings before applying the next coat.
 - F. Shop paint all new handrails with high performance coating. Touch-up only in field. Use materials compatible with those used in shop for touch-up.
 - G. Touch-up and restore damaged shop-applied primer. Refinish the entire surface if touch-up or a portion of a finish is not acceptable.
 - H. Paint and finish surfaces indicated in the Room Finish Schedule and as specified herein, including exterior and interior surfaces at areas of new or modified existing work.
 - I. Millwork: Prime or back-paint (other than shop painted or prefinished surfaces) within 24 hours after delivery to Project site. Apply 2 coats paint (primer and filler of undercoat) on top and bottom edges of doors after being cut and fit but preferably before being hung. Prime or seal edges and cut surfaces of boarding and paneling.
 - J. Wood exterior finish, including frames, trim, siding and natural-finished wood: Back-prime surfaces which will be concealed after installation. Use Kelly Moore clear prime seal and apply immediately upon delivery of material to project.
 - K. Sheet metal: Back-prime raw sheet metal before installation.
 - L. Cement plaster: apply primer and finish coats after new plaster has cured and after existing plaster has been repaired and prepared for painting
 - M. Existing Tile: after preparation, apply primer-sealer to tile surfaces in accordance with manufacturer's written instructions. Allow to fully cure and dry. Apply finish coats as scheduled.

3.4 CLEANUP

- A. Clean-Up: During progress of work, remove discarded paint materials, rubbish, cans, rags from site at end of each work day.
 1. Clean glass and paint-spattered surfaces immediately by proper methods of washing and scraping, using care not to scratch or damage finished surfaces.

- B. Protection: Protect work of other trades, whether to be painted or not; correct damage by cleaning, repairing or replacing, and repainting, as acceptable to Architect.
 - 1. Provide "Wet Paint" signs to protect newly-painted finishes.
 - 2. Remove temporary protective wrappings provided by others for protection of their work, after completion of painting operations.
- C. Repair: At completion of work of other trades, touch-up and restore damaged surfaces or defaced painted surfaces.

3.5 COMPLETION

- A. When complete, surfaces to which paint has been applied shall be clean and evenly covered, uniform in appearance, smooth, and free from brush marks, holidays, skips, runs, bubbles, streaks, and other damage and defects including inadequate coverage and mill thickness as necessary to produce a first-class workmanlike job.
- B. Edges of applied finishes adjoining other materials and colors shall be clean and sharp, with no overlapping.
- C. At the end of one year, paint colors shall be free from noticeable fading, and finishes shall have their original adherence, with-out evidence of blisters, runs, peeling, scaling, chalking, streaks, and stains. Washing with alkali-free soap and water shall remove surface dirt from finished surfaces without damaging finish.

3.6 PAINT SCHEDULE

- A. Exterior Surfaces – New:

- 1. Galvanized Metals – Eggshell:

- 1 coat Galvanized Metal Primer
KM 5725 DTM Acrylic Primer Finish

- 2 coats KM 5885 DTM High Performance Acrylic Semi-Gloss

- 2. Galvanized Steel Handrails– High Performance High Gloss:
Touch up damaged factory primed surfaces.

- 1 coat Organic Zinc Primer
Tnemec 90-96 Tnemec Zinc
Rustoleum PC. ; # 9100 series Epoxy mastic – As Specified
Distributed by
Kelly Moore

2 coats Polyurethane Enamel – High Gloss
Rustoleum 9700 series Aliphatic Polyurethane

*Omit primer on surfaces shop primed with organic zinc primer.

3. Iron and Steel –Semi-Gloss: (All other iron and steel surfaces exposed to sight and/or weather). Touch up damaged factory primed surfaces.

1 coat Ferrous Metal Primer*
Rustoleum 9334 Zinc-Sele
Tnemec 90-96 Tnemec –Zinc
Rustoleum 9100 series Epoxy Mastic

2 coats Industrial enamel– Semi-Gloss
KM 6630 Plasti- Enamel Semi-Gloss Enamel

*Omit first coat on shop primed surfaces.

4. Wood – Painted Eggshell:

1 coat Wood Primer – Exterior
KM 255 Acry- Shield 100% Acrylic Primer

2 coats Wood Trim Enamel – Eggshell
KM 1686 Dura – Epoxy + 100% Acrylic Eggshell Enamel

5. Concrete – Painted Low Sheen:

1 coat Concrete and Plaster Primer – Exterior
KM 247 Acry- Shield 100% Acrylic Masonry Primer

2 coats Acrylic Finish Coat – Flat – Exterior
KM 1240 Acry-Shield 100% Acrylic Exterior Low Sheen

*This includes existing concrete surfaces that have been sand blasted.

6. Cement Plaster – Painted Low Sheen:

1 coat Concrete and Plaster Primer – Exterior
KM 247 Acry- Shield 100% Acrylic Masonry Primer

2 coats Acrylic Finish Coat – Flat – Exterior
KM 1240 Acry-Shield 100% Acrylic Exterior Low Sheen

B. Exterior Surfaces – Existing:

1. Galvanized Metals – Eggshell:

1 coat Galvanized Metal Primer

KM 1725 100% Acrylic Metal Primer

2 coats KM 1686 Dura -Poxy + 100% Acrylic Eggshell Enamel

2. Galvanized Steel Handrails – High Performance High Gloss:

1 coat Organic Zinc Primer
Tnemec 90-96 – Distributed by Kelly Moore
Rustoleum 9100 series Epoxy Mastic - Distributed by Kelly Moore

2 coats Polyurethane Enamel – High Gloss
Rustoleum 9700 Series Aliphatic Polyurethane

3. Iron and Steel – Semi-Gloss: (All other iron and steel surfaces exposed to light and/or weather).

1 coat 1 coat Organic Zinc Primer
1711 Kel – Guard Alkyd Rust – Preventative Primer
Tnemec 90-96 – Distributed by Kelly Moore

1 coat Industrial Enamel Finish Semi-Gloss
6630 Plasti-Namel Alkyd Rust Preventative Semi-Gloss Enamel

4. Wood – Painted Eggshell:

1 coat Wood Primer – Exterior
KM 255 Acry- Shield 100% Acrylic Primer

2 coats Wood Trim Enamel – Eggshell
KM 1686 Dura – Epoxy + 100% Acrylic Eggshell Enamel

5. Concrete – Painted Low Sheen (includes retaining walls):

1 coat Concrete and Plaster Primer-Exterior
247 Acry-Shield 100% Acrylic Masonry Primer

1 coat KM 1240 Acry-Shield 100% Acrylic Exterior Low Sheen

6. Cement Plaster – Painted Low Sheen:

1 coat Concrete and Plaster Primer-Exterior
247 Acry-Shield 100% Acrylic Masonry Primer

1 coat KM 1240 Acry-Shield 100% Acrylic Exterior Low Sheen

7. Stair Nosing Stripes – Low Profile Epoxy:

1 coat Amstep, "Hercugrip 7175" low profile epoxy anti-slip coating.

C. Interior Surfaces - New:

1. Steel Doors and Frames – Non-Blocking Acrylic Latex:

Touch up damaged factory primed surfaces. Omit 1st coat on shop primed surfaces.

1 coat Ferrous Metal Primer
KM 1710 Kel Guard Red Oxide Primer

1 coat Acrylic Enamel Undercoat – Interior
KM 975 Enamel Undercoater

1 coat Acrylic Enamel-Non Blocking – Interior
KM 1686 Dura – Epoxy + 100% Acrylic Latex Enamel
Gloss sheen at corridors and stairs, eggshell sheen elsewhere.

2. Metals – Acrylic Latex Enamel: (All other metals including exposed piping, conduit, electrical panels, miscellaneous brackets, bolts, fasteners, supports, prime coated hardware, casing beads, metal grilles and exposed ducts etc., other than plated or factory finished items). Touch up damaged factory primed surfaces. Omit 1st coat on shop primed surfaces.

1 coat Ferrous Metal Primer
KM 1710 Kel Guard Red Oxide Primer

1 coat Acrylic Enamel Undercoat – Interior
KM 975 Enamel Undercoater

1 coat Acrylic Latex Enamel – Eggshell – Interior
KM 1686 Dura – Epoxy + 100% Acrylic Eggshell Enamel

Note: Provide alkyd semi-gloss enamel; Benjamin Moore Super Spec DTM Z24 or approved equal at metal handrails.

3. Gypsum Board – Acrylic Latex Enamel:

1 coat Vinyl Acrylic Sealer
KM 971 Acry-Plex

1 coat KM 1610 Acry-Plex 100% Acrylic Enamel
Gloss sheen at toilet rooms; semi-gloss sheen walls of corridors and stairs; flat sheen at ceilings of corridors and stairs; low sheen elsewhere.

4. Acoustic Tile Ceiling (Lay-in and surface applied) – Acrylic Latex Enamel:

1 coat Interior Latex Flat Paint
485 KM Commercial

1 coat Interior Latex Flat Paint

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485 KM Commercial

Only paint new acoustic tile where used in rooms to patch existing acoustic tile ceilings. At these instances both new and existing tile in entire room is to be painted.

5. Masonry – Acrylic Latex Enamel Low Sheen:

- 1 coat Masonry Block Filler
KM 521 Fill Prime Acrylic Block Filler
- 1 coat Acrylic Enamel Undercoat – Interior
KM 975 Enamel Undercoater
- 1 coat Acrylic Latex Enamel – Low Sheen – Interior
KM 1610 Acry-Plex 100% Acrylic Eggshell Enamel

6. Concrete – Painted Low Sheen:

- 1 coat Concrete and Plaster Primer-Interior
247 Acry-Shield 100% Acrylic Masonry Primer
- 1 coat Acrylic Finish Coat-Flat-Interior
550 Acry-Plex Interior Acrylic Low Sheen Wall Paint

7. Hardwood Trim and Veneered Doors – Clear Stained

- 1 coat Sanding Sealer – Interior
KM 4683 550 VOC Ultra Solids Clear Sanding Sealer
- 2 coats KM 4684 550 VOC ULTRA SOLIDS Clear Semi-Gloss

8. Hardwood Trim and Veneered Doors – Painted:

- 1 coat Acrylic Enamel Undercoat
KM 975 Enamel Undercoater
- 1 coat Acrylic Latex Enamel
KM 1610 Acry-Plex 100% Acrylic Enamel
High gloss sheen at toilet rooms; semi-gloss sheen at trim of corridors and stairs; gloss sheen at doors; semi-gloss sheen elsewhere.

9. Architectural Woodwork and Finish Carpentry -- Painted:

Pretreatment: Fill open-grained wood with filler and wipe before painting.
For finishes at wood flooring, see Section 09610 Wood Flooring Treatment.

- 1 coat Acrylic Enamel Undercoat
KM 975 Enamel Undercoater

- 2 coats Acrylic Latex Enamel

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KM 1610 Acry-Plex 100% Acrylic Enamel – low sheen

10. Concrete Floors.- High Performance Epoxy:

1 coat Rustoleum 9100 series Epoxy Anti-Slip Floor Coating

2 coats Rustoleum 9100 series Epoxy Anti-Slip Floor Coating

11. Plaster – Acrylic Latex Enamel:

1 coat Vinyl Acrylic Sealer
KM 971 Acry- Plex

1 coat KM 1686 Dura – Epoxy + 100% Acrylic Enamel
Gloss sheen at toilet rooms; semi-gloss sheen at walls of corridors and stairs; flat sheen at ceilings of corridors, stairs, classrooms and offices; low sheen elsewhere.

12. Miscellaneous: Construction visible through screen vents and grilles shall have one heavy coat of flat black paint.

1 coat KM 1240-407 Carbon Black Acry-Shield 100% Acrylic Exterior Flat

D. Interior Surfaces - Existing:

1. Steel Doors and Frames – Non-Blocking Acrylic Latex:

1 coat Tenemec Alkyd Metal Primer

1 coat Acrylic Enamel-Non Blocking – Interior
Tenemec – Epoxy + 100% Acrylic Enamel
Gloss sheen at corridors and stairs; eggshell sheen elsewhere.

2. Metals – Acrylic Latex Enamel: (All other metals including exposed piping, conduit, electrical panels, miscellaneous brackets, bolts fasteners, supports, prime coated hardware, casing beads, metal grilles and exposed ducts, etc., other than plated or factory finished items).

1 coat KM 1725 Acry-Shield 100% Acrylic Metal Primer

1 coat Acrylic Latex Enamel – Eggshell - Interior
KM 1686 Dura – Epoxy + 100% Acrylic Eggshell Enamel

Note: Provide alkyd semi-gloss enamel; Benjamin Moore Super Spec DTM Z24 or approved equal at metal handrails.

3. Gypsum Board – Acrylic Latex Enamel:

2 coats Acrylic Latex Enamel – Interior
KM 1610 Acry-Plex 100% Acrylic Enamel

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Gloss sheen at toilet rooms; semi-gloss sheen walls of corridors and stairs; flat sheen at ceilings of corridors and stairs; low sheen elsewhere.

4. Acoustic Tile Ceiling (Lay-in and surface applied) – Acrylic Latex Enamel:

1 coat Interior Latex Flat Paint
485 KM Commercial

1 coat Interior Latex Flat Paint
485 KM Commercial

5. Plaster – Acrylic Latex Enamel:

1 coat Vinyl Acrylic Sealer
KM 971 Acry-Plex

1 coat KM 1686 Dura – Epoxy + 100% Acrylic Enamel
Gloss sheen at toilet rooms; semi-gloss sheen at walls of corridors and stairs; flat sheen at ceilings of corridors, stairs, classrooms and offices; low sheen elsewhere.

6. Hardwood Trim and Veneered Doors – Stained:

1 coat Wood Stain – Interior
KM 2900 series Q.D. Alkyd Stain

1 coat Sanding Sealer – Interior
KM 4683 550 VOC Ultra Solids Clear Sanding Sealer

2 coats Semi-Gloss Lacquer – Interior
KM 4684 550 VOC ULTRA SOLIDS Clear Semi-Gloss

7. Existing Cabinetry to be Painted:

1 coat Acrylic Enamel Undercoat
KM 975 Enamel Undercoater

2 coats Acrylic Latex Enamel
KM 1610 Acry-Plex 100% Acrylic Enamel – low sheen

8. Existing Benches – Stained:

1 coat Wood Stain – Interior
KM 2900 series Q.D. Alkyd Stain

1 coat Sanding Sealer – Interior
KM 4683 550 VOC Ultra Solids Clear Sanding Sealer

2 coats Semi-Gloss Lacquer – Interior

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KM 4684 550 VOC ULTRA SOLIDS Clear Semi-Gloss

9. Hardwood Trim and Veneered Doors – Painted:

1 coat Acrylic Enamel Undercoat
KM 975 Enamel Undercoater

1 coat Acrylic Latex Enamel
KM 1610 Acry-Plex 100% Acrylic Enamel
High gloss sheen at toilet rooms; semi-gloss sheen at trim of corridors and stairs; gloss sheen at doors; semi-gloss sheen elsewhere.

10. Ceiling Tile, Tack Panel, etc. – Acrylic Latex Enamel:

1 coat Acrylic Latex Undercoat – Interior
KM 975 Enamel Undercoater

1 coat Acrylic Latex Enamel – Interior
KM 1610 Acry-Shield 100% Acrylic Latex
Flat sheen at ceiling tiles of classrooms and offices; low sheen elsewhere.

13. Concrete – Painted Low Sheen:

1 coat Concrete and Plaster Primer – Interior
247 Acry-Shield 100% Acrylic Masonry Primer

1 coat Acrylic Finish Coat-Low Sheen-Interior
550 Acry-Plex Interior Acrylic Low Sheen Wall Paint

12. Basketball Backboards at GYM – Painted Flat:

1 coat DE-EZ-PRIME

2 coats Acrylic Finish Coat – Flat – Interior
Dunn-Edwards Corp.; W701VV Evershield 100% Acrylic Flat Finish

13. Stair Nosing Stripes – Low Profile Epoxy:

1 coat Amstep, "Hercugrip 7175" low profile epoxy anti-slip coating.

3.7 MISCELLANEOUS PAINTING AND STAINING

- A. Repair paint and stain finishes on surfaces damaged by the performance of the Work with paint or stain of same type and color. If satisfactory repair cannot be made, repaint or restain entire surface; the Architect's decision as to quality of repair shall be final.

- B. Exposed New Mechanical and Electrical Items: Finish to match adjacent finished surfaces.
- C. Existing Painted and Stained Surfaces: Apply compatible primer or reconditioner, as required by the conditions of the surfaces to be refinished; apply a minimum of one finish coat, extending finish to inside/outside corner to inside/outside corner, or to full vertical height of wall or adjacent trim, unless otherwise permitted by Architect.
- D. Factory-Finished Items Specified in the Individual Sections to be Painted or Stained: Apply a minimum of two coats of finish compatible with factory-applied finish.
- E. When patching is performed at existing surfaces the entire surface or wall from end to end is to be painted.

3.8 PAINTS AND COATINGS PRODUCT MATRIX

- A. Kelly Moore Paints California Cross Reference 2001 chart indicating equivalent paint systems for other manufacturers. All products listed are examined and taken from the information listed from the manufacturers web site. Master Painter's Institute (MPI) approved categories are used for reference and not all products listed have been approved by MPI.
- B. See Appendix A on the following pages for Kelly Moore Paints California Cross Reference 2001 chart.

END OF DOCUMENT

PLUMBING SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. Section includes: The work shall consist of furnishing all labor, material, and equipment required to complete the installation of the plumbing systems as indicated on the drawings and described herein, including all incidental work necessary to make it complete and satisfactory and ready for operation. Work shall include, but not be limited to, the following principal items:
 - 1. Demolition of certain equipment, piping and related accessories.
 - 2. Natural gas piping to serve each building including the connections to existing piping.
 - 4. Condensate drain piping - cooling coils, including connections to existing piping where shown.
 - 6. Condensate drain piping - condensing furnaces.
 - 5. Connection to mechanical equipment.

1.03 RELATED WORK

- A. Electrical Systems, Division 26.
- B. Heating, Ventilating and Air Conditioning Systems, Section 23 00 00.

1.04 GENERAL REQUIREMENTS

- A. Verification of conditions:
 - 1. Prior to installation of plumbing work, Contractor shall inspect all surfaces to receive said work and arrange with the General Contractor for the satisfactory correction of all defects in workmanship and/or material that could interfere with the work specified herein.
 - 2. Installation of any plumbing work or materials on any surface shall constitute acceptance by the Contractor of such surfaces as being in proper condition to receive herein specified materials.
- B. Examination of site:
 - 1. Examine site prior to bidding. Compare it with drawings and specifications. Check conditions and take measurements, which may affect work. No allowance shall subsequently be made for any extra expense due to failure to make such examination.
- C. Manufacturer's directions:

1. Follow manufacturer's directions covering points not shown on the drawings or specified herein. Manufacturer's directions do not take precedence over drawings and specifications. Where these are in conflict with drawings and specifications, notify Engineer for clarifications before installing the work.

D. Codes:

1. Work and materials shall be in full accordance with all applicable local or state ordinances, California Building Code, California Plumbing Code, National Fire Protection Association, State of California Safety Orders, and State Fire Marshal. Whenever drawings and specifications require larger sizes or higher standards than are required by regulations, drawings and specifications govern. Whenever drawings or specifications require something, which will violate regulations, regulations govern. No extra charge will be paid for furnishing items required by regulations but not specified or shown on drawings.

E. Cooperation with other trades:

1. Schedule work and cooperate with other divisions to avoid delays, interferences and unnecessary work, conforming to construction schedule, making installation when and where required. A special effort shall be made to coordinate with the Mechanical Contractor so as not to block installation of the mechanical systems. The clearances above ceilings on this project are limited and the ductwork and piping are to have the highest priority. All plumbing work is to be coordinated with the mechanical Contractor such that the ductwork and piping can be installed in the locations shown on the mechanical drawings. If installed work is later found to interfere with work of other divisions, make all necessary changes at Contractor's expense.

F. Licenses, permits, services, and fees:

1. Secure and pay for all licenses required to begin, perform, and complete work.

G. Quietness of operation:

1. Adjust, repair, or replace any equipment producing objectionable noise or vibration in any occupied areas of building, including providing additional brackets, bracing, etc., to prevent objectionable noise or vibration.

H. Materials and workmanship:

1. All materials and equipment to be new and in perfect condition. Materials or equipment for similar uses are to be of same type and manufacturer.
2. Workmanship shall be of best standard practice of the trade.

I. Protection of equipment:

1. The Contractor shall be responsible for any damage to any of the work of this section until final acceptance. Cover all duct, pipe and equipment openings, and cover all apparatus, equipment, and appliances both before and after being set in place to prevent misuse or disfigurement of the apparatus, equipment, or appliances

J. Openings:

1. Cooperate with other trades in providing information as to openings required in walls, floors, and roof for ducts and equipment.

2. Pay all extra costs for cutting of openings as a result of incorrect, delayed, or neglected information.
3. Make absolutely watertight any openings through waterproofed construction caused by the penetration of ductwork or piping, in a manner approved by the Engineer.

K. Cleanup:

1. Thoroughly clean all parts of the apparatus and equipment. Exposed parts, which are to be painted shall be thoroughly cleaned of cement, plaster, and other materials, and all grease and oil spots removed with cleaning solvent.
2. Inside of all pipes, ducts, etc., shall be flushed or cleaned before being placed in operation, and all strainers shall be cleaned after operational tests.
3. Remove all debris and surplus equipment and leave installation in perfect condition ready for use.

L. Construction review:

1. All services rendered by the Engineer or any of his consultants consist of professional opinions and recommendations made in accordance with generally accepted engineering practice.
2. Under no circumstances is it the intent of the Engineer or any of his consultants to directly control the physical activities of the Contractor or the Contractor's workmen in the accomplishment of the Work.
3. The presence of the field representative of the Engineer or any of his consultants at the site is to provide to the Owner and/or Engineer an additional source of professional advice, opinions, and recommendations based upon the field representative's observations.

M. Safety:

1. In accordance with generally accepted construction practices, the Contractor will be solely and completely responsible for conditions on the project site including safety of all persons and property during performance of the work. This requirement will apply continuously and not be limited by normal working hours.
2. Construction review by the Engineer or any of his consultants is not intended to include review of the adequacy of the Contractor's safety measures in, on, or near the project site or at any other location.

N. Welder's qualifications:

1. All welding must be performed by registered welders qualified to perform welding operations in accordance with ASME Code Standards.

1.05 SUBMITTALS

- A. When specific names are used in connection with materials, they are used as standards only, but this implies no right to use other materials or methods unless approved by the Engineer.
- B. Decision of the Engineer shall govern as to what materials are acceptable substitutions. Burden of proof as to equality of any proposed fixtures, material, or equipment shall be upon the Contractor. Petition in favor of proposed substitute materials shall be made directly by the Contractor. If any tests are necessary to

determine quality of proposed items, such tests shall be made at the expense of the Contractor by an unbiased laboratory satisfactory to the Engineer.

- C. Submit shop drawings and material list in six (6) copies. Submit shop drawings and material list after official award of contract. Obtain approval of the Engineer before installation. Shop drawings shall be submitted for all materials, equipment, and controls.
- D. Check shop drawings and submittals before forwarding to Engineer and ascertain that all information submitted meets the requirements of drawings and specifications and conform to structural space conditions.
- E. Shop drawings also shall be prepared for modifications to architectural, plumbing, electrical, and mechanical work required by proposed materials - i.e., relocation of drains, revised electrical circuits, relocation of penetrations, etc.
- F. Installation of any approved substituted equipment is the Contractor's responsibility and any changes required to work included under other sections for installation of approved substituted equipment must be made to the satisfaction of the Engineer and without any additional cost. Approval by Engineer of substituted equipment and/or dimension drawings does not waive these requirements.
- G. Review of drawings and materials submitted for approval shall not be construed as a complete check or constitute a waiver of the requirements of the drawings and specifications. This review shall not relieve the Contractor of the responsibility to fit the proposed materials to the spaces provided and to effect necessary rearrangement or construction of other work. Contractor agrees that shop drawing submittals processed by the Engineer do not become contract documents and are not change orders; that the purpose of the shop drawing review is to establish a reporting procedure and is intended for the Contractor's convenience in organizing his work and to permit the Engineer to monitor the Contractor's progress and understanding of the design. If deviations, discrepancies, or conflicts between shop drawing submittals and the contract documents are discovered either prior to or after the shop drawing submittals are processed by the Engineer, the Contractor agrees that the contract documents shall control and shall be followed.
- H. Submittal lists shall include the identifying marks assigned to the items. Give name of manufacturer, brand name, and catalog number of each item. Submit complete list at one time with items arranged and identified in numerical sequence within each section and article specifications. Listing items "as specified" without both make and model or type designation is not acceptable, except as noted. Only pipe and fittings not specified by brand names may be listed "as specified" without manufacturer's name, provided proposed materials comply with specification requirements.
- I. Descriptive Data: Submit complete description, information and performance data covering equipment that is specified but for which catalog plate numbers, brand names, or specific models have not been used.
- J. Submittal of substitutions shall be limited to one proposal for each type or kind of item, unless otherwise permitted by the Engineer.

- K. Also comply with the requirements of Division 01- General Requirements.

1.06 DRAWINGS, SPECIFICATIONS, AND COORDINATION OF WORK

- A. Drawings are essentially diagrammatic. Size and locations of equipment are generally shown to scale. Make use of data in all contract documents, and verify this information against field conditions.
- B. The drawings indicate the required size and point of termination of ductwork, pipes, and equipment. Install pipe with all necessary offsets and fittings to conform to the structure, avoid obstructions, preserve headroom, maintain required accessibility, and satisfy the requirements of the governing codes and the standards of good practice.
- C. The architectural and structural drawings and specifications take precedence over the mechanical drawings in the representation of the general construction work. Refer to the drawings, specifications, and review shop drawings for all work in order to coordinate plumbing work with the other work of the project.
- D. Where changes in indicated locations or arrangements are necessary due to conditions in building construction, interference with work in other divisions, or conflict in location, make changes at no cost to the Owner deviations, offsets, rises or drops in piping that may be necessary, whether shown or not, shall be made at no expense to Owner.
- E. Bring discrepancies between different drawings, between drawings and actual field conditions, or between drawings and specifications promptly to the attention of the Engineer for decision, and stop all work on affected areas subject to resolution of the conflict.

1.07 OPERATING INSTRUCTIONS

- A. Upon completion of work, the Contractor shall place a competent person in charge who will operate the system and instruct the Owner's representative in all details of the operation and maintenance of the plumbing system.
- B. The Contractor shall carefully prepare four (4) descriptive booklets of the entire plumbing systems and a full description of the operation and maintenance of each piece of equipment. The binders shall have tabs indicating each type of equipment with sub-dividers indicating the equipment symbol shown on the drawings. An index shall be provided with page numbers for each type of equipment and each piece of equipment. The binders shall be well organized to provide easy reference.
- C. Operating instruction manuals are to include names, addresses, and telephone numbers for the following: project name, Owner, General Contractor, Plumbing Subcontractor, and equipment manufacturer's (including local representatives).
- D. Also comply with the requirements of Division 01 - General Requirements.

1.14 GUARANTEE

- A. The Contractor shall furnish a written guarantee to the Owner that the new materials, equipment, and installation are new, free from mechanical defects, noiseless, and are in perfect operating condition.
- B. The Contractor shall guarantee to replace and repair at his own expense any and all unsatisfactory and defective work and items to the satisfaction of the Owner for a period of one (1) year after the system is put to beneficial use.
- C. The Contractor shall also furnish the Owner with all manufacturer's written guarantees of materials and equipment.
- D. Also comply with the requirements of Division 01 - General Requirements.

1.15 RECORD DRAWINGS

- A. Record drawings are to include all changes made during construction from the design drawings. The record drawings are to show the changes as mark-ups on the design drawings. Shop drawings or CAD drawings will not be accepted as record drawings.
- B. Also comply with the requirements of Division 01 - General Requirements.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Condensate drain piping - cooling coils:
 - 1. Type M copper tubing ANSI H23.1 with wrought copper sweat fittings ANSI B16.22 joined with lead free solder.
- B. Condensate drain piping - condensing furnaces:
 - 1. Install condensate neutralizer provided by Mechanical Contractor per detail on drawings.
 - 2. Upstream of neutralizer: Schedule 40 PVC pipe and fittings with solvent weld joints.
 - 3. Downstream of neutralizer: Type M copper tubing ANSI H23.1 with wrought copper sweat fittings ANSI B16.22 joined with lead free solder.
- C. Natural gas piping:
 - 1. Above grade: Schedule 40 black steel pipe ANSI B125.2 and 150 PSI black malleable iron screwed fittings ANSI B16.3 for piping 2" and smaller and seamless welded joint 2-1/2" and larger. Pipe and fittings outside of the buildings are to be galvanized. Wrap below grade piping per AWWA HOC 203.
- D. Unions and flanges:
 - 1. Steel pipe unions: Malleable iron ground joint pattern with brass to iron seats, 150 psi.
 - 2. Steel pipe flanges: ANSI B16.0, 150 psi forged steel welding type with flat face.
 - a. Copper tubing unions: 150 psi ground joint cast bronze unions with sweat connections.

- b. Copper tubing flanges: ANSI B16.24, bronze, 150 psi to match standard ASA 150 psi steel flanges with flat face.
 - c. Flange gaskets: Crane Co Cranite, 1/16" full face sheet packing, 150 psi. Coat gaskets with thread lubricant before installation.

- E. Dielectric protection:
 - 1. Location: For connection between dissimilar metals in the piping systems to control corrosion caused by galvanic or electrolytic action.
 - 2. Listing: Victaulic Style 47, Lochinvar V-line, or equal.
 - a. Insulated couplings: Threaded for sizes 2" and smaller, grooved or flanged for 2-1/2" and larger.

- F. Thread lubricant for steel pipe:
 - 1. Amite Joint Seal Compound No. 250. or equal.

- G. Valves: Shall be a product of single manufacturer, Red-White or equal.
 - 1. Ball valves (for gas): 5044F, brass body, 600 psi, full port.
 - 2. Valves shall be same size as line in which they are installed. No valve shall be in-stalled with stem pointed below horizontal.

- H. Pipe sleeves:
 - 1. Core holes with rotary diamond tooth core drills.

- I. Pipe hangers and supports: Superstrut or equal.
 - 1. Plumbing piping – soil, waste, and vent piping:
 - a. Conform to ASME B31.9.
 - b. Hangers for pipe sizes ½ inch to 1-1/2 inches: Malleable iron, adjustable swivel, split ring.
 - c. Hangers for pipe sizes 2 inches and over: Carbon steel, adjustable, clevis.
 - d. Multiple or trapeze hangers: Steel channels with welded spacers and hanger rods.
 - e. Copper pipe support: Carbon steel ring, adjustable, copper plated.
 - 2. Plumbing piping – water:
 - a. Conform to ASME B31.9
 - b. Hangers for pipe sizes ½ inch to 1-1/2 Inches: Malleable iron, adjustable swivel, split ring.
 - c. Hangers for cold pipe sizes 2 inches and over: Carbon steel, adjustable, clevis.
 - d. Hangers for hot pipe sizes 2 inches to 4 inches and over: Carbon steel, adjustable, clevis.
 - e. Multiple or trapeze hangers: Steel channels with welded supports and hanger rods.
 - f. Copper pipe support: Carbon steel ring, adjustable, copper plated.

- J. Seismic bracing:
 - 1. Conform to SMACNA Seismic Restraint Manual Guidelines for Mechanical Systems, Second Edition, 1998.

- K. Pipe hangers and supports: Superstrut or equal.
 - 1. Horizontal piping: C-711 J-Hanger.
 - 2. Vertical piping: C-720 riser clamp.

3. Multiple piping runs and piping supported from walls; A-1200 channel and standard fittings and pipe clamps.
 4. Inserts: 452 TB or C-475.
 5. Beam clamps: U-562, U-579, C-7756, or M-778
 6. Misplaced or unspecified hanger: Phillips Red head anchor sleeve.
 7. Rods: H-104
- L. Piping identification:
1. Piping identification shall be manufactured by Marking Services, Incorporated or equal.
 2. Materials:
 - a. Color: Unless specified otherwise, conform with ANSI/ASME A13.1.
 - b. Plastic nameplates: Laminated 3-layer plastic with engraved black 2 inch high letters on light contrasting background color.
 - c. Metal tags: brass aluminum with stamped letters; tag size minimum 1-1/2 inch diameter with smooth edges.
 - d. Plastic pipe markers: Factory fabricated, flexible, semi-rigid, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and fluid being conveyed.
- M. Escutcheon plates: For pipes passing through finished ceilings, walls, and floors in conspicuous locations, use chromium-plated steel floor and ceiling plates with set screw or other approved means of holding securely in place.
- N. Flashing and counterflashing: For cast iron pipe penetrations through roof, use 4 pound lead flashing with counterflashing. For copper pipe penetration through roof, use copper flashing and counterflashing. Follow the roofing manufacturer's recommendations for all roof penetrations, curbs, platforms, and sleepers.
- O. Underground, uninsulated, steel pipe lines: Shall be wrapped conforming to AWWA HO C203.

PART 3 - EXECUTION

3.01 GENERAL

- A. Support exposed and concealed piping on specified hangers properly spaced and set to allow piping to adjust for temperature change expansion and contraction. Evenly space and support piping in parallel.
- B. Install equipment, products and materials in complete accordance with the manufacturer's installation requirements and recommendations.
- C. Coordinate with other trades to provide continuous support channel for all pipes and conduit in exposed locations.
- D. Conceal piping in ceilings, furred walls, partitions and pipe spaces, except where noted otherwise. Provide maximum head room and run piping to maintain proper clearance for piping runs beforehand and with other divisions to ensure clearance.

Where work of other divisions prevents installation of piping shown on drawings, reroute piping as directed by Engineer at no extra cost to Owner.

- E. Install exposed piping parallel to or at right angles with building walls.
- F. No valve, piece of equipment, or trim shall support the weight of any pipe. Install valves, traps, cleanouts, etc., in accessible locations.
- G. Install piping free from traps and air pockets.
- H. Use special wrenches in assembly of polished, chrome-plated tubing and fittings so that no tool marks are left on pipe fittings.
- I. Wherever changes in sizes of piping occur, use reducing fittings.
- J. Install unions adjacent to threaded valves, equipment, and at other points where required for disassembly.
- K. Provide sleeves wherever pipes run through walls, slabs, beams, footing, and floors large enough for passage of pipe and/or pipe insulation. Sufficiently size sleeves to allow for contraction and expansion of pipe. Pack sleeves with approved packing material. Pack sleeves in walls and slabs below grade and through exterior walls above grade with waterproof mastic or grout.
- L. Fit exposed pipes which pass through walls, ceilings, or floors in finished rooms and conspicuous locations with escutcheon plates.
- M. Install insulating unions or flanges at ferrous and non-ferrous piping connections.
- N. Provide maximum head room and run piping to maintain proper clearance for piping runs. Coordinate beforehand and with other divisions to insure clearance

3.02 PIPE HANGERS, SUPPORTS, AND BRACES

- A. General: Support piping from building structure so that there is no apparent deflection in piping runs. Fit piping with steel sway braces and anchors to prevent vibration and/or horizontal displacement under load when required. Support piping only by approved pipe hangers. Pipes shall not be supported from, or braced to, ducts, other pipes, conduits, or any materials except building structure. Piping or equipment shall not be supported or hung by wire, rope, plumbers tape, or blocking of any kind.
- B. Hanger spacing (not for piping or multiple piping supports):

Type of Pipe	1" diam. & smaller	1-1/4" diam. & lgr
Steel pipe	8'- 0"	10'- 0"
Copper tubing	6'- 0"	8'- 0"
Cast iron pipe	All sizes 5'- 0" max. and not less than one hanger per joint	
- C. Polypropylene and PVC pipe: Per manufacturer's recommendations.
- D. Multiple piping support: 6'- 0".

- E. Support vertical piping at each floor level with riser clamps.
- F. Piping at completion of job shall be rigid and immobile. Install additional pipe supports, brackets, and hangers as required to accomplish a rigid and immobile piping system.
- G. Double wrap copper pipe with heavy vinyl tape where pipe comes in contact with ferrous materials.

3.03 CLEANING

- A. General: Thoroughly clean exterior and interior of piping, equipment, and materials before systems are put in operation. Remove paint, concrete, plaster, and other foreign materials. Clean valve handles and stems of any paint, dirt, or other foreign materials. Clean drains of dirt and debris. Remove and clean out dirt and debris from pipe spaces, including wire and blocking.

3.04 TESTING

- A. Condensate drain piping - cooling coils: Test with minimum height of stand pipe 10'-0". Test duration to be a minimum of four (4) hours.
- B. Condensate drain piping - condensing furnaces: Test with minimum height of stand pipe 10'-0". Test duration to be a minimum of four (4) hours.
- C. Gas piping: Test with air under pressure of 100 psi for a minimum test duration of four (4) hours.
- D. If systems are tested in sections, include connection to previously tested section. Final pressures at end of test period shall be no more nor less than that caused by expansion or contraction of test medium due to temperature changes. Apply tests for a minimum period of four (4) hours or as required by local codes or agencies having jurisdiction. Where testing pressures are higher than rated pressure for equipment, or special trim, remove and bypass item with temporary piping for purposes of test.

3.05 PIPING IDENTIFICATION

- A. Installation:
 - 1. Degrease and clean surfaces to receive adhesive for identification materials.
 - 2. Plastic nameplates: Install with corrosive-resistant mechanical fasteners or adhesive.
 - 3. Plastic or metal tags: Install with corrosive-resistant chain.
 - 4. Plastic pipe markers: Install in accordance with manufacturer's instructions. Maximum spacing is to be 20 feet on center.
 - 5. Valves: Identify valves in main and branch piping with tags.
 - 6. All exposed piping and piping above accessible ceilings shall be neatly identified spaced not more than twenty (20) feet on center.
 - 7. In addition to the maximum spacing listed above, labeling is to occur at each change of direction in piping and at each side of the wall where the piping penetrates a wall.

END OF DOCUMENT

HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS

PART 1 - GENERAL

1.1 GENERAL CONDITIONS

- 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. The work shall consist of furnishing all labor, material, and equipment required to complete the installation of the heating, ventilating, and air conditioning (HVAC) systems as indicated on the drawings and described herein, including all incidental work necessary to make it complete and satisfactory and ready for operation. Work shall include, but not be limited to, the following principal items:
1. Demolition of certain HVAC equipment, duct, piping, controls and related accessories.
 2. Air conditioning units.
 3. Condensing furnaces.
 4. Cooling coils.
 5. Condensing units.
 6. Split heat pump systems.
 7. Exhaust fans.
 8. Filters.
 9. Refrigerant piping.
 10. Air distribution equipment including grilles, registers, and diffusers.
 11. Ductwork systems complete with necessary volume dampers, access doors, hangers, supports, and accessories for the following service:
 - a. Air supply.
 - b. Air exhaust.
 - c. Air return.
 - d. Air transfer.
 12. Insulation and covering for duct and equipment.
 13. Condensing furnace flue and combustion air piping.
 14. Access panels and doors in ductwork and plenums.
 15. Access panels in ceilings which relate to this trade, furnishing shop drawings, and coordination for the proper location of the panels.
 16. Miscellaneous, including instruments, sleeves, flashings, tags and markings, and all accessories and items necessary for a complete installation.
 17. Testing and adjusting all system components.
 18. Testing and balancing of all air systems.
 19. Energy Management and Temperature Control System (EMTCS):
 - a. The EMTCS work is to be a part of the work in this section.
 - b. Refer to the following Specification Sections:
 - 1) Section 23 01 01 – Energy Management and Temperature Control System.
 - 2) Section 23 01 02 – EMTCS/DDC Software.

- c. Install all line size and nonline size automatic valves and separable wells furnished by the EMTCS Contractor.
- d. Furnish and install all necessary piping connections, taps, and wells required for flow, pressure, or temperature devices.
- e. Coordination with Electrical Contractor and with the EMTCS Contractor in the test, startup, system checkout, and overall commissioning of the mechanical systems.

1.3 RELATED WORK

- A. Plumbing Systems, Section 22 00 00.
- B. Electrical Systems, Division 26.
- C. Acceptance Requirements, Section 23 05 00.

1.4 GENERAL REQUIREMENTS

- A. Verification of conditions: Prior to installation of HVAC work, inspect all surfaces to receive said work and arrange for the satisfactory correction of all defects in workmanship and/or material that could interfere with the work specified herein. Installation of any HVAC work or materials on any surface shall constitute acceptance of such surfaces as being in proper condition to receive herein specified materials.
- B. Codes: Work and materials shall be in full accordance with all applicable local or state ordinances, California Building Code, California Mechanical Code, National Fire Protection Association, State of California Safety Orders, and State Fire Marshal. Whenever drawings and specifications require larger sizes or higher standards than are required by regulations, drawings and specifications govern. Whenever drawings or specifications require something, which will violate regulations, regulations govern. No extra charge will be paid for furnishing items required by regulations but not specified or shown on drawings.
- C. Reference standards: Published specifications, standards, tests, or recommended methods of trade, industry, or governmental organizations apply to work of this Section where cited below:
 - 1. Air Moving and Conditioning Association (AMCA).
 - 2. American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE).
 - 3. American Society of Mechanical Engineers (ASME).
 - 4. American Society of Plumbing Engineers (ASPE).
 - 5. Associated Air Balance Council (AABC).
 - 6. National Electrical Manufacturers Association (NEMA).
 - 7. National Fire Protection Association (NFPA).
 - 8. Sheet Metal and Air Conditioning Contractors National Association (SMACNA).
 - 9. California Building Code (CBC).
 - 10. State of California - OSHA.
 - 11. California Mechanical Code (CMC).
 - 12. The State of California Codes and Safety Orders.
 - 13. 2016 California Building Energy Efficiency Standards (Title 24).
 - 14. State Fire Marshal requirements (SFM).

15. Air Conditioning and Refrigeration Institute (ARI).
16. State of California Environmental Quality Act.
17. American Society of Testing and Materials (ASTM).
18. Underwriters Laboratories (UL).
19. Occupational Safety and Health Act (OSHA).
20. National Bureau of Standards (NBS).
21. American National Standards Institute (ANSI).
22. AMCA Standard 99: Standards Handbook.
23. AMCA/ANSI Standard 204: Balance Quality and Vibration Levels for Fans.
24. AMCA Standard 210: Laboratory Methods of Testing Fans for Ratings.
25. AMCA Standard 300: Reverberant Room Method for Sound Testing of Fans.
26. AMCA Standard 500: Test Methods for Louvers, Dampers and Shutters.
27. ARI Standard 410: Forced-Circulation Air-Cooling and Air-Heating Coil.
28. ANSI/ASHRAE 15: Safety Code for Mechanical Refrigeration.
29. ASHRAE Standard 52: Gravimetric and Dust Spot Procedures for Testing Air Cleaning Devices Used in General Ventilation for Removing Particulate Matter.
30. ASHRAE/ANSI Standard 111: Practices for Measurement, Testing, Adjusting and Balancing of Building Heating, Ventilation, Air-Conditioning and Refrigeration Systems.
31. ASME Section VIII: Unified Pressure Vessel Code.
32. UL Standard 1995: Heating and Cooling Equipment.
33. ASTM A-525: Specification for General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
34. ASHRAE Standard 62.1-2016: Ventilation for Acceptable Indoor Air Quality.
35. ANSI/ASHRAE Standard 55-2013: Thermal Environmental Conditions for Human Occupancy.

D. Materials and workmanship:

1. All materials and equipment to be new and in perfect condition. Materials or equipment for similar uses are to be of same type and manufacturer.
2. Workmanship shall be of best standard practice of the trade.

E. Protection of equipment:

1. The Contractor shall be responsible for any damage to any of the work of this section until final acceptance. Cover all duct, pipe and equipment openings, and cover all apparatus, equipment, and appliances both before and after being set in place to prevent misuse or disfigurement of the apparatus, equipment, or appliances.

F. Openings:

1. Cooperate with other trades in providing information as to openings required in walls, floors, and roof for ducts and equipment.
2. Pay all extra costs for cutting of openings as a result of incorrect, delayed, or neglected information.
3. Make absolutely watertight any openings through waterproofed construction caused by the penetration of ductwork or piping, in a manner approved by the Engineer.

G. Cleanup:

1. Thoroughly clean all parts of the apparatus and equipment. Exposed parts, which are to be painted shall be thoroughly cleaned of cement, plaster, and other materials, and all grease and oil spots removed with cleaning solvent.

2. Inside of all pipes, ducts, etc., shall be flushed or cleaned before being placed in operation, and all strainers shall be cleaned after operational tests.
3. Remove all debris and surplus equipment and leave installation in perfect condition ready for use.

H. Construction review:

1. All services rendered by the Engineer or any of his consultants consist of professional opinions and recommendations made in accordance with generally accepted engineering practice.
2. Under no circumstances is it the intent of the Engineer or any of his consultants to directly control the physical activities of the Contractor or the Contractor's workmen in the accomplishment of the Work.
3. The presence of the field representative of the Engineer or any of his consultants at the site is to provide to the Owner and/or Engineer an additional source of professional advice, opinions, and recommendations based upon the field representative's observations.

I. Safety:

1. In accordance with generally accepted construction practices, the Contractor will be solely and completely responsible for conditions on the project site including safety of all persons and property during performance of the work. This requirement will apply continuously and not be limited by normal working hours.
2. Construction review by the Engineer or any of his consultants is not intended to include review of the adequacy of the Contractor's safety measures in, on, or near the project site or at any other location.

J. Welder's qualifications:

1. All welding must be performed by registered welders qualified to perform welding operations in accordance with ASME Code Standards.

1.5 SUBMITTALS

- A. When specific names are used in connection with materials, they are used as standards only, but this does not imply the right to use other materials or methods unless approved by the Engineer.
- B. Decision of the Engineer shall govern as to what materials are acceptable substitutions. Burden of proof as to equality of any proposed fixtures, material, or equipment shall be upon the Contractor. Petition in favor of proposed substitute materials shall be made directly by the Contractor. If any tests are necessary to determine equality of proposed items, such tests shall be made at the expense of the Contractor by an unbiased laboratory satisfactory to the Engineer.
- C. Submit shop drawings and material list in six (6) copies. Submit shop drawings and material list drawings after official award of contract. Obtain approval of the Engineer before installation. Shop drawings shall be submitted for all materials, equipment, and controls.
- D. Check shop drawings and submittals before forwarding to Engineer and ascertain that submittals meet all requirements of drawings and specifications and conform to structural conditions available.

- E. Shop drawings also shall be prepared for modifications to architectural, structural, plumbing, electrical, and mechanical work required by proposed materials - i.e., relocation of drains, revised electrical circuits, relocation of penetrations, etc.
- F. Installation of any approved substituted equipment is the Contractor's responsibility, and any changes required to work included under other sections for installation of approved substituted equipment must be made to the satisfaction of the Engineer and without any additional cost. Approval by Engineer of substituted equipment and/or dimension drawings does not waive these requirements.
- G. Review of drawings and materials submitted for approval shall not be construed as a complete check or constitute a waiver of the requirements of the drawings and specifications but will indicate that the material submitted is acceptable in quality, utility, and capacity. This review shall not relieve the Contractor of the responsibility to fit the proposed materials to the spaces provided and to effect necessary rearrangement or construction of other work. Contractor agrees that shop drawing submittals processed by the Engineer do not become contract documents and are not change orders; that the purpose of the shop drawing review is to establish a reporting procedure and is intended for the Contractor's convenience in organizing his work and to permit the Engineer to monitor the Contractor's progress and understanding of the design. If deviations, discrepancies, or conflicts between shop drawing submittals and the contract documents are discovered either prior to or after the shop drawing submittals are processed by the Engineer, the Contractor agrees that the contract documents shall control and shall be followed.
- H. Submittal lists shall include the identifying marks assigned to the items. Give name of manufacturer, brand name, and catalog number of each item. Submit complete list at one time with items arranged and identified in numerical sequence within each section and article of the specifications. Listing items "as specified" without both make and model or type designation is not acceptable except pipe and pipe fittings not specified by brand names, which may be listed "as specified" without manufacturer's name, provided proposed materials comply with specification requirements.
- I. Descriptive Data: Submit complete description, information, and performance data covering equipment which is specified but for which catalog plate numbers, brand names, or specific models have not been used. Include fan performance curves for all equipment with fans and for each individual fan submitted.
- J. Submittal of substitutions shall be limited to one (1) proposal for each type or kind of item, unless otherwise permitted by the Engineer.
- K. Also comply with the requirements of Division 01 - General Requirements.

1.6 DRAWINGS, SPECIFICATIONS, AND COORDINATION OF WORK

- A. Drawings are essentially diagrammatic. Size and locations of equipment are generally shown to scale. Make use of data in all contract documents, and verify this information against field conditions.

- B. The drawings indicate the required size and point of termination of ductwork, pipes, and equipment. Install pipe with all necessary offsets and fittings to conform to the structure, avoid obstructions, preserve headroom, maintain required accessibility, and satisfy the requirements of the governing codes and the standards of good practice.
- C. The architectural and structural drawings and specifications take precedence over the mechanical drawings in the representation of the general construction work. Refer to the drawings, specifications, and review shop drawings for all work in order to coordinate mechanical work with the other work of the project.
- E. Where changes in indicated locations or arrangements are necessary due to conditions in building construction, rearrangement of equipment, or conflict in location, make such changes at no cost to the Owner, provided that the change is ordered before pipe ductwork and/or equipment is installed and that the length of run is not revised by more than five (5) percent of the indicated run.
- F. Bring discrepancies between different drawings, between drawings and actual field conditions, or between drawings and specifications promptly to the attention of the Engineer for decision, and stop all work on affected areas subject to resolution of the conflict.

1.7 OPERATING INSTRUCTIONS

- A. Upon completion of the work, the Contractor shall place a competent person in charge who will operate the system and instruct the Owner's representatives in all details of the operation and maintenance of each piece of equipment and each system.
- B. The Contractor shall carefully prepare four (4) descriptive binders of the entire HVAC system and a full description of the operation and maintenance of each piece of equipment. The binders shall have tabs indicating each type of equipment with sub-dividers indicating the equipment symbol shown on the drawings. An index shall be provided with page numbers for each type of equipment and each piece of equipment. The binders shall be well organized to provide easy reference.
- C. Operating instruction manuals are to include names, addresses, and telephone numbers for the following: project name, Owner, Mechanical Contractor, and equipment manufacturers (including local representatives).
- D. Also comply with the requirements of Division 01 - General Requirements.

1.8 GUARANTEE

- A. The Contractor shall furnish a written guarantee to the Owner that the materials, equipment, and installation are new, free from mechanical defects, noiseless, and are in perfect operating condition.
- B. The Contractor shall guarantee to replace and repair at his own expense any and all unsatisfactory and defective work and items to the satisfaction of the Owner for a period of at least one (1) year after the completion of construction and the HVAC systems are put to beneficial use.

- C. The Contractor shall also furnish the Owner with all manufacturer's written guarantees of materials and equipment.
- D. Also comply with the requirements of Division 01 - General Requirements.

1.9 RECORD DRAWINGS

- A. Record drawings are to include all changes made during construction from the design drawings. The record drawings are to show the changes as mark-ups on the design drawings. Shop drawings or CAD drawings will not be accepted as record drawings.
- B. Also comply with the requirements of Division 01 - General Requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Access doors:
 - 1. General: All concealed equipment, valves, controls, fire/smoke dampers, volume dampers, etc., shall be provided with access doors which shall be furnished and installed by the General Contractor. Coordination for the location of access doors to ensure access to all HVAC equipment requiring access is the responsibility of this section of work. Access doors are not required in removable ceilings. Access doors which provide access to fire/smoke dampers are to be labeled with one-half inch (1/2") high letters reading "Fire/Smoke Damper."
 - 2. Access doors shall be bonderized steel, with flush screwdriver operated cam latch, fitted with concealed hinges, factory prime coated. Doors shall be Milcor, or equal, Style "A" for acoustical tile, Style "B" for acoustical plaster, Style "K" for non-acoustical plaster, and Style "M" elsewhere, 24" square unless otherwise noted on the drawings. Access doors in 1 or 2-hour construction shall be Milcor or equal U/L "B" label doors.
- B. Air diffusers, grilles, and registers:
 - 1. Provide opposed blade damper volume controls only where specifically scheduled on the drawings.
 - 2. Contractor to verify that the mounting frame of ceiling diffusers, grilles, and registers matches the ceiling or wall system actually being installed. Color to be standard off-white.
 - 3. All air diffusers, grilles, and registers are to be as shown on the drawings.
 - 4. Manufacturer: Titus, Price, or equal.

2.2 EQUIPMENT

- A. Air conditioning units:
 - 1. Completely packaged, high efficiency, self-contained, fully charged, gas-electric unit, weatherproofed, suitable for outdoor installation. Unit to be ARI certified, AGA approved, and U.L. listed. Units shall meet the requirements of the current Title 24 Energy Standard Requirements.
 - 2. Carrier models 48VGN, 48HCD and 48HCE or equal as scheduled on the drawings. Verify that the refrigeration total cooling capacity, sensible cooling

- capacity, heating capacity, and blower capacity meet or exceed those of the Carrier units scheduled.
3. A complete unit, factory assembled, precharged, and ready for operation except for external service connections. Unit shall be internally prewired including contacts, relays, compressor short cycle and low voltage protection overload protection control wiring to terminal block. Crankcase heater and fully modulating factory economizer cycle.
 4. Each unit shall be one hundred (100) percent factory run tested before shipping.
 5. Units shall meet or exceed the SEER ratings scheduled on the drawings.
 6. Provide factory five (5) year refrigeration compressor warranty.
 7. Provide all options and accessories as scheduled on drawings.

B. Condensing furnaces:

1. Condensing furnaces are to be Carrier model 59TP or equal two stage, variable speed condensing gas furnaces with the following features:
 - a. Condensing furnaces are to be a complete package including insulated heavy gauge steel cabinet, variable speed ECM blower motor, and a one piece aluminized steel heat exchanger without welds. The furnace is to be direct-vent, variable capacity condensing type furnace. The secondary heat exchanger is to be stainless steel.
 - b. Furnace blower cabinet is to be insulated for acoustical attenuation and the heat exchanger section is to be insulated with foil-faced insulation.
 - c. Furnace is to have convertible bottom, left or right side return.
 - d. Verify that the heating capacity, the air delivery capability and the efficiency meet or exceed those of the Carrier units scheduled.
 - e. Heat exchanger is to have a minimum twenty (20) year limited warranty.
 - f. Each unit shall be AGA approved and U.L. listed.
2. Provide all options and accessories as scheduled on the drawings.

C. Cooling coils:

1. Cased evaporator cooling coils for installation at discharge of condensing furnace. Each cooling coil is to be an ADP Model C60 as scheduled on the drawings or equal.
2. Cooling coils are to be manufactured specifically to be mounted directly to condensing furnace without modifications to either the cooling coil or furnace.
3. The combination of each cooling coil and related condensing unit with the condensing furnace blower setting as scheduled is to provide cooling capacity equal to or greater than the scheduled cooling capacity.
4. The refrigerant is to be R-410A.
5. Cooling coil is to include factory piped thermostatic expansion valve.
6. Provide all options and accessories as scheduled on the drawings.

D. Condensing units:

1. Each condensing unit is to be a high efficiency unit with a minimum SEER of 14.5. Condensing units are to be Carrier model 24ACB as scheduled on the drawings or equal.
2. Units are to be ARI certified and UL listed.
3. The refrigerant is to be R-410A.

4. Condensing units in combination with the related cooling coil and furnace blower setting are to meet or exceed the scheduled cooling capacity and efficiency.
 5. Provide factory five (5) year refrigeration compressor warranty.
 6. Condensing units are to have a low sound fan system and a compressor sound insulator.
 7. Each condensing unit is to be from the same manufacturer as the associated condensing furnace.
 8. Provide all options and accessories as scheduled on the drawings.
- E. Split heat pump systems:
1. The split heat pump systems are to be ductless split systems with both indoor and outdoor heat pump units from the same manufacturer.
 2. The indoor heat pump units are to be Mitsubishi type PKA or equal units as scheduled on the drawings. The outdoor heat pump units are to be Mitsubishi type PUZ or equal as scheduled on the drawings.
 3. Cooling and heating capacities are to be equal to or greater than the cooling and heating capacities scheduled on the drawings.
 4. Provide all options and accessories as scheduled on the drawings.
- F. Exhaust fans:
1. Exhaust fans are to be Greenheck Series G-VG or equal direct drive, roof-curb mounted, centrifugal roof exhausters.
 2. Fans shall have non-overloading, backwardly inclined, centrifugal wheels, birdscreens, direct drive ECM motor and drive assembly, aluminum housing, backdraft damper, and disconnect switch, all completely weatherproofed for outdoor installation.
 3. Provide all options and accessories as scheduled on the drawings.
- G. Filters:
1. Filters for each type of equipment shall be as follows:
 - a. Air conditioning units: Air conditioning units are shipped from the factory with 2" throwaway pleated media type filters. These filters are to be used for start-up and air balancing purposes. After start-up and air balance work is complete, replace all of the filters with 2" Camfil FARR ap-eleven or equal MERV-11 pleated media type files.
 - b. Condensing furnaces: Condensing furnace filter sections are to initially have 1" MERV-8 filters installed. These filters are to be used for start-up and air balancing purposes. After start-up and air balance work is complete, replace all filters with 1" Camfill FARR ap-eleven or equal MERV-11 pleated media type filters.
 2. The filter housing of each air conditioning unit and condensing furnace is to have filter enclosures that positively prevent air by-pass of the filters.

2.3 SYSTEMS

- A. Air distribution duct systems:
1. Supply, return, exhaust, transfer and outside air intake duct and fittings:
 - a. 2,500 fpm, +2.0" SP to - 2.0" SP for supply, return, exhaust, transfer and outside air intake ducts.
 - b. General: Ductwork shall be round spiral lock seam or rectangular galvanized steel construction.

- c. Duct Construction:
- 1) General: Construction shall be in accordance with the latest ASHRAE Standards, SMACNA 1995 - Second Edition with Addendum No. 1 November 1997 HVAC Duct Construction Standards, California State Mechanical Code, and the Title 24 energy standards.
 - 2) All duct joints and seams are to be constructed to meet the requirements of the 1995 SMACNA HVAC Duct Construction Standards noted above. Manufactured joints, such as Ductmate or TDC, are to be installed in strict accordance with the manufacturer's installation requirements.
 - 3) Care shall be taken to ensure that all duct reinforcing requirements are met.
 - 4) All 90° branch fittings for round ducts are to be of the conical tee type, conical saddle tap, or as detailed on the drawings.
 - 5) All spiral round duct and fittings inside buildings to be United McGill, Uni-Seal, or equal.
 - 6) Spiral duct joints are to be fabricated using sleeve type couplings.
 - 7) Commercial gauge adjustable elbows may be used in concealed areas for duct sizes up through 14" diameter. For duct sizes greater than 14" diameter and where duct is exposed, elbows shall be United McGill "Uni-Seal" gored elbows or equal.
 - 8) All spiral round duct shall be installed in strict accordance with the manufacturer's requirements.
 - 9) All rectangular duct, fittings and plenums are to be constructed in accordance with 1995 SMACNA, HVAC Duct Construction Standards noted above.
 - 10) Provide galvanized steel angle ring, 2" wide at all locations where exposed ducts penetrate walls. Angle rings are to be installed to present a finished and aesthetically pleasing appearance.
 - 11) All exposed duct, fittings, sealants and apparatus are to be installed suitable for painting.
 - 12) All elbows and bends are to be made with the minimum inside radius equal to 1.5 times the duct diameter or centerline radius ($R/W=1.5$), where possible. If field conditions do not allow 1.5 inside radius, provide elbow and bend radius as long as possible. Elbow and bend radius shall be no less than that shown on the drawings. All conditions with less than 1.5 inside radius must be approved by the Architect, prior to fabrication and/or installation.
 - 13) Non-radius, square heel and throat rectangular elbows, with or without turning vanes, are not acceptable unless specifically shown on the drawings.
 - 14) All radius elbows in rectangular ductwork are to include one (1) splitter vane, located at a distance of 1/3 of the duct width as measured in from the elbow throat.
- d. Ducts are to be sealed so as to conform to SMACNA Duct Seal Class C. Duct tape as a sealant is not acceptable. A brush applied, high pressure duct sealant is to be utilized, MEI or equal. Sealant is to be verified that it is suitable for painting. Sealant is to be applied in a neat manner in exposed duct locations. Duct sealant is to be applied in complete accordance with the manufacturer's application instructions.
- e. Flexible Duct - Atco #036, R6.0, reinforced metalized polyester vapor

barrier; or equal pre-insulated flexible duct may be used for final connection between ducts, grilles, and diffusers where shown specifically on the drawings. Maximum length of flexible duct to be six (6) feet. Duct is to be carefully supported to provide smooth air flow path and to prevent sagging. Flexible duct must meet UL 181, Class 1, factory made, air duct requirements, California State Fire Marshall Approved. Install in strict accordance with manufacturer's installation instructions. Duct insulation is to be a minimum of 1-1/2" thick, 3/4 pounds per cubic foot density. Flexible duct is to have mounting collars. Joints of flexible ducts with other ducts or registers are to be made with sheet metal screws.

- f. All roof-mounted duct and/or ducts exposed to weather are to be constructed using roll-formed flanges with corner angles, gasket and cleats. Ductmate, TDC, TDF, or equal.

2. General:

- a. Access doors: Doors in sheet metal ducts and plenums for access to dampers, extractors and equipment shall be No. 18 gauge, and made airtight by means of felt strips. Doors shall be sized as required for reasonable service access. Minimum size shall be 12" x 12" unless limited by duct size.
 - 1) Fabricate in accordance with SMACNA Duct Construction Standards and as indicated.
 - 2) Review locations prior to fabrications.
 - 3) Fabricate rigid and close-fitting doors of galvanized steel with sealing gaskets and quick fastening locking devices. For insulated ductwork, install minimum 1 inch thick insulation with metal cover.
 - 4) Access doors smaller than 12 inches square may be secured with sash locks.
 - 5) Provide 2 hinges and 2 sash locks for sizes up to 18 inches square, 3 hinges and 2 compression latches with outside and inside handles for sizes up to 24 x 18 inches.
 - 6) Access doors with sheet metal screw fasteners are not acceptable.
- b. Balancing dampers: Shall be furnished and installed where required to completely balance and otherwise adjust the air quantities to each supply and return outlet, branch duct and exhaust grille. Manual balancing dampers shall be provided in each branch duct. Balancing dampers shall not be installed in the collar of any flexible duct.
 - 1) Balancing dampers in rectangular ducts:
 - a) Ruskin Model CD50 or equal low leakage damper with airfoil type extruded aluminum blade with a maximum depth of 6" and with an integral structural reinforcing tube running full length of each blade. Blade edge seals shall be extruded vinyl double edge design with inflatable pocket. Linkage shall be concealed in frame damper manufacturer's literature shall include performance data developed from testing in accordance with AMCA Standard 500 in an AMCA approved laboratory showing pressure drop for all sizes of dampers required at all anticipated airflow rates.
 - 2) Balancing dampers in round ducts:
 - a) Fabricate in accordance with SMACNA Duct Construction Standards and as indicated.

- b) Shall be furnished and installed where required to completely balance and otherwise adjust the air quantities to all supply and return outlets, branch ducts, and exhaust grilles. Manual balance dampers shall be provided in each branch duct. Damper to be one gauge heavier than the duct gauge. Provide Jiffy Bearings JB-1 damper hardware or equal.
- c) Except in round ductwork 12 inch and smaller, provide end bearings. On multiple blade dampers, provide oil impregnated nylon or sintered bronze bearings.
- d) On insulated ducts, mount quadrant regulators on stand-off mounting brackets, bases or adaptors.
- c. Painting: Paint the inside of all backs of diffusers, registers, grilles, ducts and dampers extending as far as visible with flat black paint.
- d. Flexible connections for supply and return air ducts connections to the cooling coils, exhaust fans and gravity hoods and at all seismic building joints shall be 16oz. airtight "Ventglass" or equal non-combustible fabric with fire retardant neoprene coating on outside. Attach to ductwork by lock seam. Install 6" long. Provide sheet metal rain cover over flexible connections exposed to the weather.
- e. Ducts exposed to the weather are to be completely weatherproofed. All joints and seams are to be sealed using Hardcast Galva-Grip or equal weatherproof duct sealant. The manufacturer's installation instructions are to be followed closely.
- f. Duct test holes: Cut or drill temporary test holes in ducts as required. Cap with neat patches, neoprene plugs, threaded plugs, or threaded or twist-on metal caps.

B. Refrigerant piping:

- 1. Refrigerant piping is to be ASTM B2800, Type "ACR" hard-drawn copper.
- 2. Joints are to be brazed using Silfos-5 or equivalent brazing material.

C. Mechanical systems and equipment insulation:

- 1. Duct:
 - a. General:
 - 1) Adhesives and insulation materials: Composite fire and smoke hazard ratings maximum 25 for Flame Spread and 50 for Smoke Developed. Adhesives to be waterproof.
 - 2) Anti-microbial agent surface coating: EPA-registered biocide, ASTM C-1338, ASTM G-21, ASTM G-22.
 - b. Insulation shall be provided on all ductwork where shown on the drawings, all roof mounted supply and return ductwork, and all concealed supply and return ductwork.
 - c. Concealed ductwork: Cover all sides with 1-1/2 inch thick, 3/4 pounds per cubic foot density duct wrap with foil scrimkraft or equal, applied per the manufacturer's application specification. Note that foil scrimkraft is not required to be sealed as a vapor barrier. Johns Manville Microlite XG formaldehyde-free Type 75 FSK, Certainteed SoftTouch Type 75 FSK, or equal.
 - d. 1" Duct liner: Ducts shown on the drawings to be internally lined with 1" liner are to be lined in the interior with 1 inch thick, 1.5 pounds per cubic foot duct liner with a minimum R-value of 4.2. Duct liner shall be

installed in complete accordance with the manufacturer's installation instructions. Ducts shall be increased in size to accommodate lining without loss of area. Lined ducts need not be covered. Duct liner to be Johns Manville Permacote Linacoustic Standard, Certainteed Type 150 ToughGard R with Enhanced Surface, or equal.

2. Piping and equipment:

- a. General: Adhesives and insulation materials: Composite fire and smoke hazard ratings of maximum 25 for Flame Spread and 50 for Smoke Developed. Adhesives to be waterproof.
- b. Refrigerant piping insulation:
 - 1) General: Insulation shall be provided on all suction refrigerant piping on cooling only systems and on all gas and liquid piping on heat pump systems.
 - 2) Insulation: Refrigerant piping insulation shall be Armacell AP Armaflex SS or equal 1" wall thickness, elastomeric, closed cell pipe insulation with longitudinal slit and self-sealing adhesive on each side of slit.
 - 3) Refrigerant piping insulation located indoors shall have all elbows covered with PVC jacketing.
 - 4) Refrigerant piping insulation located outdoors is to be sealed with a weatherproof sealant in accordance with the insulation manufacturer's installation instructions. The sealant is to be Armaflex WE finish or equal. All outdoor refrigerant piping is to have 0.016 inch aluminum metal jacket for pipe and fittings. Fasten with aluminum straps.

D. Condensing furnace flue and combustion air piping:

1. Flue and combustion air piping for condensing furnaces shall schedule 40 PVC pipe and fittings with solvent weld joints.
2. Provide and install condensing furnace manufacturer's concentric vent termination kit.
3. Install condensing furnace flue and combustion air piping in strict accordance with the condensing furnace manufacturer's installation instructions.

E. Supports and anchors:

1. Supports and anchors are to be as shown on the drawings. If supports and anchors are not shown on the drawings the following applies:
2. Hanger rods: Steel, threaded both ends, threaded one end, or continuous threaded.
3. Flashing:
 - a. Follow the roof manufacturer's recommendations for all roof penetrations, curbs, platforms, and sleepers.
4. Sleeves:
 - a. Sleeves for pipes through nonfire rated floors: Form with 18 gauge galvanized steel.
 - b. Sleeves for pipes through nonfire rated beams, walls, footings, and potentially wet floors: Form with steel pipe or 18 gauge, 1.2 mm thick galvanized steel.
 - c. Sleeves for pipes through fire rated and fire resistive floors and walls, and fireproofing: Prefabricated fire rated sleeves, including seals, UL Listed.
 - d. Sleeves for round ductwork: Form with galvanized steel.

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- e. Sleeves for rectangular ductwork: Form with galvanized steel or wood.
 - f. Stuffing fire stopping insulation: Glass fiber type, noncombustible.
 - g. Caulk: Acrylic sealant.
- F. Vibration isolation:
- 1. Refer to the drawings for vibration isolation requirements.
 - 2. Vibration isolation is to be Mason Industries or equal.
- G. Mechanical identification:
- 1. Piping, duct, valves and damper identification shall be manufactured by Marking Services, Incorporated or equal.
 - 2. Materials:
 - a. Color: Unless specified otherwise, conform with ANSI/ASME A13.1.
 - b. Plastic nameplates: Laminated 3-layer plastic with engraved black 2 inch letters on light contrasting background color.
 - c. Metal tags: Brass aluminum with stamped letters; tag size minimum 1-1/2 inch diameter with smooth edges.
 - d. Plastic pipe markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and fluid being conveyed.
- H. Electrical work:
- 1. The following electrical work is required to be provided and installed under Division 26:
 - a. Motor starters and disconnect switches for all motors, except where specifically specified, to be furnished by the equipment manufacturer.
 - b. Line voltage wiring and conduit to motors, motor starters, and disconnect switches.
 - c. Line voltage wiring and conduit to switches as indicated on temperature control diagrams.
 - d. Line voltage wiring and conduit for remote control of motors.
 - e. Conduit only as required for low voltage temperature control system.
 - 2. If Contractor furnishes equipment requiring changes in electrical work, it shall be the responsibility of the Contractor to arrange and pay for such changes to result in no additional cost to the Owner.
 - 3. Contractor shall be responsible for checking electrical drawings and verifying actual voltage to be supplied before ordering equipment.
 - 4. Contractor shall provide for the complete installation of wiring and controls required for heating, ventilating, and air conditioning equipment, and shall be responsible for the proper operation of the complete system.
- I. Testing, adjusting, and balancing:
- 1. Scope includes but is not limited to:
 - a. Testing, adjustment, and balancing of air systems.
 - b. Measurement of final operating condition of HVAC systems.
 - 2. References:
 - a. AABC: National standards for field measurement and instrumentation, total system balance.
 - b. ASHRAE: Systems handbook: Testing, adjusting, and balancing.
 - c. NEBB: Procedural standards for testing, balancing, and adjusting of environmental systems.

3. Submittals:
 - a. Submit name of adjusting and balancing agency for approval.
 - b. Provide reports in soft cover, letter size, 3-ring binder manuals, complete with index page and indexing tabs, with cover identification at front and side. Include set of reduced drawings with air outlets and equipment identified to correspond with data sheets and indicating thermostat locations.
4. Report forms:
 - a. Submit reports on AABC National Standards for Total System Balance or NEBB forms.
 - b. Forms shall include the following information:
 - 1) Title page:
 - a) Company name
 - b) Company address
 - c) Company telephone number
 - d) Project name
 - e) Project location
 - f) Project Contractor
 - g) Project altitude
 - 2) Instrument list:
 - a) Instrument
 - b) Manufacturer
 - c) Model
 - d) Serial number
 - e) Range
 - f) Calibration date
 - 3) Air moving equipment data:
 - a) Location
 - b) Manufacturer
 - c) Model
 - d) Air flow, specified and actual
 - e) Return air flow, specified and actual
 - f) Outside air flow, specified and actual
 - g) Total static pressure (total external), specified and actual
 - h) Inlet pressure
 - i) Discharge pressure
 - j) Fan RPM
 - 4) Electric motor data:
 - a) Manufacturer
 - b) HP/BHP
 - c) Phase, voltage, amperage; nameplate, actual, no load.
 - d) RPM
 - e) Service factor
 - f) Starter size, rating, heater elements
 - 5) V-belt drive data:
 - a) Identification/location
 - b) Required driven RPM
 - c) Driven sheave, diameter and RPM
 - d) Belt, size, and quantity
 - e) Motor sheave, diameter, and RPM
 - f) Center to center distance, maximum, minimum, and actual
 - 6) Air conditioning unit data:

- a) Manufacturer
 - b) Identification/number
 - c) Location
 - d) Model
 - e) Design external static pressure
 - f) Actual external static pressure
 - g) Design air flow
 - h) Actual air flow
 - i) Design inlet static pressure
 - j) Actual inlet static pressure
 - k) Design discharge static pressure
 - l) Actual discharge static pressure
 - m) Filter type
 - n) Filter static pressure drop
 - o) Design outside air quantity
 - p) Actual outside air quantity
 - q) Actual outside air temperature
 - r) Actual mixed air temperature, heating and cooling
 - s) Actual supply air temperature, heating and cooling
- 7) Furnace/cooling coil data:
- a) Manufacturer
 - b) Model for furnace and cooling coil
 - c) Identification/number for furnace and cooling coil
 - d) Location
 - e) Design external static pressure
 - f) Actual external static pressure
 - g) Design air flow
 - h) Actual air flow
 - i) Design inlet static pressure
 - j) Actual inlet static pressure
 - k) Design discharge static pressure
 - l) Actual discharge static pressure
 - m) Filter type
 - n) Filter static pressure drop
 - o) Design outside air quantity
 - p) Actual outside air quantity
 - q) Actual outside air temperature
 - r) Actual mixed air temperature in heating and cooling
 - s) Actual supply air temperature in heating and cooling
- 8) Exhaust fan data:
- a) Location
 - b) Manufacturer
 - c) Model
 - d) Air flow, specified and actual
 - e) Total static pressure (total external), design and actual
 - f) Inlet pressure
 - g) Discharge pressure
 - h) Fan RPM

5. Air balance tolerances:

- a. Air balance shall be made with least possible friction.
- b. Allowances shall be made for air filter resistance at the time of the tests. The main air supplies shall be at design air quantity with

- pressure drop across the air filter bank at simulated dirty condition.
- c. Air balance tolerances:
 - 1) Supply air: The room air supply shall be plus 10%, minus 0% from the design air quantity for rooms with an air supply of under 1000 cfm and plus or minus 5% where the air supply is 1000 cfm or more. In rooms with multiple supply outlets, the air supplied shall be within plus 5%, minus 0% of the design air quantity.
 - 2) Return air: The main air returns shall be plus 10%, minus 0% from the design air quantity for rooms with an air return of under 1000 cfm and plus or minus 5% where the air return is 1000 cfm or more. In rooms with multiple return inlets, the air returned shall be within plus 5%, minus 0% of the design air quantity.
 - 3) Outside air: The outside air setting is to be plus 5%, minus 5% from the design air quantity.
 - 4) Exhaust air: The exhaust air quantity is to be plus 5%, minus 5% from the design air quantity.
 - 6. Project record documents:
 - a. Comply with Division 01 requirements.
 - b. Accurately record actual locations of flow measuring stations and balancing valves and rough setting.
 - 7. Quality assurance:
 - a. Agency shall be company specializing in the adjusting and balancing of systems specified with a minimum of 3 years experience. Perform work under supervision of AABC Certified Test and Balance Engineer or NEBB Certified Testing, Balancing, and Adjusting Supervisor.
 - b. Total system balance shall be performed in accordance with AABC National Standards for Field Measurement and Instrumentation, Total System Balance, ASHRAE Systems Handbook, or NEBB Procedural Standards for Testing, Balancing, and Adjusting of Environmental Systems.
 - c. Schedule and sequence work to ensure completion of work before substantial completion of Project.
 - 8. Agencies: The following agencies are acceptable for this Project:
 - a. National Air Balance.
 - b. Mechanical Environmental Systems (MESA).
 - c. Or equal.
 - 9. Examination:
 - a. Before commencing work, verify that systems are complete and operable. Ensure the following:
 - 1) Equipment is operable and in a safe and normal condition.
 - 2) EMTCS are installed complete and operable.
 - 3) Proper thermal overload protection is in place for electrical equipment.
 - 4) Final filters are clean and in place. If required, install temporary media in addition to final filters.
 - 5) Duct systems are clean of debris.
 - 6) Correct fan rotation.
 - 7) Fire/smoke and volume dampers are in place and open.
 - 8) Coil fins have been cleaned and combed.
 - 9) Access doors are closed and duct end caps are in place.
 - 10) Air outlets are installed and connected.
 - 11) Duct system leakage has been minimized.

- 12) Service and balance valves are open.
 - 13) Report any defects or deficiencies noted during performance of service to the engineer.
 - 14) Promptly report abnormal conditions in mechanical systems or conditions which prevent system balance.
 - 15) If, for design reasons, system cannot be properly balanced, report as soon as observed.
 - 16) Beginning of work means acceptance of existing conditions.
10. Preparation:
 - a. Provide instruments required for testing, adjusting, and balancing operations.
 - b. Provide additional balancing devices as required.
 11. Adjusting:
 - a. Recorded data shall represent actually measured or observed condition.
 - b. Permanently mark settings of valves, dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.
 - c. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.
 - d. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.
 - e. At final inspection, recheck random selections of data recorded in report. Recheck points or areas as selected and witnessed by Owner's Representative.
 12. Air system procedure:
 - a. Adjust air handling and distribution systems to provide required or design supply, return, and exhaust air quantities at all locations.
 - b. Make air quantity measurements in ducts by Pitot tube traverse of entire cross sectional area of duct.
 - c. Measure air quantities at air inlets and outlets.
 - d. Adjust distribution system to obtain uniform space temperatures free from objectionable drafts and noise.
 - e. Use volume control devices to regulate air quantities only to extent that adjustments do not create objectionable air motion or sound levels. Effect volume control by duct internal devices such as dampers and splitters.
 - f. Vary total system air quantities by adjustment of fan speeds. Install drive changes as required. Vary branch air quantities by damper regulation.
 - g. Provide system schematic with required and actual air quantities recorded at each outlet or inlet.
 - h. Measure static air pressure conditions on air supply units, including filter and coil pressure drops, and total pressure across the fan. Make allowances for 50 percent loading of filters.
 - i. Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions.
 - j. Measure temperature conditions across outside air, return air, and exhaust dampers to check leakage.

PART 3 - EXECUTION

3.1 GENERAL

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- A. For the actual fabrication, installation, and testing of work under this section, use only thoroughly trained and experienced workmen who are properly qualified for the work they perform. All installers are to be completely familiar with the manufacturer's current recommended methods of installation and shall so execute.

3.2 EQUIPMENT

- A. All equipment is to be installed to meet the manufacturer's installation instructions, guidelines, and recommendations.

3.3 REFRIGERANT PIPING INSTALLATION

- A. Total refrigerant piping is to be ASTM B280, Type "ACR" hard-drawn copper.
 1. Mechanical Contractor is to determine exact routing of refrigerant piping in field based on the actual field conditions. The mechanical Contractor is to then coordinate with the equipment manufacturer to determine the refrigerant piping line sizes, location of traps, location and size of suction line accumulators, and any other refrigerant piping accessories.
 2. All elbows are to be long radius elbows.
 3. All joints in refrigerant piping are to be brazed using Silfos-5 or equivalent brazing material. Soft solder is not to be used.
 4. Nitrogen gas is to flow through the piping continuously during brazing operations.
 5. Pressure test system with dry nitrogen to 200 psig using electronic leak detector. Test to no leakage.
 6. Evacuate system and charge completed system with refrigerant after testing. Refrigerant charge is to meet with the manufacturer's installation instructions.
 7. Horizontal refrigerant piping is to be installed to run level.
 8. All refrigerant suction piping is to be insulated on cooling only systems and all gas and liquid piping is to be insulated on heat pump systems.

3.4 DUCT AND ACCESSORIES

- A. Special requirements:
 1. All duct and fittings are to be sealed using Durodyne Dyn-O-Wrap or equal minimum 3 mil puncture resistant, UV resistant, from the time of manufacture to the time of installation.
 2. All duct and fittings left open during installation are to be fully sealed using Durodyne Dyn-O-Wrap or equal minimum 3 mil puncture resistant, UV resistant, waterproof duct wrap.
- B. Installation:
 1. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.
 2. Connect terminal units to main supply air with galvanized steel duct.
 3. Connect diffusers to low pressure ducts in concealed locations with 5 feet maximum length of flexible duct. Hold in place with strap or clamp to prevent duct from collapsing above diffuser.
 4. Provide balancing dampers at points on supply, return, and exhaust systems where branches are taken from larger ducts as required for air balancing.
 5. Provide balancing dampers on medium pressure systems where indicated.

6. Provide fire/smoke dampers at locations indicated. Install with required perimeter mounting angles, sleeves, breakaway duct connection, corrosion resistant springs, bearings, bushings, and hinges.
7. Provide flexible connections immediately adjacent to equipment in ducts associated with fans and motorized equipment.
8. Provide duct access doors for inspection and cleaning before and after filters, coils, fans, automatic dampers, at fire/smoke dampers, and elsewhere as indicated. Provide minimum 8 x 8 inch size for hand access, 18 x 18 inch size for shoulder access, and as indicated.
9. Provide duct test holes where indicated and required for testing and balancing purposes.
10. Check location of outlets and inlets and make necessary adjustments in position to conform with architectural features, symmetry, and lighting arrangement.
11. Install diffusers to ductwork with airtight connection.
12. Paint ductwork visible behind air outlets and inlets matte black.

3.5 MECHANICAL SYSTEM AND EQUIPMENT INSULATION

- A. Install all insulation, including duct liner, in strict accordance with the manufacturer's installation instructions and specifications.
- B. Ductwork:
 1. Do not install covering before ductwork and equipment has been tested, and accepted by the tenant's representative.
 2. Ensure surface is clean and dry prior to installation. Ensure insulation is dry before and during application.
 3. Ensure insulation in continuous through inside walls. Pack around ducts with fireproof, self-supporting insulation material, properly sealed.
 4. Finish insulation neatly at hangers, supports, and other protrusions.
 5. Repair separation of joints or cracking of insulation due to thermal movement or poor workmanship.
- C. Refrigerant piping insulation:
 1. Insulation shall be provided on all suction refrigerant piping on cooling only systems and on all gas and liquid piping on heat pump systems.
 2. Insulation is to be installed in complete accordance with the manufacturer's installation instructions.
 3. Refrigerant piping insulation installed indoors shall have PVC jacketing on all elbows.
 4. Refrigerant piping insulation located outdoors is to be sealed with a weatherproof sealant in accordance with the insulation manufacturer's installation instructions. All outdoor refrigerant piping is to have 0.016 inch aluminum metal jacket for pipe and fittings. Fasten with aluminum straps.

3.6 MECHANICAL IDENTIFICATION

- A. Installation:
 1. Degrease and clean surfaces to receive adhesive for identification materials.
 2. Plastic nameplates: Install with corrosive-resistant mechanical fasteners or adhesive.
 3. Plastic or metal tags: Install with corrosive-resistant chain.

4. Plastic pipe markers: Install in accordance with manufacturer's instructions.
5. Equipment: Identify all equipment with plastic nameplates. Small devices may be identified with plastic metal tags.
6. Controls: Identify control panels and major control components' outside panels with plastic nameplates.
7. Valves: Identify valves in main and branch piping with tags.
8. Piping: Identify piping, concealed or exposed, with plastic pipe markers. Tags may be used on small diameter piping. Identify service, flow direction, and pressure. In-install in clear view and align with axis of piping. Location of identification not to exceed 20 feet on straight runs including risers and drops, adjacent to each valve and "T", at each side of penetration of structure or enclosure, and at each obstruction.
9. Balancing Dampers: Identify all balancing dampers in concealed areas with fluorescent colored plastic flagging tape, min. 1-3/16" wide. Tape to be long enough so that it can be seen from the access location.
10. Provide valve chart and schedule in aluminum frame with clear plastic shield. In-install at location as directed.

3.7 SUPPORTS AND ANCHORS

- A. Fabrication:
 1. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
 2. Design hangers without disengagement of supported pipe.
 3. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.
- B. Equipment bases and supports:
 1. Provide templates, anchor bolts, and accessories for mounting and anchoring equipment.
- C. Flashing:
 1. Provide flexible flashing and metal counterflashing where piping and ductwork penetrate weather or waterproofed walls, and roofs in accordance with roofing manufacturer's recommendations.
 2. Provide acoustical lead flashing around ducts and pipes penetrating building wall from roof-mounted equipment. Flashing to be installed in accordance with manufacturer's instructions for sound control.
- D. Sleeves:
 1. Where piping or ductwork penetrates ceiling or wall, close off space between pipe or duct and adjacent work with fire stopping insulation and caulk seal airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.
 2. Install steel escutcheons at finished surfaces.

3.8 SYSTEM TEST AND STARTUP

- A. Check the installation and connection requirements for conformance with the manufacturer's installation instructions for each piece of equipment.

- B. Perform the step-by-step checkout and startup procedures for each piece of equipment in accordance with the manufacturer's startup instructions.
- C. Coordinate the control requirements with the EMTCS Contractor.
- D. The Mechanical Contractor and the EMTCS Contractor is to coordinate the efforts of the Test and Balance Contractor to ensure that all systems are tested and performing as intended.
- E. Make all necessary control and system adjustments and operate the system in its final configuration for a period of ten (10) working days for the purpose of proving satisfactory performance. During this period, instruct such persons as Owner may designate in proper operation, care, and maintenance of the systems.

3.9 ACCEPTANCE REQUIREMENTS

- A. The Contractor shall be responsible for the completion of all acceptance requirements in the 2016 California Building Energy Efficiency Standards (Title 24). Refer to Specification Section 23 05 00 for additional information on acceptance requirements.

END OF SECTION

ENERGY MANAGEMENT AND TEMPERATURE CONTROL SYSTEM

PART 1 - GENERAL

1.01 GENERAL CONDITIONS

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

1.02 SUMMARY

- A. An existing Alerton Direct Digital Control (DDC) system is currently in place at the Highlands Elementary School campus. The DDC system to be installed at the project site is to be a Alerton BACtalk web-based DDC system. The Energy Management and Temperature Control System (EMTCS) Contractor is to provide a full and functioning system in accordance with Sections 23 01 01 and 23 01 02. The DDC system serving the project building is to interface seamlessly with the existing DDC system serving the campus. Any modifications, upgrades or software changes required for this seamless interface between the new project work and the existing campus DDC system are to be included.
- B. The work shall consist of furnishing all labor, material, and equipment required to complete the installation of the EMTCS as indicated on the drawings and described herein, including all incidental work necessary to make it a complete, satisfactory, and fully functioning DDC system. Electric, electronic, pneumatic, or other non-DDC control components or systems are not allowed. Work shall include, but not be limited to, the following principal items:
 - 1. Full stand-alone DDC system, including controllers, sensors, and main processor control panel. System to include low voltage wiring and all conduit required for low voltage wiring.
 - 2. All components shall be BACnet compliant in accordance with ASHRAE Standard 135-2004.
 - 3. A dedicated data communications network including electric isolation from processors and protection from electrical interference.
 - 4. Connection of main processor control panel to existing PC (connected to Owner's LAN system). PC is located at site. Verify the location with the Owner.
 - 5. Project management for managing system installation including, but not limited to:
 - a. Design, installation, equipment delivery, coordination with other trades, labor management, commissioning and acceptance testing.
 - 6. Coordination with Contractor's on control requirements for each piece of equipment and each system controlled.
 - 7. Testing of control system to ensure required control sequence has been provided for each piece of equipment and each system controlled.
 - 8. Software required for a complete and operational EMTCS as specified in Section 23 01 02 - EMTCS/DDC Software.
 - 9. Onsite training of maintenance personnel and system users.

10. Miscellaneous control wiring, including but not limited to:
 - a. Power wiring from Division 26 outlets to control transformers.
 - b. Interlock wiring.
11. Include all carbon-dioxide (CO₂) sensors/controllers including provision of training, instructions, and apparatus as required for calibration to the Owner.
12. Include all carbon-monoxide (CO) sensors/controllers including provision of training, instructions, and apparatus as required for calibration to the Owner.
13. Warranty of system, including all associated materials, labor, and services for a period of one (1) year from the date of final acceptance.

1.03 RELATED WORK

- A. Heating, Ventilating and Air Conditioning Systems, Section 23 00 00.
- B. EMTCS/DDC Software, Section 23 01 02.
- C. Plumbing Systems, Section 22 00 00.
- D. Electrical Systems, Division 26.

1.04 GENERAL REQUIREMENTS

- A. Verification of conditions: Prior to installation of EMTCS work, inspect all surfaces to receive said work and arrange for the satisfactory correction of all defects in workmanship and/or material that could interfere with the work specified herein. Installation of any air conditioning work or materials on any surface shall constitute acceptance of such surfaces as being in proper condition to receive herein specified materials.
- B. Codes: Work must comply with the Applicable Code Requirements.
- C. Reference standards: Published specifications, standards, tests, or recommended methods of trade, industry, or governmental organizations apply to work of this Section where cited below:
 1. Air Moving and Conditioning Association (AMCA).
 2. American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE).
 3. Engineers (ASHRAE).
 4. American Society of Mechanical Engineers (ASME).
 5. American Society of Plumbing Engineers (ASPE).
 6. Associated Air Balance Council (AABC).
 7. National Electrical Manufacturers Association (NEMA).
 8. National Fire Protection Association (NFPA).
 9. Sheet Metal and Air Conditioning Contractors National Association (SMACNA).
 10. (SMACNA).
 11. California Building Code (CBC).
 12. State of California - OSHA.
 13. California Mechanical Code (CMC).
 14. 2016 California Building Energy Efficiency Standards (Title 24).
 15. State Fire Marshal requirements (SFM).
 16. Air Conditioning and Refrigeration Institute (ARI).

17. State of California Environmental Quality Act.
18. American Society of Testing and Materials (ASTM).
19. Underwriters Laboratories (UL).
20. Occupational Safety and Health Act (OSHA).
21. National Bureau of Standards (NBS).
22. American National Standards Institute (ANSI).
23. AMCA Standard 99: Standards Handbook.
24. AMCA/ANSI Standard 204: Balance Quality and Vibration Levels for Fans.
25. AMCA Standard 210: Laboratory Methods of Testing Fans for Ratings.
26. AMCA Standard 300: Reverberant Room Method for Sound Testing of Fans.
27. AMCA Standard 500: Test Methods for Louvers, Dampers and Shutters.
28. ARI Standard 410: Forced-Circulation Air-Cooling and Air-Heating Coil.
29. ANSI/ASHRAE 15: Safety Code for Mechanical Refrigeration.
30. ASHRAE Standard 52: Gravimetric and Dust Spot Procedures for Testing Air Cleaning Devices Used in General Ventilation for Removing Particulate Matter.
31. ASHRAE/ANSI Standard 111: Practices for Measurement, Testing, Adjusting and Balancing of Building Heating, Ventilation, Air-Conditioning and Refrigeration Systems.
32. ASME Section VIII: Unified Pressure Vessel Code.
33. UL Standard 1995: Heating and Cooling Equipment.
34. ASTM A-525: Specification for General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
35. ASHRAE Standard 62.1-2016: Ventilation For Acceptable Indoor Air Quality.
36. ANSI/ASHRAE Standard 55-2013: Thermal Environmental Conditions for Human Occupancy.

D. Materials and workmanship:

1. All materials and equipment to be new and in perfect condition. Materials or equipment for similar uses are to be of same type and manufacturer.
2. Workmanship shall be of best standard practice of the trade.

E. Protection of equipment: The Contractor shall be responsible for any damage to any of the work of this Section until final acceptance. Cover all duct, pipe and equipment openings, and cover all apparatus, equipment, and appliances both before and after being set in place to prevent misuse or disfigurement of the apparatus, equipment, or appliances.

F. Openings:

1. Cooperate with other trades in providing information as to openings required in walls, floors, and roof for ducts and equipment.
2. Pay all extra costs for cutting of openings as a result of incorrect, delayed, or neglected information.
3. Make absolutely watertight any openings through waterproofed construction caused by the penetration of ductwork or piping, in a manner approved by the Engineer.

G. Cleanup:

1. Thoroughly clean all parts of the apparatus and equipment. Exposed parts, which are to be painted shall be thoroughly cleaned of cement,

- plaster, and other materials, and all grease and oil spots removed with cleaning solvent.
2. Inside of all pipes, ducts, etc., shall be flushed or cleaned before being placed in operation, and all strainers shall be cleaned after operational tests.
 3. Remove all debris and surplus equipment and leave installation in perfect condition ready for use.
- H. Construction review:
1. All services rendered by the Engineer or any of his consultants consist of professional opinions and recommendations made in accordance with generally accepted architectural practice.
 2. Under no circumstances is it the intent of the Engineer or any of his consultants to directly control the physical activities of the Contractor or the Contractor's workmen in the accomplishment of the Work.
 3. The presence of the field representative of the Engineer or any of his consultants at the site is to provide to the Owner and/or Engineer an additional source of professional advice, opinions, and recommendations based upon the field representative's observations.
- I. Safety:
1. In accordance with generally accepted construction practices, the Contractor will be solely and completely responsible for conditions on the project site including safety of all persons and property during performance of the work. This requirement will apply continuously and not be limited by normal working hours.
 2. Construction review by the Engineer or any of his consultants is not intended to include review of the adequacy of the Contractor's safety measures in, on, or near the project site or at any other location.

1.05 QUALITY ASSURANCE

- A. The supplier of the EMTCS shall be responsible for inspection and quality assurance for all materials and workmanship furnished by him. Provide all testing and calibration necessary to ensure reliability and accuracy of the EMTCS.
- B. Comply with all applicable code requirements.

1.06 WARRANTY

- A. This Contractor shall furnish a written guarantee to the Owner that the materials, hardware, software, and installation are new, free from mechanical defects, noiseless, and are in perfect operating condition.
- B. The Contractor shall guarantee to replace and repair at his own expense any and all unsatisfactory and defective work and items to the satisfaction of the Owner for a period of at least one (1) year after final acceptance of work.
 1. The Contractor shall also furnish the Owner with all manufacturer's written guarantees of materials and equipment.

- C. The warranty shall be submitted to the Engineer and shall be included in the maintenance and operation manual for the EMTCS system.
- D. Also comply with the requirements of Division 01 - General Requirements.

1.07 SUBMITTALS

- A. Review of drawings and materials submitted for approval shall not be construed as a complete check or constitute a waiver of the requirements of the plans and specifications but will indicate that the material submitted is acceptable in quality, utility, and capacity. Contractor agrees that shop drawing submittals processed by the Engineer do not become contract documents and are not change orders; that the purpose of the shop drawing review is to establish a reporting procedure and is intended for the Contractor's convenience in organizing his work and to permit the Engineer to monitor the Contractor's progress and understanding of the design. If deviations, discrepancies, or conflicts between shop drawing submittals and the contract documents are discovered either prior to or after the shop drawing submittals are processed by the Engineer, the Contractor agrees that the contract documents shall control and shall be followed.
- B. Submittal lists shall include the identifying marks assigned to the items. Give name of manufacturer, brand name, and catalog number of each item. Submit complete list at one time with items arranged and identified in numerical sequence within each section and article of the specifications. Listing items "as specified" without both make and model or type designation is not acceptable, except as noted. Descriptive Data: Submit complete description, information, and performance data covering equipment which is specified but for which catalog plate numbers, brand names, or specific models have not been used. Include images of data display screens as part of the controls submittal for review prior to commencement of work.
- C. Sequence of operation - The sequences of operation included in the design documents are intended only to communicate the general control intent and are not to be used as a direct reference for programming of the EMTCS system. Verbatim duplication of the Sequence of Operation on the submittals is discouraged and may result in non-approval to the submittal. Sequence of Operation on submittals shall accurately detail the system's intended programming, and shall include details of all enhancements, adjustments, or deviations from the Sequence of Operation shown on the design documents. Submitted Sequence of Operation shall be written with a logical and organized format and flow. Sequence of Operation language shall be detailed, clear, and unambiguous. Point descriptors and point nomenclature referenced in the submitted Sequence of Operation shall match those (to be) actually programmed. As-built submittal Sequence of Operation shall include all modifications to the programming made as a result of any addendum, bulletins, RFI's, change orders, and commissioning.
- D. Also comply with the requirements of Division 01 - General Requirements.

1.08 SHOP DRAWINGS

- A. Submit shop drawings and material list in six (6) copies. Submit material list and shop drawings after official award of contract. Obtain approval of the Engineer before installation. Shop drawings shall be submitted for all materials, equipment, and controls. Check shop drawings and submittals before forwarding to Engineer and ascertain that submittals meet all requirements of drawings and specifications.
- B. Also comply with the requirements of Division 01 - General Requirements.

1.09 PRODUCTS FURNISHED UNDER THIS SECTION, INSTALLED UNDER SECTION 23 00 00

- A. Control valves furnished under this section shall be installed under the applicable piping section under the direction of this Contractor who will be fully responsible for the proper operation of the valve.
- B. Water pressure taps, thermal wells, flow switches, flow meters, etc., that will have wet surfaces, shall be installed under the applicable piping section under the direction of this Contractor who will be fully responsible for the proper installation and application.
- C. Equipment power wiring shall be furnished and installed under Division 26. Where control involves 120V control devices controlling 120V equipment, Division 26 Contractor shall extend power wiring to the equipment. The EMTCS Contractor shall coordinate the location of the control device with the Div. 26 Contractor. The Div. 26 Contractor shall wire only the power side of the original device. The EMTCS Contractor shall provide all control side wiring, whether line or low voltage.

1.10 COORDINATION

- A. It is the responsibility of the EMTCS Contractor to read and conform to all sections of the specification and to coordinate with other Contractor's on control requirements and wiring diagrams or equipment supplied and installed as a part of their work.
- B. EMTCS Contractor is fully responsible for coordination of location and positioning of EMTCS products furnished under this section and installed under other sections.

1.11 QUALIFICATIONS

- A. Manufacturer/Contractor must have installed a minimum of ten (10) EMTCS of similar type and magnitude in the local area within the last three (3) years and shall have been in operation a minimum of five (5) years in the State of California.

1.12 OPERATIONS, MAINTENANCE, AND PROGRAMMING MANUALS

- A. Prepare operation, maintenance and programming manuals for the EMTCS. The operation, maintenance and programming manuals are to provide the Owner with all required information on the hardware, software and programming of the EMTCS. The operation, maintenance and programming manuals are to include, but not limited to, the following:
1. Owning and operating manuals for the EMTCS and all equipment and systems controlled by it, bound together in one or more books.
 2. Records of initial settings and test results.
 3. Training of the maintenance and operation personnel.
 4. Copies of applicable warranties.
 5. Service contact telephone numbers, email addresses and websites including emergency contact information during off-hours, weekends and holidays.
- B. General requirements:
1. Submit two (2) draft copies of manuals for review. After review by the Engineer, make corrections and submit six (6) final copies to Engineer for distribution to Owner.
 2. Assemble all manuals into binders. All manuals are to include names, addresses, and telephone numbers for the following: project name, Owner, EMTCS Contractor (including project manager's name and service telephone number), Engineer, and Mechanical Contractor.
 3. Operations, maintenance, and programming manuals are to serve as training and reference manuals for EMTCS.
- C. Programming manual:
1. Provide Programming Manual to serve as training and reference manual for all aspects of EMTCS programming:
 - a. Complete programming manuals and reference guides.
 - b. Software troubleshooting procedures.
 - c. Details of any special software packages and compilers supplied with system.
 - d. Documentation of application and DDC programs: Flow charts, equations, parameters.
 - e. Information required for independent programming of system.
 - f. Input/Output Point schedule: Include all points, real and virtual. Identify point function, type, and location.
- D. Operating manual:
1. Provide Operating Manual to serve as training and reference manual for all aspects of day-to-day operation of the system. Manual shall include, but not be limited to, the following:
 - a. Sequence of Operation for automatic and manual operating modes. The sequences shall cross reference the system point names.
 - b. Description of manual override operation of control points.
 - c. System manufacturer's complete operating manuals.
 - d. Control flow diagrams.
 - e. System block diagram showing quantity and location of all hardware, including main processor control panel, equipment controllers, and room sensors.

- f. Interfaces (software and hardware) with equipment provided in other sections of specifications.
- g. Narrative description of operation for each system, enumerating and describing the function of each component. Include alarm and emergency sequences and equipment interlocks.

E. Maintenance manual:

- 1. Provide Maintenance Manual to serve as training and reference manual for all aspects of day-to-day maintenance and major system repairs. Manual shall include, but not be limited, to the following:
 - a. Complete as-built drawings for installation of each system.
 - b. Drawings and photographs showing installation details and locations of equipment.
 - c. Manufacturer's operating setup, maintenance and catalog literature for each piece of equipment.
 - d. Maintenance and repair instructions.
 - e. Parts lists with manufacturer's catalog numbers and ordering information.
 - f. Calibration procedures, routine preventive maintenance procedures, and corrective diagnostic troubleshooting procedures.
 - g. Charts showing normal operating conditions of all significant equipment and significant points such as electrical test points.
 - h. Field test reports.
 - i. Lists of ordinary and special tools, operating materials supplies and test equipment recommended for operation and servicing.
 - j. Overall system electrical power supply scheme indicating source of electrical power for each system component. Indicate which components are on emergency power and indicate all battery backup provisions.
 - k. Overall system shielding and grounding scheme indicating all major components and ground paths.

F. Also comply with the requirements of Division 01 – General Requirements.

1.13 SYSTEM DESCRIPTION

A. System configuration:

- 1. The EMTCS shall perform both monitoring and control of HVAC equipment for building management, energy conservation, and environmental control.
- 2. The EMTCS control philosophy is to be direct digital control and be implemented by a distributed digital system.
- 3. The Direct Digital Controllers are to communicate through dedicated communications network(s). All communications on network shall be by digital signals only. Information from all controllers is to be processed through a local area network interface device (main processor control panel).
- 4. The EMTCS is to perform remote data acquisition and process control. EMTCS panels shall be locally mounted, completely self-contained, field programmable, real-time microprocessor based controllers capable of stand alone operation.

5. The EMTCS is to be connected to its particular controlled environment through field I/O instrumentation.
- B. GENERAL:
1. All settings to be accessible and adjustable from the owner workstations.
 2. Data displays shall allow owner to change all field-resident functions associated with the project, such as setpoints, weekly schedules, etc. from the owner workstations.
 3. Data displays shall render standard object types for all equipment and devices shown on the drawings and shall be accessed and adjustable by the owner workstations. These shall include as a minimum: analog value, analog input, analog output, binary value, binary input, binary output, calendar, device, event enrollment, file, notification class, program, and schedule object types.
 4. Data connections including but not limited to Bacnet, Lonworks, and Modbus data connections to all equipment (including lighting control panels) shall include mapping of all available equipment points. These points shall be accessible and adjustable from the owner workstations.
 5. Include images of data display screens as part of the controls submittal for review prior to commencement of work.
- C. Design and performance criteria:
1. Response time:
 - a. Time between occurrence of alarm, status change or change of value and its processing, display or printout shall not exceed 10 seconds, irrespective of other system activities.
 - b. Time between an operator's command and the associated system output shall not exceed the following times, irrespective of other system activities:
 - 1) Point Command (Start Stop, Setpoint, etc.)
 - 2) Log Request
 - 3) Graphics Request
 - 4) Program or Database Modification
 - c. Provide stable control of all connected systems with a closed loop control accuracy not to exceed:
 - 1) Temperature: $\pm 2\%$ of sensor span
 - 2) Pressure: $\pm 2\%$ of sensor span
 - 3) Flow: $\pm 3\%$ of sensor span
 - d. Environmental conditions:
 - 1) The EMTCS field equipment panels and other equipment shall operate under ambient environmental conditions of 35° to 122° F dry bulb and 10% to 95% relative humidity, noncondensing as a minimum. Sensors and control elements shall operate under the ambient environmental temperature, pressure, humidity, and vibration conditions encountered in the installed locations.
 - 2) Other equipment, such as computers and printers, shall, unless designated otherwise, operate properly under ambient environmental conditions of 50° to 104°F and a relative humidity of 20% to 80%.
 - e. Materials and equipment:

- 1) Where multiple units of the same type are required, the units shall be products of a single manufacturer. However, the component parts of the system need not be the products of a single manufacturer. The components shall not require customizing other than setting jumpers and switches and adding firmware. Each major component of equipment shall be labeled with the manufacturer's name, address, model and serial number.
 - 2) All systems and components shall have been thoroughly tested and proven in actual use.
- f. Total system shall be immune to internal and external generated sources of electrical noise.
 - g. The system shall be capable of two-way communication over voice grade telephone lines.

1.14 EXAMINATION OF SITE

- A. Examine site prior to bidding. Compare it with drawings and specifications. Check conditions and take measurements which may affect work. No allowance shall subsequently be made for any extra expense due to failure to make such examination.

1.15 COOPERATION WITH OTHER TRADES

- A. Schedule work and cooperate with other divisions to avoid delays, interferences, and unnecessary work, conforming to construction schedule and making installation when and where required. If installed work is later found to interfere with work of other divisions, make all necessary changes at Contractor's expense.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURER OF EMTCS

- A. Alerton BACtalk, BACnet, web-based (No exceptions).

2.02 LOCAL AREA NETWORK INTERFACE DEVICES (MAIN PROCESSOR CONTROL PANEL)

- A. Locate main processor control panel in mechanical room or as shown on the drawings.
- B. LAN Interface Devices shall be microprocessor-based communications devices which act as gateways between the Primary Controllers and the Secondary Controllers. They may also function as a gateway between the Primary and Secondary Controllers and a device to support remote building operator interface or a printer.
- C. The LAN Interface Device shall perform information translation between all control components and shall contain its own microprocessor, RAM, battery, real

time clock, communication ports and, power supply. Each LAN Interface Device shall be completely enclosed, secured, and locked within a panel.

- D. Each LAN Interface Device shall support interrogation, full control, and all utilities associated with of all Primary Control Units, all Secondary Control Units, and all points connected to those Primary Control Units and Secondary Control Units.
- E. LAN Interface Device shall support all operator interface operations without degrading the performance of the control functions and communications.
- F. Upon loss of power to a LAN Interface Device, the battery shall provide for minimum 100 hour back-up of all programs and data in RAM. The battery shall be sealed and self-charging.
- G. LAN Interface Devices in remote buildings shall support auto answer/auto dial communications between remote building Primary Controller LAN (or standalone Primary Control Unit) and the operator terminal. LAN Interface Device functionality shall support:
 - 1. Automatic dial out to a modem on the operator terminal(s) to report alarm conditions, download trend data, etc., as required elsewhere in these specifications.
 - 2. Multiple retries for unsuccessful connection.
 - 3. Multiple number dial out.
 - 4. Buffering of incoming and outgoing data.
 - 5. Automatic answer.
- H. Uploading and downloading of control unit programs.
- I. The LAN Interface Device shall be transparent to control functions and shall not be required to control information routing on the Primary LAN.
- J. Include a permanent hardwired connection of LAN interface device to PC located at the project site. EMTCS Contractor will furnish PC for connection of main processor control panel. EMTCS Contractor is to include furnishing and installing a permanent connection to PC. Owner will designate actual location of PC.

2.03 PRIMARY CONTROL UNITS

- A. Primary Control Units shall provide intelligent, stand-alone control of HVAC functions. Each unit shall have its own internal RAM, non-volatile memory, microprocessor, battery backup, A/D converters, regulated power supply, power conditioning equipment, wiring terminal strips, ports for connection of operating interface devices, and control enclosure. Primary Control Units shall be programmable from an operator workstation, portable operators terminal, or hand held operating device. Primary Control Units shall contain sufficient memory for specified global control strategies, user defined reports, communication programs, and central alarming. In addition, Primary Control Units shall contain sufficient memory to hold 144 trend values for each I/O point.

- B. Primary Control Units communicate over a primary high speed, local area network. They perform overall system coordination, accept control programs, perform automated HVAC functions, control peripheral devices and perform all necessary mathematical and logical functions. Primary Control Units share information with the entire network of Primary Control Units and Secondary Control Units for full global control. Each controller shall permit multi-user operation from multiple workstations and portable operator terminals connected either locally or over the Primary Controller network.
- C. Each Primary Control Unit shall be capable of stand-alone direct digital operation utilizing its own processor, non-volatile memory, input/output, A to D conversion, real time clock/calendar and voltage transient and lightning protection devices. All Primary Control Units shall be protected from any memory loss due to a loss of power by one or a combination of the following:
 - 1. Volatile RAM shall have a battery backup using a lithium battery with a rated service life of fifty (50) hours, and a rated shelf life of at least five years. Self-diagnostic routine shall report an alarm for a low battery condition.
 - 2. EEPROM, EPROM, or NOVRAM non-volatile memory
- D. The Primary Control Unit shall provide for point mix flexibility and expandability. This requirement may be met via either a family of expander boards, modular input/output configuration, or a combination thereof. Any expansion devices shall connect directly to the microprocessor bus and receive the same functionality as that on the main board. Alternatively, slave panels may be used for point expansion provided they are located immediately adjacent to the Primary Control Unit.
- E. All Primary Control Unit point data, algorithms, reporting, trends, messages, run time totalizations, and application software shall be modifiable from the Operator Workstation.
- F. Each Primary Control Unit shall execute application programs, calculations, and commands via a microprocessor resident in the Primary Control Unit. The database and all application programs for each Primary Control Unit shall be stored in non-volatile or battery backed volatile memory within the Primary Control Unit and will be able to upload to, and download from, the Operator Workstation.
- G. Primary Control Unit shall provide buffer for holding alarms, messages, trends, runtime totalizations, etc.
- H. Each Primary Control Unit shall be connected to the Primary LAN communicating to/from other Primary Control Units. Each Primary Control Unit shall include self-test diagnostics which allow the Primary Control Unit to automatically alarm any malfunctions or alarm conditions that exceed desired parameters as determined by programming input.
- I. Each Primary Control Unit shall contain both software and hardware to perform full DDC/PID control loops.
- J. Input-output processing

1. Digital Outputs (DO): Outputs shall be rated for a minimum 24 VAC or VDC, 1 amp maximum current. Each configurable as normally open or normally closed. Each output shall have a manual hand-off-auto switch to allow for override and a LED to indicate the operating mode of the output. If these HOA switches are not provided on the main board they shall be provided via isolation relays within the control enclosure. Each DO shall be discrete outputs from the Primary Control Units board (multiplexing to a separate manufacturer's board is unacceptable). Provide suppression to limit transients to acceptable levels.
 2. Analog Inputs (AI): 0-5VDC, 0-10VDC; and 0-20 mA. Provide signal conditioning, and zero and span calibration for each input. Each input shall be a discrete input to the Primary Control Units board (multiplexing to a separate manufacturers board is unacceptable unless specifically indicated otherwise). A/D converters shall have a minimum resolution of 10 bits.
 3. Digital Inputs (DI): Monitor dry contact closures. Accept pulsed inputs of at least one per second. Source voltage for sensing shall be supplied by the Primary Control Unit and shall be isolated from the main board.
 4. Universal Inputs (UI-AI or DI): To serve as either AI or DI as specified above.
 5. Electronic Analog Outputs (AO): voltage mode, 0-5VDC and 0-10VDC; current mode (4-20 mA). Provide zero and span calibration and circuit protection. Pulse Width Modulated (PWM) analog via a DO and transducer is acceptable unless stipulated otherwise for a given control loop. Transducer shall be programmable for normally open, normally closed, or hold last position and shall allow adjustable timing. Each DO shall be discrete outputs from the Primary Control Units board (multiplexing to a separate manufacturers board is unacceptable). D/A converters shall have a minimum resolution of 8 bits.
 6. Analog Output Pneumatic (AOP), 0-20 psi: Pneumatic outputs via multiplexed digital to pneumatic transducers with integral pressure feedback supplied as a standard product and part of the Primary Control Unit. Integral pressure feedback shall be capable of monitoring main pressure input and individual pressure outputs. Each output shall have a manual hand-off-auto switch to allow for override and a LED to indicate the operating mode of the output. Multiplexed pneumatic outputs of a separate manufacturer, I/P transducer, PWM/P transducer, or digital to pneumatic transducer are not acceptable.
 7. Pulsed Inputs: Capable of counting up to 8 pulses per second with buffer to accumulate pulse count. Pulses shall be counted at all times.
- K. A communication port for operator interface through a terminal shall be provided in each Primary Control Unit. It shall be possible to perform all program and database back-up, system monitoring, control functions, and Primary Control Unit diagnostics through this port. Standalone Primary Control Units (single Primary Control Units in remote buildings, not on a Primary Controller network) shall allow temporary use of portable devices without interrupting the normal operation of permanently connected modems, printers, or workstations.
- L. Each Primary Control Unit shall be equipped with loop tuning algorithm for precise, proportional, integral, derivative (PID) control. Loop tuning tools provided with the Operator workstation software is acceptable. In any case,

tools to support loop tuning must be provided such that P, I, and D gains are automatically calculated.

- M. All analog output points shall have a selectable failure setpoint. The Primary Control Unit shall be capable of maintaining this failure setpoint in the event of a system malfunction which causes loss of Primary Control Unit control, or loss of output signal, as long as power is available at the Primary Control Unit. The failure setpoint shall be selectable on a per point basis.
- N. Slope intercepts and gain adjustments shall be available on a per point basis.
- O. Primary Control Unit power loss:
 - 1. Upon a loss of power to any Primary Control Unit, the other units on the network shall not in any way be affected.
 - 2. Upon a loss of power to any Primary Control Unit, the battery backup shall ensure that the energy management control software, the Direct Digital Control software, the database parameters, and all other programs and data stored in the RAM are retained for a minimum of fifty (50) hours. An alarm diagnostic message shall indicate that the Primary Control Unit is under battery power.
 - 3. Upon restoration of power within the specified battery backup period, the Primary Control Unit shall resume full operation without operator intervention. The Primary Control Unit shall automatically reset its clock such that proper operation of any time dependent function is possible without manual reset of the clock. All monitored functions shall be updated.
 - 4. Should the duration of a loss of power exceed the specified battery back-up period or Primary Control Unit panel memory be lost for any reason, the panel shall automatically report the condition (upon resumption of power) and be capable of receiving a down load from any operator workstation via the LAN or telephone line dial-up modem. In addition, the Owner's representative shall be able to upload the most current versions of all energy management control programs, Direct Digital Control programs, database parameters, and all other data and programs in the memory of each Primary Control Unit to any operator workstation via the LAN, or via the telephone line dial-up modem, or to the laptop PC via the local RS-232C port.
- P. Primary Control Unit failure:
 - 1. Primary LAN Data Transmission Failure: Primary Control Unit shall continue to operate in stand alone mode. Primary Control Unit shall store loss of communication alarm along with the time of the event. All control functions shall continue with the global values programmable to either last value or a specified value. Peer Primary Control Units shall recognize the loss, report alarm and reconfigure the LAN.
 - 2. Primary Control Unit Hardware Failure: Primary Control Unit shall cease operation and terminate communication with other devices. All outputs shall go to their specified fail position.
- Q. Each Primary Control Unit shall be equipped with firmware resident self diagnostics for sensors and be capable of assessing an open or shorted sensor

circuit, and sensor input signal out of range conditions, and taking an appropriate control action (close valve, damper, etc.).

- R. Primary Control Units may include LAN communications interface functions for controlling secondary controlling LANs.
- S. A minimum of four levels of password protection shall be provided at each Primary Control Unit.

2.04 SECONDARY CONTROL UNITS

- A. Secondary Control Units shall include Unitary Controllers (UC), Terminal Equipment Controllers (TEC), and/or Application Specific Controllers (ASC) which provide intelligent, limited stand-alone control of HVAC equipment. Each unit shall have its own internal battery backed RAM and/or non-volatile memory and will continue to operate all local control functions in the event of a loss of communications on the LAN. In addition, it shall be able to share information with every other Primary Control Units and Secondary Control Units on the entire network.
- B. Each Secondary Control Unit shall include self-test diagnostics which allow the Secondary Control Unit to automatically relay to the Primary Control Unit, LAN Interface Device or workstation, any malfunctions or abnormal conditions within the Secondary Control Unit or alarm conditions of inputs that exceed desired parameters as determined by programming input.
- C. Secondary Control Units shall include sufficient memory to perform the specific control functions required for its application and to communicate with other devices.
- D. Each Secondary Control Unit must be capable of stand-alone direct digital operation utilizing its own processor, battery-backed or non-volatile memory, input/output, minimum 10 bit A to D conversion, voltage transient and lightning protection devices. All volatile memory shall have a battery backup of at least fifty (50) hrs using a lithium battery with a rated shelf life of five years.
- E. All point data, algorithms and application software within a Secondary Control Unit shall be modifiable from the Operator Workstation, Portable Operator Terminal / Remote Workstation and Hand Held Device.
- F. Secondary Control Unit input-output processing:
 - 1. Digital Outputs (DO): Outputs shall be rated for a minimum 24 VAC or VDC, 1 amp maximum current. Each configurable as normally open or normally closed. Where specified, each output shall have a manual hand off or auto switch to allow for override and a LED to indicate the operating mode of the output. If these HOA switches are not provided on the main board they shall be provided via isolation relays within the control enclosure. Each DO shall be discrete outputs from the Secondary Control Units board (multiplexing to a separate manufacturer's board is unacceptable). Provide suppression to limit transients to acceptable levels.

2. Analog Inputs (AI): 0-5VDC, 0-10VDC; and 0-20 mA. Provide signal conditioning, and zero and span calibration for each input. Each input shall be a discrete input to the Primary Control Units board (multiplexing to a separate manufacturers board is unacceptable unless specifically indicated otherwise). A/D converters shall have a minimum resolution of 10 bits.
 3. Digital Inputs (DI): Monitor dry contact closures. Accept pulsed inputs of at least one per second. Source voltage for sensing shall be supplied by the Primary Control Unit and shall be isolated from the main board.
 4. Universal Inputs (UI-AI or DI): To serve as either AI or DI as specified above.
 5. Electronic Analog Outputs (AO) as required by the application: voltage mode, 0-5VDC and 0-10VDC; current mode (4-20 mA). Provide zero and span calibration and circuit protection. Pulse Width Modulated (PWM) analog via a DO and transducer is acceptable unless stipulated otherwise for a given control loop. Transducer shall be programmable for normally open, normally closed, or hold last position and shall allow adjustable timing. Each DO shall be discrete outputs from the Primary Control Units board (multiplexing to a separate manufacturers board is unacceptable). D/A converters shall have a minimum resolution of 8 bits.
 6. Analog Output Pneumatic (AOP), 0-20 psi: Pneumatic outputs via multiplexed digital to pneumatic transducers with integral pressure feedback supplied as a standard product integral with the Primary Control Unit. Multiplexed pneumatic outputs of a separate manufacturer, I/P transducer, PWM/P transducer, or digital to pneumatic transducer are not acceptable.
- G. Where specified, provide space sensors with integral setpoint adjustment, override pushbutton, and jack for hand-held operating device.
- H. Each Secondary Control Unit shall be equipped with loop tuning algorithm for precise, proportional, integral, derivative (PID) control. Loop tuning tools provided with the Operator workstation software is acceptable. In any case, tools to support loop tuning must be provided such that P, I, and D gains are automatically calculated.
- I. All analog output points shall have a selectable failure setpoint. The Secondary Control Unit shall be capable of maintaining this failure setpoint in the event of a system malfunction which causes loss of Secondary Control Unit control, or loss of output signal, as long as power is available at the Secondary Control Unit. The failure setpoint shall be selectable on a per point basis.
- J. Slope intercepts and gain adjustments shall be available on a per point basis.
- K. Secondary Control Unit power loss:
1. Upon a loss of power to any Secondary Control Unit, the other units on the network shall not in any way be affected.
 2. Upon a loss of power to any Secondary Control Unit, the battery backup shall ensure that the energy management control software, the Direct Digital Control software, the database parameters, and all other programs and data stored in the RAM are retained for a minimum of fifty (50) hours. An alarm diagnostic message shall indicate that the Secondary Control Unit is under battery power.

3. Upon restoration of power within the specified battery backup period, the Secondary Control Unit shall resume full operation without operator intervention. The Secondary Control Unit shall automatically reset its clock such that proper operation of any time dependent function is possible without manual reset of the clock. All monitored functions shall be updated.
 4. Should the duration of a loss of power exceed the specified battery back-up period or Secondary Control Unit panel memory be lost for any reason, the panel shall automatically report the condition (upon resumption of power) and be capable of receiving a down load from any operator workstation via the LAN or telephone line dial-up modem. Direct In addition, the Owner's representative shall be able to upload the most current versions of all database parameters, to any operator workstation via the LAN, or via the telephone line dial-up modem, or to the laptop PC via the local RS-232C port.
- L. Secondary Control Unit hardware failure: Secondary Control Unit shall cease operation and terminate communication with other devices. All outputs shall go to their specified fail position.
- M. A minimum of four levels of password protection shall be provided at each Secondary Control Unit.

2.05 CONTROL DEVICES AND SENSORS

- A. Materials and equipment:
1. General: Provide wiring and conduit, electric, and electronic control products in sizes and capacities indicated, consisting of valves, dampers, damper motors, thermostats, relays, controllers, and other components as required for complete installation. Except as otherwise indicated, provide manufacturer's standard materials and components as published in their product information; designed and constructed as recommended by manufacturer, and as required for application indicated.
 2. Communication wiring: Contractor shall run all line and low voltage communication wiring and conduit where required in accordance with National Electrical Codes and Division 26.
 - a. Contractor shall supply all communication wiring between Control Units and to local and remote peripherals (e.g., operator workstations, printers, and modems).
 - b. Communication wiring Control Unit to Control Unit, shall be individually 100% shielded pairs. Communication wiring shall be 18-gauge, with overall PVC cover Anixter (single-shielded pair-type), or equal product of other manufacturer, run in conduit with no splices, separate from any wiring over thirty (30) volts. Shield shall be terminated as recommended by Primary Control Unit manufacturer.
 - c. Data communication wiring from Control Units and peripherals (i.e., operator interface devices, printers, etc.) and modems shall be minimum 4-conductor, 22-gauge wire, 100% shielded, with PVC cover and RS-232C (or equal) connectors at both ends.
 - d. At nonexposed areas, if allowed by code, communication wiring may be run in plenum rated cable, without conduit.

3. Signal wiring: Contractor shall run all line and low voltage signal wiring and conduit where required in accordance with National Electric Codes and Division 26.
 - a. Signal wiring to all field devices, including, but not limited to, all sensors, transducers, transmitters, switches, etc. shall be twisted, 100% shielded pair, minimum 18-gauge wire, with PVC cover. Run in conduit with no splices, separate from any wiring above thirty (30) volts.
 - b. Signal wiring shield shall be grounded at Control Unit end, only as recommended by the Control Unit manufacturer.
 - c. At nonexposed areas, if allowed by code, signal may be run in plenum rated cable without conduit.
 4. Low voltage output wiring: Contractor shall run all low voltage control wiring and conduit where required in accordance with National Electric Codes and Division 26 of this Specification.
 - a. Low voltage control wiring shall be minimum 16-gauge, twisted pair, 100% shielded, with PVC cover, Anixter #9C200250, or equal product of other manufacturer, run-in conduit with no splices, separate from any wiring above thirty (30) volts.
 5. Control panels: Provide control panels with suitable brackets for wall mounting for each control system. Locate panel adjacent to systems served.
 - a. Fabricate panels of 16-gage furniture-grade steel, or 6063-T5 extruded aluminum alloy, totally enclosed on four sides, with hinged door and keyed lock, with manufacturer's standard shop-painted finish and color.
 - b. Panels shall be NEMA 4 rated. Provide UL-listed panels for use with line voltage devices.
 - c. Control panel shall be completely factory wired and piped, and all electrical connections made to a terminal strip. Control panel shall have standard manufacturer's color.
 - d. All gauges and control components shall be identified by means of nameplates.
 - e. All control wiring shall be run neatly and orderly in open slot wiring duct with cover.
 - f. Complete wiring and tubing termination drawings shall be mounted in or adjacent to panel.
- B. Control valves:
1. General: Provide factory fabricated control valves of type, body material and pressure class indicated. Where type or body material is not indicated, provide selection as determined by manufacturer for installation requirements and pressure class, based on maximum pressure and temperature in piping system. Provide valve size in accordance with scheduled or specified maximum pressure drop across control valve. Equip control valves with heavy-duty actuators, with proper shutoff rating for each individual application.
 2. Plug type:
 - a. Water service valves: Equal percentage characteristics with rangeability of 50 to 1, and maximum full flow pressure drop of 5 PSIG (35 KPa) unless scheduled otherwise.

- b. Single seated valves: Cage type trim, providing seating and guiding surfaces for plug on "top and bottom" guided plugs.
 - c. Double seated valves: Balanced plug type, with cage type trim providing seating and guiding surfaces on "top and bottom" guided plugs.
 - d. Valve trim and stems: Polished stainless steel.
 - e. Packing: Synthetic elastomer u-cups, self-adjusting, replaceable.
 - f. Plug: Brass , Seat: Brass
 - g. Disc: Stainless steel filled PTFE.
 - h. Pressure rating: Valve shall be rated for the same pressure as system service valves as specified elsewhere.
 - i. Ambient operating temperature limits: -10 to 150°F (-12.2 to 66 °C)
 - j. Available manufacturers: Subject to compliance with requirements manufacturers are as follows:
 - 1) Johnson Controls
 - 2) Honeywell
 - 3) Barber-Coleman
 - 4) Substitutions: As provided under Division 01.
3. Ball type:
- a. Water service valves: Equal percentage characteristics with rangeability of 50 to 1, and maximum full flow pressure drop of 5 PSIG (35 KPa) unless scheduled otherwise.
 - b. Body: Cast bronze.
 - c. Ball: Polished stainless steel.
 - d. Valve trim and stems: Polished stainless steel.
 - e. Packing: Synthetic elastomer or PTFE o-rings, replaceable.
 - f. Pressure Rating: Valve shall be rated for the same pressure as system service valves as specified elsewhere.
 - g. Ambient operating temperature limits: -10 to 150°F (-12.2 to 66 °C)
 - h. Available manufacturers: Subject to compliance with requirements Manufacturers are as follows:
 - 1) Belimo
 - 2) Krueter
 - 3) Landis & Gyr Powers
 - 4) Substitutions: As provided under the general and special provisions.
4. Butterfly type:
- a. Body: Ductile Iron with lugged and tapped connections
 - b. Seat: EPDM
 - c. Disc: Nickel coated cast iron
 - d. Bearings: Bronze
 - e. Shaft: 416 stainless steel
 - f. Cold Service Pressure: 175 psi
 - g. Bubble-tight shutoff to 150 psi

C. Actuators:

- 1. General: Size actuators to operate their appropriate dampers or valves with sufficient reserve power to provide smooth modulating action or 2-position action as specified. Select spring return actuators as required to provide positive shut off of devices as they are applied.
- 2. Electric/electronic actuators: Provide actuators for two position (24v), or modulating 0-5vdc, 0-10vdc, 4-20ma, or PWM input as required. Actuator

shall travel full stroke in less than 60 seconds. Provide with reserve power or spring return for fail positioning (as required by the sequence) sized for required close off pressure. Provide stroke indicator. Where two actuators are required in parallel or in sequence provide an auxiliary actuator driver.

a. Manufacturers: Subject to compliance with requirements.

Manufacturers are as follows:

- 1) Belimo
- 2) Delta
- 3) Tevco
- 4) Substitutions: As provided under the general and special provisions.

D. General field devices:

1. Provide field devices for input and output of digital (binary) and analog signals into Primary Control Units and Secondary Control Units. Provide signal conditioning for all field devices as recommended by field device manufacturers, and as required for proper operation in the system.
2. It shall be this Contractor's responsibility to assure that all field devices are compatible with Control Unit hardware and software.
3. Field devices specified herein are generally "two-wire" type transmitters, with power for the device expected to be supplied from the respective Control Unit. If the Control Unit provided is not equipped to provide this power, or is not designed to work with "two-wire" type transmitters, or if field device is to serve as input to more than one Control Unit, the Contractor shall provide "four-wire" type equal transmitter and necessary regulated DC power supply or 120 VAC power supply, as required.
4. For field devices specified hereinafter that require signal conditioners, signal boosters, signal repeaters, or other devices for proper interface to Control Units, Contractor shall furnish and install proper device, including 120V power as required. Such devices shall have accuracy no less than or equal to the accuracy listed for respective field devices.
5. Accuracy, as stated in this Section, shall include combined effects of nonlinearity, nonrepeatability and hysteresis.

E. Temperature sensors:

1. Sensor range: When matched with A/D converter of Primary Control Unit, or Secondary Control Unit, sensor range shall provide a resolution of no worse than .4°F (unless noted otherwise).
2. Room temperature sensor shall be an element contained within a ventilated cover, suitable for wall mounting. Provide insulated base. Following sensing elements are acceptable:
 - a. Sensing element - Platinum RTD, thermistor, or integrated circuit, +/- 0.8°F accuracy at calibration point
 - b. Where specified, provide space sensors with integral setpoint adjustment, override pushbutton, and jack for hand-held operating device.
 - c. Device shall include separate setpoints for cooling and heating.
3. Single point duct temperature sensor shall consist of sensing element, junction box for wiring connections and gasket to prevent air leakage or vibration noise. Temperature range as required for resolution indicated in paragraph 1. Sensor probe shall be 316 stainless steel.

- a. Sensing element - Platinum RTD, Thermistor, or integrated circuit, +/- 0.5°F accuracy at calibration point
 - 4. Averaging duct temperature sensor shall consist of an averaging element, junction box for wiring connections and gasket to prevent air leakage. Provide enough sensors to give one lineal foot of sensing element for each square foot of cooling coil face area. Temperature range as required for resolution indicated in paragraph 1.
 - a. Sensing element - Platinum RTD, or Thermistor, +/- 0.5°F accuracy at calibration point
 - 5. Liquid immersion temperature sensor shall include stainless steel thermowell, sensor and connection head for wiring connections. Temperature range shall be as required for resolution indicated in paragraph
 - a. Sensing element - Platinum RTD, Thermistor, or integrated circuit, +/- 0.5°F accuracy at calibration point
 - 6. Outside air sensors shall consist of a sensor, sun shield, utility box, and water tight gasket to prevent water seepage. Temperature range shall be as required for resolution indicated in paragraph 1.
 - a. Sensing element - Platinum RTD, Thermistor, or integrated circuit, +/- 0.8°F accuracy at calibration point.
- F. Differential pressure transmitters:
 - 1. Water: Capacities cell type pressure transmitter shall be a two-wire, 4-20 mA microprocessor based field instrument with an accuracy of 0.2% of calibrated span. The process connection shall be 1/4 inch NPT. The transmitter shall be rated 0-2000 psig on either side without damage to the unit. The unit shall be a Rosemount Model 1151 Smart Transmitter (Owner Standard, No Substitutions).
 - 2. Air: Thin film type pressure transmitter shall be a two-wire, 4-20 mA polysilicon sensor, and surface-mount, electronics-based, field instrument with an accuracy of 0.5% of calibrated span. The unit shall have zero and span adjustments and the process connection shall be 1/4 inch male NPT. Unit shall be an Ashcroft, Model K1 Pressure Transmitter, Model K1-5-MO-42-B4-xxx (where xxx is the pressure range) with H1 mating connector (Owner Standard, No Substitutions). Install with isolation ball valve and calibration connection assembly.
- G. Differential pressure switches:
 - 1. Air: Diaphragm with adjustable setpoint and differential and snap acting form C contacts rated for the application. Provide manufacturer's recommended static pressure sensing tips and connecting tubing.
 - 2. Water: Diaphragm with adjustable setpoint and differential and snap acting form C contacts rated for the application. Provide manufacturer's recommended connecting tubing.
- H. Pressure switches:
 - 1. Diaphragm or bourdon tube with adjustable setpoint and differential and snap acting form C contacts rated for the application. Pressure switches shall be capable of withstanding 150% of rated pressure.
- I. Carbon-dioxide (CO2) sensors/controllers:
 - 1. Sensor type: Non-dispersive infrared (NDIR), diffusion sampling.

2. Outlet range: 0-2000 ppm or 0-5000 ppm, user selectable.
3. Accuracy: +/- 30 ppm +/- 2% of measured value.
4. Repeatability: +/- 20 ppm +/- 1% of measured value.
5. Response time: <60 seconds for 90% step change.
6. 4-20 Ma analog output.
7. Veris CWL with digital display or equal.
8. Provide Veris AA01 CO₂ calibration accessory, or equal, complete with calibration gas, gas regulator, tubing, fittings and storage case. Provide one (1) per building, total of three (3).

PART 3 - EXECUTION

3.01 INSTALLATION OF COMPONENTS

- A. Locate and install components for easy accessibility. In general, mount 48 inches above floor with minimum 3'- 0" clear access space in front of units.
- B. All instruments, switches, transmitters, etc., shall be suitably wired and mounted to protect them from vibration and high temperatures.
- C. Line and low voltage control, signal and communication wiring including conduit required for line and low voltage control, signal, and communication wiring shall be the responsibility of the EMTCS Contractor. Wiring may be run using plenum rated cable in nonexposed area. In mechanical rooms and electrical rooms, wiring must be in EMT conduit. In outdoor areas, wiring must be in EMT conduit with raintight fittings and NEMA 3R enclosures.

3.02 ON-SITE EMTCS OPERATOR TRAINING

- A. Provide two (2) days, eight (8) hours per day, of on-site training for up to seven (7) people. The first eight (8) hour training session is to include detailed training on the equipment control, control sequences and EMTCS hardware including hands-on instruction on the troubleshooting of problems and how the EMTCS is wired, physically installed and the control components installed. The second eight (8) hour training session is to include detailed training on the EMTCS software, how to navigate the graphical user interface, the password protection system and how to set each level of password protection and making user changes to setpoints and operating schedules.
- B. The instructor for the EMTCS training is to have extensive experience in the EMTCS and is to be experienced in conducting similar training classes.
- C. Training is to occur within four (4) weeks after the completion of commissioning. Coordinate the time and date for training with the Owner's representative. The training is to take place at the project site.
- D. The agenda for the EMTCS training is to be submitted for review and comment to the Owner's representative and Engineer a minimum of ten (10) working days prior to the commencement of training.

- E. Provide up to seven (7) complete sets of the approved Operations, Maintenance and Programming Manuals to be used for training.
- F. The EMTCS Contractor's designated training personnel shall meet with the Owner's representative for the purpose of discussing and fine-tuning the training agenda prior to the first training session. Training agenda shall generally be as follows:
 - 1. Topic 1:
 - a. Brief walk-through of building, including identification of all controlled equipment and condensed demonstration of DDC controller local display capabilities.
 - b. Brief overview of the various parts of the O&M manual, including hardware and software programming and operating publications, catalog data, controls installation drawings, and DDC programming documentation.
 - c. Demonstration of workstation login/logout procedures, password setup, and exception reporting.
 - d. Demonstration of workstation menu penetration and broad overview of the various workstation features.
 - 2. Topic 2:
 - a. Introduction to DDC panel programming.
 - 3. Topic 3, 4 & 5:
 - a. Review of Sequence of Operation, DDC panel programming, standalone modes, fail modes and graphic workstation screen for each HVAC subsystem.
 - 4. Topic 6:
 - a. Review of alarm feature.
 - b. Review of diagnostics features.
 - c. Review of I/O hardware testing, calibration, and replacement.
 - 5. Topic 7:
 - a. Review of trend feature.
 - b. Review of workstation reports.
 - c. Review of setpoint optimization and fine-tuning concepts.
 - 6. Topic 8:
 - a. Review of all remaining miscellaneous workstation features.
 - b. Question and answer period.

3.03 SEQUENCE OF OPERATION

- A. Energy management applications:
 - 1. System shall have the ability to perform all of the following energy management routines via preprogrammed function blocks or template programs.
 - 2. All programs shall be executed automatically without the need for operator intervention and shall be flexible enough to allow operator customization. Programs shall be applied to building equipment as described below.
 - 3. Refer to Section 23 01 02 - "EMTCS/DDC SOFTWARE" for time schedules and additional requirements.
 - 4. Refer to the drawings for specific equipment Sequence of Operation.

END OF SECTION

EMTCS/DDC SOFTWARE

PART 1 - GENERAL

1.1 GENERAL CONDITIONS

- 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. An existing Alerton Direct Digital Control (DDC) system is currently in place at the Highlands Elementary School campus. The DDC system to be installed at the project site is to be a Alerton BACtalk web-based DDC system. The Energy Management and Temperature Control System (EMTCS) Contractor is to provide a full and functioning stand-alone system in accordance with Sections 23 01 01 and 23 01 02. The DDC system serving the project building is to interface seamlessly with the existing DDC system serving the campus. Any modifications, upgrades or software changes required for this seamless interface between the new project work and the existing campus DDC system are to be included.
- B. The work shall consist of all labor, material and equipment required to complete the EMTCS/DDC Software, programming and graphics including all incidental work to make it a complete, satisfactory, and fully functioning Direct Digital Control (DDC) Energy Management and Temperature Control System (EMTCS). Work shall include, but not be limited to, the following principal items:
 - 1. System software
 - 2. Programming description
 - 3. Control algorithms
 - 4. Energy management applications
 - 5. Password protection
 - 6. Alarm reporting
 - 7. Trending
 - 8. Dynamic color graphics
 - 9. Management reporting
- C. The EMTCS Contractor is to provide a full and functioning system in accordance with Sections 23 01 01 and 23 01 02.
 - 1. Acceptable Manufacturers:
 - a. Alerton BACtalk, BACnet, web-based (no exceptions).

1.3 RELATED WORK

- A. Heating, Ventilating and Air Conditioning Systems, Section 23 00 00.
- B. Energy Management and Temperature Control System, Section 23 01 01.

- C. Electrical Systems, Division 26.
- D. Plumbing Systems, Section 22 00 00.

1.4 DESCRIPTION OF WORK

- A. Furnish, provide, and install all software, programming and dynamic color graphics for a complete and fully functioning EMTCS as specified and as shown on the drawings.
- B. Control System Software shall be BACnet based system architecture compliant with ASHRAE Standard 135-2004.
- C. All settings to be accessible and adjustable from the owner workstations.
- D. Data displays shall allow owner to change all field-resident functions associated with the project, such as setpoints, weekly schedules, etc. from the owner workstations.
- E. Data displays shall render standard object types for all equipment and devices shown on the drawings and shall be accessed and adjustable by the owner workstations. These shall include as a minimum: analog value, analog input, analog output, binary value, binary input, binary output, calendar, device, event enrollment, file, notification class, program, and schedule object types.
- F. Data connections including but not limited to Bacnet, Lonworks, and Modbus data connections to all equipment (including lighting control panels) shall include mapping of all available equipment points. These points shall be accessible and adjustable from the owner workstations.
- G. Include images of data display screens as part of the controls submittal for review prior to commencement of work.

1.5 Licensing

- A. Include licensing for all project specific software programming at all required workstations.
- B. Include licensing for workstation operating systems, and all required third party software.
- C. Provide licensing and original software copies for each specified workstation.
- D. Licenses for remote graphic workstations shall allow for access to any site and shall not be restricted to accessing only the Primary Control Unit LAN's included in this project.
- E. Owner to designate computers on which software is to be installed.

PART 2 - PRODUCTS

2.1 SYSTEM SOFTWARE - GENERAL

- A. Functionality and completeness: The Contractor shall furnish and install all software and programming necessary to provide a complete and functioning system as specified and as shown on the drawings. The Contractor shall include all software and programming not specifically itemized in these specifications, which is necessary to implement, maintain, operate, and diagnose the system in compliance with these specifications.
- B. Contractor to furnish and install workstation software onto any building Owner's personal computer(s) at building site as requested by Owner. Contractor to furnish three (3) media software copies and three (3) licenses to the Owner for his use.
- C. Configuration: The software shall support the system as a distributed processing network configuration.
- D. System management and supervision: The system software shall allow centralized overall system supervision, operator interface, management report generation, alarm annunciation, and communication with control units. It shall allow system operators to perform the following functions from the Operator Interface, portable operators terminal, and hand held operating device.
 - 1. Monitor and supervise control of all points.
 - 2. Add new points and edit the system database.
 - 3. Change control setpoint, timing parameters, and loop-tuning constants in all control units.
 - 4. Enter programmed start/stop time schedules.
 - 5. View alarms and messages.
 - 6. Modify existing control programs in all control units
 - 7. Upload/Download programs, database, etc. as specified.

2.2 CONTROL UNIT SOFTWARE

- A. Primary control unit software residency: Each Primary Control Unit shall be capable of control and monitoring of all points physically connected to it. All software including the following shall reside and execute at the Primary Control Unit.
 - 1. Real Time Operating System software
 - 2. Real Time Clock/Calendar and network time synchronization
 - 3. Primary Control Unit diagnostic software
 - 4. LAN Communication software
 - 5. Direct Digital Control software
 - 6. Alarm Processing and Buffering software
 - 7. Energy Management software
 - 8. Data Trending, Reporting, and Buffering software
 - 9. I/O (physical and virtual) database
 - 10. Remote Communication Software unless its resident in a LAN Interface Device on the primary LAN.

- B. Secondary control unit software residency: Each Secondary Control Unit shall be capable of control and monitoring of all points physically connected to it. As a minimum software including the following shall reside and execute at the Secondary Control Unit. Other software to support other required functions of the Secondary Control Unit may reside at the master Primary Control Unit or LAN Interface Device.
1. Real Time Operating System software
 2. Secondary Control Unit diagnostic software
 3. LAN Communication software
 4. Control software applicable to the unit it serves that will support a single mode of operation
 5. I/O (physical and virtual) database to support one mode of operation
- C. Stand alone capability: Primary Control Unit shall continue to perform all functions independent of a failure in other Primary Control Units/Secondary Control Units or other communication links to other Primary Control Units/Secondary Control Units. Trends and runtime totalization shall be retained in Primary Control Unit memory. Runtime totalization shall be available on all digital input points that monitor electric motor status.
- D. Operating system: Control Units shall include a real time operating system resident in ROM. This software shall execute independently from any other devices in the system. It shall support all specified functions including a real time clock that can be automatically synchronized with other devices on the LAN. It shall provide a command prioritization scheme to allow functional override of control functions.
- E. Network communications: Each Control Unit shall include software that supports the networking of Control Units on a common communications trunk, which forms the respective LAN. Network support shall include the following:
1. If a Primary LAN communications trunk is severed, Primary Control Units shall reconfigure into two separate LANs and continue operations without interruption.
 2. Control Unit communication software shall include error detection, correction, and re-transmission to ensure data integrity
 3. Operator/System communication software shall facilitate communications between other Primary Control Units, all subordinate Secondary Control Units, gateways and LAN Interface Devices or Operator Workstations. Software shall allow point interrogation, adjustment, addition/deletion, and programming while the Control Unit is on line and functioning without disruption to unaffected points. The software architecture shall allow networked Control Units to share selected physical and virtual point information throughout the entire system.
- F. Point database: Point/system database creation and modification shall be via a user friendly, menu driven program. System software shall support virtual or logic point (points not representing a physical I/O) creation. Software shall support virtual points with all services specified herein. Database software shall support definition of all parameters specified in Part 3 of this Section for a given point type. If database does not support all these parameters software module shall be created and attached to the points which accomplish the respective function.

- G. Diagnostic Software: Control Unit software shall include diagnostic software that checks memory and communications and reports any malfunctions
- H. Alarm/messaging software: Control Unit's software shall support alarm/message processing and buffering software as more fully specified below.
- I. Application programs: Control Units shall support and execute application programs as more fully specified below. All DDC software, Energy Management Control software, and functional block application programming software templates shall be provided in a "ready-to-use" state, and shall not require (but shall allow) Owner programming. All functions shall be provided with printed narratives and/or flow diagrams to document algorithms and how to modify and use them.
- J. Security: Control Unit software shall support multiple level password access restriction as more fully specified below.
- K. Direct digital control: Control Unit shall support application of DDC Logic. All logic modules shall be provided pre-programmed with written documentation to support their application. Provide the following logic modules as a minimum:
 1. Proportional-Integral-Derivative (PID) Control with analog, PWM and floating output PID algorithms shall automatically adjust for changes in Control Unit scanning frequency.
 2. Two Position control (Hi or Low crossing with deadband)
 3. Single Pole double throw relay
 4. Delay Timer (delay on make, delay on break, and interval)
 5. Hi/Low Selection
 6. Reset or Scaling Module
- L. Updating/storing application data: Site specific programming residing in volatile memory shall be uploadable/downloadable from an operator interface connected either locally, to the primary LAN or remotely via modem and telephone lines. Initiation of an upload or download shall include all of the following methods; manually, scheduled, and automatically upon detection of a loss or change.
- M. Restart: System software shall provide for orderly shut down upon loss of power and automatic restart upon power restoration. Volatile memory shall be retained, outputs shall go to programmed fail (open, closed, or last) position. Equipment restart shall include a user definable time delay on each piece of equipment to stagger the restart. Loss of power shall be alarmed at operator interface indicating date and time.
- N. Miscellaneous calculations: System software shall automate calculation of psychometric functions, calendar functions, kwh/kw and flow determination and totalization from pulsed or analog inputs, curve-fitting, look-up table, input/output scaling, and A/D conversion coefficients.
- O. PID loop tuning: Contractor shall provide a software tool for tuning PID loops. This tool shall preferably be provided as an integral part of the system software or graphic software package. Loop response trends shall be used to calculate suggested P, I, and D gains in the units used in the manufacturers PID algorithms. The following are acceptable:

1. Manual Tuning that accepts either automatic or manual amplitude and response time inputs and calculates PID gains for automatic or manual entry into control module.
 2. Self Tuning algorithm that periodically upsets the process and automatically adjusts the PID gains.
 3. Adaptive Tuning that continuously monitors natural disturbances in the process and adjusts the PID gains accordingly. This algorithm must include a user definable noise band to inhibit adjustments.
- P. Trending software: Control Unit's software shall support alarm/message processing and buffering software as more fully specified below.

2.3 CONTROL UNIT PROGRAMMING METHOD

- A. The application software shall be user programmable.
- B. This specification generally requires a programming convention that is logical, easy to learn, use, and diagnose. Application programming shall be provided by the following conventions:
1. Database creation: Provide templates customized for point type, to support input of individual point information.
 2. Graphical block programming: The method of programming shall be by manipulation of graphic icon "blocks". Each block represents a subroutine containing the programming necessary to execute the function of the device that the block represents. The graphical programming software shall allow for interactive mouse-driven placement of block icons on the graphic screen and connection of block inputs to block outputs by means of drawing lines to form a graphic logic diagram. The user shall not have to manually input text to assign block input/output interconnections. Blocks shall allow entry of adjustable settings and parameters via pop-up windows. The clarity of the sequence shall be such that the user has the ability to verify that the system programming meets the specs without having to learn or interpret a manufacturer's unique programming language. Provide a utility that shall allow the graphic logic diagrams to be directly compiled into application programs. Logic diagrams shall be viewable either off-line, or on-line with real-time block output values. Line type programming which uses text programming in a language similar to BASIC or FORTRAN is not acceptable.
- C. The programming method and block selections shall be common to the manufacturer's entire control unit product line.
- D. Provide a means for testing and/or debugging the control programs off-line (not communicating with control units) using operator entered values for physical inputs and time.
- E. Provide a means for testing and/or debugging the control programs on-line (communicating with control units) showing actual physical inputs and all block outputs in real time.

2.4 ENERGY MANAGEMENT APPLICATIONS

- A. System shall have the ability to perform all of the following energy management routines via preprogrammed function blocks or template programs. As a minimum provide the following whether or not required in the software:
 - 1. Time of Day Scheduling
 - 2. Calendar Based Scheduling
 - 3. Holiday Scheduling
 - 4. Temporary Schedule Overrides
 - 5. Optimal Start/Optimal Stop-based on space temperature offset, outdoor air temperature, and building heating and cooling capacitance factors as a minimum
 - 6. Night Setback and Morning Recovery Control with ventilation only during occupancy.
 - 7. Economizer Control (enthalpy or dry bulb).
 - 8. Peak Demand Limiting

- B. All programs shall be executed automatically without the need for operator intervention, and shall be flexible enough to allow operator customization. Programs shall be applied to building equipment as described in Section 23 01 01-Energy Management and Temperature Control System.

2.5 PASSWORD PROTECTION

- A. Multiple-level password access protection shall be provided to allow the Owner's authorized EMTCS System manager to limit workstation control, display and database manipulation capabilities as he deems appropriate for each user, based upon an assigned user name with a unique password.

- B. Passwords shall restrict access to all control units

- C. Each user name shall be assigned to a discrete access level. A minimum of 5 levels of access shall be supported.

- D. A minimum of 20 user names shall be supported.

- E. Operators shall be able to perform only those commands available for the access level assigned to their user name.

- F. User-definable, automatic log-off timers of from 1 to 60 minutes shall be provided to prevent operators from inadvertently leaving interface device software on-line.

2.6 ALARM/MESSAGE REPORTING

- A. Alarm management shall be provided to monitor, buffer, and direct alarms and messages to operator devices and memory files. Each Primary Control Unit shall perform distributed, independent alarm analysis and filtering to minimize operator interruptions due to non-critical alarms, minimize network traffic, and prevent alarms from being lost. At no time shall a Primary Control Unit's ability to report alarms be affected by either operator activity at an Operator

Workstation or local handheld device, or by communications with other panels on the network.

1. Alarm descriptor: Each alarm or point change shall include the point's English language description, and the time and date of occurrence. In addition to the alarm's descriptor and the time and date, the user shall be able to print, display and store an alarm message to more fully describe the alarm condition or direct operator response.
2. Alarm prioritization: The software shall allow users to define the handling and routing of each alarm by their assignment to discrete priority levels. A minimum of five priority levels shall be provided. For each priority level, users shall have the ability to enable or disable an audible tone whenever an alarm is reported and whenever an alarm returns to normal condition. Users shall have the ability to manually inhibit alarm reporting for each individual alarm and for each priority level.
3. Alarm report routing: Each alarm priority level shall be associated with a unique user-defined list of operator devices including any combination of local or remote workstations, printers and workstation disk files. All alarms associated with a given priority level shall be routed to all of the operator devices on the user-defined list associated with that priority level. For each priority level, alarms shall be automatically routed to a default operator device in the event that alarms are unable to be routed to any operator device assigned to the priority level.
4. Auto-dial alarm routing: For alarm priority levels that include a remote notification (accessed by modem, LAN or WAN connection) as one of the listed reporting destinations (including text messages and emails), the Primary Control Unit shall send a text or email message to report the alarm, and shall resend the message until the alarm reporting is complete. System shall be capable of multiple retries and shall buffer alarms until a connection is made. If no connection is made, system shall attempt connection to an email address or cell phone number as specified by the Owner. System shall also be able to send multiple text messages and emails upon alarm activation.
5. Graphic links: Each alarm shall be individually programmable to automatically display a selected graphic screen on a selected workstation when the alarm is reported.
6. Trend log links: Each alarm shall be individually programmable to automatically display a trend log of a pre-selected group of points.
7. Alarm acknowledgment: For alarm priority levels that are directed to a workstation screen, an indication of alarm receipt shall be displayed immediately regardless of the application in use at the workstation, and shall remain on the screen until acknowledged by a user having a password that allows alarm acknowledgment. Upon acknowledgment, the complete alarm message string (including date, time, and user name of acknowledging operator) shall be stored in a selected file on the workstation hard disk.

2.7 TRENDING

- A. The software shall be capable of displaying historical data in both a tabular and graphical format. The requirements of this trending capability shall include the following:
 1. Any physical point or calculated variable shall be available for trending.

2. In the graphical format, the trend shall plot at least four (4) different values for a given time period superimposed on the same graph. The four (4) values shall be distinguishable by using unique colors. In printed form the four (4) lines shall be distinguishable by different line symbology. Displayed trend graphs shall indicate the engineering units for each trended value. Trends shall be able to be displayed in a dynamic mode using real time format.
3. The time period for each trend shall be user selectable.
4. The trended value range shall be user selectable.
5. Control Loop Performance Trends: Control Units incorporating PID control loops shall also provide high resolution dynamic sampling capability in one-second increments for verification of control loop performance.
6. Data Storage and Archiving: Trend data shall be stored at the Control Unit, and uploaded to hard disk storage when archival is desired. Uploads shall occur based upon either user-defined interval, manual command, or when the trend buffers become full. All trend data shall be available in disk file format compatible with third party personal computer applications.

2.8 TOTALIZATION

- A. The software shall support totalizing analog, digital, and pulsed inputs and be capable of accumulating, storing, and converting these totals to engineering units used in the documents. These values shall generally be accessible to the Operator Interfaces to support management reporting functions.
- B. Totalization of electricity use/demand shall allow application of totals to different rate periods, which shall be user definable.

2.9 EQUIPMENT SCHEDULING

- A. Provide a graphic utility for user-friendly operator interface to adjust equipment operating schedules.
- B. Scheduling feature shall include multiple seven day master schedules, plus holiday schedule, each with multiple start times and stop times. Master schedules shall be individually editable for each day and holiday.
- C. Scheduling feature shall allow for each individual equipment unit to be assigned to one of the master schedules.
- D. Timed override feature shall allow an operator to temporarily change the state of scheduled equipment. An override command shall be selectable to apply to an individual unit, all units assigned to a given master schedule, or to all units in a building. Timed override shall terminate at the end of an operator selectable time, or at the end of the scheduled occupied/unoccupied period, whichever comes first. Timed override feature shall be allowed by a password level that does not allow assignment of master schedules.
- E. A yearly calendar feature shall allow assignment of holidays, and automatic reset of system real time clocks for transitions between daylight savings time and standard time.

2.10 OPERATOR INTERFACE (WORKSTATION) GRAPHIC SOFTWARE

- A. Graphic software shall facilitate user-friendly interface to all aspects of the System Software specified above. The intent of this specification is to require a graphic package that provides for intuitive operation of the systems without extensive training and experience. It shall facilitate logical and simple system interrogation, modification, configuration, and diagnosis.
- B. Graphic software shall support multiple simultaneous screens to be openable and resizable in a "Windows" type environment. All except text entry functions shall be executable with a mouse.
- C. Graphic software shall provide for multitasking such that third party programs can be used while the Operator Workstation Software is on line. Provide the ability to alarm graphically even when operator is in another software package.
- D. Operating system software shall be Microsoft Windows 2007 or higher environment. Coordinate system software requirements with Owner's representative.
- E. The software shall allow for Owner creation of user defined, color graphic displays of geographic maps, building plans, floor plans, and mechanical and electrical system schematics. These graphics shall be capable of displaying all point information from the database including any attributes associated with each point (e.g., engineering units, etc.). In addition, operators shall be able to command equipment or change setpoints from a graphic through the use of the mouse. The user shall have the ability to directly import AutoDesk AutoCAD Release 2014 or later generated files as background displays, without requiring third party file format conversion utilities.
- F. Screen penetration: The operator interface shall allow users to access the various system graphic screens via a graphical penetration scheme by using the mouse to select from menus or "button" icons. Each graphic screen shall be capable of having a unique list of other graphic screens that are directly "linked" through the selection of a menu item or button icon.
- G. Dynamic data displays: Dynamic physical point values shall be automatically updated at a minimum frequency of two (2) updates per minute without operator intervention. Point value fields shall be displayed with a color code depicting normal, abnormal, override and alarm conditions.
- H. Point override feature: Each displayed point shall be individually enabled/disabled to allow mouse driven override of digital points or changing of analog points for a user settable time. Such overrides or changes shall occur in the control unit, not just in the workstation software. When the override time has expired, the point value shall revert back to the normal value as otherwise sensed or calculated within the control unit. The graphic point override feature shall be subject to password level protection. Points that are overridden shall be reported as an alarm, and shall be displayed in a coded color. The alarm message shall include the operator's user name. A list of points that are currently in an override state shall be available through menu selection.

- I. Dynamic symbols: Provide a selection of standard symbols which change in appearance based on the value of an associated point.
 - 1. Analog symbol: Provide a symbol that represents the value of an analog point as the length of a line or linear bar.
 - 2. Digital symbol: Provide symbols such as switches, pilot lights, rotating fan wheels, etc. to represent the value of digital input and output points.

- J. Graphics definition package: Graphic generation software shall be provided to allow the user to add, modify, or delete system graphic displays.
 - 1. The Contractor shall provide libraries of pre-engineered screens and symbols depicting standard air handling unit components (e.g. fans, cooling coils, filters, dampers, etc.), mechanical system components (e.g., pumps, chillers, cooling towers, boilers, etc.), complete mechanical systems (e.g. constant volume-terminal reheat, VAV, etc.) and electrical symbols.
 - 2. The graphic development package shall use a mouse or similar pointing device in conjunction with AutoCad Release 14 or later to allow the user to perform the following:
 - a. Define symbols
 - b. Position items on graphic screens
 - c. Attach physical or virtual points to a graphic
 - d. Define background screens
 - e. Define connecting lines and curves
 - f. Locate, orient and size descriptive text
 - g. Define and display colors for all elements
 - h. Establish correlation between symbols or text and associated system points or other displays.
 - i. Create hot spots or link triggers to other graphic displays or other functions in the software.

2.11 REMOTE WORKSTATION GRAPHIC SOFTWARE

- A. This section applies to workstation software as it relates to communication with remote buildings via modems and voice grade telephone lines or wide area networks and ISDN lines. Software shall not require graphic images to be sent across the phone lines. Graphic images shall reside on the remote operator workstation hard drive.

- B. Graphic operator software for remote buildings shall provide all the functionality specified for the graphic software. It shall also provide for dial up communications using the specified modems via commercial telephone lines or wide area networks to connect to the primary LAN.

- C. Software shall not require graphic images to be sent across the phone lines. Graphic images shall reside on the remote operator workstation hard drive. If the use of terminal emulation software such as PC Anywhere, Carbon Copy, ProComm, PolyPM II, etc. are used which require graphic images to be sent across phone lines or ISDN to display graphic pages, this must be listed as an exception to these specifications in the Exception List submitted with the contract bid.

- D. Software shall be capable of initiating phone calls or contacting the primary LAN, upon user command, to perform all specified functions. Software shall be capable of initiating calls to the primary LAN in accordance with user-programmed time schedules to upload trend and report data. Software shall be capable of receiving calls from the primary LAN in accordance with user-programmed time schedules to report alarms and upload trend and report data. Software shall automatically terminate the modem phone call whenever all applications requiring modem connection are closed.
- E. The remote building primary LAN shall be capable of initiating phone calls to the workstation graphic software at scheduled times and establishing communications for use of any of the workstation features other than alarms.
- F. The combination of Remote Workstation Software, Primary Control Unit software, and LAN Interface Device software shall provide the ability for seamless automatic upload of trend data and reports to the remote workstation. The feature shall allow for disk storage of continuous historical trend and report data without gaps or duplications.

2.12 WORKSTATION DATA REPORTING AND STORAGE

- A. Workstation software shall support Microsoft Dynamic Data Exchange (DDE) and Object Linking and Embedding (OLE) to facilitate historical data access from popular spreadsheet and database programs (e.g., Microsoft EXCEL and ACCESS, Lotus 123 for Windows, Dbase, Quattro Pro for Windows, etc.-). Data storage format shall be directly importable to the application without manual parsing. Programs provided external to the graphic software are acceptable to meet this requirement.
- B. Global reporting capability: Data reporting software shall be resident in the workstation. Reporting software shall not require an operator to log on to control units to access reports or reported information. Global reports shall include an All Points Report, and subset points reports, user organized by wildcard, building, control unit, override status, alarm status, or point type.
- C. Workstation software shall include standard reports of totalized degree-days, kW-hrs, ton-hrs, MBtu, etc. on a daily, monthly and yearly basis.

PART 3 - EXECUTION

3.1 SYSTEM CONFIGURATION

- A. Thoroughly configure EMTCS software, network communications, operator workstations, portable operators terminals, printers, and remote communications.

3.2 SITE SPECIFIC APPLICATION PROGRAMMING

- A. Provide all database creation and site specific application control programming as required by these specifications, national and local standards and for a fully functioning system. Contractor shall provide all initial site specific application

programming and thoroughly document programming. Generally meet the intent of the written sequences of operation. It is Contractor's responsibility to request clarification on sequence issues that require such clarification.

3.3 PASSWORD SETUP

- A. Set up the following password levels to include the specified capabilities:
1. Level 1: (Owner's EMTCS Administrator)
 - a. Level 5 capabilities
 - b. View, add, change and delete user names, passwords, password levels
 2. Level 2: (Programmer)
 - a. Level 3 capabilities
 - b. Configure system software
 - c. Modify control unit programs
 - d. Modify graphic software
 - e. Essentially unrestricted except for viewing or modifying user names, passwords, password levels
 3. Level 3: (Senior HVAC Technician)
 - a. Level 4 capabilities
 - b. Override output points
 - c. Change setpoints
 - d. Change equipment schedules
 - e. Exit EMTCS software to use third party programs
 4. Level 4: (Junior HVAC Technician)
 - a. Level 5 capabilities
 - b. Acknowledge alarms
 - c. Temporarily override equipment schedules
 5. Level 5: (HVAC Technician Trainee)
 - a. Display all graphic data
 - b. Trend point data
- B. Assist Owner's operators with assigning user names, passwords and password levels.
- C. Level 1, 2, and 3 passwords shall not be enabled until after record documents of all control unit databases have been submitted in accordance with Section 23 01 01-Energy Management and Temperature Control System. This is to prevent unauthorized adjustment of panel software by Owner's operators before Contractor's record of final settings has been established.

3.4 POINT PARAMETERS

- A. Provide the following minimum programming for each analog input:
1. Name
 2. Address
 3. Scanning frequency
 4. Engineering units
 5. Offset calibration and scaling factor for engineering units
 6. High and low alarm values and alarm differentials for return to normal condition

7. High and low value reporting limits (reasonableness values) which shall prevent control logic from using shorted or open circuit values.
 8. Default value to be used when the actual measured value is not reporting. This is required only for points that are transferred across the primary and/or secondary networks and used in control programs residing in control units other than the one in which the point resides. Events causing the default value to be used shall include failure of the control unit in which the point resides, or failure of any network over which the point value is transferred.
 9. Selectable averaging function which shall average the measured value over a user selected number of scans for reporting.
- B. Provide the following minimum programming for each analog output:
1. Name
 2. Address
 3. Output updating frequency
 4. Engineering units
 5. Offset calibration and scaling factor for engineering units
 6. Output Range
 7. Default value to be used when the normal controlling value is not reporting.
- C. Provide the following minimum programming for each digital input:
1. Name
 2. Address
 3. Scanning frequency
 4. Engineering units (on/off, open/closed, freeze/normal, etc.)
 5. Debounce time delay
 6. Message and alarm reporting as specified.
 7. Reporting of each change of state, and memory storage of the time of the last change of state.
 8. Totalization of on time (for all motorized equipment status points), and accumulated number of off-to-on transitions.
- D. Provide the following minimum programming for each digital output:
1. Name
 2. Address
 3. Output updating frequency
 4. Engineering units (on/off, open/closed, freeze/normal, etc.)
 5. Direct or Reverse action selection
 6. Minimum on time
 7. Minimum off time
 8. Status association with a DI and failure alarming (as applicable)
 9. Reporting of each change of state, and memory storage of the time of the last change of state.
 10. Totalization of on time (for all motorized equipment status points), and accumulated number of off-to-on transitions.
 11. Default value to be used when the normal controlling value is not reporting.

3.5 ALARMS

- A. Alarm priority levels: Alarm messages specified below and throughout Section 23 01 01–Energy Management and Temperature Control System shall be assigned to one of the following priority levels. Level 1 is the most critical. Level 5 is the least critical. Unless otherwise specified, alarm messages shall be assigned to priority level 5. If the EMTCS does not have the capability of displaying the entire specified message, it shall condense the message as necessary; if the entire meaning of the message cannot be included, the message shall reference a code number that refers to an alarm code list. The alarm code list shall be provided by the Contractor with a third party database, spreadsheet, or word processor software package in a format that is searchable using the alarm code number. Return to normal conditions for all alarms shall be reported at the same priority level. Alarm message reporting locations for each alarm priority level shall be as follows:
1. Level 1: Fire and security office monitor
 2. Level 2: Central control station monitor and alarm logging printer
 3. Level 3: Controls maintenance shop monitor
 4. Level 4: Energy conservation engineer monitor
 5. Level 5: Filter changing crew alarm logging printer
- B. Override alarms: Any point that is overridden through the override feature of the graphic workstation software shall be reported as a Level 3 alarm. Any point overridden through the use of Control Unit hardware HOA switches shall be reported as a level 2 alarm.
- C. Analog input alarms: For each analog input, program an alarm message for reporting whenever the analog value is outside of the programmed alarm limits. Report a return to normal message after the analog value returns to the normal range, using a programmed alarm differential. The alarm limits shall be individually selected by the Contractor based on the following criteria:
1. Space temperature, except as otherwise stated in sequence of operation:
Level 2 (Also see drawings for additional requirements)
 - a. Low alarm: 68 degrees F
 - b. Low return to normal: 69 degrees F
 - c. High alarm: 78 degrees F
 - d. High return to normal: 77 degrees F
 2. Controlled media temperature other than space temperature (e.g. air conditioning unit discharge air temperature. If controlled media temperature setpoint is reset, alarm setpoints shall be programmed to follow setpoint:
 - a. Low alarm: 3 degrees F below setpoint
 - b. Low return to normal: 2 degrees F below setpoint
 - c. High alarm: 3 degrees F above setpoint
 - d. High return to normal: 2 degrees F above setpoint.
- D. Motorized equipment failure alarms: Where “prove” operation is indicated in Section 23 01 01–Energy Management and Temperature Control System, it shall be defined as follows: monitor status of the associated device as indicated in the points list and on the drawings. If status does not prove the device is operational at any time after 15 seconds following start command for constant speed devices, remove and lock out the run command to that device and any

other interlocked devices, and enunciate the following Level 2 alarm message as applicable:

1. DEVICE XXXX FAILURE: Status has been lost on Device XXXX when it was commanded to run. Determine cause of failure, correct it, and then acknowledge this alarm so the device can be restarted.
- E. HOA switch tampering alarms: For motorized equipment where the HOA switch is indicated to be monitored directly by a digital input point, EMTCS shall also enunciate the following Level 2 alarm message if the motorized device HOA switch is placed in HAND position. Whenever any device HOA switch is placed in HAND position, the EMTCS shall perform the remaining sequence as specified.
1. DEVICE XXXX HOA IN HAND: HOA switch is in HAND position. Acknowledge this alarm when the problem has been corrected.
- F. HOA switch tampering alarms: Program this alarm for motorized equipment where the HOA switch is not indicated to be monitored directly by a digital input point. The sequences of operation are based on the presumption that motor starter Hand-Off-Auto (HOA) switches are in the auto position. If a motorized equipment unit starts without a prior start command from the EMTCS, (as sensed by status sensing device), then EMTCS shall perform the remaining sequence as specified. EMTCS shall also enunciate the following Level 2 alarm message if status indicates a unit is operational when the run command is not present.
1. DEVICE XXXX HOA IN HAND: Status is indicated on the device even though it has been commanded to stop. Check the HOA switch, control relay, status sensing device, contactors, etc. involved in starting the unit. Acknowledge this alarm when the problem has been corrected.
- G. Maintenance alarms: Enunciate Level 3 alarms when runtime accumulation exceeds a value specified by the operator
1. DEVICE XXXX REQUIRES MAINTENANCE. Runtime has exceeded specified value since last reset.
- H. See requirements for additional equipment-specific alarms specified in Part 4 – Sequence of Operation, Section 23 01 01–Energy Management and Temperature Control System.

3.6 SITE SPECIFIC TRENDING

- A. Establish trends of the following values:
1. Outside Air Temperature
 2. Outside Air Enthalpy
 3. Discharge Air Temperature on each air conditioning unit.
 4. Return Air Temperature on each air conditioning unit.

3.7 EQUIPMENT SCHEDULES:

- A. Program master schedules per Owner's required time schedules with the stated equipment assignments. Scheduling examples are as follows:
1. Administrative: AHU- []
 - a. Weekdays: Occupied time: []
Unoccupied time: []

- b. Weekends: Occupied time:
Unoccupied time:
 - c. Holidays: Occupied time:
Unoccupied time:
 - 2. Dining:
 - a. Seven days: Occupied time:
Unoccupied time:
 - b. Holidays: Occupied time:
Unoccupied time:
 - 3. Classroom:
 - a. Weekdays: Occupied time:
Unoccupied time:
 - b. Weekends: Occupied time:
Unoccupied time:
 - c. Holidays: Occupied time:
Unoccupied time:
 - 4. Other:
 - a. Weekdays: Occupied time:
Unoccupied time:
 - b. Weekends: Occupied time:
Unoccupied time:
 - c. Holidays: Occupied time:
Unoccupied time:

3.8 GRAPHIC SCREENS

- A. Floor plan screens:
 - 1. Provide graphic floor plan screens, which include each room of each building. Indicate the location of temperature sensors associated with each temperature controlled zone (i.e., VAV reheat terminals, etc.) on the floor plan screens. Alternatively, change zone background color based on the temperature offset from setpoint. Display the space temperature point adjacent to each temperature sensor symbol. Use a distinct line symbol to demarcate each terminal unit zone boundary. Use distinct colors to demarcate each air handling unit zone. Indicate room numbers as provided by the Owner. Provide a drawing link from each terminal unit temperature sensor symbol shown on the graphic floor plan screens to each corresponding equipment schematic graphic screen.
 - 2. Provide graphic floor plan screens for each mechanical equipment room and a plan screen of the roof. Indicate the location of each item of mechanical equipment. Provide a drawing link from each equipment symbol shown on the graphic plan view screen to each corresponding mechanical system schematic graphic screen.
 - 3. If multiple floor plans are necessary to show all areas, provide a graphic building key plan. Use elevation views and/or plan views as necessary to graphically indicate the location of all of the larger scale floor plans. Link graphic building key plan to larger scale partial floor plans. Provide links from each larger scale graphic floor plan screen to the building key plan and to each of the other graphic floor plan screens.
 - 4. Provide a graphic site plan with links to and from each building plan. If multiple site plans are necessary to show all areas, provide a graphic site

key plan. Provide links from each site plan screen to the site key plan and to each of the other site plan screens.

- B. System schematic screens: Provide graphic system schematic screen for each HVAC subsystem controlled with each I/O point in the project appearing on at least one graphic screen. System graphics shall include flow diagrams with status, setpoints, current analog input and output values, operator commands, etc. as applicable. General layout of the system shall be schematically correct. Input/output devices shall be shown in their schematically correct locations. Include appropriate engineering units for each displayed point value. Verbose names (English language descriptors) shall be included for each point on all graphics; this may be accomplished by the use of a pop-up window accessed by selecting the displayed point with the mouse. Indicate all adjustable setpoints on the applicable system schematic graphic screen or, if space does not allow, on a supplemental linked setpoint screen.
 - 1. Provide graphic screens for each HVAC unit or system. Indicate outside air temperature and enthalpy, and mode of operation as applicable (i.e., occupied, unoccupied, warm-up, cool-down). Link screens for supply and exhaust systems if they are not combined onto one screen.
 - 2. Link screens for heating and cooling system graphics to utility history graphics showing current and monthly electric uses, demands, peak values, etc.
- C. Bar chart screens: On each graphic Bar Chart Screen, provide drawing links to the graphic air handling unit schematic screens.
 - 1. Provide a graphic air conditioning unit status screen showing the current start or stop command and the status of all supply and return fans.
- D. Alarms: Each programmed alarm shall appear on at least one graphic screen. In general, alarms shall be displayed on the graphic system schematic screen for the system that the alarm is associated with (e.g., chiller alarm shall be shown on graphic cooling plant schematic screen). For all graphic screens, display analog values that are in a "high alarm" condition in a red color, "low alarm" condition in a blue color. Indicate digital values that are in alarm condition in a red color.

3.9 MANAGEMENT REPORTING

- A. Electrical utility use report: Provide and set up daily, weekly, monthly, and yearly reports for electrical demand and energy usage for the building.
 - 1. Daily report shall include for each hour, totalized kW-hr, peak kW, demand setpoint, outside air temperature, and outside air humidity. Daily report shall also include daily total kW-hr, hourly maximum kW-hr and time of occurrence, hourly maximum kW, time of occurrence, and corresponding outside air temperature and humidity, and daily total heating degree-days and cooling degree-days.
 - 2. Weekly, monthly, and yearly reports shall include totalized data from daily reports, maximum kW and kW-hr and their times of occurrence and corresponding outside air temperature and humidity.
 - 3. The reporting interval for monthly reports shall be selected to coincide with power company meter reading dates and billing periods.

- B. See requirements for additional equipment-specific reports specified in Section 23 01 01–Energy Management and Temperature Control System.
- C. Set up an export function to automatically save management reports on disk on a regular basis. Files shall be saved in delimited text file format that is readable into third party programs using Microsoft Dynamic Data Exchange (DDE) and Object Linking and Embedding (OLE).

END OF SECTION

ACCEPTANCE REQUIREMENTS

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 work shall consist of furnishing all labor, materials, and equipment required, including the cost and coordination necessary to engage a certified HERS rater if duct leakage testing is required, to complete the Mechanical Acceptance Requirements of the California Building Energy Efficiency Standards (2016) and submit the required forms. Work shall include, but not be limited to, the following principal items:
 - 1. Visual inspection of the equipment and installation.
 - 2. Review of the certification requirements.
 - 3. Functional tests of the systems and controls.
 - 4. Completion of the required forms and submission to the authority having jurisdiction.

1.3 RELATED WORK

- A. Heating, Ventilating and Air Conditioning Systems, Section 23 00 00.
- B. Electrical Systems, Division 26.
- C. Plumbing Systems, Section 22 00 00.

1.4 GENERAL REQUIREMENTS

- A. All labor, material and testing apparatus required to complete the Acceptance Testing of the Heating, Ventilating and Air Conditioning (HVAC) systems to meet the 2016 Title 24 Acceptance Requirements are to be included as a part of this work. For additional information on the 2016 Title 24 testing acceptance requirements refer to www.energy.ca.gov/title24/2016standards/.
- B. Verification of Conditions: Prior to beginning Acceptance Testing of the mechanical equipment, inspect all equipment and verify that equipment is properly installed and ready for operation.
- C. Codes: Work must comply with the Applicable Code Requirements.

D. Reference Standards: Published specifications, standards, tests, or recommended methods of trade, industry, or governmental organizations apply to work of this Section where cited below:

1. Air Moving and Conditioning Association (AMCA).
2. American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE).
3. American Society of Mechanical Engineers (ASME).
4. American Society of Plumbing Engineers (ASPE).
5. Associated Air Balance Council (AABC).
6. National Electrical Manufacturers Association (NEMA).
7. National Fire Protection Association (NFPA).
8. Sheet Metal and Air Conditioning Contractors National Association (SMACNA).
9. California Building Code (CBC).
10. State of California - OSHA.
11. California Mechanical Code (CMC).
12. The State of California Codes and Safety Orders.
13. 2016 California Building Energy Efficiency Standards (Title 24).
14. State Fire Marshal requirements (SFM).
15. Air Conditioning and Refrigeration Institute (ARI).
16. State of California Environmental Quality Act.
17. American Society of Testing and Materials (ASTM).
18. Underwriters Laboratories (UL).
19. Occupational Safety and Health Act (OSHA).
20. National Bureau of Standards (NBS).
21. American National Standards Institute (ANSI).
22. AMCA Standard 99: Standards Handbook.
23. AMCA/ANSI Standard 204: Balance Quality and Vibration Levels for Fans.
24. AMCA Standard 210: Laboratory Methods of Testing Fans for Ratings.
25. AMCA Standard 300: Reverberant Room Method for Sound Testing of Fans.
26. AMCA Standard 500: Test Methods for Louvers, Dampers and Shutters.
27. ARI Standard 410: Forced-Circulation Air-Cooling and Air-Heating Coil.
28. ANSI/ASHRAE 15: Safety Code for Mechanical Refrigeration.
29. ASHRAE Standard 52: Gravimetric and Dust Spot Procedures for Testing Air Cleaning Devices Used in General Ventilation for Removing Particulate Matter.
30. ASHRAE/ANSI Standard 111: Practices for Measurement, Testing, Adjusting and Balancing of Building Heating, Ventilation, Air-Conditioning and Refrigeration Systems
31. ASME Section VIII: Unified Pressure Vessel Code.
32. UL Standard 1995: Heating and Cooling Equipment.
33. ASTM A-525: Specification for General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
34. ASHRAE Standard 62.1-2016: Ventilation for Acceptable Indoor Air Quality.
35. ANSI/ASHRAE Standard 55-2013: Thermal Environmental Conditions for Human Occupancy.

1.5 ROLES AND RESPONSIBILITIES

A. Acceptance testing, the completion of the Certificate of Acceptance forms and the submittal of the Certificate of Acceptance forms to the authority having jurisdiction are the responsibility of the installing Contractor. The responsible Contractors for the mechanical acceptance test requirements are as follows:

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Highlands Elementary School
HVAC Equipment Replacement
McCracken & Woodman, Inc.

ACCEPTANCE REQUIREMENTS

DOCUMENT 23 05 00-2

1. Mechanical acceptance requirements: The mechanical acceptance test requirements and completion of the required Certificate of Acceptance forms are to be completed by the HVAC system installing Contractor.
- B. Individual acceptance tests may be performed by one or more Field Technicians under the responsible charge of the installing licensed Contractor (Responsible Person) eligible under Division 3 of the Business and Professions Code, in the applicable classification, to accept responsibility for the scope of work specified by the Certificate of Acceptance document. The Responsible Person must review the information on the Certificate of Acceptance form and sign the form to certify compliance with the acceptance requirements. The individuals who perform the field testing/verification work and provide the information required for completion of acceptance form (Field Technicians) are not required to be licensed Contractors. Only the Responsible Person who signs the Certificate of Acceptance form to certify compliance must be licensed.
- C. Field Technician: The Field Technician is responsible for performing and documenting the results of the acceptance procedures on the Certificate of Acceptance forms. The Field Technician must sign the Certificate of Acceptance to certify that the information he provides on the Certificate of Acceptance is true and correct. It is important to note that the Field Technician is not required to have a Contractor's license. A license is only required of the Responsible Person described below.
- D. Responsible Person: Each certificate of Acceptance must be signed by a licensed Responsible Person who is eligible under Division 3 of the Business and Professions code in the applicable classification, to take responsibility for the scope of work specified by the Certificate of Acceptance document. The Responsible Person can also perform the field testing and verification work, and if this is the case, the Responsible Person must complete and sign both the Field Technician's signature block and the Responsible Person's signature block on the Certificate of Acceptance form. The Responsible Person assumes responsibility of the acceptance testing work performed by his Field Technician agent or employee.
- E. The acceptance requirements process must address the following:
 1. Review the bid documents to make sure that sensor locations, devices and control sequences are properly documented.
 2. Review of the installation, and complete the required acceptance testing.
 3. Certify the acceptance test results on the Certificate of Acceptance, and submit the certificate to the enforcement agency prior to received a final occupancy permit.

1.6 SUBMITTALS

- A. At the completion of the acceptance testing and Certificate of Acceptance forms, the HVAC system installing Contractor is to submit their respective Certificate of Acceptance forms to the authority having jurisdiction with a copy to the Engineer.

PART 2 - PRODUCTS

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ACCEPTANCE REQUIREMENTS
DOCUMENT 23 05 00-3

2.1 TEST EQUIPMENT

- A. The Acceptance Agent is to provide the test equipment and the test materials required for performing the required acceptance testing.

2.2 FORMS AND PROCEDURES

- A. Refer to the 2016 Non-Residential Compliance Manual for the 2016 Building Energy Efficiency Standard for the complete list of acceptance tests and related Certificate of Acceptance forms that may be required.
- B. The actual acceptance tests required are shown on the Title 24 forms provided on the drawings.

PART 3 - EXECUTION

3.1 ACCEPTANCE TESTING PROCESS

- A. Overview:
 - 1. The acceptance requirements require the following four (4) major check-points to be conducted by the installing Contractor:
 - a. Plan review
 - b. Construction inspection
 - c. Functional testing and verification
 - d. Certificate of Occupancy
 - 2. Each of these four (4) major check-points are described in more detail below:
- B. Plan Review:
 - 1. The installing Contractor responsible for certification of the acceptance testing/verification on the Certificate of Acceptance (Responsible Person) must review the plans and specifications to ensure that they conform to the acceptance requirements. This is typically done prior to signing a Certificate of Compliance.
 - 2. The Title 24 documents will include code compliance forms which list the respective envelope and mechanical systems that will require acceptance tests, and the parties responsible for performing the tests.
- C. Construction Inspection:
 - 1. The installing Contractor responsible for certification of the acceptance testing/verification on the Certificate of Acceptance (Responsible Person) must perform a construction inspection prior to testing.
 - 2. The purpose of the construction inspection is to assure that the equipment that is installed is capable of complying with the requirements of the Standards. Construction inspection also assures that the equipment is installed correctly and is calibrated.
- D. Functional Testing:
 - 1. A Field Technician must take responsibility for performing the required acceptance requirements procedures. All of the required acceptance tests for a project need not to be performed, the Field Technician who performs the

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test is responsible for identifying all performance deficiencies, ensuring that they are corrected, and if necessary, he must repeat the acceptance requirement procedures until the specified systems and equipment are performing in accordance with the acceptance requirements. The Field Technician who performs the testing must sign the Certificate of Acceptance to certify the information he has provided to document the results of the acceptance procedures is true and correct.

2. A licensed Contractor, who is eligible under Division 3 of the Business and Professions Code in the applicable classification, to take responsibility for the scope of work specified by the Certificate of Acceptance must review the test results from the acceptance requirement procedures provided by the Field Technician and sign the Certificate of Acceptance to certify compliance with the acceptance requirements. Regardless of who performs the tests, a Responsible Person must review the forms and sign off on them. The Responsible Person may also perform the Field Technician's responsibilities, and must then also sign the Field Technician declaration on the Certificate of Acceptance to certify that the information on the form is true and correct.

3.2 COMPLETION OF ACCEPTANCE TESTING

- A. The Acceptance Testing work will be complete when the HVAC system installing Contractor has completed the required acceptance tests and has completed the acceptance testing forms and completed and signed the Certificates of Acceptance for their respective installation and submitted this documentation to the authority having jurisdiction and to the Engineer.

END OF SECTION

SECTION 26 00 00
ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Furnish all labor, materials, apparatus, tools, equipment, transportation, temporary construction and special or occasional services as required to make a complete working electrical installation, as shown on the drawings or described in these Specifications. The work shall include materials, appliances and apparatus not specifically mentioned herein or noted on the drawings as being furnished and installed under another section.

- B. Work Included:
 - 1. Service and connections to motors and equipment furnished under other divisions.
 - 2. Overcurrent protective devices.
 - 3. Grounding.
 - 4. Incidental work and materials involved in installing the electrical equipment including, but not limited to, rigging, support hardware, temporary lighting and carpentry.
 - 5. Fire-stopping.
 - 6. Compliance with all applicable codes.
 - 7. Testing.
 - 8. Seismic bracing and structural calculations for anchoring and bracing of installed equipment.
 - 9. Project record drawings.
 - 10. Electrical permit(s).

1.2 RELATED SECTIONS

- A. Consult all other sections, determine the extent and character of related work and properly coordinate work specified herein with that specified elsewhere to produce a complete, finished and workmanlike installation.

- B. Perform the following work, in accordance with the appropriate sections of the specifications as necessary to furnish a complete, working electrical installation.
 - 1. Moisture protection: Include sheet metal flashing, counter flashing, caulking and sealants as required for waterproofing of conduit penetrations through walls, and roofs. All leaks caused by this contractor's work shall be repaired at no additional cost to the owner.
 - 2. Miscellaneous metal work: Include fittings, brackets, supports, rods, welding and pipe as required for support and bracing of raceways, lighting fixtures, panel etc.
 - 3. Mechanical Equipment: Provide power wiring, fused disconnect switches and electrical connections for all mechanical equipment. Refer to the mechanical drawings for additional requirements. All electrical power (including 120V control power) and interfacing relays and other devices shown on those

drawings as being furnished by the electrical contractor shall be included in the pricing. Provide roof receptacles as required by code. Roof receptacles shall be ground fault with built-in test and reset.

4. Equipment furnished under other contracts requiring electrical power and connections: Information regarding power and control connections is shown on the electrical drawings. It is the contractor's responsibility to obtain a set of vendor's installation drawings and coordinate the details of the electrical installation with them.

1.3 DEFINITIONS

Furnish: Purchase and deliver to jobsite in new condition.

Install: Receive and store at jobsite until required; place, secure and connect; provide appurtenances.

Provide: Furnish and install as defined above.

Section: Refers to a section of these specifications.

NEC: National Electrical Code.

NETA: International Electrical Testing Association.

Contractor: Electrical Contractor.

Commissioning: Complete system testing and debugging. After commissioning the system under test shall be fully operational and ready to turn over to the owner.

1.4 SEISMIC BRACING

- A. All major electrical components including, but not limited to, conduit racks and fused safety disconnect switches shall be anchored and braced to conform to the International Building Code.

1.5 QUALITY ASSURANCE

- A. Materials and Systems:
 1. Labels: Provide materials listed and labeled by Underwriters' Laboratories or testing firm acceptable to authority having jurisdiction, where listing service is normally provided for product.
 2. Materials:
 - a. Provide new and ship to jobsite in original manufacturer's containers or bundles. Materials and equipment for which tests have been established by Underwriters Laboratories, Inc. shall bear its label of approval or the label of an OSHA approved nationally recognized testing laboratory [NRTL].
 - b. The materials to be furnished shall be the standard products of manufacturers regularly engaged in the production of such equipment equal to or superior to material specified, and shall be the manufacturer's latest standard design that complies with the Specification requirements.
- B. Workmanship: Arrange work to as required for a coordinated installation.
- C. Code Compliance: Comply with applicable codes, laws, rules, regulations, and standards of applicable code-enforcing authorities.

PITTSBURG UNIFIED SCHOOL DISTRICT

Highlands Elementary School
HVAC Equipment Replacement
McCracken & Woodman, Inc.

ELECTRICAL SYSTEMS DOCUMENT 26 00 00-2

- D. References and Standards: All materials and equipment shall comply with all applicable standards and requirements of the standards listed below. Nothing in the Drawings or Specifications shall be construed to permit Work not conforming to applicable laws, ordinances, rules, regulations. It is not the intent of Drawings or Specifications to repeat requirements of codes except where necessary for completeness or clarity.
1. Underwriters' Laboratories, Inc. (UL).
 2. American National Standards Institute (ANSI).
 3. Institute of Electrical and Electronics Engineers (IEEE).
 4. National Electrical Code (NEC) (as currently adopted by the AHJ).
 5. International Building Code (IBC).
 6. Standard for Electrical Safety in the Work Place (NFPA-70E, 2009 Edition).
 7. National Electrical Manufacturer's Association (NEMA).
 8. National Fire Protection Association (NFPA).
 9. NETA Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
 10. State of California Energy Regulations.
- E. If the Drawings or Specifications are not clear, the Subcontractor shall issue a Request for Information (RFI) for an interpretation and decision prior to proceeding with the Work.
- F. Manufacturer's Directions: Follow manufacturer's directions for specific equipment installation requirements. Manufacturer's directions do not take precedence over the drawings and specifications and where these are in conflict notify the Architect for clarification prior to proceeding with the work.
- G. Protection of Equipment:
1. Care shall be exercised during construction to avoid damage to equipment. Equipment shall be protected from dust and moisture prior to and during construction.
 2. Where required or directed, construct temporary protection for equipment and installations so as to protect same from dust and debris caused by construction.
 3. The Subcontractor shall repair by spray or brush painting, after properly preparing the surface, scratches or defects in the finish of the equipment. Only identical paint furnished by the equipment manufacturer shall be used.
 4. Failure of the Subcontractor to protect the equipment as outlined herein shall be grounds for rejection of the equipment and its installation.
- H. Qualifications and License Requirements:
1. The subcontractor performing electrical construction work on the project shall have an Electrical Construction License from the State of California.
 2. The Subcontractor performing electrical construction work shall have sufficient experience in this type of construction.
 3. Certified electricians shall have evidence of certification in their possession at all times. Non-certified personnel shall perform electrical work under the continuous supervision of a certified electrician.

1.6 SUBMITTALS

- A. A complete list of materials and equipment proposed shall be submitted for approval. The list shall include for each item: the manufacturer, the manufacturer's catalog number, type or class, rating, capacity, size, etc.
- B. Submittals shall include, but not be limited to, manufacturer's product literature, dimensioned drawings, one-line drawings and performance data as necessary to verify compliance to specification requirements.
- C. Submit product information for supplied products for approval.
 - 1. Overcurrent protection devices.
 - 2. Fused disconnect switches.
 - 3. Conduits.
 - 4. Conductors.
- D. Format: Submittals shall be neatly bound in an 8-1/2" X 11" format and shall show manufacturer's catalog data and shop drawings prepared specifically for this project. Include dimensions, weights and operational characteristics.
- E. Submit seven (5) copies of all required submittals.

1.7 SUBSTITUTION

- A. The manufacturer's equipment described on the drawings and listed first in the specification is the basis of the design. Where manufacturers of generally comparable products are listed, these are substitute items subject to proof of acceptability.
- B. No resubmittal of substitute items shall be allowed. If a substitute item is rejected, the contractor shall provide the specified item.
- C. Installation of approved substituted equipment is the Subcontractor's responsibility, and changes required to work included under other divisions for installations of approved substituted equipment must be made to the satisfaction of the Architect-Engineer and without change in contract price. Approval by the Architect-Engineer of substituted equipment and/or dimension drawings does not waive these requirements.

1.8 SUPERVISION

- A. The contractor shall personally or through an authorized and competent representative constantly supervise the work from beginning to completion and, within reason, keep the same workmen and foreman on the project throughout the project duration.

1.9 PROTECTION

- A. Keep conduits, junction boxes and outlet boxes and other openings closed to prevent entry of foreign matter; cover fixtures, equipment and apparatus; protect against dirt, paint, water, chemical, or mechanical damage before and during construction period. Restore to original condition any fixture, apparatus, or equipment damaged prior to final acceptance, including restoration of damaged shop coats of paint, before final acceptance. Protect bright finished surfaces and

similar items until in service. No rust or damage will be permitted.

1.10 SITE INVESTIGATION

- A. The contractor acknowledges that he has investigated and satisfied himself as to the conditions affecting his work including reviewing the site electrical drawings. No allowance shall be subsequently made for any extra expense incurred due to failure or neglect to determine conditions affecting the work.

1.11 WARRANTY OF CONSTRUCTION

- A. The contractor warrants that the work performed under this contract conforms to the contract requirements and is free of any defects of equipment, materials or design furnished, or workmanship by the contractor of any of his subcontractors or suppliers.
- B. Such warranty shall continue for a period of one year from the date of final acceptance of the work. Under this warranty the contractor shall remedy, at his own expense, any such failure or defect in the system.
- C. Manufacturer's guarantees or warranties still in effect shall be given to the owner at the expiration of the guarantee period specified above.

1.12 SAFETY AND INDEMNITY

- A. The contractor shall be responsible for implementing, maintaining and supervising all necessary safety precautions which will insure against injury to persons or damage to property as a result of any of his work, tools or equipment on or off the project, before, during or after normal working hours. No drawing review, construction review or any other act or services rendered by the owner, engineer, their employees or consultants shall be construed to approve or judge upon the adequacy of the contractor's safety measures.
- B. The contractor shall hold harmless, indemnify and defend the owner, engineer, their employees and consultants from any and all liability claims, losses or damage arising or alleged to arise from the performance of the work described herein, but not including the sole negligence of the owner, engineer, their employees or consultants.

1.13 PROJECT RECORD DRAWINGS

- A. Prepare complete record drawings showing actual installed locations and sizes of equipment, fixtures, devices, feeders, branch circuits and empty conduit runs and a complete and accurate single-line diagram of the electrical work as installed.
- B. Project record drawings shall be prepared in AutoCAD R2010 or later version format.
- C. Submit a compact disk (with all electronic files) to the owner.

1.14 TEMPORARY FACILITIES

- A. Provide all required temporary facilities for proper performance of the contract. All

such temporary facilities shall be located where directed and maintained in a safe and sanitary condition at all times until completion of the contract; then removed from the site and disposed of as directed.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. All the materials shall be new, of the quality herein specified, free from defects and listed by the Underwriter's Laboratories for the purpose for which they are used. Materials shall be of uniform type and make throughout the building.

2.2 CONDUIT:

- A. Electrical Metallic Tubing (EMT):
 1. Conduit: Shall be formed of cold rolled strip steel, electrical resistance welded continuously along the longitudinal seam and hot dip galvanized after fabrication. Conduit shall conform to ANSI C80.3 specifications and shall meet UL requirements.
 2. Couplings: Electroplated, steel, set-screw type, UL listed concrete tight in dry locations; electroplated, steel, watertight compression type (with compression ring), UL listed concrete tight in damp and wet locations. Efcor or approved equal.
 3. Connectors: Electroplated, steel, set-screw type, UL listed concrete tight with insulated plastic throat, 150 degree C temperature rated; electroplated, steel, watertight compression type (with compression ring), UL listed concrete tight with insulated plastic throat, 150 degree C temperature rated in damp and wet locations. Efcor or approved equal.
- B. Liquid tight Flexible Metallic Conduit:
 1. Conduit: Anaconda Type UA, Coleman Type UXTL or approved equal.
 2. Fittings: Connector body and gland nut shall be of cadmium plated cast malleable iron, with tapered, male, threaded hub; insulated throat and neoprene "O" ring gasket recessed into the face of the stop nut. The clamping gland shall be of molded nylon with an integral brass push-in ferrule.

2.3 OUTLET AND PULL BOXES

- A. Dry Locations: Galvanized, one-piece, pressed steel; Steel City, Raco, Efcor.
- B. Pull Boxes: Fabricated from Code-gauge galvanized steel, painted grey.

2.4 WIRE AND CABLE

- A. Deliver to the site in unbroken containers or reels, all secondary cable single conductors, 600 volt rating, with UL label.
- B. All conductors shall be copper; Minimum size is #12.
- C. Conductors #6 and smaller shall be color coded.

- D. Wire type shall be XHHW, 90 degrees C, for feeders, type THWN, 90 degrees C, for branch circuits in dry locations and type RHH, THHN or THWN, 90 degrees C, for wire installed in fixtures raceways.
- E. Color coding shall be in accordance with the requirements of the local inspection authorities.

2.5 WIRE TERMINATIONS AND SPLICING DEVICES

- A. Splices in wires and cables #10 and smaller shall be made with approved type solderless connectors, Scotchlok or equal. In no case shall insulation of joint be of less insulation value than corresponding insulation of the wires.
- B. Wire splicing devices shall be mechanical set-screw type with flexible insulating cover, captive pressure screws and self-closing openings. They shall be UL 486B listed for 600V and shall be rated for copper conductors. IlSCO "Nimbus" or equal.

2.6 HANGERS AND SUPPORTS:

- A. Construction channel: 14 gauge, plated steel, Superstrut, Unistrut.
- B. General: Properly support all material, equipment and apparatus.
- C. Concrete Inserts: No. 452 or C-302 for new construction. Phillips Red Head or self-drilled anchors.
- D. Exposed Metallic Conduits: Support at intervals of not more than 10'.
- E. Conduit Supports: Pipe clamps with inserts for concrete, machine screws for metal surfaces and wood screws for wood construction or suitable trapeze supports.
- F. Miscellaneous Steel: Provide miscellaneous steel members, beams, brackets, etc., for support of work in this Division unless specifically included in other Divisions.

2.7 OVERCURRENT PROTECTION DEVICES

- A. Molded Case Branch and Feeder Circuit Breakers:
 - 1. Breakers shall be molded case, bolt-on, trip indicating, thermal magnetic type ambient temperature compensated.
 - 2. Circuit breakers shall have interrupting capacity not less than shown on the drawings, or if not shown, not less than 14,000 RMS symmetrical amps for 480 volt systems and 10,000 RMS symmetrical amps for 208 volt systems. Series ratings may be used to obtain ratings between feeder and branch circuit breakers only.
 - 3. Covers shall be sealed on non-interchangeable trip breakers to prevent tampering. Circuit breaker ratings shall be clearly visible after installation, or engraved nameplates shall be provided stating the rating. All ferrous parts shall be plated to minimize corrosion.
 - 4. Breakers shall have toggle, quick-make and quick-break operating mechanisms with trip-free feature to prevent contacts being held closed against over-current conditions in the circuit. Trip position of the breakers

- shall be clearly indicated by operating handles moving to a center position.
5. Each pole of the circuit breakers shall have a thermal magnetic trip element, each pole being individually calibrated. Multiple breakers shall have a single handle to open and close all contact simultaneously in both manual operation and under automatic tripping. Interpole barriers shall be provided inside the breaker to prevent any phase-to-phase flash over. Each pole of the breakers shall have means of arc extinction.
 6. Circuit breaker frame 250A and larger shall be provided with adjustable instantaneous.
 7. Circuit breakers shall have UL label and shall conform to the requirements of the National Electrical Manufacturers' Association Publication AB-1-1975.
 8. Fuses: All power fuses shall be current limiting type. Unless otherwise shown on the plans, types of fuses shall be Shawmut or equal class RK-1 Rejection type fuses.

2.8 DISCONNECT SWITCHES:

- A. Switches shall be NEMA heavy duty type with dead front construction with provisions for fuses and for padlocking the handle in the off position.
- B. Switches shall have a quick-make quick-break, position indicating, operating handle and mechanism and a dual cover interlock to prevent unauthorized opening of the switch door in the "ON" position.

Manufacturer: Square D, Eaton, General Electric or approved equal.

PART 3 - EXECUTION

3.1 WORKMANSHIP

- A. All workmanship shall be of highest quality, done by persons especially skilled at assigned tasks, and shall result in neat installation consistent with best practices of trades.
- B. Install work uniform, level and plumb in relationship to lines of building. Do not install any exposed diagonal, or otherwise irregular work unless approved by the County representative.

3.2 COORDINATION WITH OTHER TRADES:

- A. The contract drawings are diagrammatic and indicate the approximate location of outlets and materials unless dimensions are shown. follow the drawings as closely as possible.
- B. Examine the contract drawings to logically locate work in coordination with construction features such as beams, furring, door swings, ducts, and pipes.

3.3 CUTTING AND PATCHING:

- A. The electrical contractor shall obtain approval before performing any cutting or patching of concrete, steel, masonry, or wood structure in the buildings

3.4 CONDUIT

- A. Conduits shall be installed in a workmanlike manner and shall conform to best of modern practice. All conduits shall be installed with code radius bends. Where more than two 90 degree bends are required, pull boxes shall be installed. Conduits shall be tightly corked and shall be otherwise well protected during construction. All branch circuit conduits shall be blown out and swabbed before wires are pulled. All conduit ends shall be reamed after cutting. A heavy nylon cord shall be installed in all empty conduits or ducts.
- B. Conduits shall be concealed in spaces provided, unless otherwise specifically shown. If spaces are inadequate, the School representative shall be notified in time to avoid unnecessary work. All conduit runs exposed to view shall be installed parallel or at right angles to structural members, wall of lines of the buildings.
- C. In long runs of conduit, provide sufficient pull boxes to facilitate pulling wires and cables. Support pull boxes from structure independent of conduit supports. Spacing of pull boxes shall not exceed 100 feet. Pull boxes are not necessarily shown on the plans.
- D. Uses:
 - 1. EMT: For feeders and power branch circuits run exposed or concealed above ceilings and in walls.
 - 2. Liquidtight flexible metallic conduit: For all connections to air conditioning equipment and motors located in wet or damp areas.
- E. Where conduits cross corridor walls, through electrical or mechanical room walls, they shall be neatly firestopped. Fire sealing shall be done using approved compounds and methods.

3.5 INSTALLATION OF WIRE AND CABLE

- A. No wires shall be pulled into any portions of conduit system until all construction work which might damage the wire has been completed. No mechanical means shall be used to pull wires without obtaining permission from the school representative. All wires shall be continuous from outlet to outlet, or from terminal to terminal. No splices shall be permitted in the conduit.
- B. Splices in wires and cables shall be made with approved type solderless, crimped connector kits. In no case shall insulation of joint be of less insulation value than corresponding insulation of the wires.

3.6 INSTALLATION OF BOXES AND WIRING DEVICES:

- A. General:
 - 1. All outlets shall finish flush with building walls, ceilings and floors except where exposed work is called for.
 - 2. Install raised device covers (plaster rings) on all switch and receptacle outlets installed in stud walls; or in furred or suspended, walls or ceilings. Covers shall be of a depth to suit the wall or ceiling finish.

3. Leave no unused openings in any box. Install close-up plugs as required to seal openings.
 4. Exposed outlet boxes and boxes in damp location or wet locations shall be cast metal with gasketed cast metal cover plates.
- B. Box Layout:
1. Outlet boxes shall be installed at the locations and elevations shown on the drawings or specified herein. Make adjustments to locations as required by structural conditions and to suit coordination requirements of other trades.
 2. Through-wall boxes shall not be permitted.
- C. Supports:
1. Boxes installed in metal stud walls shall be equipped with brackets designed for attaching directly to the studs or shall be mounted on heavy gauge, galvanized steel, snap-in box supports. Efcor MBS series, Steel City 5171 V series or equal.
- D. Wiring Devices and Device Plates:
1. Wall mounted straight blade, U-ground receptacles shall be installed with grounding slot at the bottom for vertical orientations and with grounding slot at left for horizontal orientations.
 2. Device plates shall be set with the vertical corner line plumb and with all edges of the plate in contact with the adjacent wall surfaces.
- E. Blank device plates shall be installed on all outlets in which no device is required is installed.

3.8 GROUNDING

- A. Except as otherwise noted, the complete electrical installation including neutral conductors, metallic conduits and raceways, boxes, cabinets and equipment shall be completely and effectively grounded in accordance with all code requirements, whether or not such connections are specifically shown or specified.
- B. An insulated, green copper ground conductor shall be installed in all power system raceways.
- C. Conduit terminating in concentric knockouts at panelboards, cabinets and gutters shall have grounding bushings and bonding jumpers installed interconnecting all such conduits and the panelboards, cabinets, gutter, etc.
- D. Terminate the equipment ground wires on an isolated ground bus provided in panelboards.
- E. Receptacle grounding: Connect the ground wire to the receptacle ground screw and to the box using two 6" green pigtailed sliced to the ground wire

3.9 TESTING AND COMMISSIONING

- A Required labor, equipment and materials shall be provided to perform specified tests. Tests must be successfully completed prior to and after energizing systems.

Defects which are found during tests shall be corrected at no additional charge.

- B. Test all new feeders, circuits, control devices and motors for proper operation. Correct any malfunctions at no additional charge.

3.10 IDENTIFICATION AND LABELING

- A. Provide plastic engraved nameplates on all major pieces of equipment including, but not limited to each feeder circuit breaker and panelboards. Nameplates shall be black with 1/2" high white letters and shall clearly indicate the device or feeder name and, in the case of panelboards, the voltage.
- B. Provide a typewritten panelboard directory in each panelboard.
- C. Provide black lettering (3/16" high) on clear adhesive circuit markers ("Brother" or equal) identifying panel and circuit number on each receptacle and motor circuit. Markers shall be placed on the receptacle cover plates or on the outside of disconnect switches in dry locations and on the inside of disconnect switches in damp or wet locations.

3.11 WORKMANSHIP

- A. All workmanship shall be of highest quality, done by persons especially skilled at assigned tasks, and shall result in neat, clean and well done installation consistent with best practices of trades.
- B. Install work uniform, level and plumb in relationship to lines of building. Do not install any exposed diagonal, or otherwise irregular work unless specifically approved by the owner's representative.

3.12 CLEANING AND PROTECTION

- A. During progress of the work, keep premises reasonably free of debris, cuttings and waste material. Upon completion of work, and at other times as general contractor may direct, remove all such debris from premises.
- B. Interior of conduits and equipment shall be kept free of direct rubbish and other foreign materials during and after installation. Conduits and ducts shall be capped when work is stopped and for future use.
- C. Upon completion of the work under this section, remove immediately all surplus materials, rubbish and equipment associated with or used in the performance of this work. Failure to perform such cleanup operations within 24 hours of notice by the general contractor shall be considered adequate grounds for having the work done by others at this contractor's expense.

3.13 PAINTING AND FINISHING

- A. Equipment shall be furnished with factory or field-applied coat and finish coat of

enamel. Damaged finishes shall be restored to match original.

3.14 WATERPROOF CONSTRUCTION:

- A. Maintain waterproof integrity of all penetrations of materials intended to be waterproof. Flash all raceways extending through the roof with galvanized metal roof jacks and seal with approved sealants to make the flashing watertight. All leaks caused by this contractor's work shall be repaired at no additional cost to the owner.
- B. Equipment or devices mounted out-of-doors or otherwise exposed to the weather shall have NEMA Type 3R or better enclosures. Such installations shall be weatherproof.

3.15 CLEAN-UP

- A. Perform the work under this section so as to keep affected portions of the building and site neat, clean and orderly. Upon completion of the work under this section, remove immediately all surplus materials, rubbish and equipment associated with or used in the performance of this work. Failure to perform such cleanup operations within 24 hours of notice by the owner shall be considered adequate grounds for having the work done by others at this contractor's expense.

3.16 PROJECT CLOSEOUT

- A. The contractor shall notify the owner's representative in writing when the project is ready for final inspection for the purpose of determining the state of completion of the project. From the information gathered from this inspection, the owner's representative will prepare a "walk-through-summary" of work to be performed, corrected, or completed before the project will be accepted. All work on the walk-thru summary shall be completed within thirty (30) calendar days by the contractor prior to final inspection.
- B. Project record drawings and the operation and maintenance manuals shall be completed within 30 calendar days after the walk-through summary and shall be delivered to the owner's representative at that time. Provide four copies.
- C. Submit "as-built" plots (reproducible vellum) and a compact disk (with all electronic files) to the owner.
- D. Final payment will not be made until the project record drawings, the operation and maintenance manuals and the "as-built" drawings are received and accepted.

END OF SECTION

FIRE DETECTION AND ALARM

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. Section includes: The work shall consist of furnishing all labor, material, and equipment required to complete the installation of the fire alarm system as indicated on the drawings and described herein, including all incidental work necessary to make it complete and satisfactory and ready for operation. Work shall include, but not be limited to, the following principal items:
 - 1. Fire alarm control panel(s).
 - 2. Manual fire alarm stations.
 - 3. Automatic smoke detectors.
 - 4. Combination automatic smoke and carbon monoxide detectors
 - 5. Automatic heat detectors.
 - 6. Fire alarm occupant notification appliances.
 - 7. Auxiliary fire alarm equipment and initiating devices.
 - 8. Demolition and proper disposal of the existing fire alarm system equipment components, raceways, and cables upon completion and acceptance of the replacement fire alarm system.
 - 9. Repair and restoration of all surfaces and construction assemblies damaged by the fire alarm system installation or demolition.

1.03 RELATED WORK

- A. General Requirement, Division 1.
- B. Electrical Systems, Division 26.

1.04 REFERENCED STANDARDS

- A. NFPA 72 - National Fire Alarm and Signaling Code, with California amendments.
- B. ADA - Americans with Disabilities Act.
- C. UL - Underwriters Laboratories, Inc.
- D. FM - Factory Mutual System.
- E. ANSI - American National Standards Institute.

- F. California Code of Regulations, Title 24, Part 9, California Fire Code, 2016 Edition.
- G. California Code of Regulations, Title 24, Part 3, California Electrical Code, 2016 Edition.
- H. California State Fire Marshal's Building Equipment List.

1.05 SCOPE

- A. This Project provides a replacement fire alarm system for the Highland Elementary School. The Project also includes, but is not limited to:
 - 1. A new fire alarm control unit, and all ancillary equipment necessary for a complete and functioning system shall be provided for the Building.
 - 2. The provision and installation of all ancillary and associated equipment, devices, wiring and cabling and all programming necessary for the complete system operation.
- B. The fire alarm system installation shall provide area-wide detection for the building and shall include a voice evacuation alarm system.
- C. The Drawings are diagrammatic in that the exact device, appliance, and equipment locations, conduit and raceway routing, raceway supports, and construction details for the replacement fire alarm system shall be developed by the Contractor based on field investigation and conditions. The riser diagrams are diagrammatic and represent feasible connectivity.
- D. The Contractor may modify the connectivity to suit field conditions provided that the notification appliance and signaling line circuit loads do not exceed those specified in the listings and approvals for each manufacturer's piece of equipment.

1.06 QUALITY ASSURANCE

- A. Every component of the fire alarm system shall be listed by the California Department of Forestry & Fire Protection Office of the State Fire Marshal (CSFM).
- B. The fire alarm system supplier shall be a Silent Knight Installer engaged in the design and the installation of fire alarm systems and their related subsystems. For the purposes of this Section, an Installer shall be interpreted to mean an organization that complies with all of the following criteria:
 - 1. Employs a registered fire protection engineer or NICET Level IV to supervise or perform the work required by this specification section.
 - 2. Employs personnel on this project who have successfully completed the manufacturer's training courses on the specific fire alarm equipment provided for the installation.
 - 3. Has performed work (including design, installation, startup, testing and maintenance) on at least five previous projects of similar or greater complexity.
 - 4. Has been actively engaged in the type of work specified in this section for a minimum of five years.
 - 5. See Article 1.12 for Installer qualifications.

- C. Each and all items of the fire alarm system shall be listed as a product of a single fire alarm system manufacturer under the appropriate category by Underwriters' Laboratories, Inc. (UL), and shall bear the corresponding "U.L." label.

1.07 WORK INCLUDED

- A. Where provisions of the referenced Codes and Standards are repeated in this Specification, it is intended only to call attention to them. It is not intended that other parts of the referenced Codes and Standards shall be assumed to be omitted if not repeated in this Specification.
- B. The system installation includes those items identified in the Contract Documents and the necessary and appropriate ancillary equipment incidental to the system operation.
- C. It is the intent of these specifications to describe the complete fire alarm system. The Contractor is responsible for carefully and critically reviewing the Contract Drawings, specifications, and site conditions to the extent practicable. Any error, omission, discrepancy or lack of clarity shall be promptly communicated to the District.
- D. In general, work shall include, but not be limited to:
 - 1. Provide and install a fire alarm system for the protection of the building, as shown on the Contract Drawings. Development of shop drawings and equipment submittals for review and acceptance by the District.
 - 2. Provide all equipment necessary for initiating devices, occupant notification appliances, communication of signals to the off-site monitoring service.
 - 3. Provide all design, calculations, details and software required to install the fire alarm system as indicated in the Contract Drawings and project specifications.
 - 4. Provide all penetrations through walls, floors and ceilings necessary for the installation of the fire alarm system. Provide fire stopping as required.
 - 5. Perform systems and device testing as required by the Authority Having Jurisdiction and the project specifications. Obtain final approval from the Authority Having Jurisdiction.
 - 6. Perform training and provide the Manufacturer's Certification for the District's personnel.

1.08 GENERAL REQUIREMENTS AND OPERATION

- A. Provide intelligent, electrically supervised, manual and automatic, fire alarm and detection systems, including proprietary and local alarm panels, and occupant notification appliances.
- B. Occupant notification shall be the uniform alarm code (3 beats, pause, 3 beats) followed by voice message (and repeated as required by NFPA 72) in accordance

with the Fire Code. Any fire alarm signal shall also cause an alarm signal to be transmitted via the network to the fire alarm control unit located in the Main Building.

- C. Power supplies: Adequate to serve control panel modules, remote detectors, remote annunciators, door holders, relays, alarm notification appliances, and other appurtenances as specified.
 - 1. The Contractor shall provide and install a dedicated circuit of at least 20 Amp service, 120 VAC power (and conduit) from the electrical service in the building to the control unit and any other ancillary fire alarm equipment.
 - 2. The Fire Alarm Control Unit and supporting device shall have sufficient electrical capability and enclosure space to handle the following:
 - a. 10% increase in the number of smoke detectors on the SLC loop.
 - b. 10% increase in the number of occupant notification appliances on each circuit.
 - c. 10% increase in the number of occupant notification appliance circuits.
 - 3. Battery-operated emergency power supplies shall be furnished, and sized with minimum 25% additional capacity than what is required for the operating system in standby mode for minimum of 24 hours followed by alarm notification mode for 15 minutes.
- D. System Supervision: Alarm, trouble and supervisory signals from all intelligent reporting devices shall be encoded onto NFPA Class B Signaling Line Circuit (SLC) alarm signals arriving at the fire alarm control unit shall not be lost following a power failure (or outage) until the alarm signal is processed and recorded.
- E. Initiating Device Circuits (IDC): Supervised zone module with alarm and trouble indication; occurrence of an open condition shall place the circuit in trouble mode but shall not disable that circuit from initiating an alarm. Initiating device circuits shall be provided with NFPA Class B wiring.
- F. Occupant Notification Appliance Circuits: Supervised signal modules, sufficient for the indication/notification appliances connected to system; occurrence of an open or ground fault condition shall place the circuit in trouble mode but shall not disable any device on that circuit from signaling an alarm. Indicating appliance circuits shall NFPA Class B wiring.
- G. Auxiliary Relays: Provide sufficient double throw auxiliary relay contacts for each accessory function shown and as specified.
- H. Provide TROUBLE ACKNOWLEDGE, ALARM SILENCE, BELL AND ANCILLARY FUNCTION DISCONNECT switches at the fire alarm control unit for the testing, as required and shown in the drawings.
- I. Trouble Sequence of Operation: System or circuit trouble shall place the system in the trouble mode, which shall cause the following system operations:
 - 1. Visual and audible trouble alarm indicated by address at the fire alarm control panel.

2. The manual acknowledge function at the fire alarm control panel shall silence the audible trouble alarm; visual alarm shall continue to be displayed and notification shall be maintained until initiating device failure or circuit trouble is cleared.
- J. Alarm Sequence of Operation: Actuation of initiating device, shall place the circuit in alarm mode, which shall cause the following system operations:
1. Sound and display local fire alarm notification appliances (ceiling and/or wall mounted audible, visual appliances).
 2. Indicate location of alarm address and type of device on the fire alarm control unit.
 3. Transmit signal by function to building mechanical systems, as shown and described in the Drawings and project specifications.
 4. Alarm silence function at the fire alarm control panel shall silence all audible alarm signaling devices; visual alarm shall continue to be displayed at the local Fire Alarm Control Panel (FACP), and notification via the network shall be maintained until Alarm Reset occurs. Actuation of a second initiating device shall cause the alarm to re-activate in accordance with this section.
- K. Alarm Reset: System shall remain in the alarm mode until manually reset with key-accessible reset switch; system shall remain in alarm mode until the initiating appliance(s) and circuit(s) are reset and are out of alarm mode.
- L. Lamp Test: Manual lamp test function shall cause alarm indication at each zone at FACP.
- M. Addressing: Actual room numbers and/or names will be assigned by the District and shall be shown on the Permit and As-Built Drawings and shall be used in the software address identification.
- N. Each panel shall have a minimum of 15% additional space for future expansion.
- O. Each system shall be electrically supervised against open wire, shorts and ground faults in the initiating, and indication/notification circuits.

1.09 SUBMITTALS

- A. The Contractor shall furnish all construction drawings in hard copy and AutoCad (Version 2010 or 2013) format.
- B. Submit six copies of shop drawings and product data. The drawing format for the FACP layouts, general arrangement, and connection diagrams shall conform to the District furnished CADD standards and formatting.
- C. Shop Drawings - Drawings shall be stamped by California registered Fire Protection Engineer or NICET Level IV certified individual and shall include:
 1. System logic.
 2. Control panel general arrangement, and connection wiring with individual wire numbers, and color code. Module legends must show the module type and the zone input and output connections.

3. Layout plan view showing location of initiating devices and notification appliances with zone and device numbers. Conduit size and routing with wire fill must be shown on the same drawing. All conduits and cables shall be labeled and presented in a cable and conduit schedule.
 4. Typical connection details for each device to be installed.
 5. Nameplate schedules indicating text for annunciation and labeling for all alarm initiating devices, by address.
 6. Area coverage drawings with spacing requirements for the initiating, and indicating/notification appliances in accordance with the requirements and criteria specified in the applicable Codes and Standards.
 7. Standby Battery size calculations.
 8. Provide California State Fire Marshall (CSFM) Listing numbers for all the system components.
- D. Product Data: Provide electrical characteristics and inter connection requirements.
- E. Reports: A certificate of compliance shall be provided. Provide Certified inspection and test reports and documents to the Engineer as specified in the project specifications and the manufacturer's instructions.
- F. Certification of installer training and contractor listing, per Article 1.12.
- G. Substitutions: No substitutions of materials, specified in this section, will be allowed without the written approval of the District.
- H. Review of drawings and materials submitted for approval shall not be construed as a complete check or constitute a waiver of the requirements of the drawings and specifications. This review shall not relieve the Contractor of the responsibility to fit the proposed materials to the spaces provided and to effect necessary rearrangement or construction of other work. Contractor agrees that shop drawing submittals processed by the District do not become contract documents and are not change orders; that the purpose of the shop drawing review is to establish a reporting procedure and is intended for the Contractor's convenience in organizing his work and to permit the District to monitor the Contractor's progress and understanding of the design. If deviations, discrepancies, or conflicts between shop drawing submittals and the contract documents are discovered either prior to or after the shop drawing submittals are processed by the Engineer, the Contractor agrees that the contract documents shall control and shall be followed.

1.10 PROJECT RECORD DOCUMENTS

- A. Record and submit actual locations of initiating devices, and indication/notification appliances on the Drawings.
- B. Submit copies of record documents that show as-built conditions.

1.11 OPERATION AND MAINTENANCE DATA

- A. Submit six (6) copies of bound original Installation, Operating and Maintenance Manuals.

- B. Spare Parts List: The supplier shall provide a recommended spare parts list for one year operation, and pricing good for 90 days from date of equipment delivery.

1.12 INSTALLER QUALIFICATIONS

- A. As identified under Article 1.6.
- B. A company licensed by State of California as a fire alarm installer with a C-10 contractor's license, and specializing in installing the products specified in this specification with a minimum of five years documented experience.
- C. Principal fire alarm control unit installation personnel shall have completed the system manufacturer's training courses within the past 5 years on the equipment to be installed and shall submit documentation of such training to the District.

1.13 MANUFACTURER'S FIELD SERVICES

- A. As identified under Article 1.6.
- B. Include services of Factory or NICET (National Institute for Certification in Engineering Technologies) Certified Technician to supervise installation, adjustments, final connections, and system testing.

1.14 MAINTENANCE SERVICE

- A. The equipment and systems Warranty shall include parts, labor and field service, pickup, delivery, and to ensure restoration of the system to normal within 24 hours of notification to the Contractor.
- B. Provide test and maintenance service for a period of one year from the date of contract acceptance. Provide a written certified copy of test results to the District within one week after completion of the work.
- C. Contractor shall provide an annual maintenance cost for routine services following the expiration of Contract Warranty. The costs shall be itemized, tabulated, and may include annual cost adjustments as needed.

1.15 EXTRA MATERIALS

- A. Provide six keys of each type.
- B. Provide six spare of each type of automatic smoke detector with base.
- C. Provide two (2) copies of programming software for the FACP.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturers:

1. Products described below and identified by product name, model number, or other manufacturer designation, are Basis of Design Products. Basis of Design Products establish the standards of type, function, dimension, in-service performance, physical properties, appearance, warranty, cost, and other characteristics required by the Project. The Project's design is based on the Basis-of-Design Products specified.
2. Products of manufacturers not listed may be proposed for substitution, provided they are comparable to the products specified.
 - a. If "No substitutions" is indicated next to the product name, provide only products of listed manufacturers.
 - b. The burden of proof of equality of proposed products is on the Contractor.

2.02 CONTROL PANELS

- A. Silent Knight 6820EVS analog addressable fire alarm control panel with emergency communication system. This represents the District's fire alarm standard for operation and maintenance. No substitutions are allowed.
- B. FACP shall be provided with a power supply and the necessary and most current firmware, software, and hardware to perform the functions shown in the design. The FACP shall contain a microprocessor based Central Processing Unit (CPU). The CPU shall communicate with and control the following types of equipment used to make up the system: intelligent addressable smoke and thermal (heat) detectors, addressable modules, control circuits, and notification appliance circuits, local and remote operator terminals, printers, annunciators, and other system controlled devices.
- C. The audio amplifiers shall be the Silent Knight EVS-50W, or EVS-125W. The FACP shall have a 6-amp power supply and be capable of expansion to a minimum of 384 total amps via bus connected expander modules that supervise low battery, loss of AC and loss of communication.
- D. The system must contain Silent Knight ECS-50W, ECS-125W or ECS-DUAL-50W amplifier and shall be expandable from 50 to 500 watts utilizing up to 3 additional amplifiers. The ECS-50W and ECS-125W amplifiers shall be able to support a 4-zone splitter (Silent Knight EVS-CE4) to distribute the audio information to different locations in the installation. The system shall have the capability of controlling up to 32 notification zones. The amplifiers shall contain the capability of being remotely located through a four-wire SBUS communications circuit and a two-wire VBUS voice circuit. The system shall have the capability of adding up to 4 EVS-LOCs local operating consoles.
- E. The emergency communication system shall have the capability of downloading fifteen (15) 60 second messages and utilize DSP technology for higher audio intelligibility.
- F. The emergency communication system shall be capable of operating at 25vrms and shall be field selectable at the amplifier level. Systems that require additional modules for voltage conversion shall not be accepted.

- G. The FACP shall communicate with and control the intelligent detectors, intelligent manual pull stations, addressable modules, and other system controlled devices. The FACP shall perform the following functions:
1. Supervise and monitor intelligent addressable devices for normal, trouble and alarm conditions.
 2. Supervise all occupant notification appliance circuits.
 3. Detect the activation of any initiating device, identify the location, and communicate the status of the alarm condition for devices on the circuit. Operate all notification appliances and auxiliary devices as programmed.
 4. Visually and audibly annunciate any trouble, supervisory or alarm condition on the panel display.
 5. Shall cause for the signals, annunciation and control of HVAC fans and dampers, as indicated in the Drawings.
 6. Shall cause for the release of held open doors and other protective assemblies, as indicated in the Drawings.
 7. The FACP shall feature a text-based user-friendly interface integral with the panel that provides an intuitive guidance program with prompts in English that will allow District operators to interrogate the system for point data without in-depth knowledge of the interface menu hierarchy.
- H. The FACP shall have three Form "C" dry contacts, one will be dedicated to trouble conditions, the other two will be programmable for alarm, trouble, supervisory, notification, pre-alarm, waterflow, manual pull, aux. 1 or aux. 2 conditions. The trouble contact shall be normal in an electrically energized state (fail-safe) so that any total power loss (AC and Backup) will cause a trouble condition. If the microprocessor on the FACP fails, the trouble contacts shall also indicate a trouble condition.
- I. The FACP must have Drift Compensation sensitivity capabilities on detectors and be able to support 159 detectors and 159 analog addressable modules. The communication protocol on the SLC loop must be digital.
- J. The FACP must support a minimum of six programmable Flexput™ circuits. The panel must have a built in 160-character LCD annunciator with the capability of having additional supervised remote annunciators connected in the field.
- K. The FACP must have a built in UL approved IP and digital communicator with the option of adding a cellular module for communications. The communicator must allow local and remote up/downloading of system operating options, event history, and detector sensitivity data.
- L. The FACP must automatically test the smoke detectors in compliance with NFPA standards to ensure that they are within listed sensitivity parameters and be listed with Underwriters Laboratories for this purpose.
- M. The FACP must compensate for the accumulation of contaminants that affect detector sensitivity. The FACP must have day/night sensitivity adjustments, maintenance alert feature (differentiated from trouble condition), detector sensitivity selection, auto-programming mode (Jumpstart) and the ability to upgrade the core programming software on site or over the telephone.

- N. The main communication bus (SBUS RS485) shall be capable of class A or class B configuration with a total SBUS length of 6,000 feet.
- O. The FACP shall have a Jumpstart feature that can automatically enroll all properly connected accessories into a functional system.
- P. The FACP must have the ability to upgrade the firmware revision from a laptop where the FACP is installed
- Q. A ground fault detection circuit shall be employed which can detect a ground fault on both the positive and negative side of each circuit. The ground fault detector shall operate the general trouble devices as specified but shall not cause an alarm to be sounded. Ground faults shall not interfere with normal operation, such as alarm, or other trouble conditions.
- R. All low voltage circuits shall be protected by microprocessor controlled power limiting or have self-restoring polyswitches for the following: smoke detector power, main power supply, indicating appliance circuits, battery standby power and auxiliary output.
- S. The control unit shall have the following test functions:
 - 1. A "Lamp Test" mode shall be a standard feature of the fire alarm control panel and shall test all LEDs and the LCD display on the main panel and remote annunciators.
 - 2. A "Walk Test" mode shall be a standard feature of the fire alarm control panel. The walk test feature shall function so that each alarm input tested will operate the associated notification appliance for six seconds. The fire alarm control panel (FACP) will then automatically perform a reset and confirm normal device operation. The event memory shall contain the information on the point tested, the zone tripped, the zone restored, and the individual points return to normal.
 - 3. A "Fire Drill" mode shall allow the manual testing of the fire alarm system notification circuits. The "Fire Drill" shall be capable of being controlled at the main annunciator, remote annunciators and via a remote contact input.
 - 4. A "Disable Mode" shall allow for any zone, point, group, or NAC circuit to be disabled without affecting the operation of the total fire system.
- T. The control panel shall have provisions for supervised switch inputs, for the purpose of Alarm reset and Alarm and Trouble silence.
- U. The FACP shall have the following software and hardware features:
 - 1. All notification circuits and modules shall be programmable via a mapping structure that allows for a maximum of 999 output groups. Each of these groups shall be able to be triggered by any of the panels 999 zones. A group may be triggered from a zone individually, or may contain a global trigger for manual pull stations, fire drills and two different system alarms.

2. Each zone will individually control the cadence pattern of each of the groups that it is "Mapped" to so that sounders can indicate a variety of conditions. The zone shall be able to issue a different cadence pattern for each of the groups under its control. The mapping structure must also allow a group to be designated to "ignore cadence" for use with strobes and other continuous input devices.
 3. Zones shall have eight different output categories; Detector alarm, Trouble, Supervisory, Pre-alarm, Waterflow, Manual pull, Zone auxiliary one and Zone Auxiliary two. Each of the categories shall be able to control from 1 to 8 output groups with a cadence pattern. The patterns are; March code, ANSI 3.41, Single Stroke Bell Temporal, California code, Zone 1 coded, Zone 2 coded, Zone 3 coded, Zone 4 coded, Zone 5 coded, Zone 6 coded, Zone 7 coded, Zone 8 coded, Custom output pattern 1, Custom output pattern 2, Custom output pattern 3, Custom output pattern 4 and Constant.
 4. Each NAC circuit shall also be configured to produce one of four synchronization patterns: AMSECO synchronization, Gentex synchronization, System Sensor synchronization, and Wheelock synchronization. This mapping/cadence pattern shall be supported by all system power supplies and Notification Expander Modules. This mapping/cadence pattern shall be supported by all system power supplies and Notification Expander Modules.
 5. The fire alarm control panel must support up/downloading of system programming from a PC under Windows or NT environments. The FACP must also be able to upload the detector sensitivity test results and a 1000 event system event buffer to the PC.
 6. The products of combustion detectors must communicate analog values using a digital protocol to the control panel for the following functions:
 - a. Automatic compliance with NFPA 72 standards for detector sensitivity testing
 - b. Drift compensation to assure detector is operating correctly
 - c. Maintenance alert when a detector nears the trouble condition
 - d. Trouble alert when a detector is out of tolerance
 - e. Alert control panel of analog values that indicate fire.
- V. Communication shall take place over a direct connection to the PC through a USB or Ethernet cable and shall not require an external modem to be connected to the panel. The downloading software shall contain a code that will block unauthorized persons from accessing the panel via direct connection or ethernet.
- W. Enclosure
1. The control panel shall be housed in a UL listed cabinet and mounted as specified on the Contract Drawings. Enclosure and front shall be corrosion protected, given a rust-resistant prime coat, and manufacturer's standard finish.
 2. The back box and door shall be constructed of steel with provisions for electrical conduit connections into the sides, top, and bottom.
 3. The door shall provide a key lock and shall include a glass or other transparent opening for viewing of all indicators.
 4. The control unit shall be modular in structure for ease of installation, maintenance, and future expansion.
 5. The FACP and associated equipment shall be protected from the effects of voltage surges or line transients in accordance with UL864 standards.

6. Each peripheral device connected to the FACP shall be continuously scanned for proper operation. Data transmissions between the FACP and peripheral devices shall be reliable and error free. The transmission scheme used shall employ dual transmission or other equivalent error checking techniques.
 7. Each enclosure shall be mounted such that any display or keyboard functions are no higher than 5 ft. 6 in. AFF.
- X. FACP Power Supply
1. The Main Power Supply shall operate on 120 VAC, 60 Hz, and shall provide all necessary power for the FACP.
 2. External power panels shall be used to power the occupant notification appliances (strobes) for the AMC facilities.
 3. It shall provide a battery charger for 24 hours of standby using dual-rate charging techniques for fast battery recharge.
 4. It shall provide a very low frequency sweep earth detect circuit, capable of detecting earth faults on sensitive addressable modules.
 5. It shall be power-limited per current UL864 requirements.
 6. It shall provide meters to indicate battery voltage and charging current.
 7. A separate power supply shall be provided for all externally controlled devices such as remote relays, door holders, etc.
- Y. Distributed Power
1. The contractor shall supply power modules, Models 5496 and 5895XL, compatible with the model 6820EVS fire alarm control panel. The power module must have 6 amps of output power, six Flexput[®] circuits rated at 3 amps each, and two Form C relay circuits rated at 6 amps at 24 volts DC. The six Flexput circuits shall be capable of being programmed as supervised reverse polarity notification circuits or supervised auxiliary power circuits that can be programmed as continuous, resettable or door holder power. The circuits shall also be programmable as input circuits in Class A or B configurations to support dry contact or compatible two wire smoke detectors.
 2. The power module shall be capable of being connected via an RS-485 system bus (SBUS) at a maximum distance of 6,000 feet from the main control panel. It shall contain an additional RS-485 system bus that is completely compatible with all 6820EVS add-on SBUS modules, annunciators, serial/parallel modules and addressable devices. The power module will also act as a bus repeater so that additional RS-485 (modules) devices can be connected at a maximum distance of 6,000 feet from the power module.
 3. The 5496 and 5895XL power modules must have 6 amps of output power and four circuits rated at 3 amps each. The four circuits can be programmed as notification outputs or auxiliary power outputs of door holder, constant, resettable and sounder base synchronization types.
 4. The 6820EVS shall be able to support up to eight (8) of the Distributed Power Modules in any combination.
 5. The power module's RS-485 bus shall be electrically isolated providing ground loop isolation and transient protection.

2.03 LOCAL OPERATOR CONTROL (LOC)

- A. Silent Knight EVS-LOC with annunciator.

2.04 SYSTEM COMPONENTS

- A. Addressable Devices (General)
 - 1. Addressable devices shall provide an address-setting means and shall be compatible with the Silent Knight FACP.
 - 2. Alarm initiating devices shall be intelligent and addressable, shall be compatible with the Silent Knight FACP, and shall connect to the Silent Knight FACP Signaling Line Circuits.
 - 3. Detectors shall be intelligent and addressable, shall be compatible with the FACP, and shall connect to the FACP Signaling Line Circuits.
 - 4. Smoke detector sensitivity shall be set through the FACP and shall be adjustable in the field through the field programming of the system.
 - 5. Detectors shall automatically compensate for dust accumulation and other slow environmental changes that may affect their performance. The detectors shall be listed by UL as meeting the calibrated sensitivity test requirements of NFPA 72.
 - 6. The detectors shall be ceiling-mounted and shall include a separate twist-lock base which includes a tamper proof feature.
 - 7. The detectors shall provide a test means whereby they will simulate an alarm condition and report that condition to the FACP. Such a test may be initiated at the detector itself or initiated remotely on command from the control panel.
 - 8. Detectors shall also store an internal identifying type code that the control unit shall use to identify the type of device.

- B. Addressable Manual Pull Station
 - 1. Silent Knight SK-Pull-DA. Manual pull stations shall be compatible with the FACP. Manual pull stations shall, on command from the FACP, send data to the panel representing the state of the manual switch and the addressable communication status. They shall use a manually operated test-reset keylock, and shall be designed so that after actual emergency operation, they cannot be restored to normal use except by the use of a hex key wrench or similar tool.
 - 2. Stations shall be suitable for flush or semiflush mounting as shown on the plans, and shall be installed 48 inches on center above the finished floor.
 - 3. A permanent label identifying the pull station address shall be provided on each pull station.

- C. Photoelectric Smoke Detector
 - 1. Silent Knight SK-Photo. Photoelectric detectors shall be compatible with the FACP. The detectors shall use the photoelectric principal to measure smoke density and shall, on command from the control panel, send data to the panel representing the analog level of smoke density.
 - 2. A permanent label, legible from the floor level, identifying the detector address shall be provided on each detector base.

- D. Combination Smoke Carbon Monoxide Detector
 - 1. Silent Knight SK-Fire-Co. Combination smoke carbon monoxide detectors shall be compatible with the FACP. The detectors shall, on command from the control panel, send data to the panel representing the analog level of smoke density.

2. A permanent label, legible from the floor level, identifying the detector address shall be provided on each detector base.
- E. Heat Detector
1. Silent Knight SK-Heat. Heat detectors shall be compatible with the FACP. The detectors shall be fixed temperature 135° F.
 2. A permanent label, legible from the floor level, identifying the detector address shall be provided on each detector base.
- F. Beam Detector
1. Silent Knight SK-Beam. Beam detectors shall be compatible with the FACP.
 2. A permanent label, legible from the floor level, identifying the detector address shall be provided.
- G. Monitor Module
1. Silent Knight SK-Monitor Module. Monitor Modules shall be compatible with the FACP. Modules shall, on command, from the FACP, send data to the panel representing the state of the module and the addressable communication status and perform the intended function.
 2. A permanent label, legible from the floor level, identifying the detector address shall be provided.
- H. Control Module
1. Silent Knight SK-Control Module. Control Modules shall be compatible with the FACP. Modules shall, on command, from the FACP, send data to the panel representing the state of the module and the addressable communication status and perform the intended function.
 2. A permanent label, legible from the floor level, identifying the detector address shall be provided.
- I. Occupant Notification Appliances
1. Strobes: Field selectable candela values, strobe light with red lettered "FIRE" on white cover plate, System Sensor SpectrAlert L Series, or approved equal.
 2. Speakers: Temporal sound pattern, followed by voice message (repeated and in accordance with NFPA 72), tapped at 0.50 watt, with red lettered "FIRE" on white cover plate System Sensor SpectrAlert L Series.
 3. Combination speaker/strobes: Field selectable candela values, temporal sound pattern, followed by voice message (repeated and in accordance with NFPA 72), tapped at 0.50 watt dB setting strobe light with red lettered "FIRE" on white cover plate, System Sensor SpectrAlert L Series, or approve equal.

2.04 BATTERIES AND EXTERNAL CHARGER

- A. Battery
1. Shall be 12 volt, Gell-Cell type.

2. Battery shall be furnished, and sized with minimum 25% over the capacity required for the operating system to sufficiently power the fire alarm system for not less than twenty-four hours plus 5 minutes of alarm upon a normal AC power failure.
- B. External Battery Charger
1. Shall be completely automatic, with constant potential charger maintaining the battery fully charged under all service conditions. Charger shall operate from a 120-volt 60 hertz source.
 2. Shall be rated for fully charging a completely discharged battery within 48 hours while simultaneously supplying any loads connected to the battery.
 3. Shall have protection to prevent discharge through the charger.
 4. Shall have protection for overloads and short circuits on both AC and DC.

2.05 FIRE ALARM WIRE AND CABLE

- A. Conduit and wire shall be in accordance with the California Electrical Code (CEC), and NFPA 72.
1. Cable and wire shall not be installed in ventilation ducts without specific prior written approval of the Engineer. Cable and wiring routed in concealed areas meeting the protection requirements of the California Electrical Code (e.g. Article 760) may be routed without the use of conduit or raceway.
 2. Cable and wire not installed in conduit shall have the fire resistance rating suitable for the installation as indicated in the California Electrical Code and shall be supported and protected in accordance with the California Electrical Code and the manufacturer's requirements, but shall be supported from the wall/floor assemblies at intervals not exceeding 5 ft or the manufacturer's requirements. Cable and wiring shall not be directly laid, unsupported, on ceiling surfaces and shall be routed parallel or perpendicular to the adjacent surface.
 3. Cable and wiring in exposed areas, within drops/rises, and other areas required by Code, shall be in conduit or decorative raceway. Decorative raceway (e.g. Wiremold or equal) shall be used in all finished areas at the direction of the District. Wiremold or other decorative raceway, shall be metallic.
 4. See Division 26 "Electrical" for specifications related to electrical conductors, cables, raceways, and boxes.
- B. Conduit/Raceway
1. All wiring in exposed areas, within drops/rises, and other areas required by Code shall be installed in conduit or raceway. Raceway fill shall not exceed 40 percent of interior cross sectional area where three or more cables are contained within a single conduit.
 2. Cable must be separated from any open conductors of power, or Class 1 circuits, and shall not be placed in any conduit, junction box or raceway containing these conductors, as per NEC Article 760-29.
 3. Wiring for 24 volt control, alarm notification, emergency communication and similar power limited auxiliary functions may be run in the same conduit as initiating and signaling line circuits. All circuits shall be provided with transient suppression devices and the system shall be designed to permit simultaneous operation of all circuits without interference or loss of signals.

4. Conduit shall not enter the fire alarm control panel, or any other remotely mounted control panel equipment or backboxes, except where conduit entry is specified by the manufacturer.
 5. New conduit shall be 3/4 inch minimum.
 6. No conductor or cable splices shall be permitted below ground.
- C. Terminal Boxes, Junction Boxes and Cabinets
1. All boxes and cabinets shall be UL listed for their use and purpose.
- D. The FACP shall be connected to a separate dedicated branch circuit, maximum 20 amperes. This circuit shall be labeled at the main power distribution panel as FIRE ALARM. Fire alarm control panel primary power wiring shall be minimum 12 AWG.

PART 3 – EXECUTION

3.01 GENERAL

- A. The work takes place in an occupied building. All material and equipment shall be sized to fit into the spaces required and all work shall be coordinated with the District.
- B. The Contractor shall be a California licensed contractor, experienced in the installation of fire alarm systems.
- C. All fire alarm junction boxes shall be marked for identification. Flexible connectors shall be used for all devices mounted in suspended lay-in panels. All conduits, mounting boxes and panels shall be hung and fastened with fittings to insure positive grounding throughout the entire system.
- D. No wiring other than that directly associated with fire alarm detection, alarm or auxiliary fire protection functions shall be permitted in fire alarm conduits. Wiring splices shall be prevented. If needed, they shall be made only in junction boxes. Transposing or changing color coding of wires will not be permitted. All conductors in conduit containing more than one wire shall be labeled on each end with "E-Z markers." Conductors in cabinets shall be formed and harnessed so that each drops off directly opposite to its terminal. Cabinet terminals shall be numbered and coded. All controls, function switches, etc., shall be labeled on all equipment panels. All wiring shall be checked and tested to insure that there are no grounds, opens or shorts.
- E. All wire shall be identified with Cloth Type "E-Z Marker." Terminate all wiring including cable drain wires as indicated in the Manufacturer's Operation, Installation and Maintenance Manuals.
- F. Provide permanent identification labels on each addressable device indicating the address.
1. Labels shall contain minimum 1/2 inch lettering, black letters on white background and shall be of high quality. Labels shall be produced by the Kroy 1000 System, P-Touch system, or equal.
- G. Field paint all fire alarm boxes red on exterior. Paint and label conduits and raceways.

- H. Access: All fire alarm and electrical equipment shall be accessible as defined in NFPA 70. Access panels shall be provided as necessary for equipment which would otherwise be considered inaccessible. Access doors shall be fire rated where required.

3.02 INSTALLATION

- A. Install all equipment and materials in the locations indicated on the Contract Drawings, and in accordance with the referenced standards and the manufacturers' instructions. Installation shall include mounting of new devices, new conduit and wire pulled through either existing or new conduit, devices and appurtenances necessary for a complete functioning system. All conflicts shall be identified to the District for clarification and correction.
- B. Control and other panels shall be mounted with sufficient clearance for observation and testing. All fire alarm junction boxes shall be clearly marked for distinct identification. All box and fitting covers shall be painted RED.
- C. Automatic detector and occupant notification appliance installations shall conform to NFPA 72.
- D. Install all new conduit.
- E. Make conduit and wiring connections to initiating devices, indicating/notification appliances, and door release devices.
- F. Install all wiring in accordance with the California Electrical Code and NFPA 72. Pull conductors to necessary and appropriate devices.
- G. Solid conductors terminated at screwed connections of any type shall be formed about the screw shank in a clockwise direction. Stranded conductors shall be terminated with a pressure-applied lug connector, applied with a tool approved for the use by the lug connector manufacturer and the District.
- H. Provide all necessary connections and terminations. All field and FACU wiring shall be terminated in terminal cabinets or on field devices/appliances. All connections shall be made on terminals.
- I. Install all intelligent modules.
- J. Provide system programming. Use the District's room numbers or names provided by the District for annunciation. Correct the Drawings to reflect the addresses used.
- K. Repair damage caused by the Contract work

3.03 PROGRAMMING

- A. The Contractor shall retain the services of factory certified technician for all programming.

- B. The District's room numbers or names provided for annunciation shall be used as part of the tag and/or descriptor for each point in the Fire Alarm System program. The Contractor shall update the Construction Drawings to reflect the addresses used.
- C. In addition to the programming tasks required to implement the Fire Alarm System sequences of operation as depicted in the drawings, the factory certified technician shall perform all programming necessary to implement the following:
 - 1. The points in the Fire Alarm System program representing initiating devices shall be logically grouped in the software such that a District operator can, from the FACP built-in interface, temporarily disable points by their logical group in addition to being able to do so by individual point. They shall also be able to filter alarm and trouble status information by group. These alarm groups shall be assigned meaningful names in the software that are integrated into the FACP built-in display. Alarm groups shall be created for each of the individual building areas (e.g. Building 1, Building 2,, etc.) and for each portable.

3.04 Job Conditions

- A. Other trades will be in the Building during the installation. Coordinate movement and installation with the other trades.

3.05 TESTS AND REPORTS

- A. The Contractor shall perform all electrical and mechanical tests required by the Authority Having Jurisdiction and the equipment manufacturer's installation procedures. All testing shall be coordinated with the District.
- B. The Contractor shall measure and adjust each of the detectors to the maximum stable sensitivity setting. This must be performed at the operational location of the unit and under normal operational environmental conditions in the area. Bench settings are not acceptable.
- C. All test and report costs shall be included in the contract price. A checkout report shall be prepared by the technician and submitted in triplicate, one copy of which will be registered with the equipment manufacturer. This report shall include, but not be limited to:
 - 1. A complete list of equipment installed and wired.
 - 2. Indication that all equipment is properly installed and functions and conforms to these specifications.
 - 3. Tests of individual zone functions as applicable.
 - 4. Serial number, location by zone, location on SLC or NAC loop, physical location in the building, space for signoff by Engineer, and model number for each installed detector.
 - 5. Voltage (sensitivity) settings for each detector as measured in place with air conditioning system operating.
 - 6. Verification of all event triggered device operations and status feedback
 - 7. Technician's name and date.
 - 8. Include testing requirements for communication to the remote monitoring service.

3.06 SYSTEM ACCEPTANCE

- A. Procedure for the Acceptance Tests shall be submitted for the District's approval. All tests shall be performed in the presence of the District's Representative.
- B. The completed system shall be tested to ensure that it is operating properly. The testing shall consist of exposing the installed detection units to simulated smoke.
- C. Acceptance of the system shall also require a demonstration of the operation and stability performance of the system. This shall be adequately demonstrated if the system operates for a ninety (90) day period without any unwarranted alarms. Should an unwarranted alarm(s) occur, the Contractor shall readjust or replace the detector(s) and begin another ninety (90) day test period.
- D. Acceptance of the system shall also require the acceptance of the Authority Having Jurisdiction.
- E. As required by the District's Representative, the Contractor shall recheck the detectors using the installation standard test after each readjustment or replacement of detectors. This test shall not start until the Engineer has obtained beneficial use of the building under test.
- F. The Acceptance Test includes a demonstration of the following:
 - 1. Activation of every initiation device.
 - 2. Activation of every sprinkler control and monitoring device, with test of time delay features as outlined in the Contract Documents.
 - 3. Activation and check of every indicating appliance, audible/visual device.
 - 4. Activation of all fire alarm system controlled components.
 - 5. Activation of all fire alarm control features (i.e. by-pass software functions).
 - 6. Testing of all appropriate circuits for open-circuit supervision, short-circuit supervision, and ground-fault supervision.
 - 7. Magnhelic test of all duct smoke detectors to confirm operation with the listings and approvals.

3.07 OPERATION AND MAINTENANCE

- A. After completion of all the tests and adjustments listed in Section 3.06, above, the Contractor shall submit the following information to the District within two weeks after equipment operation.
 - 1. As-built conduit layout diagrams including wire color code and/or tag number. Conduit layout diagrams shall meet the following requirements:
 - a. All devices installed as part of the Fire Alarm System shall be depicted on the drawings at their installed locations. This includes initiating devices, notification appliances, power supplies, control panels, etc.
 - b. All devices depicted on these drawings shall be identified on the drawings by their system address. All conduits shall be identified on the drawings by their type (RGS, EMT, LFMC, etc.), trade size, and conduit number.
 - c. "Home run" depiction of conduit layout shall not be acceptable. All conduit runs and any junction boxes shall be depicted in their final

- locations for each conduit and junction box installed as part of the Fire Alarm System.
- d. Conduit runs spanning multiple drawings shall identify the drawings containing their continuation at each interruption.
2. Complete as-built wiring diagrams. As-built wiring diagrams shall meet the following requirements:
 - a. Generic manufacturer's wiring diagrams provided as "wired similar to" examples shall not be acceptable.
 - b. All unique as-built final wiring diagrams shall be provided for all devices installed as part of the Fire Alarm System. A single depiction that is accurate for multiple devices is acceptable so long as all devices thus wired are identified by system address and/or tag number on the drawing in tabular format.
 - c. Wiring diagrams shall identify wire terminations for each wire by the printed identification at the device or panel terminals. Wiring terminated at power distribution/lighting panels shall identify the panel tag and circuit breaker number for the connected circuit.
 - d. Wiring diagrams shall call out wire insulation color and wire tag/number for each depicted wire.
 3. Panel site layout and elevation drawings depicting the final, installed physical location of all Fire Alarm System control panels and power supplies.
 4. Detailed catalog data on all installed system components.
 5. Copy of the test report described in section 3.05.
 6. "Operating and Shop Manuals". Each manual shall contain, but not be limited to the following:
 - a. Statement of Warranty including date of termination.
 - b. Name address and phone number of the service representative to be called in the event of equipment failure.
 - c. Individual factory-issued Installation, Operational and Maintenance manuals containing all technical information for each piece of equipment. Advertising brochures shall not be used in lieu of the required technical manuals.
 - d. A complete list of preventative maintenance requirements including recommended frequency for each type of device furnished as part of the project
 - e. Overall system logic diagrams.
 - f. System start-up, operating and shutdown Procedures.
 - g. System troubleshooting guide.
 7. Electronic file copies of all the As Built drawings in AutoCAD format.

END OF DOCUMENT

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**HAZARDOUS MATERIALS SPECIFICATIONS
BID SUBMITTAL**

**Pittsburg Unified School District
Highlands Elementary School
HVAC Equipment Replacement
4141 Harbor Street
Pittsburg, California 94565**

Prepared For:

**Pittsburg Unified School District
3200 Loveridge Road
Pittsburg, CA 94565**

Prepared By:

**Sensible Environmental Solutions Inc.
1116 Willow Pass Court
Concord, CA 94520**

June 27, 2017

SES Project No. 16-098

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PITTSBURG UNIFIED SCHOOL DISTRICT HIGHLANDS ELEMENTARY SCHOOL HVAC EQUIPMENT REPLACEMENT

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Not used.	

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SECTION 00 31 26

EXISTING HAZARDOUS MATERIALS CONDITIONS

PART 1 – GENERAL

1.01 SUMMARY

- A. This section provides a list of known and assumed hazardous materials that may be impacted during renovation, demolition, repair, custodial and/or maintenance activities. The hazardous materials information has been provided through existing surveys conducted by the Pittsburg Unified School District (District) and the District's environmental consultants.
- B. Some materials and items found at the Site either contain or may contain materials known to the State of California to be either hazardous, carcinogenic or reproductive toxins. These include but are not limited to asbestos, lead, PCB's, silica, and other materials.
- C. The Contractor shall hold the District and its consultants harmless for claims, damages, losses, and expenses, including attorney's fees arising out of the Contractor's hazardous materials related work including releases from any incidental disturbance of existing hazardous materials, on-site or off-site spills of hazardous materials, or from non-compliance with the Contract Documents and regulatory requirements.

1.02 HAZARD COMMUNICATION

- A. The District may have conducted previous hazardous materials abatement projects at the site. The hazardous materials abatement oversight information is available for review by appointment only through the District's Project Manager at (925) 473-2428.
- B. Copies of previous hazardous materials report(s) and the AHERA Management Plan for the site are available for review by appointment only through the District's Project Manager at (925) 473-2428.
- C. Asbestos Hazards at Highlands Elementary School
 - 1. Asbestos has been identified at concentrations greater than one percent (>1%) in the following materials:
 - a. White vibration joint cloth (30% Chrysotile asbestos) at the mechanical equipment located at Storage 60 and 77 (Sample no. 098-M1-1).
 - b. Mudded pipe elbow insulation at the Boiler Room, Dishwasher Room, Southeast Hall, Stage North Entry Hallway, and inside wall cavities and ceiling plenums throughout (Sample nos. 04 (#'s 15,16,17), 05 (#'s 18,19,20)).

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- c. 9"x9" vinyl floor tile (all colors) and black mastic at Cafeteria / Multi-purpose, Stage, Costume Room, Admin. Office Supply Room, Classrooms 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 20, 21, and 22, all Corridors, Kitchen, Teachers Lounge, Custodians Office, Science/Dark Room, Teachers Work Room, Quest Room, Special Services, Media Center, Work Room/Rec. Room, Women's Restroom Storage (adjacent to Teachers Lounge) (Sample nos. 03 (#14), 06 (#30), and 07 (#31)) (*Note: 9"x9" vinyl floor tile is assumed to be located beneath 12"x12" vinyl floor tile throughout, except at Janitor Closets adjacent to Classroom 21 and 16. 9"x9" vinyl floor tile was removed and replaced with 12"x12" vinyl floor tile in Classrooms 18, 19 and 24. Dates of replacement unknown.*)
 - d. 9"x9" vinyl floor tile (all colors) and black mastic located below carpet at Library, Admin. Office, Principals Office, Health Services, Administrative Assistant Room 26, Classroom 3 [Sample nos. 03 (#14), 06 (#30), and 07 (#31)].
 - e. Spray-on acoustic plaster at ceilings and soffits at ALL Classrooms, Library 42, Stage 116 and Multi-use Room 130, [Sample nos. 01 (#'s 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 10)] (*Note: Spray-on acoustic plaster was enclosed with new non-asbestos containing gypsum board / taping compound and new 12"x12" acoustic tiles and glue in the Summer of 1999 in all Classrooms, the Stage, the Cafeteria / Multi-purpose Room and the Library. All seams were sealed with caulking for an air tight seal.*)
 - f. Spray-on acoustic plaster overspray at interior HVAC soffits at Classrooms 8, 9, 10, 11, 12, 15, 16, 17, 18, 19, 20, 21, 22, 23 and 24 and Multi-use Room 130.
 - g. Sheet flooring with asbestos containing backing at Restroom Men's Entry Hallway, Restroom Men's Library, Restroom Women's Entry Hallway, Restroom Women's Library, Room 4 Restroom Girls, Restrooms adjacent to Classrooms 1, 4, and 6, and Kitchen (including serving area) (Sample nos. HMS-PUSD-HES-B014407-15-A, B, C).
 - h. Gray / black tar / mastic / sealant at roof mounted exhaust fans (Sample no. 098-M12-1).
2. The following materials have not been sampled and shall be assumed to contain asbestos at concentrations > 1%:
- a. Carpet mastic at Library 42, Admin. Office, Principals Office, Health Services, Administrative Assistant Room 26, Classroom 3, Conference Room, Conference Room Office #2, Conference Room Office #3, Classrooms 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 23, 24, Supply Room 2 (Vault), Vice Principals Office (*Note: Asbestos containing 9"x9" floor tile and mastic is assumed to be present below all carpet throughout the campus.*)
 - b. Blue vinyl cove base and mastics at Classrooms 18 and 24.
 - c. FRP wall panel glue at the Multi-use Room 130 and kitchen areas.
 - d. Wall paper glue at the Multi-use Room 130.
 - e. Metal fire doors.
 - f. Ceramic wall and base tile, grout and mortar / glue at all Restrooms, Kitchen and Serving areas.

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- g. Ceramic floor tile, grout and mortar / glue at all restrooms.
 - h. Pipe insulation and wrapping at straight runs at Dishwasher Room, Southeast Hall, north entry hallway at Stage and throughout at ceiling plenums and wall cavities.
 - i. Fire brick and gaskets associated with the incinerator at Mechanical Room 110.
 - j. There was no access to Storage 107 and 139. All mechanical equipment (i.e. gaskets, vibration joint cloth, fire damper, insulation, etc.) shall assumed to contain asbestos at concentrations greater than one percent unless further inspections and testing are performed by the District's Environmental Consultant.
3. The following sampled suspect materials had results that reported NO asbestos detected by PLM analysis:
- a. White synthetic roofing, tar, gravel and felt underlayments, fiberboard and Styrofoam underlayments at flat roof areas and curbs (Sample nos. 098-M10-1, 098-M10-2).
 - b. Gray HVAC duct seam sealant, gray coatings and beige coatings on roof mounted HVAC duct work (Sample nos. 098-M11-1, 098-M11-2, 098-M16-1, 098-M16-2).
 - c. Silver paint coating on roofing including mechanical and electrical equipment (Sample no. 098-M12-1).
 - d. Black tar coating on roof mounted gas piping and supports (Sample nos. 098-M13-1 and 098-M13-2).
 - e. Felt roofing shingles with fine gravel and felt underlayments at pitched roof areas (Sample nos. 098-M14-1, 098-M14-2).
 - f. White sealants on blocking at roof areas (Sample no. 098-M15-1).
 - g. Paints, beige and brown finish coat stucco / plaster and grey base coat plasters at exterior walls, window panels and overhangs (Sample nos. 097-M13-1, 097-M13-2, 097-M13-3, 097-M13-4, 097-M13-5, 097-M13-6 and 097-M13-7).
 - h. Gray caulking (rubber) at interior and exterior window glazing (Sample nos. 097-M1-1, 097-M1-2, 097-M1-3).
 - i. Black caulking (rubber) at interior and exterior window glazing (Sample nos. 097-M7-1, 097-M7-2, 097-M7-3).
 - j. Paint and white, gray and black window glazing compounds at interior and exterior transom windows above doors (Sample nos. 097-M5-1, 097-M5-2, 097-M5-3).
 - k. Black window caulking at interior and exterior side light windows (Sample nos. 097-M8-1, 097-M8-2, 097-M8-3).
 - l. Paint, white skim coat plaster (smooth) and gray basecoat plaster at interior walls throughout and in-filled window panels throughout building interiors (Sample nos. 097-M2-1, 61-M1-1, 61-M1-2, 61-M1-3, 61-M2-1, 61-M2-2, 61-M2-3).
 - m. Paint, white skim coat plaster (smooth) and gray basecoat plaster at interior ceilings at Costume Room, All Restrooms, Kitchen, Dark Room, Media Center, Custodial Office, Admin Supply Room, Mechanical Rooms (Sample nos. 61-M1-1, 61-M1-2, 61-M1-3, 61-M2-1, 61-M2-2, 61-M2-3).

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- n. Paint, gypsum board and taping compounds on walls and ceilings throughout (Sample nos. HMS-PUSD-HES-B014407-10-A, B, C, 097-M9-1, 097-M9-2, 097-M9-3) (*Notes: At all Classrooms, the Library and the Multi-use room there is asbestos containing spray-on acoustic plaster at all ceiling and soffit areas that is located above the gypsum board, taping compound and glued on 12"x12" acoustic tiles. Additionally, the gypsum board and taping compound is concealed by tackable wall finishes, 12"x12" acoustic tiles, etc.*).
- o. Vinyl covered tackable wall systems and glue located at walls throughout and interior in-filled window panels (Sample nos. 097-M10-1, 097-M10-2, 097-M10-3).
- p. 2'x4' acoustic ceiling and wall tiles (all types) and paints (Sample nos. 02 (#s 11, 12, 13), 08 (#32), 097-M3-1, 097-M3-2, 097-M3-3).
- q. 12"x12" acoustic ceiling, wall and soffit tiles (all types) and glues / mastic (tan and brown) (Sample nos. HMS-PUSD-HES-B014407-7-A, B and C, 097-M6-1, 097-M6-2, 097-M6-3).
- r. Black / brown glue associated with Formica and laminate counter tops (Sample no. 097-M4-1).
- s. White caulking material (patching) at Corridor 92 (Sample no. 097-M11-1).
- t. White / gray grout and mortar associated with 2"x2" ceramic wall tile (green, gray) at corridors (Sample no. 097-M12-1)
- u. Black felt water proofing membrane at interior concrete walls and metal conduit and piping at Storage Rooms / Closets (sampled at Storage 87. Sample no. 098-M2-1).
- v. Residual yellow mastic and fiberglass insulation on metal HVAC ducting at Storage Rooms / Closets (Sampled at Storage 87. Sample no. 098-M3-1).
- w. Paint and vibration joint cloth (black) at mechanical equipment at Storage 29, 38, 97, 98, 99, 106 and 108 (Sample nos. 098-M4-1, 098-M4-2).
- x. Off-white seam tape and sealant / glue on metal HVAC ducting (round and square) at Storage 29 and 38 (Sample nos. 098-M5-1, 098-M5-2, 098-M5-3).
- y. Fiberglass insulation panels with silver backing on metal HVAC ducting at Storage 29 and 38 (Sample nos. 098-M6-1, 098-M6-2).
- z. Silver foil tape with sticky adhesive at HVAC ducting seams at Storage 38 (Sample nos. 098-M7-1, 098-M7-2).
- aa. Residual roof tar at mechanical exhaust vents at Storage Rooms / Closets (sampled at Storage 38 (Sample nos. 098-M8-1, 098-M8-2).
- bb. Grey sealant at square HVAC ducting at Storage 29 (Sample Nos. 098-M9-1, 098-M9-2).
- cc. 12"x12" vinyl floor tile) (speckled oatmeal color) and associated mastic at Cafeteria / Multi-purpose, Cafeteria Foray, Cafeteria West Entry Hallway, Conference Room Closet, Conference Room Hallway, Conference Room Storage, Conference Room Office 1, Costume Room, East Entry Hall, East Hall Reading Room, Eastside Central Hall, Hallway Cafeteria, Library Computer Room, Library Office, Main Entry Foray, Main Office, Northeast Hallway, Northwest Hall, Northwest Hall Teachers Work Room, Parent Coordinator Room, Restroom Women's Storage, Classroom 1, Room 1 Office, Classroom 2, Room 2 Office, Classroom 3, Room 3 Office, Classroom 4 Office, Classroom 5 Office, Classroom 6 Office, Classrooms 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, and 22, Southeast Hall, Southwest Hall,

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Speech / Psychologist Office, Stage Entry North Hallway, Stage Entry South Hallway, Stage North Entry Hallway, Teacher's Lounge, West Center Hall, West Entry Hall, West Hall Storage Room (Sample nos. HMS-PUSD-HES-B014407-2-01A, 01B, 01C (*Note: Except for Classrooms 18, 19 and 24 it is assumed that asbestos containing 9"x9" floor tile and mastic remains below the newly installed 12"x12" floor tile and below carpet where present*)).

dd. Brown, dark brown and black vinyl cove base and mastics located throughout interiors (Sample nos. HMS-PUSD-HES-B014407-1-01A, 01B, 01C, HMS-PUSD-HES-B014407-4-A, HMS-PUSD-HES-B014407-16-A).

4. Areas and/or Spaces known or presumed to be contaminated with asbestos containing materials, dust, and debris include:
 - a. Not used.
5. Areas and/or Spaces where asbestos abatement was conducted include:
 - a. Asbestos containing spray-on acoustic plaster at ceilings and soffits is still present and was enclosed with new non-asbestos containing gypsum board / taping compound and new 12"x12" acoustic tiles and glue in the Summer of 1999 in ALL Classrooms, the Stage, the Cafeteria / Multi-purpose Room and the Library.

D. Lead Hazards at Highlands Elementary School

1. Lead has been detected in individual painted surfaces and surface coatings in concentrations greater than 5,000 parts per million (ppm) lead or 1.0 milligram of lead per square centimeter (mg/cm²). Where ranges of lead levels are indicated, Contractor shall presume the highest level is typical. These lead containing surfaces include, but are not limited to the following:
 - a. Building Exteriors
 - 1) Metal framing associated with doors and louvered vents at Furnace / Storage 29, Storage 33, Furnace / Storage 38, Storage 60, 66, 71, 77, 86, 87, 88, 97, 98, 99, 106, 107 and 108, Mechanical Room 110 and 123, and Storage 139 (1.7 to >9.9 mg/cm²).
 - 2) Wood window and door framing, sills, trim, jambs, headers, etc. painted blue at all exterior aluminum windows (1.0 to 2.1 mg/cm²).
 - 3) Stucco / plaster at walls above and below aluminum windows and building overhangs (1.0 to 1.9 mg/cm²).
 - b. Building Interiors
 - 1) Metal framing associated with doors and louvered vents at Furnace / Storage 29, Storage 33, Furnace / Storage 38, Storage 60, 66, 71, 77, 86, 87, 88, 97, 98, 99, 106, 107 and 108, Mechanical Room 110 and 123, and Storage 139 (1.0 to >9.9 mg/cm²).

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- 2) Wood door framing, jambs and trim / casings at interior Classrooms and the Library (1.0 to 1.6 mg/cm²).
2. Lead has been identified in individual painted surfaces and surface coatings in concentration less than 5,000 ppm lead or 1.0 mg/cm². Where ranges of lead levels are indicated, Contractor shall presume the highest level is typical. These lead containing surfaces include, but are not limited to the following surfaces:
- a. Building Exteriors
 - 1) Metal and FRP doors (-0.2 to 0.4 mg/cm²).
 - 2) Hollow metal door frames, window frames, sidelights and associated framing at corridors (-0.6 to 0.5 mg/cm²).
 - 3) Metal window panels (-0.2 to -0.1 mg/cm²).
 - 4) Metal door frames excluding those at Furnace / Storage 29, Storage 33, Furnace / Storage 38, Storage 60, 66, 71, 77, 86, 87, 88, 97, 98, 99, 106, 107 and 108, Mechanical Room 110 and 123, and Storage 139 (-0.1 to 0.4 mg/cm²).
 - 5) Metal louvered vents at Furnace / Storage 29, Storage 33, Furnace / Storage 38, Storage 60, 66, 71, 77, 86, 87, 88, 97, 98, 99, 106, 107 and 108, Mechanical Room 110 and 123, and Storage 139 (-0.3 to 0.3 mg/cm²).
 - 6) Metal roof mounted and exterior wall mounted HVAC units and associated duct work and support brackets (-0.3 to -0.1 mg/cm²).
 - 7) Concrete walls (-0.1 to 0.0 mg/cm²).
 - b. Building Interiors
 - 1) Metal HVAC units and associated framing and duct work at Furnace / Storage Rooms and Mechanical Rooms (-0.4 to 0.1 mg/cm²).
 - 2) Metal louvered vents at Furnace / Storage Rooms and Mechanical Rooms (-0.1 to 0.0 mg/cm²).
 - 3) Metal HVAC ducting and associated supports at interior Classrooms (-0.3 to 0.2 mg/cm²).
 - 4) Metal HVAC control panels (-0.1 mg/cm²).
 - 5) Metal HVAC registers throughout interiors (-0.4 to 0.0 mg/cm²).
 - 6) Metal ceiling grid associated with 2'x4' acoustic ceiling tiles (-0.5 to 0.1 mg/cm²).
 - 7) 2'x4' acoustic ceiling tiles (-0.3 to 0.0 mg/cm²).
 - 8) 12"x12" acoustic wall and ceiling tiles (-0.3 to 0.1 mg/cm²).
 - 9) Metal ceiling access hatches (-0.1 mg/cm²).
 - 10) Hollow metal door frames, window frames, sidelights and associated framing at corridors (-0.4 to -0.1 mg/cm²).
 - 11) Metal and FRP doors (-0.4 to -0.1 mg/cm²).
 - 12) Metal door frames excluding those at Furnace / Storage 29, Storage 33, Furnace / Storage 38, Storage 60, 66, 71, 77, 86, 87, 88, 97, 98, 99, 106, 107 and 108, Mechanical Room 123, and Storage 139 (-0.4 to 0.0 mg/cm²).

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- 13) Metal screen door at Kitchen 121 (-0.1 mg/cm²).
 - 14) Wood doors (-0.2 to -0.2 mg/cm²).
 - 15) Wood door framing (0.0 to 0.5 mg/cm²).
 - 16) Wood window framing, casing, sills and trim (-0.5 to 0.5 mg/cm²).
 - 17) Wood trim / casing at the ceramic tile mural at Lobby 45 (0.0 mg/cm²).
 - 18) Vinyl coverings on walls, HVAC register panels and tackable wall finishes (-0.3 to 0.5 mg/cm²).
 - 19) Glazings on ceramic wall tile (green and gray) at Corridors and Lobby 45 (-0.6 to 0.3 mg/cm²).
 - 20) Formica / laminate counter tops and backsplash at casework (-0.3 mg/cm²).
 - 21) Plaster and concrete at window panels, walls and ceilings (-0.5 to 0.3 mg/cm²).
3. The Contractor shall assume that all paints and surface coatings contain detectable quantities of lead requiring compliance with CAL/OSHA lead regulation in the absence of objective data to the contrary. Additionally, the Contractor shall assume that, at a minimum, lead is “present” in all of these materials at levels that have a potential, until proven otherwise, to create a lead hazard.
 4. The District has not verified that any paints, coatings, dusts, or materials are “lead free” or below 600 ppm. The Contractor shall treat all paints, coatings, dusts or materials as having a lead content greater than 600 ppm requiring dust controls and personal protective procedures for construction activities in conformance with the Cal/OSHA Lead Construction Standard, 8 CCR 1532.1 lead. Any paint, varnish, or other coating or finish not listed above shall be considered to be lead-based paint with lead levels at or exceeding 5000 ppm lead or 1.0 mg/cm² for this contract.
 5. All firms, including sub-contracted firms who impact lead-based paint (LBP) (5,000 ppm lead or 1.0 mg/cm² or greater) at Child Occupied Facilities shall conduct all work in accordance with 40 CFR Part 745. This includes but is not limited to being an EPA certified firm; having an EPA “Certified Renovator”; providing “on-the-job” training for workers; conducting pre-renovation notifications; following specific work practice procedures for containment, disturbance and final clean-up; and inspection requirements. Renovation is defined in 40 CFR Part 745 as the modification to any existing structure or portion that results in the disturbance of LBP surfaces, unless the activity is performed as part of an abatement. In essence this regulation includes all work activities that disturb LBP surfaces.
 6. The EPA certified Contractor or Sub-contractor(s) “Certified Renovator” shall be responsible for identifying the specific job activities which impact lead-based paint (LBP) during renovation that requires the use of “containment” as described in 40 CFR Part 745. Work also includes but is not limited to provide “on-the-job” training for workers; conduct pre-renovation notifications; follow specific work practice procedures for containment, disturbance and final clean-up; and inspection requirements as defined by regulation.

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7. In addition to lead-containing paints and coatings, the Contractor shall assume that lead is present at detectable levels over 600 ppm in existing plumbing components and solders, glazing compounds, roof jacks, and surficial soils.
- E. Metallic Mercury and mercury compounds are present at this site in fluorescent lighting tubes. All demolition and disposal of these items shall be conducted in accordance with applicable safety and environmental regulation and the requirements of the Contract Documents.
- F. Polychlorinated biphenyl (PCB)-containing fluorescent lighting ballasts. This site contains fluorescent lighting fixtures manufactured or installed prior to 1979. All fixtures known or presumed to have been installed prior to 1979 shall be considered to contain PCB ballasts unless otherwise noted in the contract documents. Removal, handling and disposal of PCB ballasts is subject to applicable regulation and requirements of the Contract Documents.
- G. Crystalline Silica is presumed present in all concrete, plaster, ceramic tile, grouts, and other cementitious materials at this site as well as soils. Worker protection and control of air dust during cutting, drilling, demolition and other construction operations is the responsibility of the Contractor.
- H. The Contractor shall take into consideration all existing known and presumed hazardous materials that may be disturbed or otherwise impacted by the Work of this project. All work of this project that disturbs or otherwise impacts hazardous material shall be considered included in the Work of the project and shall be conducted in accordance with all applicable regulations and the Contract Documents. The Contractor shall use appropriately trained and qualified personnel to conduct all hazardous material related work and shall adhere to the requirements for handling, removal, clean-up, and disposal in accordance with the Contract Documents and all applicable Cal/OSHA, Cal/EPA, Department of Health Services (DHS), and Bay Area Air Quality Management District (BAAQMD) regulations.

1.03 RELATED DOCUMENTS

- A. Contract Documents including hazardous material-related plans and specifications and all other project construction documents. Refer to Section 01 11 00 Summary of Hazardous Materials Work, Article 1.04 Related Documents for a more detailed listing.

1.04 USE OF HAZARDOUS MATERIALS INFORMATION

- A. Hazardous material information identified herein was obtained for the use of the District and its Consultants for planning and design stages of the Project. The above mentioned survey data and reports are not, as a whole, part of the Contract Documents, but can be relied upon by the Contractor to characterize general site conditions, although quantities, friability and other factors may have changed or altered since the published report dates.

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- B. All statements, findings and interpretations in the above mentioned reports are those of the Survey or Environmental Consultant. The District makes no representation, either expressed or implied, as to the completeness or adequacy of the above mentioned reports. Bidders are advised that the limited testing of components allows for generalizations in describing the extent of hazardous materials. Contractors may visit the site and investigate to identify locations of hazardous materials identified herein. Specific components or materials, should be checked against the referenced survey reports and the Contract Documents, or be tested at affected locations, prior to disturbance of such components.

PART 2 – PRODUCTS: NOT USED

PART 3 – EXECUTION: NOT USED

END OF SECTION

APPENDIX “A”

SECTION 01 11 00

SUMMARY OF HAZARDOUS MATERIALS WORK

PART 1 – GENERAL

1.01 GENERAL

- A. The work required to be performed by the Contractor comprises

HAZARDOUS MATERIALS IMPACTED CONSTRUCTION AND ABATEMENT
PITTSBURG UNIFIED SCHOOL DISTRICT
HIGHLANDS ELEMENTARY SCHOOL
HVAC EQUIPMENT REPLACEMENT
4141 HARBOR STREET
PITTSBURG, CA 94565
SITE EPA I.D. #: TO BE PROVIDED PRIOR TO START OF CONSTRUCTION

in conformity with plans and specifications herein after identified; including furnishing all materials, labor, tools, equipment, and services necessary there for and incidental there to, complete and ready for use, except as herein after otherwise provided.

- B. The hazardous materials abatement portion of the project includes removal, clean-up, decontamination, and proper disposal of the following materials: asbestos containing materials (ACMs); assumed asbestos containing materials; and asbestos containing construction materials (ACCMs) and recycling of refrigerant gasses from mechanical equipment scheduled for removal and replacement. Abatement will take place in areas of work indicated on the project drawings and where can reasonably inferred to be required to support the HVAC equipment replacement project.
- C. The Contractor and its associated Subcontractors shall take into consideration all identified and presumed hazardous materials present that will be impacted by the work of this Project. At minimum, the Contractor’s bid shall take into consideration the information provided in Section 00 31 26, hazardous materials specifications, all contract documents, and the information resulting from Contractor’s own onsite investigation and review of site conditions.
- D. Hazardous materials abatement documents are not to be considered stand-alone documents. In addition to the identified hazardous removal work described in the scope of work, abatement shall include all incidental removal of hazardous materials required to complete the Work. Coordinate all hazardous materials related work with all other work of the Contract as indicated or inferred in the Contract Documents.
- E. The Contractor shall carefully schedule and coordinate all phases of hazardous materials related work to ensure that unprotected personnel are not exposed to hazardous substances. This includes the coordination of all pre-demolition, demolition, alteration, repair, renovation, and new construction work.

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- F. Hazardous material abatement specifications have been prepared on the basis of existing documents and site inspections. Location of materials scheduled for abatement are general in nature. Contractor is responsible for locating, accessing and removing all hazardous materials (i.e. ACMs; assumed ACMs; ACCMs) in areas of work to support the modernization project.
- G. The Contractor shall coordinate the removal of all furniture, fixtures, casework, fixed and movable objects, non-hazardous partition walls, finishes, mechanical ducting, etc., prior to hazardous material abatement. Refer to the Contract Documents for details and items scheduled for salvage and reuse. Any work that could impact known or assumed hazardous materials shall be conducted within a negative pressure enclosure in accordance with the requirements herein.
- H. All hazardous materials related work shall be performed after normal school hours and / or on weekends during the academic school year. Hazardous materials related work may not be performed in buildings or on the site during normal school hours without the written approval from the District.
- I. All submittals as required by the project specifications must be approved prior to the start of any hazardous materials related work. The Contractor shall review Specification Sections 02 82 00 and Article 1.06 of this section for specific submittal requirements.
- J. To the extent possible, the Contractor shall construct containment areas to the full extent of each area of work on each floor. Additional clearance samples resulting from separation of containment areas into multiple containments will be back charged to the Contractor.
- K. Contractor's electrician shall de-energize and lockout electrical power to the work areas to the greatest extent possible. Contractor's electrician shall install temporary power from an outside source. Temporary power shall be protected with ground fault interrupter circuit breakers. The contractor shall supply adequate power to each of the work areas solely dedicated for use by the District's Environmental Consultant.
- L. Provide, operate and maintain digital manometers of appropriate range at the entrance to each interior work area during asbestos and lead related activities. No asbestos work shall be conducted unless the system is installed, operating and recording and printing correctly.
- M. All differential air pressure units and vacuums must be DOP tested on-site prior to use by an independent third party. If previously tested equipment is removed from the site at any time the equipment must be re-tested on-site prior to its re-use.
- N. All polyethylene sheeting and construction materials shall be fire retardant.

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- O. Final clearance for asbestos work areas will be conducted by the District's Environmental Consultant in accordance with the Asbestos Hazard Emergency Response Act (AHERA) requirements. Refer to specification sections 01 11 00 and 02 82 00.
- P. Contractor shall be responsible for securing all entrances and exits to hazardous materials work areas to prevent unauthorized access. Contractor shall affix appropriate warning signs at the entries and approaches to the regulated area(s) as required by regulation and the contract documents.

1.02 HAZARDOUS COMMUNICATION

- A. Hazardous materials present in the building(s) and structures at this site include: ACMs; assumed ACMs; ACCMs; lead-based paint (LBP); lead-containing coatings and materials; polychlorinated biphenyl (PCB) light ballasts; and mercury containing fluorescent lighting tubes. These materials will significantly impact demolition and renovation activities. The Contractor shall review Specification Section 00 31 26 – "Existing Hazardous Materials Conditions" for known and / or assumed hazardous materials that are to be impacted by the project.
- B. Asbestos containing spray-on acoustic plaster at ceilings and soffits is still present and was enclosed with new non-asbestos containing gypsum board / taping compound and new 12"x12" acoustic tiles and glue in the Summer of 1999 in ALL Classrooms, Stage 116, Multi-use Room 130 and Library 42. Disturbance and / or impaction to the asbestos containing acoustical plaster is restricted to asbestos trained personnel only.
- C. The HVAC soffits at Classrooms 8, 9, 10, 11, 12, 15, 16, 17, 18, 19, 20, 21, 22, 23 and 24 and Multi-use Room 130 are contaminated with asbestos containing spray-on acoustic plaster overspray and debris. Access to the HVAC soffits is restricted to asbestos trained personnel only.

1.03 SCOPE OF WORK

- A. The Contractor(s) work includes the removal of hazardous materials to the extent specified and/or necessary prior to non-hazardous demolition, renovation, alteration, repair, or other construction operations. The Contractor is responsible for locating, accessing and removing all hazardous materials in areas of project work including materials and assemblies scheduled for removal and any necessary removal coincidental to the completion of the work of the project. All removal shall be to the extent necessary to properly complete the work of the project. This project requires close coordination with all other trades and work on this project. The Contractor's hazardous materials scope of work includes but is not limited to the following:
 - 1. Remove and recycle all coolant gasses from HVAC equipment at roof, exterior and interior areas scheduled for demolition prior to removal of equipment and associated piping.

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2. Remove, clean-up and dispose of all existing roof mounted exhaust fans with asbestos containing (AC) gray / black mastics / sealants scheduled for demolition. Roof mounted exhaust fans with AC gray / black mastics / sealants scheduled for demolition are located at roof areas above the following locations:
 - a. Building 1A at Restrooms 28A, 28B, 32A, 32B, 37A and 37B and Library Restrooms 44;
 - b. Building 1B at Restroom 47, Waiting Area 52 and Restroom 56;
 - c. Building 2 at Restrooms 60, 65, 70 and 75;
 - d. Building 3 at Girls Restroom 79 and Boys Restroom 83;
 - e. Building 4A at Girls Restroom 90 and Boys Restroom 94;
 - f. Building 4B at Boys Restroom 100 and Girls Restroom 103;
 - g. Building 5 at Women's Restroom 117, Storage 120, Women's Restroom 132 and Men's Restroom 134.

3. Remove, clean-up and dispose of all AC expansion joint cloth at mechanical equipment located at Building 2 at Storage 060 and Storage 077.

4. Remove, clean-up and dispose of 12"x12" non-asbestos containing (NAC) acoustic ceiling tile, NAC ceiling tile mastic, NAC gypsum board, NAC joint compound, AC spray-on acoustic ceiling plaster and NAC gypsum board lath at ceilings to the extent required to install mounting brackets, cover plates, etc. associated with new exposed spiral ductwork installation. Work includes the application of a bridging encapsulant at newly cut edge(s) of AC spray-on acoustic ceiling plaster and NAC gypsum board lath underlayment exposed as a result to install the mounting brackets, cover plates, etc. associated with new exposed spiral ductwork installation. Removal shall be completed within a negative pressure enclosure (NPE) with contiguous worker and / or equipment decontamination enclosure system(s). Refer to Drawings M2.2 and M4.1 for mounting and duct support details. Locations for removal are located at the following locations:
 - a. Building 2 at Classrooms 4, 5, 6 and 7.

5. Remove, clean-up and dispose of existing finishes at Classroom mechanical soffits and portions of adjacent ceilings. Mechanical soffits and adjacent ceiling finishes consist of 12"x12" NAC acoustic tile, NAC acoustic tile mastic, NAC gypsum board, NAC joint compound, AC spray-on acoustic plaster and NAC gypsum board lath. Work includes the removal of all existing duct work, supports, registers, fiberglass insulation, etc. in the existing soffits which are covered with AC spray-on acoustic plaster overspray and debris. Work also includes the removal and decontamination of any AC spray-on acoustic plaster overspray that remains on interior framing, trim, plywood ceiling deck, ceiling and wall finishes, etc. where the existing soffits were removed. Work also includes the application of a bridging encapsulant at newly cut edges of AC spray-on acoustic ceiling plaster and NAC gypsum board lath underlayment. All AC and NAC removed materials from the soffits shall be treated as hazardous asbestos waste. Removal shall be completed within a negative pressure enclosure (NPE) with contiguous worker and equipment

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decontamination enclosure system(s). Locations of soffit removal are located at the following locations:

- a. Building 3 at Classrooms 8, 9, 10, 11 and 12;
 - b. Building 4A at Classrooms 15, 16, 17, 18 and 19; and
 - c. Building 4B at Classrooms 20, 21, 22, 23 and 24.
6. Drill, core, anchor, attach and / or affix to 12"x12" NAC acoustic ceiling tile, NAC ceiling tile mastic, NAC gypsum board, NAC joint compound, AC spray-on acoustic ceiling plaster and NAC gypsum board lath at ceilings to the extent required to install surface mounted brackets, cover plates, conduits, devices, etc. associated with installation of a new fire detection and fire alarm system and a CO monitoring system. Work includes the application of a bridging encapsulant at newly cut edges of AC spray-on acoustic ceiling plaster and NAC gypsum board lath underlayment exposed as a result to install surface mounted brackets, cover plates, conduits, devices, etc. All incidental hazardous materials related work (i.e. drilling, coring, anchoring, attaching, affixing) to the above ceiling finish system shall be performed by using tools and equipment equipped with a shroud and attached to a functioning DOP tested HEPA vacuum during all related operations. Where the use of shrouded tools is not possible, the Contractor shall provide an alternative removal method for review and approval. This method may require all hazardous materials related work to be completed within a negative pressure enclosure (NPE). Refer to the Fire Alarm and CO Drawings for installation locations and details. The ceiling systems as described above are located at ALL Classrooms, Stage116, Multi-use Room 130 and Library 42.
7. Remove, clean-up and dispose of 12"x12" NAC acoustic ceiling tile, NAC ceiling tile mastic, NAC gypsum board, NAC joint compound, AC spray-on acoustic ceiling plaster and NAC gypsum board lath at ceilings to the extent required to install listed access doors (minimum 18-inches by 18-inches) associated with installation of a new fire detection and fire alarm system and a CO monitoring system. Work includes the application of a bridging encapsulant at newly cut edges of AC spray-on acoustic ceiling plaster and NAC gypsum board lath underlayment exposed as a result to install listed access doors (minimum 18-inches by 18-inches). Removal shall be completed within a NPE with contiguous worker and equipment decontamination enclosure system(s). Refer to the Fire Alarm and CO Drawings for installation locations and details. The ceiling systems as described above are located at ALL Classrooms, Stage116, Multi-use Room 130 and Library 42.
8. Remove the existing fire detection and alarm system (i.e. conduit, brackets, strobes, devices, mounting brackets, cover plates, etc.) which is attached to 12"x12" NAC acoustic ceiling tile, NAC ceiling tile mastic, NAC gypsum board, NAC joint compound, AC spray-on acoustic ceiling plaster and NAC gypsum board lath. Work includes the application of a leak-tight caulking material where penetration holes remain. The Contractor shall use tools and equipment equipped with a shroud and attached to a functioning DOP tested HEPA vacuum during all related

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operations. Where the use of shrouded tools is not possible, the Contractor shall provide an alternative removal method for review and approval. Refer to the Fire Alarm Drawings for removal locations and details. The ceiling systems as described above are located at ALL Classrooms, Stage 116, Multi-use Room 130 and Library 42.

- B. The Contractor shall refer to the Hazardous Materials Abatement Specifications, Architectural Drawings, Mechanical Drawings, Structural Drawings, Electrical Drawings, Plumbing Drawings, Fire Alarm Drawings, other project drawings and the Contract Documents for approximate locations and extent of hazardous materials related work, project phasing, bid alternates, and other requirements for completion of the Work.
- C. All hazardous materials related work shall be conducted in accordance with applicable federal, state, local regulations and the Contract Documents. The most stringent requirements shall take precedence.
 - 1. All asbestos-related work shall be conducted in accordance with Section 02 82 00 – Asbestos Abatement.
- D. The Contractor shall ensure that any hazardous materials contamination resulting from any construction activities on this site is cleaned up prior to each room or work area is turned back over to the District. The same hazardous materials clearance methods and standards shall be used to determine adequacy and completeness of the Contractor's final clean-up operation prior to returning each room or work area to the District.
- E. The Contractor shall ensure that their Asbestos Supervisor on this project speaks fluent English and is present on the project during all asbestos-related activities.
- F. Hazardous materials related work entails adhering to special requirements for the protection of workers, occupants, the public and the environment, and requires consideration of, and close coordination with, work specified elsewhere for this site.

1.04 RELATED DOCUMENTS

- A. Hazardous Materials Related Documents
 - 1. Section 00 31 26 – Existing Hazardous Materials Conditions.
 - 2. Section 02 82 00 – Asbestos Abatement
- B. Contract Documents for Highlands Elementary School HVAC Equipment Replacement.

1.05 DEFINITIONS

- A. Definitions Applicable to All Hazardous Materials Specification Sections:

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1. **Abatement:** Special methods and procedures to control or prevent hazardous releases during removal, repair, encapsulation, and enclosure of hazardous materials. This definition is not meant to imply an intent to reduce or eliminate an existing hazard unless so stated in the project work scope.
2. **Air Filtration Equipment:** A portable air re-circulation system equipped with HEPA filtration and used to cleanse air of particulate matter within an abatement Work Area or containment. Air filtration equipment is essentially the same as differential pressure equipment except it re-circulates air instead of exhausting it.
3. **Airlock:** A system for permitting ingress and egress with minimum air movement between a contaminated area and an uncontaminated area. Typically consisting of chamber with two curtained doorways at least 3 feet apart. Note: See Curtained Doorway.
4. **Air Monitoring:** The process of measuring the airborne levels of one or more air contaminants, such as asbestos, lead, by collecting a specific volume of air in a stated period of time. “Personal” air monitoring is used to determine compliance with exposure limits; “general area” and “perimeter” air samples are used to evaluate the effectiveness of hazard controls; “background” air monitoring is used to monitor initial conditions prior to disturbance or abatement; and “clearance” air is used for comparison with air quality standards established for assessing status and acceptability of work completion.
5. **Amended Water:** Water to which a surfactant (chemical wetting agent has been added to improve penetration and wetting.
6. **Authorized Visitor:** The District’s Project team member, the District’s Representative, and any Representative of a regulatory or other agency having jurisdiction over the project.
7. **CDPH:** California Department of Public Health.
8. **Competent Person:** One who is capable of identifying existing asbestos, lead or other hazards in the workplace and selecting the appropriate control strategy for worker exposure, who has the authority to take prompt corrective measures to eliminate them. All work performed in regulated work areas must be supervised by a “Competent Person” specially trained in accordance to regulation.
9. **Containment or Containment System:** The system of physical barriers and protective coverings (e.g. plastic sheeting) used to enclose or “contain” the hazardous materials within a Regulated Area (or Work Area) and thereby prevent personnel exposure and environmental contamination outside the Regulated Area. Includes simple mini-containments to full HEPA exhausted negative pressure enclosure (NPE) with contiguous worker and/or equipment Decontamination Enclosure System(s). Also see related Mini-containment below and Negative Pressure Enclosure definitions.

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10. Critical Barrier: A unit of temporary construction of air tight and impermeable barrier, which provides the only separation between an asbestos or other hazardous materials Work Area and an adjacent, potentially occupied area.
11. Curtained Doorway – A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms. Typically constructed by placing two overlapping sheet of plastic sheeting oven a existing or temporary doorway, securing each along the top of the doorway, and securing the outer vertical edge of each of the sheets along the adjacent vertical sides of the doorway.
12. Decontamination Enclosure System: A series of connected rooms, with airtight doorways between any two adjacent rooms, for the decontamination of workers and of materials and equipment. A decontamination enclosure system always contains at least one airlock.
13. Differential Pressure Equipment: A portable local exhaust system equipped with HEPA filtration and capable of maintaining a constant, low velocity air flow into contaminated areas from adjacent uncontaminated areas. Also referred to as “HEPA units” or “HOGS”.
14. District: The Pittsburg Unified School District (PUSD) and its designated representatives (District’s Representatives) for this project. For the hazardous materials-related work of this project, the District’s Representatives include the District’s Project Manager, Construction Manager, Inspector of Record (Construction Inspector) and other persons designated or appointed to represent the District in all matters concerning the construction of the Project.
15. Disturbance: Contact or activities, which disrupt the matrix of a hazardous material, crumble or pulverize a hazardous material, or otherwise cause airborne dust and/or visible debris containing hazardous constituents to be released. Typically applied to asbestos or lead related work.
16. Environmental Consultant – firm and its representatives retained to provide environmental consulting services for the District including surveys, project design, bid support, construction technical support and construction compliance observation and monitoring services. Also known as the District’s Environmental Consultant.
17. Equipment Decontamination Enclosure: That portion of a decontamination enclosure system designed for controlled transfer of materials and equipment, typically consisting of a wet sponge area, a washroom and a holding area.
18. Exposure Assessment: Sampling of the concentrations asbestos, lead or other airborne contaminate within the breathing zone of worker during representative work operations and shifts to determine airborne exposure levels as required by regulation.

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19. Fixed Object – A unit of equipment, furniture or other features in the Work area that cannot be removed from the Work Area. Fixed Objects typically require protection from contamination during abatement or related work that disturbs asbestos, lead or other hazardous materials.
20. HEPA Filter: High Efficiency particulate air filter means a filter that is at least 99.97% efficient in removing monodisperse particles of 0.3 micrometers in diameter. Required filtration system for vacuums, local exhaust systems for asbestos, lead and other specified hazardous material work. For respirator cartridges, the equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters where HEPA filtration is required (e.g. asbestos, lead, cadmium, etc.)
21. HEPA Vacuum Equipment: Vacuuming equipment with a HEPA (UL 586 labeled) filter system.
22. Mini-containment or Mini-enclosure – A small temporary enclosure constructed of impervious material (e.g. plastic sheeting) with at least one air lock to permit ingress and egress. The entire Work Area is enclosed or contained within this system to prevent the release of contamination outside the work area.
23. Negative Exposure Assessment (NEA): Air sampling of representative operations to demonstrate employee exposures are below the permissible exposure limits for similar operations undertaken using similar method and procedure, production rates, by similarly trained and skilled employees. Often conducted for limited maintenance and operations type work involving asbestos and/or lead. To be accepted as valid, the NEA must have been conducted within last 12 months.
24. Negative Pressure Enclosure (NPE): An enclosed or contained area of any configuration constructed of polyethylene sheeting with a minimum of four (4) air changes per hour and a negative pressure of -0.02 inches of water as compared to surrounding area outside the enclosure. NPE must be maintained until final air clearance sampling or final dust wipe sampling and air must be exhausted to the exterior of the building.
25. Regulated Area – A controlled access work area where asbestos, lead, or other hazardous materials are being removed or otherwise disturbed. Access is limited to specially trained and protected personnel. The perimeter of the regulated area is established to preclude airborne hazards to personnel or environmental contamination outside the Regulated Area. Minimum controls involve signage and barrier tape but controls can range all of the way up to full negative pressure containment with HEPA filtration.
26. View Port: A clear material, typically Plexiglas, which allows observation of all possible areas inside the work area.
27. Waste Generator Label: Waste Generator Label shall include the Generator's Name, ID Number, Address and Waste Manifest Number.

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28. **Wet Cleaning:** The process of eliminating asbestos, lead or other contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with water, and by afterwards disposing of these cleaning tools as contaminated waste. Often used in conjunction with detergents and/or other agents for lead, mold or other contamination.
29. **Work Area:** Designated rooms, spaces, or areas of the project in which abatement, removal or other disturbance activities involving asbestos, lead or other hazardous materials are undertaken or which may become contaminated as a result of such abatement actions. A contained Work Area is one which has been sealed and equipped with a decontamination enclosure system. A non-contained Work Area is a controlled-access Work Area which has not been sealed nor equipped with a decontamination enclosure system. Also known as a “Regulated Area”.
30. **Worker Decontamination Enclosure System:** That portion of a decontamination enclosure system designed for controlled passage of Workers, and other personnel and authorized visitors, typically consisting of a clean room, shower room, and an equipment room.
- B. Definitions specific to a particular hazardous material are found in the specific hazardous material abatement specification section and are to be used to supplement the definitions of this section.

1.06 SUBMITTALS

- A. **General.** Submit Pre-Job hazardous materials abatement submittals in accordance with Section 01 33 00 of the Contract Documents and at least 14 days prior to any planned work. Allow a minimum of 14 days for review by the Environmental Consultant. Additional review time will be required for re-submittals of rejected or incomplete submittals. Upon written approval of the Pre-Job submittal package, the hazardous materials abatement contractor may mobilize to site but shall submit the required remaining Pre-Start submittal items prior to starting any hazardous materials abatement work. Daily Submittals are due within 24 hours of completion of each day of site work. Inspection, Weekly, and Close-out Submittals are to be submitted within the time frames indicated below. At least one copy of each completed submittal shall be maintained on-site and shall be available for review. Refer to the Submittal Check Sheet which is provided as Appendix A to this section.
- B. **Pre-job Submittals.** Submit a minimum of three (3) copies and one (1) electronic copy (pdf format) of each of the following hazardous materials submittals. Submittals shall be organized by type of work (asbestos abatement, lead impacted construction and abatement, etc.) and otherwise in the order specified herein. Partial submittals and/or submittals not organized in the required order will be considered deficient and not acceptable for review. No hazardous materials related work will begin until the submittal package has been fully approved in writing. Refer to the Submittal Check Sheet which is provided as Appendix A to this section.

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1. Licensing and Registration: Submit copies of current and valid certificates for the following:
 - a. Contractor’s license and Contractor’s asbestos certificate issued by the California State Licensing Board (CSLB);
 - b. Registration for asbestos-related work from OSHA in accordance with 8 CCR, Article 2.5 (asbestos abatement contractors only).
 - c. Contractor’s certification to conduct lead-based paint renovation, repair and paint activities pursuant to 40 CFR 745.90 (i.e. EPA RRP).
2. Notifications, Communications and Postings. Provide copies of all required notifications including the following:
 - a. Division of Occupational Safety and Health (Cal/OSHA)
Local Office
(Temporary work site notification-asbestos)
 - b. Bay Area Air Quality Management District (BAAQMD)
939 Ellis Street
San Francisco, CA 94109
(415) 771-6000
(10 day notification for asbestos abatement/demolition)
 - c. Where local police and fire departments have jurisdiction, provide required notifications.
3. Respiratory Protection Plan: Submit a site specific written respiratory protection plan along with a written standard operating procedure governing selection, fit testing, use, and storage of respirators in accordance with applicable regulation. Include NIOSH Certification and manufacturer’s information that indicates respirators to be used in this project have been properly selected for the anticipated hazards and hazard levels.
4. Detailed Work Plan: Submit a detailed work plan proposed for use in complying with the requirements of each specification section (02 82 00 and 02 83 00) applicable to the work to be performed for each hazardous material (asbestos abatement, lead impacted construction and abatement, etc.) at each abatement/removal location and phase. Each work plan shall include:
 - a. A drawing or sketch showing details of each Regulated Area / Containment Area including location of the containment boundaries, Decontamination Enclosure System(s), portable fire extinguishers, view port locations, Differential Pressure Equipment (HEPA Units) locations, HEPA Unit exhaust locations, and emergency exit routes;

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- b. Description of construction (i.e. set-up) of each Regulated Area / Containment construction including materials to be used;
 - c. Description of proposed removal methods, equipment, and materials for each type of hazardous material to be removed and condition;
 - d. Method of containment and clean-up of hazardous materials if there is an unexpected breakage or breach.
5. The Contractor shall submit a detailed schedule for completing hazardous materials related work within the allowable time frame. The schedule shall identify each containment / regulated area, the scope of work to be performed within each containment / regulated area, hours of work, and the anticipated schedule of completion for each containment / regulated work area. If weekend work is anticipated, the schedule shall take this into consideration.
6. Method of secure storage of hazardous materials and hazardous wastes at the site.
7. Waste Transportation and Disposal:
- a. Name, address, EPA I.D. number and telephone number of each transporter of hazardous material waste and removed hazardous materials to be recycled.
 - b. Method of disposal for each type of waste generated (i.e. hazardous asbestos, non-hazardous (e.g. non-friable) asbestos, lead, PCBs, universal wastes, etc.) indicating land disposal (treated or non-treated), incineration, recycling, etc.
 - c. Name, class, address, EPA I.D. number and telephone number of each treatment, storage, and disposal (TSD) waste site(s) to be utilized for disposal and facility or site to be used for recycling hazardous wastes. Clearly indicate what wastes are anticipated to be disposed or recycled at each TSD site or facility.
8. Rental Equipment Notifications: When rental equipment is to be used in removal areas or to transport waste materials, provide a copy of written notification given to the Rental Company informing them of the nature of use of the rented equipment. Otherwise, certify that no rental equipment is to be used.
9. Product Data: Manufacturers product data for all items required for complete and proper execution of the work, this includes product data for items listed in Part 2 Products of Section 02 82 00 as applicable. Product data shall include manufacturing product data, specifications, application instructions; material safety data sheets (MSDS) and other information as necessary or required. All data sheets must be legible. Do not submit data for products not intended for use on this project.

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- C. Pre-start Submittals. Submit a minimum of one (1) copy of the following hazardous materials submittals to the Environmental Consultant at the site prior to the start of hazardous materials work. Additionally the Contractor shall maintain one (1) copy at the site at all times during hazardous materials related work. Submittals shall be organized by type of work (asbestos abatement, lead impacted construction and abatement, etc.) and otherwise in the order specified herein. The Contractor's Supervisor shall be held responsible for the accuracy and authenticity of the submittals provided. Discovery of altered or misleading personnel documents provided by the Contractor will result in the removal of such person(s) from the project immediately. Repeated offenses will result in the removal of the Contractor's Supervisor. Refer to the Submittal Check Sheet which is provided as Appendix B to this section.
1. Personnel Qualifications: Personnel documents required by this section shall be organized by individual employees and must be current and valid. All workers who will be performing work at the site will be required to show photo documentation prior to approval of their personnel documents. Workers who do not have all the required documentation present at the site, including photo documentation, will be denied access to the type of hazardous material Work Areas for which they are lacking full valid documentation.
 - a. Training Certificates for Asbestos: Submit proper documentation that Competent Person(s) and Workers scheduled for this project have successfully completed Cal/OSHA approved courses for asbestos abatement;
 - b. Medical Examination: Submit proper documentation, in the form of the physician's written opinion, showing that all hazardous materials abatement personnel scheduled for this project have had the appropriate medical examinations applicable to their assignments. Exams must be in accordance with 8 CCR 1529 for asbestos, 8 CCR 1532.1 for lead, and 8 CCR 5144 for respiratory protection. All exams must have been conducted within the last 12 months. Respiratory use evaluation exams alone do not suffice for asbestos and lead related work. Do not submit actual medical exam results. The written physician's opinion should indicate what exam(s) were provided and whether there are limitations on the worker.
 - c. Respirator Fit Tests: Submit proper documentation that personnel who will be entering Regulated Areas have had a qualitative respirator fit test performed within the last 12 months for all face fitting respirators.
 - d. Provide a signed copy of Certificate of Worker's Acknowledgment (Appendix C) for each worker conducting hazardous materials related removal work.
 - e. All other hazardous materials hazard communication training and related documentation for general construction work shall be kept on site for review upon request.

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2. Calibration Data: Submit calibration data for the secondary standard (rotometer) that will be used on this project to calibrate personal air sampling pumps. The secondary standard must be calibrated to a primary standard within the last (6) six months.
3. HEPA Filtration Certifications:
 - a. Provide third party test certificates for all Differential Pressure Equipment and HEPA Vacuums to be used on this project. Such Certificates shall document that each item of equipment has been tested on-site prior to start-up and that the results have demonstrated that each HEPA equipment assembly meets the efficiency requirement for HEPA filtration as an installed system or unit of equipment.
 - b. All HEPA filtration testing must be conducted by challenging the installed filter system with 0.3 micrometer diameter particles using a dioctyl phthalate (DOP) particle generator & appropriate aerosol measurement test equipment designed for this purpose. Alternate test methods may be accepted if demonstrated to be equivalent and approved by the Environmental Consultant.
 - c. Test certificate stickers shall be placed on each machine tested and a copy of the testing certification shall be provided to the Environmental Consultant. The test result, date and time of testing, testing firm, and signature of qualified test technician shall be included on each certification along with equipment identification information.
- D. Daily Submittals. As applicable, within 24 hours following the completion of each work shift, the Contractor shall submit the following information to the Environmental Consultant, as required by the applicable section.
 1. Submit an employee roster for each work shift (Appendix D).
 2. Work Area entry/exit logs (Appendix E).
 3. Copies of Manometer recordings (Appendix F).
 4. Personal Air Monitoring Results: Provide copies of all personal air sampling results, 8-hour time weighted average (TWA) and short term exposure limit (STEL) results as applicable. Results shall be submitted on a daily basis or as approved by the Environmental Consultant.
 5. Waste Manifests: Each time Hazardous Waste (i.e. asbestos, lead, PCBs, etc.) and Non-Hazardous Asbestos Waste is removed from the site; the Contractor shall submit complete and signed manifests to the Environmental Consultant. For hazardous waste manifests, submit the generator copy including a completed Land Disposal Restriction Form for each manifest to the Environmental Consultant.

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6. Special Reports: The Contractor shall submit a special report of unusual events of significance which occurs at the site. The report shall include the date and time of the event, activities leading up to the event, a detailed account of the event, persons involved, corrective actions taken and action taken to prevent a reoccurrence.
- E. Inspection Submittals. The Contractor shall submit to the District and the Environmental Consultant a completed Inspection Form (Appendix G) at minimum 48 hours prior to inspection requests. Failure to properly notify the District and the Environmental Consultant in writing 48 hours in advance of a required hazardous materials inspection shall NOT result in an increase in number of days and/or shifts to the Contractor's allotted schedule.
- F. Weekly Submittals. The Contractor shall submit an updated detailed schedule for completing hazardous materials work within the allowable time frame on a weekly basis. The schedule shall identify hours of work and locations of work and the anticipated schedule of completion for each regulated work area. The Short Interval Schedule (SIS) or an equivalent weekly “look ahead” schedule can be used for this purpose.
- G. Close-Out Submittals. Within 10 days following the completion of the Contractor's work, the Contractor shall submit the following information to the Environmental Consultant.
 1. The Contractor shall provide lists and quantities of ACCMs, ACMs, assumed ACMs and/or PACMs remaining in the work areas where they performed asbestos-related work and an abatement “as-built” drawing in AutoCAD format showing actual extent of removal.
 2. The Contractor shall provide recycling receipts for all coolant gasses removed from HVAC equipment.
 3. All outstanding submittal information including; personal air sampling results, manifests, daily logs, sign-in/sign-out logs, manometer logs for all work areas, and all appendices required by this contract.

1.07 WORK SCHEDULE

- A. Onsite hazardous materials related work shall not commence until all required submittals have been reviewed and approved. Delays due to deficient submittals will not result in contract time extensions.
- B. Within the overall construction schedule, the total allotted time allowed for completion of all hazardous materials abatement work required by the Contract Documents is as follows:
 1. Thirty (30) eight-hour shifts (Monday through Friday) for all hazardous materials related work.

APPENDIX “A”

- C. The Contractor shall refer to the Contract Documents for construction phasing associated with the above allotted time to complete all interior and exterior hazardous materials related work.
- D. The total number of work shifts allotted for the Contractor's completion of hazardous materials related work for each phase of hazardous materials work includes the time required for the Environmental Consultant to conduct final clearance inspections and testing.
- E. The Contractor will be responsible for additional costs incurred by the District for the Environmental Consultant for additional monitoring, consulting and analytical costs associated with working hours beyond the stipulated number of hours per shift and any additional shifts worked beyond the allotted number of shifts scheduled for the hazardous materials related work at the hourly rates, shift rates, and analytical rates established in Article 1.12 of this section.
- F. Failed inspections and failed clearance tests shall be considered the result of defective work by the Contractor and, therefore, the Contractor shall be responsible for any additional travel, labor, and analytical costs associated with additional inspections and clearance testing by the Environmental Consultant.
- G. The Contractor shall submit a detailed schedule for completing hazardous materials related removal and abatement work within the allowable time frame. The schedule shall identify hours of work and locations of work and the anticipated schedule of completion for each regulated work area. This schedule shall be provided prior to the start of any hazardous materials related removal or abatement work.
- H. The Contractor shall provide to the District and the Environmental Consultant a minimum of one week (7 days) advance notice prior to start of each phase of work. In addition, the Contractor shall provide the District and Environmental Consultant a minimum 48 hours written notice for all pre-start and final visual hazardous materials inspection requests within each phase of work. Failure to properly notify the District and the Environmental Consultant in writing 48 hours in advance of a required hazardous materials inspection may result in inspection delays but shall NOT result in an increase in number of days and/or shifts to the Contractor's allotted schedule. Cost associated with failure to provide timely notices shall be borne solely by the Contractor.
- I. The Contractor shall be bound to conducting its work activities during the dates and times specified in the approved construction schedule. Schedules and times that deviate from the schedule must be submitted and approved 72 hours in advance by the District and Environmental Consultant.
- J. The Contractor shall provide to the District and the Environmental Consultant a minimum of 24 hours notice of their intent to cancel a previously scheduled workday. Failure to properly notify the District and the Environmental Consultant in writing will result in the loss of a full day or full shift to the Contractor's allotted schedule and the Contractor will be responsible for the Environmental Consultant shift cost established in Article 1.12 of this section.

APPENDIX "A"

1.08 SEQUENCE OF CONSTRUCTION OPERATIONS

- A. The recommended sequence of construction operations for this project is as follows: (Note: sequences may vary to best accomplish the work in a logical flow and/or to accommodate the District's needs. The Contractor may propose alternate sequences for approval by the District and Environmental Consultant.)
1. Isolate Construction Areas from Occupied Areas as required by the Contract Documents.
 2. Set-up of regulated areas (including NPE's) for hazardous materials related work.
 3. Hazardous Materials Work.
 4. Remaining Construction Work

1.09 PRE-CONSTRUCTION MEETING FOR HAZARDOUS MATERIALS RELATED WORK

- A. An initial progress meeting recognized, as "Pre-Construction Meeting" will be convened by the District prior to the start of any hazardous materials related work. Meet at the project site at a date and time to be determined.
- B. This is an organizational meeting to communicate and review project communication lines, responsibilities, schedules, submittal issues, project details, temporary facilities, security issues and other project related issues.
- C. The following individuals shall attend this meeting: the District; the Environmental Consultant; the Contractor's Principal or Superintendent; the Contractor's Competent Person scheduled for the project, and; any pertinent subcontractors.

1.10 ENVIRONMENTAL CONSULTANT

- A. The Environmental Consultant is authorized to have free access to all hazardous materials Work Areas at any time. The Contractor shall supply the Environmental Consultant with disposable coveralls, respirators, replacement respirator cartridges, knee pads, flashlights, two way radios and any other required equipment.
- B. The Environmental Consultant is authorized to conduct intermittent or continuous compliance observation and monitoring including, but not limited to:
1. Start up, progress, and clearance inspections for adequacy of containment, procedural compliance with contract documents, and completeness of work;
 2. Air sampling for asbestos, lead or other contaminate to determine containment integrity;
 3. Dust wipe, surface, bulk, or soil sampling for lead, PCB, or other hazardous materials to determine initial conditions and to evaluate Contractor containment controls;

APPENDIX “A”

4. Clearance air and surface sampling to evaluate compliance with completion standards; and
 5. Collection and review of documentation to be provided by the Contractor including Pre-Start, Daily, Inspection, Weekly, and other required submittals.
- C. The Contractor shall ensure that full cooperation is provided to the Environmental Consultant in carrying out the Environmental Consultant's responsibilities as the District's Representative including the immediate correction of any problems identified. The Contractor shall fully comply with the specifications and any applicable regulations.

1.11 ENVIRONMENTAL TESTING

- A. The Environmental Consultant will be collecting air samples during asbestos related work activities and at completion of asbestos abatement operations in the impacted Work Areas. In some instances, samples will be collected prior to start or removal to benchmark an area. The collection of other types of samples will be at the discretion of the District and Environmental Consultant and on an “as needed” basis.
- B. Air sample results in excess of 0.01 fibers per cubic centimeter (f/cc), as determined by phase contrast microscopy (PCM) analysis for samples collected outside the asbestos abatement Regulated Area or Containment during asbestos related work will be considered the result of defective work and will require cleaning of the affected areas by the Contractor using approved cleaning and decontaminating techniques at no additional cost to the District. Likewise for clearance air samples, results in excess of AHERA PCM or transmission electron microscopy (TEM) clearance standards will be considered the result of defective work and will require re-cleaning of the affected areas by the Contractor using approved cleaning and decontaminating techniques at no additional cost to the District.
- C. Contractor shall carefully coordinate all work activities to avoid impacting air sampling during asbestos related activities. All costs, including consultant labor fees and analytical fees, for additional testing required due to air sample results outside the Work Area containment exceeding 0.01 fibers per cubic centimeter as analyzed by PCM shall be the responsibility of the Contractor. Likewise, all consultant and analytical costs for failed clearance air samples by either PCM or TEM shall be the responsibility of the Contractor. All results of PCM sampling during asbestos related work will be consider to represent actual measured asbestos fiber levels unless proven otherwise at no additional cost to the District.

1.12 CONSULTANT FEES AND TESTING COSTS

- A. In accordance with the General Conditions of the Contract Documents or as specified elsewhere in the Contract Documents by the District, the Contractor shall be responsible for additional costs incurred by the District for monitoring and consulting work by the Environmental Consultant when the additional work and/or costs are caused by the Contractor or the Contractor's work activities as described herein.

APPENDIX “A”

- B. When the Contractor’s work activities, actions or inactions are determined by the District to have resulted in any of the following circumstances or conditions, the Contractor shall be responsible for taking action to correct any of these deficient condition(s) identified and shall be responsible for all associated costs including the cost of the Environmental Consultant and all associated analytical costs:
1. Breach of containment, hazardous materials spills (i.e. lead, asbestos, mold, PCBs, etc.) outside the Work Area based on visual evidence containment failure or contamination release;
 2. Containment failure or other releases as evidenced by air sample results over 0.01 f/cc by PCM outside the asbestos Work Area;
 3. Other hazardous materials related emergencies arising out of the Contractor’s work;
 4. Re-work of defective and/or incomplete abatement work as evidenced by failed visual inspections or failed clearance test results;
 5. Incomplete abatement work (i.e. additional removal of hazardous materials due to lack of proper planning, proper layout for removal, etc.) as evidenced by the set-up of additional regulated areas (containments) requiring additional removal, inspections and testing at work areas/zones where the hazardous materials related work was previously completed by the Contractor;
 6. Failure to complete scheduled hazardous materials work within the total allotted number of work shifts specified in this section for the base bid, phase, or alternate as applicable. Partial shifts shall be counted as whole shifts for the purpose of determining the total number of hazardous material related work shifts worked for this Contract.
 7. Failure to provide the District’s Project Manager and the Environmental Consultant a minimum of 24 hours notice of their intent to cancel a previously scheduled workday. This will result in the Contractor being responsible for the entire work shift cost of the Environmental Consultant as though the shift had been worked.
- C. The following rates shall be used to determine the additional Environmental Consulting costs and shall be considered agreed upon for determining the monetary damage to be back charged to the Contractor for any of the conditions described in Paragraph B above:
1. Daily Hourly Rates (Regular Business Hours – Monday thru Friday) – Hourly rates for each technician for additional on-site monitoring and/or consulting shall be: \$120 per hour for each additional hour of work over 8 hours but less than 12 hours in a day; \$160 per hour for each hour worked over 12 hours but less than 24 hours per day;

APPENDIX “A”

2. Off Shift Hourly Rates (Weekends and Night Work) – Hourly rates for each technician for on-site monitoring and/or consulting shall be: \$120 per hour for each hour of work less than 12 hours in a day; \$160 per hour for each hour worked over 12 hours but less than 24 hours per day;
3. Daily Shift Rates (Regular Business Hours – Monday thru Friday) – Shift rates shall be charged at the rate of \$525 per 4-hour shift; \$875 per 8-hour shift; \$1,125 per 10-hour shift; and \$1,390 per 12-hour shift for compliance observation and monitoring. Each shift includes up to six (6) PCM air samples or six (6) lead air samples;
4. Off Shift Rates (Weekends and Night Work) – Shift rates shall be charged at the rate of \$695 per 4-hour shift; \$1,200 per 8-hour shift; \$1,450.00 per 10-hour shift; and \$1,720 per 12-hour shift for compliance observation and monitoring. Each shift includes up to six (6) PCM air samples or six (6) lead air samples; and
5. Analytical Costs – Analytical costs will be charged at actual costs plus 15 percent for additional samples required for additional shifts, spills, other emergencies and re-work.

1.13 SPECIAL PROVISIONS

- A. Prior to disturbing any hazardous materials, the Work Area must be effectively isolated from interior and exterior areas occupied or in use by the District. Isolation shall be by rigid physical construction barriers and HVAC isolation by shut down and/or capping in addition to any required critical barriers or other specific containment and control requirements. Alternative methods may be proposed by the Contractor but must be approved by the District and Environment Consultant in advance.
- B. All plastic sheeting and construction materials for construction of barriers, containments, decontamination units, critical barriers and related controls shall be flame retardant or fire rated.
- C. All electrical power to the Work Areas shall be de-energized and locked out to the extent possible with any remaining energized lines clearly demarcated and protected. The Contractor is responsible for establishing temporary power protected by ground fault circuit interrupters (GFCIs). In addition, the Contractor shall provide an adequate number of GFCI protected electrical power outlets and extension cords for dedicated use of the Environmental Consultant. At minimum, provide six power cords inside each containment and two outside each containment unless otherwise noted or agreed upon.
- D. All negative pressure enclosures (NPEs) shall be equipped with accurate, functioning and printable magnahelic gages which continuously record negative pressure conditions. Recording charts shall be replaced daily. Copies shall be provided to the Environmental Consultant mounted on a completed Appendix F form within 24 hours as a Daily submittal.

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- E. The Contractor shall take all necessary precautions and modify work procedures to prevent hazardous materials spills or releases of any kind. The Contractor shall immediately extend the boundaries of the Regulated Work Area to incorporate the affected area if a spill or release occurs. The Contractor shall immediately contact the District and the Environmental Consultant.
- F. If at any time during the course of this project additional suspect hazardous materials are identified or different conditions are encountered by the Contractor, the Contractor shall immediately notify the District and Environmental Consultant in writing and request an investigation.
- G. Minimum respiratory protection for this project during all asbestos related activities shall be full face, powered air purifying respirators unless otherwise noted.
- H. The Contractor shall hold the District and its consultants harmless for claims, damages, losses, and expenses, including attorney's fees arising out of the Contractor's asbestos, lead, or other hazardous materials related work including releases from any incidental disturbance of existing hazardous materials, on-site or off site spills of hazardous materials, or from non-compliance with the Contract Documents and regulatory requirements

1.14 SECURITY

- A. The Contractor shall take all necessary security measures to prevent unauthorized personnel access to the Building(s), hazardous materials Work Area(s), and waste bin(s) storing hazardous waste for the duration of the project.
- B. The Contractor shall make all necessary arrangements for deactivation and re-activation of security alarms for work during off hours, weekends, and holiday in advance of scheduled work.

1.15 AUTHORITY TO STOP WORK

- A. The District and/or the Environmental Consultant has the authority to stop work if it is determined that conditions or procedures are not in compliance with the specifications and/or applicable regulations; or the Contractor is deficient on submitting daily required paperwork; or the Contractor is impacting Facility and/or adjacent operations; or a potential release of lead, asbestos, or other hazardous material contamination outside the Work Area could occur; or if any other unsafe condition deemed to represent an immediate hazard to adjacent building occupants exists.
- B. The work stoppage shall remain in effect until conditions have been corrected and corrective measures have been taken to the satisfaction of the District and the Environmental Consultant. All standby time and testing costs required to correct the above mentioned problems shall be borne solely at the Contractor's expense.

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PART 2 - PRODUCTS: NOT USED

PART 3 - EXECUTION: NOT USED

END OF SECTION

PRE-JOB SUBMITTAL CHECKLIST

Instructions:

Use of this check sheet is required but should be understood to be a brief listing of the major submittal items required. It is not intended to be a substitute for the detailed submittal requirements of the contract. The Contractor's submittal must comply with the requirements of Section 01 11 00 Article 1.06 and be in technical compliance with applicable technical specification sections and regulations.

I. DISTRICT INFORMATION

District Name: Pittsburg Unified School District
Address: 3200 Loveridge Road, Pittsburg, CA 94565
Point Of Contact: Keith Holtlander **Email Address:** kholtlander@pittsburg.k12.ca.us
Phone No.: (925) 473-2428 **Fax No.:** _____

Project Title: HVAC Equipment Replacement at Highlands Elementary School

II. ENVIRONMENTAL CONSULTANT (EC) INFORMATION

Consultant Name: Sensible Environmental Solutions Inc.
Address: 1116 Willow Pass Court, Concord, CA 94520
Point Of Contact: Mitch Edwards **Email Address:** mitch@sensibleinc.net
Phone No.: (925) 689-9737 **Fax No.:** (925) 689-1420

III. CONTRACTOR INFORMATION

General Contractor Name: _____
Address: _____
Point Of Contact: _____ **Email Address:** _____
Phone No.: _____ **Fax No.:** _____

Haz. Mat. Contractor Name: _____
Address: _____
Point Of Contact: _____ **Email Address:** _____
Phone No.: _____ **Fax No.:** _____

IV. SUBMITTAL INFORMATION

District Submittal No.: _____ **SES Project No.:** 16-098
Date Received by EC: _____ **No. Copies Received:** _____
Date Reviewed by EC: _____ **Review Performed by:** _____
No. Copies of Submittal Distributed: _____ **Date Distributed:** _____

V. PRE-JOB SUBMITTALS –Refer to Section 01 11 00 Article 1.06 for detailed requirements:

Pre-job Submittals must be approved prior to the initiation of any hazardous materials related work including set-up operations. At minimum, ensure the following is submitted and complete.

Item Submitted	Required		Accepted			Review Comment
	Yes	No	Yes	No	N/A	
1. Licensing & Registration	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Notifications						
a. Cal/OSHA	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b. AQMD/APCD/EPA	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. Resp. Protection Plan	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. Detailed Work Plan						
a. Drawing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b. NPE Calculations	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
c. Desc. of Reg. Area	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d. Desc. of removal methods, equipment & materials.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
e. Method of clean-up if unexpected spill or breakage.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5. Detailed Schedule	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. Secure Waste Storage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7. Waste Disposal Info.						
a. Transporter Info.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b. Disposal Method/Type	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c. Treatment, Storage & Disposal Waste Site.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8. Rental Equip. Notifications	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9. Product Data.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Submittal Review No.: _____ **Review Date:** _____

This Submittal has been reviewed for conformance with the Contract Documents. **SES** has the following comments:

- Approved, No Exceptions**
- Approved as Noted Above**
- Rejected Completely. Revise & Resubmit**

Reviewed By: _____ **Signature:** _____

PRE-START SUBMITTAL CHECKLIST

Instructions:

Use of this check sheet is required but should be understood to be a brief listing of the major pre-start submittal items required. Pre-start Submittals must be approved at the site prior to the initiation of any hazardous materials related work. They may be submitted earlier but must be limited to documentation and certification for assigned workers and equipment. Do not submit extraneous information, but update later as needed for changes. The Contractor's submittal must comply with the requirements of Section 01 11 00 Article 1.06 and be in technical compliance with applicable technical specification sections and regulations.

I. DISTRICT INFORMATION

District Name: Pittsburg Unified School District
Address: 3200 Loveridge Road, Pittsburg, CA 94565
Point Of Contact: Keith Holtzlander **Email Address:** kholtzlander@pittsburg.k12.ca.us
Phone No.: (925) 473-2428 **Fax No.:** _____

Project Title: HVAC Equipment Replacement at Highlands Elementary School

II. PRE-START SUBMITTALS - Reference 01 11 00 (1.06):

Item Submitted	Required		Accepted			Review Comment
	Yes	No	Yes	No	N/A	
1. Personnel Qualifications						
a. Asbestos Sup. & Workers Certs.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b. Medical Exams	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c. Resp. Fit Tests	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d. Worker Ack. (App. C)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
e. Haz. Comm. Training	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Calibration Data (<6 Mos.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. HEPA Certifications	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

NOTE: After start up of hazardous material work, progress submittals including Daily, Inspection, and Weekly Submittals are required. Upon completion of all hazardous materials work, Close Out Submittals are required. Refer to Section 01 11 00 Article 1.06 for detailed information and requirements.

CERTIFICATE OF WORKER'S ACKNOWLEDGMENT

PROJECT NAME: HVAC Equipment Replacement **SES NO.:** 16-098

PROJECT ADDRESS: Highlands Elementary School, 4141 Harbor Street, Pittsburg, CA 94565

CONTRACTOR'S NAME: _____

WORKING WITH HAZARDOUS MATERIALS CAN BE DANGEROUS.

Your employer's contract with the Owner for the above project requires that: You will be supplied with the proper respirator and be trained in its use. You will be trained in safe work practices and in the use of the equipment found on the job. You will receive a medical examination. These things are to have been done at no cost to you.

RESPIRATORY PROTECTION: I have been trained in the proper use of respirators, and informed of the type respirator to be used on the above referenced project. I have a copy of the written respiratory protection manual issued by my employer. I have been equipped at no cost with the respirator to be used on the above project.

TRAINING COURSE: I have completed a training course of not less than 4 days for the types of hazards I will be working with. I have been trained in the dangers inherent in handling hazardous materials and in proper work procedures and personal and area protective measures. The topics covered in the course included the following:

- Physical characteristics of hazards
- Associated Health hazards
- Respiratory protection
- Use of personal protective equipment
- Pressure Differential Systems
- Work practices including hands-on or on-the-job training
- Personal decontamination procedures
- Air monitoring, personal, and area

MEDICAL EXAMINATION: I have had a medical examination within the past 12 months in accordance with applicable regulations (asbestos, lead, mold, etc.), which was paid for by my employer. This examination included: health history, pulmonary function tests, and may have included an evaluation of a chest x-ray.

By signing this document, you are acknowledging only that the Owner of the building you are about to work in has advised you of your rights to training and protection relative to your employer, the Contractor.

Printed Name: _____

Signature: _____ **Date:** _____

Witness: _____

EMPLOYEE DAILY ROSTER**DATE:** _____ **SES PROJECT NUMBER:** 16-098**PROJECT TITLE:** HVAC Equipment Replacement at Highlands ES**CONTRACTOR:** _____**COMPETENT PERSON:** _____**IMPORTANT NOTE: ALL PERSONS ENTERING AND EXITING THE WORK AREA MUST SIGN IN AND OUT EVERY TIME.**

No.	PERSONS NAME (PRINT)	START TIME	STOP TIME
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
21.			
22.			
23.			
24.			
25.			
26.			
27.			

DAILY MANOMETER REPORT

Project Title: HVAC Equipment Replacement at Highlands ES _____

Work Area Location: _____ **SES No.:** 16-098

Contractor: _____

Competent Person: _____

Start Date: _____ **Stop Date:** _____

Start Time: _____ **Stop Time:** _____

(CONTRACTOR IS TO ATTACH A COPY OF THE
NEGATIVE PRESSURE RECORDING HERE AND COMPLETE
THIS FORM FOR EACH WORK AREA ON A DAILY BASIS).

I hereby declare the above data is true and correct.

Competent Person's Signature: _____ **Date:** _____

ASBESTOS AND LEAD INSPECTION FORM

LOCATION OF ZONE / WORK AREA: _____

BUILDING NAME: _____

DISTRICT NAME: Pittsburg Unified School District **SES REF. NUMBER:** 16-098

PROJECT TITLE: HVAC Equipment Replacement at Highlands ES

DESCRIPTION OF ASBESTOS WORK:

Room No.	Material Description	Quantity Removed	Abatement Method	Quantity Remaining

Legend: AC- Asbestos-containing SF – Square Feet LF – Linear Feet

DESCRIPTION OF LEAD WORK:

Room No.	Material Description	Quantity Removed	Abatement Method	Quantity Remaining

Legend: LC – Lead-containing LBP – Lead-based Paint SF – Square Feet LF – Linear Feet

CONTRACTOR’S PRE-START VISUAL INSPECTION

CONTRACTOR hereby certifies that he has visually inspected the Work Area and has found it to be prepared in accordance with the Contract Documents and associated Regulations and is ready to start abatement operations.

NAME: _____ **INSPECTION DATE:** _____

SIGNATURE: _____ **CERTIFICATION #:** _____

CONTRACTOR’S FINAL VISUAL INSPECTION

CONTRACTOR hereby certifies that he has visually inspected the Work Area and has found no dust, debris or residue. This inspection included all surfaces including pipes, beams, ledges, walls, ceiling, floor, Decontamination Unit, sheet plastic, etc.

NAME: _____ **INSPECTION DATE:** _____

SIGNATURE: _____ **CERTIFICATION #:** _____

CONSULTANT PRE-START VISUAL INSPECTION

CONSULTANT hereby certifies that he has conducted a pre-abatement visual inspection of the referenced Work Area, and verifies that the Contractor has prepared the Work Area in accordance with the Contract Documents and is ready to start abatement operations.

NAME: _____ **INSPECTION DATE:** _____

SIGNATURE: _____ **CERTIFICATION #:** _____

ASBESTOS AND LEAD INSPECTION FORM

LOCATION OF ZONE / WORK AREA: _____

BUILDING NAME: _____

CONSULTANT FINAL VISUAL INSPECTION

CONSULTANT hereby certifies that he has performed the final visual inspection of the referenced Work Area, and verifies that this inspection has been thorough and to the best of his knowledge and belief, the Contractor's Certification above is a true and honest one.

NAME: _____ INSPECTION DATE: _____

SIGNATURE: _____ CERTIFICATION #: _____

ASBESTOS CLEARANCE AIR SAMPLING

CONSULTANT hereby certifies that the results of air samples collected and analyzed in this work area meet the clearance criteria indicated below:

- Not Applicable – No Asbestos Related Work Completed Within The Area Of Work / Zone.
- Not Applicable – Cleared by Visual Inspection Only – Exterior Work Area.
- Not Applicable – Cleared by Visual Inspection Only for the following Reasons: _____
- _____ Aggressive PCM Samples at or below 0.01 Fibers/cc
- _____ Non-aggressive PCM Samples at or below 0.01 Fibers/cc
- _____ Aggressive TEM Samples at or below 70 Structures/mm²
- _____ Non-aggressive TEM Samples at or below 70 Structures/mm²

SES Clearance Air Sample Numbers: _____

NAME: _____ INSPECTION DATE: _____

SIGNATURE: _____ CERTIFICATION #: _____

CLEARANCE DUST WIPE SAMPLING FOR LEAD

CONSULTANT hereby certifies that the results of dust wipe samples collected and analyzed in this work area meet the clearance criteria indicated below:

- Not Applicable – No Lead Related Work Completed Within The Area Of Work / Zone

APPENDIX "A"

SECTION 02 82 00

ASBESTOS ABATEMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Class I Asbestos Removal Operations
- B. Class II Asbestos Removal Operations
- C. Class III Asbestos Removal Operations

1.02 RELATED DOCUMENTS

- A. Contract Documents including hazardous material-related plans and specifications and all other project construction documents. Refer to Section 01 11 00 Summary of Hazardous Materials Work, Article 1.04 Related Documents for a more detailed listing.

1.03 REFERENCES

- A. General - Codes, regulations and references applicable to asbestos abatement work include by are not limited to the most current edition of the following:

- 1. Code of Federal Regulations:

29 CFR 1910.20	General Safety and Health Provisions Access to Employee Exposure and Medical Records.
29 CFR 1910 Subpart I	Personal Protective Equipment.
29 CFR 1910.145	Specifications for Accident Prevention Signs and Tags.
29 CFR 1926.1101	Asbestos.
29 CFR 1926.103	Respiratory Protection
34 CFR 231 Append. C	Procedures for Containing and Removing Building Materials Containing Asbestos.
40 CFR Part 61 Subpart A and M	USEPA, National Emission Standards for Hazardous Air Pollutants (NESHAPS).
40 CFR Part 763	Asbestos-Containing Materials in Schools; Final Rule and Notice.
42 CFR Part 84	HEPA Filters

- 2. California Code of Regulations:

Title 8, Article 2.5	Registration for Asbestos Work Sections 341.6 through 341.14.
Title 8, Section 1529	Asbestos.
Title 8, Section 5144	Respiratory Protection

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Title 22, Division 4 Minimum Standards for Management of Chapter 30
Hazardous and Extremely Hazardous Waste.

3. Bay Area Air Quality Management District (BAAQMD): Regulation 11, Rule 2
Asbestos Demolition, Renovation and Manufacturing.
4. California Environmental Protection Agency, Air Resource Board, Final Regulation
Order, Section 93105, *Asbestos Airborne Toxic Control Measures for Construction,
Grading, Quarrying, and Surface Mining Operations.*
5. Local Fire Department Regulations
6. American National Standards Institute (ANSI) publications:
 - Z9.2 Fundamentals Governing the Design and Operation of Local
Exhaust Systems.
 - Z87.1 Occupational and Educational Eye and Face Protection.
 - Z88.2 Practices for Respiratory Protection.
 - Z89.1 Requirements for Protective Headgear for Industrial Workers.
 - Z41 Personal Protection - Protective Footwear.
 - Z88.6 Respiratory Protection - Respiratory Use Physical Qualifications
for Personnel.
7. American Society for Testing and Materials (ASTM) publications:
 - D1331-56 Surface and Interfacial Tensions of Solutions of Surface Active
Agents.
 - E849-82 Safety and Health Requirements Relating to Occupational
Exposure to Asbestos.
 - E1368 Practice for Visual Inspection for Asbestos Abatement Projects.
 - Proposal P189 Specifications for Encapsulants for Friable Asbestos Containing
Building Materials.
8. ANSI/Compressed Gas Association, Inc.:
 - G-7.1 Commodity Specification for Air
9. National Fire Protection Association (NFPA):
 - No. 70. National Electrical Code.
10. UL 586-77 (r1982) Test Performance of High Efficiency Particulate Air Filter Units
(June 10, 1977, 5th Ed.; Rev. March 12, 1982).
11. National Institute for Occupational Safety and Health (NIOSH)
N31, 3rd. Ed.; Vol. 1 Manual of Analytical Methods, Method 7400

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1.04 DEFINITIONS

- A. In addition to the definitions in Section 01 11 00 Summary of Hazardous Materials Work, the following definitions are specific to work of this section:
1. Asbestos: includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite asbestos, and any of these minerals that have been chemically treated or altered.
 2. Asbestos Containing Construction Material (ACCM): Any manufactured construction material, which contains more than one tenth of one percent asbestos by weight.
 3. Asbestos Containing Material: Any material containing more than one percent asbestos.
 4. Asbestos Containing Waste Material: Any waste generated by the disturbance or removal of ACM including, but not limited to: ACCM, ACM, asbestos waste generated from control devices, particulate asbestos material, asbestos slurries, unfiltered waste water, used asbestos contaminated polyethylene sheeting, use disposable protective clothing and equipment, and any used mop heads, rags or other miscellaneous clean-up equipment waste.
 5. Asbestos-related Work: Any activity, which by disturbing ACCMs, ACMs or PACMs may release asbestos fibers into the air.
 6. Class I Asbestos Removal Operations: Class I Asbestos work means activities involving the removal of thermal system insulation (TSI) and surfacing ACM and PACM.
 7. Class II Asbestos Removal Operations: Class II Asbestos Work means activities involving the removal of ACM, which is not TSI, or surfacing material. This includes but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.
 8. Class III Asbestos Removal Operations: Class III Asbestos Work means activities involving the repair and maintenance operations, where ACM, including TSI and surfacing ACM and PACM, is likely to be disturbed. Class III Asbestos Removal Operations are limited to operations that generate no more waste then what can fit into one 60”x 60” waste bag.
 9. Glovebag: An impervious plastic bag-like enclosure affixed around not more than a 60”x60” ACM or ACCM, with glove-like appendages through which material and tools may be handled.
 10. Hazardous Asbestos Waste: Friable waste with an asbestos content equal to or greater than one-percent asbestos including all associated dust, debris and plastic sheeting used during abatement.

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11. Negative Pressure Enclosure (NPE): An enclosed or contained area of any configuration constructed of polyethylene sheeting with a minimum of four (4) air changes per hour and a negative pressure of -0.02 inches of water as compared to surrounding area outside the enclosure. NPE must be maintained until final air clearance sampling and air must be exhausted to the exterior of the building.
12. Non-Hazardous Asbestos Waste: Wastes which are non-friable and/or are below one percent asbestos by weight as determined by objective testing approved by the Environmental Consultant. These wastes require OSHA Asbestos Hazard warning labels and disposal at landfills which accept such asbestos wastes.
13. Presumed Asbestos Containing Material (PACM): TSI and surfacing material found in buildings constructed no later than 1980.
14. Surfacing Material: Any material that is sprayed, troweled-on or otherwise applied to surfaces. Includes materials such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing and other purposes.
15. Thermal System Insulation (TSI): Thermal insulation materials applied to pipes, fitting, boilers, breeching, tanks, ducts or other plumbing or mechanical components to prevent heat loss or gain.
16. Waste Generator Label: Waste Generator Label shall include the Generator's Name, ID Number, Address and Waste Manifest Number.
17. Wet Washing: The process of eliminating asbestos contamination from areas such as crawlspaces, tunnels, boiler rooms, etc., using wet washing methods (i.e. airless sprayers) to systematically wash down all surfaces within the effected area. "Wet Washing" should only be used after the affected area has first been fully cleaned using HEPA vacuums.

1.05 SUBMITTALS

- A. Refer to Section 01 11 00 Summary of Hazardous Materials Work for submittal requirements applicable to this Section and Section 01 33 00 Submittal procedures unless otherwise noted.

1.06 POSTINGS

- A. Prior to the commencement of any asbestos related work at the site, post required CAL/OSHA warning signs in and around the Work Area to comply with regulation.
- B. Post copies of the Contractor's SCLB license, Cal-OSHA registration certificate, temporary job-site notifications, local agency notifications, emergency exit diagram, emergency phone numbers, CAL/OSHA poster on worker's rights, and worker's compensation poster at proximate to the entrance to each Work Area.

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- C. Contractor shall have at least one copy of the Contract Documents including project plans and specifications, and a copy of 8 CCR 1529 asbestos.
- D. Bilingual Worker Protection Procedures (English and Spanish) – To Be Posted in Clean Room.

1.07 SAFETY

- A. The Contractor shall take all necessary personal protective measures and provide sufficient safety training related to the following anticipated hazards, including but not limited to: airborne asbestos, lead, and organic vapors from solvent solvents and other chemical agents used; noise; heat stress; confined space; electrical (lockout and tag out); fall hazards (ladders, scaffolding, floor holes, roofs, etc.); water usage around hot objects; boiler room safety; power tools, eye hazards, and falling objects.
- B. Safety Compliance: The Contractor shall comply with this section and all laws, ordinances, rules, and regulations of federal, state, regional, and local authorities regarding removal, handling, storing, transporting, and disposing of asbestos waste materials and conducting construction work. Where requirements of this section and any regulation or reference documents vary, the most stringent requirements shall apply. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting work.
- C. Emergency Precautions and Procedures
 1. Establish emergency and fire exits from the Work Area. Stage two full sets of protective clothing and respirators at each emergency exit. A diagram of all emergency and fire exits must be prepared, and displayed in a conspicuous location in the clean room and/or entry to clean room.
 2. Local medical emergency personnel, both ambulance crews and hospital emergency room staff, shall be notified prior to commencement of abatement operations as to the possibility of having to handle containment or injured workers, and shall be advised on safe decontamination.
 3. Contractor's (on-the-job) Competent Person shall be prepared to administer first aid to injured personnel after decontamination. Seriously injured personnel shall be treated immediately or evacuated without delay for decontamination. When an injury occurs, the Contractor shall stop Work and implement fiber reduction techniques until the injured person has been removed from the Work Area.

1.08 SPECIAL PROVISIONS

- A. The Contractor shall hold the District, District's Representatives, Agents and Environmental Consultant harmless for claims, damages, losses, and expenses, including attorney's fees, arising out of or resulting from the Contractor's asbestos or other hazardous materials work, asbestos and hazardous spills on the site or enroute

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to the disposal site, or any other condition resulting from the Contractor’s non-compliance with regulation or the Contract Documents.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Submit manufacturer’s product data and material safety data sheet for all products listed below per Section 01 11 00 requirements.
- B. The product submittal shall be limited to only those materials scheduled for use on this project. Do not submit data for products not scheduled for use.
- C. Submittals that are incomplete, disorganized, unreadable, or not project specific will be rejected.

2.02 PROTECTIVE COVERING (PLASTIC)

- A. Fire Retardant Polyethylene sheets 6-mil and 4-mil sizes to minimize frequency of joints, approved and listed by State Fire Marshall per Section 13121 and/or 13144.1 of the California Health and Safety Code.

2.03 TAPE, ADHESIVE, SEALANTS

- A. Duct tape 2” or wider, or equal, capable of sealing joints of adjacent sheets of plastic sheets and for attachment of plastic sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including use of amended water.
- B. Spray adhesive for sealing polyethylene to polyethylene shall contain no methylene chloride compounds.
- C. Fire resistant sealants shall be compatible with concrete, metals, wood cable jacketing, etc. Sealant shall prevent fire, smoke, water and toxic fumes from penetrating through sealants. Sealant shall have flame spread, smoke and fuel contribution of zero, and shall be ASTM and UL rated for 3 hours for standard method of fire test for Fire Stop Systems.

2.04 PROTECTIVE PACKAGING

- A. Appropriately labeled 6-mil sealable polyethylene bags as a minimum.
- B. Appropriately labeled, impermeable drum containers with lids.
- C. Bilingual labels (English and Spanish) on containment glove bags, waste packages, contaminated material packages and other containers shall be in accordance with Cal/OSHA standards.

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2.05 WARNING LABELS AND SIGNS

- A. As required by 29 CFR 1926.1101 and 29 CFR 1910.145.

2.06 SURFACTANT

- A. Surfactant, or wetting agent, for amending water will be 50 percent polyoxyethylene ether and 50 percent polyethylene ester, or equivalent, at a concentration of one ounce per 5 gallons of water.

2.07 ENCAPSULANTS

- A. After removal use a clear encapsulant that will be compatible with replacement materials. The encapsulant shall be applied in a fine mist application and shall not be allowed to pond at any time or for any duration.

2.08 SOLVENTS

- A. Solvents shall be odorless, non-toxic, non-carcinogenic, non-flammable (flash point in excess of 200 degrees Fahrenheit), non-reactive with or damaging to materials it will come in contact with and approved for indoor use by regulatory agencies. Provide ventilation of Work Area as required by manufacturer. Vent exhaust to the exterior of the building and in a manner that will not result in adverse affects to other areas of the facility, adjacent facilities or public areas. Solvents shall not be used in areas where food is stored or to be stored.

2.09 DIFFERENTIAL PRESSURE EQUIPMENT

- A. Provide Differential Pressure Equipment - High-efficiency particulate absolute (HEPA) filtration systems shall be equipped with filtration equipment in compliance with ANSI Z9.2, local exhaust ventilation. No air movement system or air filtering equipment shall discharge unfiltered air outside the Work Area. The differential pressure creating a negative pressure within the Work Area shall be maintained at 0.02 inches of water (-0.02”) or greater and shall provide a minimum of 6 air changes per hour during abatement.
- B. All Differential Pressure Equipment shall be exhausted to the exterior of the Building unless approved in writing by the District and the District’s Environmental Consultant.
- C. Do not locate Differential Pressure Equipment near or adjacent to other building intake vents or louvers or at the entrances to the building.
- D. Provide Air Filtration Equipment with HEPA filtration system to cleanse air of particulate matter during abatement. Replace HEPA filters when filters become clogged with particulate matter. Provide enough air filtration devices within the work area to maintain fiber levels within the protection factors of workers’ respirators.

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- E. All Differential Air Pressure Units and HEPA vacuums proposed for use onsite shall be tested onsite using DOP or Portacount methods by an independent third party and certified to meet the HEPA standard of efficiency by the testing firm. Copies of certificates must be provided prior to startup of abatement activities.

2.10 PERSONAL PROTECTIVE EQUIPMENT

- A. Personal Protective Equipment shall comply with the requirements of 29 CFR 1910, Subpart I.
- B. Work clothes shall consist of disposable, full-body coveralls, head covers, boots, rubber gloves or equivalent in accordance with 29 CFR 1926.1101, and ANSI Z41. Sleeves at wrists and cuffs at ankles shall be secure.
- C. Eye protection and hard hats shall be available as required by applicable safety regulations and shall conform to ANSI 87.1 and 89.1.
- D. Provide authorized visitors with suitable protective clothing, headgear, eye protection, and footwear whenever they are required to enter Work Area.

2.11 RESPIRATORS

- A. Provide all workers, foremen, superintendents, authorized visitors, and inspectors personally issued and marked respiratory equipment approved by NIOSH. When respirators with disposable filters are employed, provide sufficient filters for replacement as recommended by respirator manufacturer(s). Selection of respirators shall be made according to the guidance of 29 CFR 1910 Subpart I; ANSI Z88.2; CGAI F7.1; EPA 560 OPTS-86.001; and Table I of this section. Selection of HEPA filters shall be made according to 42 CFR Part 84 (N100, R100, P100).
- B. When positive pressure supplied air Type “C” equipped with full face piece respirators are employed, the Air Supply System shall provide Type I Grade “D” breathing air in accordance with OSHA 29 CFR 1910 Subpart I and ANS Z88.2 and CGAI G7.1.
- C. The compressed Air system for Type “C” Respirators shall be high pressure (nominal 100 psi), with a compressor capacity to satisfy the respirator manufacturer’s recommendations. The receiver shall have sufficient capacity to allow a 15 minute escape time for the respirator wearers in the event of compressor failure of malfunction. Type C supplied air respirators with HEPA filter disconnect may be used as an alternate to the 15 minute escape time required with event of compressor failure for Type C respirators. The Compressed Air System shall have compressor failure alarm, high temperature alarm, carbon monoxide alarm, and suitable in-line air purifying sorbent beds and filters to assure Grade “D” breathing air.
- D. The minimum respiratory protection required for this project is as follows:

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1. Use high efficiency powered air-purifying respirators (PAPRs) for all asbestos related work where the Contractor’s Exposure Assessment indicates the exposure level to employees will not exceed 1.0 fibers/cc.

2. If airborne fiber concentrations outside the respirator exceed 1.0 fibers/cc, use Type “C” respirators supplied-air, full face piece, Type “C” pressure demand or pressure demand with auxiliary positive pressure self-contained breathing apparatus. When exposure limits are established, respirators presented in Table I that afford adequate protection for the maximum concentrations of airborne asbestos may be used, except for Class I Asbestos Work. The minimum respiratory protection for all Class I Asbestos Work, regardless of airborne concentrations, is PAPRs. If respirators other than a Type “C” pressure-demand, supplied-air respirator, are provided, determine the exposure of each employee to airborne asbestos during each type of removal operation. Determine both the ceiling limit and the 8-hour, time-weighted average concentration of asbestos fibers to which each of the employees is exposed during each type of removal operation.
 - a. Type “C” Respirators shall be worn with belt to minimize possibility of dislodging face mask when hose becomes snagged in the work area.
 - b. Provide a minimum of two spare hoses to be available at any time to the District and their authorized visitors and inspectors to connect to their assigned clean Type “C” respirator without having to displace workers from the abatement area to obtain a hose connection if use of Type “C” becomes necessary.
 - c. The Environmental Consultant will consider alternate respiratory protection systems proposed by the Contractor. Negative Exposure Assessment documentation must be provided by the Contractor demonstrating that asbestos levels during previous, comparable jobs were within the protection factors of the respirators to be used as outlined in Table I. The use of the following type of respirators is contingent upon approval by the Environmental Consultant.

TABLE I		
Maximum Airborne Fiber Concentration Outside Respirator	Protection Factor	Minimum Acceptable Respirator
0.1 fiber/cc**	1	Half of full face mask and dual cartridge air purifying respirator with cartridges approved for asbestos and with high efficiency filters.*
1.0 fibers/cc	10	Powered air purifying respirator (half or full face piece) and with high efficiency filters.*
1.0 fibers/cc	10	Type “C” supplied air respirators, full face piece, continuous flow.
5.0 fibers/cc**	50	Type “C” supplied air respirators, full face piece, pressure demand mode.
Over 5.0 fibers/cc**	50	Type “C” supplied air respirators, full face piece, pressure demand mode, equipped with an auxiliary positive pressure, self-contained breathing apparatus.

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TABLE I		
Maximum Airborne Fiber Concentration Outside Respirator	Protection Factor	Minimum Acceptable Respirator
Disposable (single use respirators are not to be worn for protection against asbestos. * Greater respiratory protection is always acceptable regardless of asbestos concentrations. ** Must demonstrate that the fiber levels will not exceed 0.01 f/cc inside the respirator based on quantitative mask fit testing for each individual using the respirator factor formula.		

d. When Type "C" respirators are not required according to the OSHA standard (29 CFR 1926.1101 or this specification, whichever is more stringent), provide workers with approved, permanent, personally-issued and marked respirators with replaceable filters. Provide sufficient quantity of filters jointly approved by NIOSH/MSHA for use in asbestos environments so that workers can change filters as required by manufacturer during the work day. Filters shall not be used any longer than one work day. Respirator filters shall be stored at job site in clean room and shall be totally protected from exposure to asbestos prior to their use.

E. Compressors shall meet the requirements of 29 CFR 1910 Subpart I. Periodic inspection of the carbon monoxide monitor shall be evidenced. Documentation of adequacy of compressed air system/respiratory protection system shall be retained on site. Documentation shall include a list of compatible components with the maximum number and type of respirators that may be used with the system. Periodic testing of compressed air shall insure that systems provided air of sufficient quality.

PART 3 - EXECUTION

3.01 COORDINATION REQUIREMENTS

- A. Coordinate all hazardous material related work with non-hazardous work to prevent exposure to unprotected personnel and building occupants. Phase hazardous materials related work activities and non-hazardous work accordingly to prevent impacting air sample results outside Regulated Areas. The Contractor will be responsible for extra costs related to additional laboratory analyses or additional testing.
- B. Building access requirements and/or site restrictions shall be discussed at the pre-construction meeting.
- C. Coordinate timing of waste bag-out activities with the District and the Environmental Consultant. The Contractor shall be aware that these activities may need to take place during times when it is most convenient to the District.

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- D. Coordinate with the General Contractor the shut down and isolation of power to the Work Area(s) in addition to power requirements. Power lines which are unable to be shut down, such as those that provide service to outside the Work Area, shall be adequately protected and marked.
- E. Coordinate and provide to Environmental Consultant the required number of power outlets needed inside and outside each work area. These outlets shall be solely dedicated for the use of the Environmental Consultant.

3.02 PROJECT PROCEDURES

- A. Prior to the start of on-site work, the Contractor shall hold an on-site start-up safety meeting for all of his employees that addresses at least the following issues specific for the project:
 - 1. Safety and health hazards;
 - 2. Procedures and work practices;
 - 3. Respiratory protection and instruction;
 - 4. Special conditions and work requirements.
- B. Worker Protection Procedures (Bilingual: English and Spanish) – To Be Posted in Clean Room.
 - 1. Provide authorized visitors with suitable protective clothing, headgear, eye protection, and footwear whenever they are required to enter Work Area.
 - 2. Each worker and authorized visitor shall, upon entering the job site: Remove street clothes in the clean-change room and put on a respirator and clean protective clothing before entering the equipment room or Work Area.
 - 3. Workers shall, each time they leave the Work Area: Remove gross contamination from clothing before leaving the Work Area; proceed to the equipment room and remove clothing except respirators; still wearing the respirator, proceed naked to the showers; clean the outside of the respirator with soap and water while showering; remove the respirator; thoroughly shampoo and wash themselves.
 - 4. Following showering and drying off, each worker shall proceed directly to the clean change room and dress in clean clothes at the end of the each day's work, or before eating, smoking, or drinking. Before re-entering the Work Area from the clean-change room, each worker and authorized visitor shall put on a clean respirator and shall dress in clean protective clothing.
 - 5. Contaminated work footwear shall be stored in the equipment room when not in use in the Work Area. Upon completion of asbestos-related work, dispose of footwear as contaminated waste.

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6. Workers removing waste containers from the equipment decontamination enclosure shall enter the holding Area from outside wearing a respirator and dressed in clean disposable coveralls. No Worker shall use this system as a means to leave or enter the washroom or the Work Area.
7. Color of disposable clothing worn outside the Work Area shall be different in color or markings from disposable clothing work inside Work Area.
8. Workers shall not eat, drink, smoke, or chew gum or tobacco while in the Work Area.
9. Workers and Authorized Visitors with beards shall not enter the Work Area unless equipped with respiratory protection approved for use with beards.

3.03 PREPARATION

A. General Requirements:

1. Shut down electric power to the Work Area to the greatest extent possible. Consult with the District and District's Representative before shutting down power. Provide temporary power and lighting and ensure safe installation of temporary power sources and equipment per applicable electrical code requirements and provide ground-fault interrupter circuits as power source for electrical equipment.
2. Shut down and isolate heating, cooling, ventilation air systems to prevent contamination and fiber dispersal to other areas of the structure. If shut down is not feasible, duct capping and sealing will be required according to an approved plan. During the Work, vents within the Work Area shall be sealed with tape and plastic sheeting and as indicated on plans (if available).
3. Install a Decontamination Enclosure System or equivalent prefabricated portable decontamination unit(s) as approved. This system will be the primary entrance and exit to the Work Area.
4. Seal off all other accesses to the Work Area with polyethylene sheeting sealed with tape.
5. Install Differential Pressure Equipment for all Class I and Class II Asbestos Removal Operations, and for Class III Asbestos Removal Operations where specified in accordance with the requirements herein.
6. Pre-clean fixed objects within the proposed Work Areas, using HEPA filtered vacuum equipment and/or wet cleaning methods as appropriate, and enclose with protective barriers. Protective barriers will consist of plastic sheeting and plywood as appropriate.

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7. Clean the proposed work areas using HEPA filtered vacuum equipment and wet cleaning methods as necessary to maintain fiber levels at or below 0.01 f/cc. Methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters shall not be used. Use only HEPA filtered vacuums on electrical equipment. Brush attachments and vacuum lines to be plastic.
 8. Seal all remaining openings, including but limited to ducts, grills, diffusers, and any other penetrations of the Work Areas, with 2 layers of 6 mil polyethylene sheeting sealed with tape. Seal all joints of conduit, junction boxes, and ductwork with duct tape and plastic sheeting. Cover and protect during abatement.
 9. Establish and maintain emergency and fire exits from Work Areas at all times.
- B. Decontamination Enclosure System (General):
1. Construct decontamination enclosure system(s) with suitable framing. Walls and floor of decontamination enclosure system(s) shall be lined with 2 layers of 6 mil polyethylene sheeting sealed with duct tape.
 2. Access between contaminated and uncontaminated rooms or areas shall be through an airlock.
 3. Extra precautions shall be taken by the Contractor to prevent leaking of any kind from the Decontamination Enclosure System. The Contractor shall conduct inspections before, during and at the end of each work shift to ensure there is no standing water or leaks.
 4. The Decontamination Enclosure System shall be securable and lockable.
- C. Worker Decontamination Enclosure System: Construct a worker decontamination enclosure system contiguous to the Work Area consisting of three totally enclosed chambers including a clean room, a shower, and an equipment room.
- D. Equipment Decontamination Enclosure System:
1. Provide or construct an equipment decontamination enclosure system consisting of three totally enclosed chambers including a washroom, a wet sponge area and a holding area.
- E. Separation of Work Area from Occupied Areas:
1. Separate parts of the building required to remain in use from parts of the building that will undergo asbestos-related work by means of airtight barriers, constructed as follows:
 - a. Build suitable wood or metal framing and apply 3/8" minimum thickness sheathing on work side.

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- b. Cover sheathing with minimum of 2 layers of 6 mil plastic sheet, sealed with duct tape as specified on Work Area side.
- c. Seal all penetration points to the work area by using minimum of 2 layers of 6 mil plastic sealed with duct tape.

F. Maintenance of Enclosure Systems:

1. Ensure that barriers and plastic linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately upon discovery.
2. Visually inspect enclosures at the beginning of each work period.
3. Use smoke methods to test effectiveness of barriers prior to implementing asbestos removal and as directed by the District.

G. Asbestos abatement work shall not commence until:

1. Submittals as required herein have been reviewed and approved in writing by the District and the Environmental Consultant.
2. Arrangements have been made for disposal of waste at an acceptable site and there is a securable waste dumpster present on-site lined with one layer of 6 mil polyethylene sheeting.
3. The Contractor's Competent Person and the Environmental Consultant have inspected and approved the containment system for start of asbestos-related work and the Contractor's Pre-Start Visual Inspection Section of the Asbestos and Lead Inspection Form (Section 01 11 00 – Appendix G) is completed and signed by both parties.
4. Arrangements have been made for securing the Work Area.

3.04 CLASS I ASESTOS REMOVAL OPERATIONS

A. Work Area Preparation (General)

1. In addition to the requirements specified in Article 3.03 Preparation, Cover floor and wall surfaces with two independent layers of 6 mil polyethylene sheeting sealed with tape. For each layer, cover the floor first so that the polyethylene sheeting extends up the wall at least 12 inches, then cover the wall down to the floor level. An additional layer of polyethylene sheeting encompassing the entire floor of the work area shall be used during gross removal as a drop sheet.
2. Cover ceilings with one layer of 6 mil polyethylene sheeting where noted and/or where floor mastic is to be removed utilizing a chemical solvent and mechanical buffers with abrasive pads and/or utilizing bead or shot blasting and/or with any other type of mechanical removal. The only time a ceiling will not be required for floor

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mastic removal is if the floor mastic is being removed manually or if the ceilings are to be removed and disposed of as a regulated asbestos containing material (RACM).

3. Differential pressure shall be installed, operating and able to maintain a negative pressure of 0.02 inches of water with a minimum of 6 air changes per hour during abatement.
4. Mini Containments: The use of mini-containments shall only be permitted if the disturbance or removal can be completely contained by the enclosure. Mini-containments shall be constructed out of a minimum of one layer of 6 mil polyethylene sheeting sealed with tape. The mini-containment shall have rigid framing for support. The enclosure shall have a decontamination enclosure system in accordance with the requirements herein or as approved by the District's Environmental Consultant. The containment shall be placed under negative pressure for the duration of work in the containment until final air clearance is obtained.

B. Abatement Procedures (General):

1. Spray asbestos materials with amended water, using only spray equipment capable of dispensing a fine mist application. Saturate material without causing excess dripping or pooling. Spray materials and work area repeatedly during work process to control airborne fiber levels. In work areas with active electrical equipment, spray material with only enough amended water to dampen material, do not saturate material. Immediately vacuum up any standing water on floor of the Work Area.
2. Remove saturated asbestos materials in small manageable sections. As it is removed, immediately place materials in six mil sealable plastic bags or appropriate containers labeled in accordance with 29 CFR 1910.1101 (g) (2) and 8 CCR 1529 (n) (3).
3. All waste put in plastic bags must be sealed using the "goose neck" technique by twisting the neck of the bag, bending it over and taping it with multiple wraps of tape. Clean external surfaces of containers thoroughly by wet sponging in the designated wet sponge area, which is part of decontamination enclosure system. Move containers to wash room, wet clean each container thoroughly, and move to holding area pending removal to uncontaminated areas. Ensure that containers are removed from the holding area by workers who have entered from uncontaminated areas dressed in clean coveralls. Ensure that workers do not enter from uncontaminated areas into the wash room or the Work Area.
4. After completion of asbestos-related work, surfaces from which asbestos has been removed shall be Wet Cleaned and/or Wet Sponged or cleaned by an equivalent method to remove all visible material and residue. During this work the surfaces being cleaned shall be kept damp. Do not allow water to pond at any time.

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5. Remove outer layer of polyethylene sheeting (drop sheet) only. Clean all surfaces of the work area including remaining sheeting by use of damp-cleaning and HEPA filtered vacuuming.

C. Glovebag Technique:

1. Removal of asbestos-containing materials from piping may be accomplished using approved glovebag techniques in specified areas. In all cases, Glovebag operations shall be conducted within mini containments under negative air pressure as specified herein.
2. Modifications or downgrading of the decontamination system in combination with use of a remote shower may be acceptable for this procedure if approved in writing by the District and the District's Environmental Consultant. Contractor must submit their proposed decontamination enclosure system for approval.
3. After installation of glovebag(s), thoroughly wet material to be removed with amended water. Allow to soak in, then remove insulating material from piping. Insulation not to be removed shall be cut clean to form a new smooth edge a minimum of 6" back from the original end of the insulation. Thoroughly wash the inside of the bag, the piping surfaces and the tools.
4. Upon approval from the District's Environmental Consultant, encapsulate all surfaces inside the glovebag including the piping and ends of exposed insulation material. Evacuate bag with an approved HEPA vacuum; tie off trash area; remove tools from bag; remove bag from pipe, folding inward the sides of the bag; then twist and tape the open end, the wand opening, and the vacuum opening.
5. Place glovebag directly into another six mil sealable plastic bag or appropriate container labeled in accordance with 8 CCR 1529 (n) (3). Sealed outer bag using the "goose neck" technique by twisting the neck of the bag, bending it over and taping it with multiple wraps of tape.

D. Cut, Wrap and Take Technique:

1. Removal of TSI from piping may be accomplished using approved Cut, Wrap, and Take Techniques in specified areas. In all cases, Cut, Wrap and Take Techniques shall be conducted within negative pressure enclosures.
2. Before using this technique, it is important the contractor ensure the piping being removed is going to be abandoned or removed prior to proceeding. Additionally, the Contractor must lock and tag out pipe system(s) and drain lines prior to cutting pipe(s).
3. Wrap pipe being removed with two layers of six mil polyethylene sheeting. Install glovebags at sections where the pipe will be cut and seal to polyethylene sheeting. Thoroughly wet material to be removed with amended water. Allow to soak in, then remove a section of insulating large enough to allow for cutting without

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disturbing the remaining asbestos insulation. Insulation not to be removed shall be cut clean and the ends patched with canvas and bridging encapsulant. Thoroughly wash the inside of the bag, the piping surfaces and the tools.

E. Removal of Asbestos Containing Surfacing Materials (Includes Wall and Ceiling Plasters):

1. Removal of asbestos containing surfacing materials shall be coordinated with other removal work specified elsewhere to prevent the waste material becoming commingled with other wastes that may be produced.
2. Continuously mist the asbestos containing surfacing materials being removed with amended water. There shall be a dedicated person applying mist at each point of removal. Clean up any standing water immediately.
3. Place removed asbestos containing surfacing materials in impervious containers with asbestos warning labels as they are removed. Complete Work Area clean-up when the asbestos containing surfacing material removal is complete or at the end of the shift, whichever comes first.
4. When applicable, separate metal lath and black iron from asbestos surfacing material. Metal that cannot be properly decontaminated shall be packaged appropriately and disposed of as asbestos waste. Metal that can be properly decontaminated, shall be cleaned and removed from the work area and disposed of as general construction debris or recycled.
5. All removed asbestos containing surfacing materials, contaminated metal, and associated debris shall be packaged and labeled for disposal as a friable asbestos waste.

F. Asbestos Removal (Crawlspace, Tunnel, Plenum and Soffit Areas):

1. Crawlspace, Tunnel, Plenum and Soffit areas shall not be accessed or opened until the decontamination enclosure system has been installed. At this point, access shall be restricted until Differential Pressure Units are installed, operating, and maintaining a negative pressure of at least 0.02 inches of water.
2. Seal off any openings within the crawlspace, tunnel, plenum and/or soffit areas with plastic and tape and/or foam prior to proceeding with any other activities in the Work Area.
3. Remove loose debris and dispose of as ACM waste. Install a minimum of one layer of polyethylene sheeting as a drop sheet on the floor of the crawlspace or tunnel.
4. Remove ACMs in accordance with procedures described in the general abatement procedures.

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5. Upon completion of removal, remove drop sheet and thoroughly HEPA vacuum all surfaces within the area. Thoroughly wipe down all surfaces in the work areas. Contractor shall perform a minimum of two complete cleanings of the work areas utilizing HEPA vacuums and wet-wiping prior to the final visual inspection. Use of garden hoses is prohibited and the final visual inspection shall not be performed until the work areas have had sufficient time to dry and adequate lighting has been installed.

G. Removal of Boiler Brick, Caulkings, Gaskets, Packings and Sealants:

1. Remove boiler fire brick, caulking, gaskets, packings and sealants in small manageable sections using wet methods and promptly place in properly labeled waste containers. Remove construction materials as necessary to access boiler gaskets and sealants.
2. In no case shall waste disposal containers be dropped or thrown. All asbestos containing waste disposal containers shall be handled in a careful manner to prevent a spill and resulting fiber release of airborne asbestos.
3. Acceptable clearance criteria for boiler fire brick, caulking, gaskets, packings and sealants removal shall be no visible three-dimension residue at removal locations.

3.05 CLASS II ASBESTOS REMOVAL OPERATIONS

A. Work Area Preparation (Interior Areas):

1. Cover floor and other horizontal surfaces not scheduled for removal with two layers of 6 mil polyethylene sheeting extending at least 12 inches up all vertical surfaces (i.e., walls) and sealed with duct tape and spray adhesive (as necessary) to the wall surfaces. Cover wall surfaces with a minimum of one layer of 4 mil polyethylene sheeting from above the baseboard to the ceiling and seal with tape.
2. Cover ceilings with one layer of 6 mil polyethylene sheeting where noted and/or where floor mastic is to be removed utilizing a chemical solvent and mechanical buffers with abrasive pads and/or utilizing bead or shot blasting and/or with any other type of mechanical removal. The only time a ceiling will not be required for floor mastic removal is if the floor mastic is being removed manually or if the ceilings are to be removed as a regulated asbestos containing material (RACM).
3. In cases where Class I Asbestos Work and Class II Asbestos Work are scheduled to occur in the same Work Area, Contractor shall prepare the Work Area in accordance with the Class I Asbestos Work and sequence removal activities accordingly.

B. Work Area Preparation (Exterior Areas):

1. Cover ground and horizontal surfaces with one layer of 6 mil polyethylene sheeting extending at least five feet from wall surfaces and seal with duct tape and spray adhesive (as necessary).

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2. Install barrier tape a minimum of ten feet away from the perimeter of Work Areas.

C. Work Procedures (General):

1. Remove asbestos-containing materials intact where possible using wet methods. All interior work shall be conducted within a negative pressure enclosure (NPE). As materials are removed, immediately place materials in six mil sealable plastic bags or appropriate containers labeled in accordance with 29 CFR 1910.1101 (g) (2) and 8 CCR 1529 (n) (3). Collect all dust and debris using vacuum cleaners equipped with HEPA filters. Modify methods where the use of water and/or HEPA vacuums could create an electrical hazard or other unsafe condition.

D. Removal of Building Components (i.e. Gas lines, piping, exhaust vents, HVAC equipment, etc.) with Asbestos Containing Paints/Coatings/Sealants/Mastics:

1. Install one layer of 6 mil polyethylene sheeting in the area where the building component with asbestos containing paints/coatings/sealants/mastics is being removed. Polyethylene sheeting shall extend a minimum of five feet from the point of removal.
2. Spray the building component with asbestos containing paints / coatings / sealants / mastics with amended water and keep wet at all times. Remove building component with asbestos containing paints / coatings / sealants / mastics in whole sections without breaking.
3. Where possible, wrap two independent layers of 6 mil polyethylene sheeting sealed with tape around the building component with asbestos containing paints / coatings / sealants / mastics and remove and dispose of as a whole component.
4. All resulting asbestos waste is to be bagged up as asbestos waste and removed from the Work Area prior to continuing hazardous material work.
5. If the building component with asbestos containing paints / coatings / sealants / mastics is to be removed by mechanical means, removal shall be completed utilizing glove bag procedures as specified in 3.04 of this section for Class I work.

E. Removal of Asbestos Containing Materials by Mechanical Removal

1. Removal of asbestos containing surfaces by mechanical removal shall be performed within negative pressure enclosures.
2. All mechanical removal equipment and systems shall be approved by the District's Consultant. Such equipment includes but is not limited to needle guns, abrasive wheels, and roto-peen equipment.
3. All power tools shall be designed and equipped with HEPA-filtered exhaust systems.

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4. The Contractor shall submit a separate workplan for containment of fugitive dust and debris emissions.
- F. Drilling/Anchoring/Coring/Cutting/Abrading Asbestos Containing Surfaces
1. Prepare the Work Area as specified herein for Asbestos abatement.
 2. Remove all interfering structures and store for replacement when work is complete.
 3. Where installation of materials requires drilling, cutting, coring, anchoring or abrading the asbestos containing surfaces, the Contractor shall take additional appropriate precautions including, but not limited to, use of protective drop cloths, glove-bag enclosures, clean-up and decontamination as specified herein.
 4. Place plastic drop sheet below area of impaction.
 5. Install leak-tight glove-bags to the area of impaction.
 6. Lightly moisten the asbestos containing surface to be impacted.
 7. Conduct impaction operations (i.e. drilling, anchoring, abrading, etc.).
 8. Continue misting asbestos containing surface within the glove-bag during impaction to control airborne dust.
 9. HEPA vacuum and wet-wipe frequently to prevent accumulation and spread of asbestos-containing dust and debris.

3.06 CLASS III ASBESTOS REMOVAL OPERATIONS

A. Work Area Preparation (Interior Areas):

1. Cover floor and other horizontal surfaces not scheduled for removal with two layers of 6 mil polyethylene sheeting extending at least 12 inches up all vertical surfaces (i.e., walls) and sealed with duct tape and spray adhesive (as necessary) to the wall surfaces. Cover wall surfaces with a minimum of one layer of 4 mil polyethylene sheeting from above the baseboard to the ceiling and seal with tape.
2. In cases where Class I Asbestos Work and Class II Asbestos Work are scheduled to occur in the same Work Area, Contractor shall prepare the Work Area in accordance with the Class I Asbestos Work and sequence removal activities accordingly.

B. Work Procedures (General)

1. Use wet methods or methods that minimize or eliminate the generation of dust during cutting or drilling operations. Alternate methods may include the use of foams or negative pressure glovebags or gloveboxes, and/or mini-containments.

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2. To the extent feasible, the work shall be performed using local exhaust HEPA vacuums at point of dust generation.
3. Adequately wet the material with Amended water before and during Disturbance using airless sprayers.
4. Promptly place all waste in properly labeled plastic bags or waste containers. Plastic bags must be sealed using the “goose neck” technique by twisting the neck of the bag, bending it over and taping it with multiple wraps of tape.
5. Upon completion of Class III operations, remove drop sheets and thoroughly HEPA vacuum and wet wipe all surfaces within the Work Area.

C. Work Procedures for ACM other than TSI or Surfacing:

1. Use wet methods or methods that minimize or eliminate the generation of dust during cutting or drilling operations. Alternate methods may include the use of foams, gels, wet sponges, or negative pressure glove bags, glove boxes, and/or mini-containments.
2. Adequately wet the material with Amended water before and during Disturbance using airless sprayers. Alternatively apply a foam or gel material in the area prior to the disturbance as a means of preventing an airborne fiber release.
3. To the extent feasible, the work shall be performed using local exhaust HEPA vacuums at point of disturbance.
4. As an alternative, spot remove the asbestos containing material in advance of coring, drilling, etc. Wet material with amended water or apply foam or gel and remove intact.
5. Promptly place all waste in properly labeled plastic bags or waste containers. Plastic bags must be sealed using the “goose neck” technique by twisting the neck of the bag, bending it over and taping it with multiple wraps of tape. Dispose of waste as Non-Friable Asbestos Waste as appropriate.
6. Upon completion of Class III operations, remove drop sheets and thoroughly HEPA vacuum and wet-wipe all surfaces within the Work Area.

D. Work Procedures for Thermal System Insulation (TSI), Surfacing ACM and PACMs:

1. Where possible, avoid disturbing friable TSI, surfacing ACMs, and PACMs by rerouting conduits on non-ACM surfaces. (i.e. Attach conduit to non ACM plaster wall verses ACM acoustical ceiling).

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2. Activities that disturb TSI, surfacing ACMs and PACMs shall be Isolated using mini-enclosures or negative pressure glove bags or glove boxes in accordance with 29 CFR 1926.1101.
 3. Promptly place all waste in properly labeled plastic bags or waste containers. Plastic bags must be sealed using the “goose neck” technique by twisting the neck of the bag, bending it over and taping it with multiple wraps of tape. Dispose of waste as Hazardous Asbestos Waste.
- E. Painting and Surface Preparation of TSI, Surfacing ACMs and PACMs (Where the total quantity of asbestos waste generated is less than what can fit in one 60”x60” waste bag.)
1. Prepare the area with a minimum of one layer of 4 mil polyethylene sheeting on walls, floors, and critical barriers. The areas shall be placed under negative air pressure for the duration of work until final air clearance is obtained. Entry to the Work Area shall be restricted through a Decontamination Enclosure System.
 2. Use wet manual sanding/scraping methods or methods that minimize or eliminate the generation of dust during painting and surface preparation operations.
 3. Adequately Wet impacted surfaces with Amended water before and during surface preparation operations.
 4. Upon completion of surface preparation operations, thoroughly HEPA vacuum and wet wipe all surfaces within the Work Area.
 5. Apply surface coating to substrate in accordance with the specified requirements and manufacturer’s instructions.
 6. Perform a final HEPA vacuuming and wet wiping at completion of surface coat application.
- F. Glovebag Systems
1. Glovebag Systems must be seamless, smoke tested prior to use, may not be moved, and may not be used on surfaces that exceed 150 degrees Fahrenheit. Adjacent friable material must be wrapped in two layers of 6 mil polyethylene sheeting or rendered intact. At minimum, all glovebag work must be conducted within a secondary containment under negative pressure. All glovebag work must be performed by a team of two people.
- G. Drilling/Anchoring/Cutting/Abrading Asbestos Containing Surfaces
1. Prepare the Work Area as specified herein for Asbestos abatement.
 2. Remove all interfering structures and store for replacement when work is complete.

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3. Place plastic drop sheet below area of impaction.
4. Where installation of materials requires drilling, cutting, anchoring or abrading the asbestos containing surfaces, the Contractor shall take additional appropriate precautions including, but not limited to, use of protective drop cloths, glove-bag enclosures, use of shaving cream or equivalent, clean-up and decontamination as specified herein.
5. Install leak-tight glove-bags to the area of impaction.
6. Lightly moisten the asbestos containing surface to be impacted.
7. Conduct impaction operations (i.e. drilling, anchoring, abrading, etc.).
8. Continue misting asbestos containing surface within the glove-bag during impaction to control airborne dust.
9. HEPA vacuum and wet-wipe frequently to prevent accumulation and spread of lead-containing dust and debris.

3.07 EXTENSION OF WORK AREA

- A. If a Critical Barrier is breached and/or a spill occurs outside the Work Area or Regulated Area, the Contractor shall extend the work area to include the affected area. The Contractor shall take all precautions to prevent the spread of asbestos debris and/or asbestos fibers during extension of the Work Area. The affected area shall be constructed in the same manner required for that class of asbestos work.
- B. The District's Environmental Consultant will determine the extent of the Work Area boundaries.

3.08 DECONTAMINATION OF WORK AREA

- A. Clean all surfaces within the Work Area using wet methods and HEPA vacuum equipment. Floor and wall surfaces shall be free of any visible asbestos material, debris and dust.
- B. The Contractor's Competent Person shall perform a complete visual inspection of the Work Area under adequate lighting to ensure that the Work Area is free of visible asbestos material, debris, dust, waste bags or containers, and unnecessary equipment. The Competent Person shall ensure that additional cleaning is completed if the area is not acceptably clean. The Contractor's request for inspection will be recognized upon receipt of a completed and signed copy of the Contractor's Final Visual Inspection Section of the Asbestos and Lead Inspection Form (Section 01 11 00 – Appendix G). No inspections will be conducted without a completed and signed copy of the Contractor's Final Visual Inspection Section of the Asbestos and Lead Inspection Form (Section 01 11 00 – Appendix G).

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- C. Upon successful completion of final visual inspection by the District's Environmental Consultant, spray substrate(s) with encapsulant compatible with finish materials. Encapsulant should be applied using airless spray equipment as specified by the manufacturer.
- D. The District's Environmental Consultant shall conduct the final air clearance testing after a minimum 12 hour wait period. Final clearance air sampling and analysis shall be conducted in accordance with 40 CFR 763. After written notification from District's Environmental Consultant accepting decontamination of the Work Area (Section 01 11 00 – Appendix G), remove inner plastic layer isolation barriers and proceed with any remaining repairs or refinish work and reestablishment of objects and systems as specified. If applicable, the Contractor may elect to leave the final layer of plastic sheeting for material replacement.

3.09 WASTE HANDLING AND DISPOSAL

- A. Under no circumstances shall asbestos waste be stored at any time in the building, surrounding buildings, outside the building, or be allowed to accumulate inside the Work Area. Asbestos Waste must be taken from the Work Area directly to a securable waste dumpster via leak tight carts covered with polyethylene sheeting at the end of each work day.
- B. Waste Manifests: Each time Hazardous Asbestos Waste and Non-Hazardous Asbestos Waste is removed from the site, the Contractor is responsible for submitting the generator copies to the District's Representative and copies to the District's Environmental Consultant. For Hazardous Asbestos Waste, complete and submit a copy of the Land Disposal Restriction Form.
- C. The sealed asbestos containers shall be delivered to Contractor's pre-designated approved hazardous waste site for burial; in accordance with Title 22, CCR, EPA guidelines and 40 CFR 61.156 and local Air Pollution Control District Regulations. Contractor shall be responsible for safe handling and transportation of hazardous waste generated by this Contract to the designated Hazardous Waste Site.
- D. Notify the District 48 hours in advance of the time when contaminated materials are to be removed from the site.

3.10 AIR MONITORING

- A. Area Air Monitoring:
 - 1. Throughout the abatement process area air monitoring will be conducted by the District's Environmental Consultant to ensure work is done in conformance with fiber concentration limits of these Specifications.

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2. If area air monitoring results outside the Work Area are in excess of 0.01 f/cc or background air samples, whichever is greater, Contractor shall make changes in work procedures to assure compliance with minimum standards. At a minimum, Contractor shall stop all work and clean the affected area to the extent necessary as determined by the District's Environmental Consultant. Contractor shall be responsible for all costs associated with air fiber counts outside the Work Area including asbestos air analysis by transmission electron microscopy (TEM).
- B. Contractor shall submit written report to District's Environmental Consultant of Contractor's personnel monitoring within 24 hours or as approved. Personnel air monitoring shall not exceed the levels recommended for the type of respiratory equipment in use.
- C. The District's Environmental Consultant shall conduct the final air clearance testing after a minimum 12 hour wait period. Final clearance air sampling and analysis shall be in accordance with 40 CFR 763. The first set of clearance samples will be collected and analyzed at the District's Expense.
- D. If an unacceptable final air clearance is obtained, the Work Area decontamination for the entire area shall be considered incomplete and re-cleaning must be repeated in accordance with the procedures outlined herein. The Contractor shall also be responsible for all costs associated with such failure such as Consultant fees and laboratory costs.

3.11 RE-ESTABLISHMENT OF OBJECTS AND SYSTEMS

- A. When clean-up and installation of replacement finishes is complete:
 1. Relocate objects moved to temporary locations in the course of work to their former positions.
 2. Re-secure mounted objects removed in course of work in their former positions
 3. Re-establish HVAC, mechanical and electrical systems in proper working order. Install new filters and dispose of used filters as asbestos contaminated waste.

3.12 REPAIR AND PAINTING

- A. Damage to finishes and other items as a result of work under this section shall be repaired or replaced, painted, or cleaned to match existing adjacent surfaces to satisfaction of the District and as specified elsewhere. Coordinate all work with General Contractor to avoid unnecessary repairs.

3.13 CLEAN-UP

- A. Maintain a clean project site during and upon completion of work of this section. Cleaning shall be in accordance with the General Conditions.

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3.14 PROJECT CLOSEOUT

- A. Contractor shall provide all outstanding submittal information to the District's Environmental Consultant within 10 working days from the completion of abatement work. The District reserves the right to withhold final payment to the Contractor until all required submittal information is received and approved by the District's Environmental Consultant.

END OF SECTION