



**WAREHOUSE FREEZER REPLACEMENT
REQUEST FOR BIDS
25-26-01B**

CONTRACT DOCUMENTS

August 6, 2025

**National School District
1500 N Avenue
National City, CA 91950**

NATIONAL SCHOOL DISTRICT

WAREHOUSE FREEZER REPLACEMENT REQUEST FOR BIDS 25-26-01B

SECTION 1 NOTICE TO CONTRACTORS CALLING FOR BIDS

NOTICE TO CONTRACTORS CALLING FOR BIDS

NOTICE IS HEREBY GIVEN that the National School District of San Diego County, California, acting by and through its Governing Board, hereinafter referred to as the DISTRICT will receive up to, but not later than **9:00 AM** of the **25th day of August 2025**, sealed proposals for the award of a contract for **Warehouse Freezer Replacement, Bid 25-26-01B**.

Bids shall be received in the Business Services Office of the National School District located at 1500 N Avenue, National City, CA and shall be opened and publicly read aloud at the above-stated time and place.

Prospective bidders are required to be pre-qualified for projects in excess of one million dollars (\$1,000,000) in estimated value using any funds received pursuant to the Leroy F. Greene School Facilities Act of 1998 or any funds from any state school bond. Additionally, subcontractors in the trades of mechanical, electrical and plumbing are required to be prequalified. Prequalification Applications can be found on the District website https://www.nsd.us/apps/pages/index.jsp?uREC_ID=605810&type=d&termREC_ID=&pREC_ID=1162448. **This Project is not subject to prequalification.**

In contracts involving expenditure in excess of \$25,000.00, the successful bidder, shall file a payment bond issued by an admitted Surety approved to conduct business in the State of California (Civil Code Section 9550) approved by the District in the form set forth in the contract documents.

Each bid shall be accompanied by a bid bond, the non-collusion affidavit, the list of proposed subcontractors, and all additional documentation required in the contract documents.

The District reserves the right to reject any or all bids or to waive any irregularities or informalities in any bids or in the bidding.

The lowest bid shall be the lowest total of the base bid prices as set forth in the bid form.

Pursuant to Labor Code Section 1725.5, contractors and all subcontractors must be registered with the Department of Industrial Relations in order to bid on or to be listed in a bid proposal or to engage in the performance of any defined public work contract. This Project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

The Director of Industrial Relations has determined the general prevailing rate of per diem wages in the locality in which this work is to be performed for each craft or type of worker needed to execute the contract which will be awarded to the successful bidder, copies of which are on file and will be made available to any interested party upon request. It shall be mandatory upon the Contractor to whom the contract is awarded, and upon any subcontractor under him, to pay not less than the said specified rates to all workers employed by them in the execution of the contract, as this is a public works contract.

Each bidder shall be a licensed contractor at the time the bid is submitted and throughout the duration of the project pursuant to the Business and Professions Code and shall be licensed in the following classification:

A-General Engineering Contractor or B-General Building Contractor

A **mandatory** project Conference and site walk will be held on **Thursday, August 14, 2025 at 9:00 AM at the District Office, 1500 N Avenue, National City, CA 91950** for the purpose of acquainting all prospective Contractors with the Bid documents and the work site. All prospective Contractors for this project are required to attend this meeting.

No bidder may withdraw his or her or its bid for a period of sixty (60) days after the date set for the opening of bids.

Dated this **6th day of August, 2025**

Leighangela Brady, Ed.D.
Secretary to the Governing Board
National School District,
of San Diego County, California

WAREHOUSE FREEZER REPLACEMENT
BID 25-26-01B

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NATIONAL SCHOOL DISTRICT

WAREHOUSE FREEZER REPLACEMENT BID 25-26-01B

<p>SECTION 2 INFORMATION FOR BIDDERS</p>

INFORMATION FOR BIDDERS

1. Preparation of Bid Form

The District invites bids on the attached form to be submitted by qualified contractors to the District at such time and place as is stated in the Notice to Contractors Calling for Bids, not later than **9:00 AM of the 25th day of August, 2025**. Bids shall only be prepared using copies of the Bid Forms that are included in the Contract Documents. The use of substitute bid forms other than clear and correct photocopies of those provided by the District will not be permitted. Bids shall be received in the Office of Assistant Superintendent, Business Service located at 1500 N Avenue, National City, CA. All blanks in the bid form must be appropriately filled in, and all prices must be stated in both words and figures. If a different price is stated in words than is stated in figures, the price stated in words shall be the price bid.

2. Bid Security

Each bid shall be accompanied by either: (a) a certified check made payable to the District; (b) a cashier's check made payable to the District; or (c) a bid bond payable to the District executed by the Bidder as principal and surety as obligor in an amount not less than 10% of the maximum amount of the bid. Personal sureties and unregistered surety companies are unacceptable. The surety insurer shall be California admitted surety insurer, as defined in Code of Civil Procedure Section 995.120. The check or bid bond shall be given as a guarantee that the Bidder shall execute the Contract if it be awarded to the Bidder, shall provide the payment and performance bonds and insurance certificates and endorsements as required herein within ten (10) calendar days after notification of the award of the Contract to the Bidder. Failure to provide the required documents may result in forfeiture of the Bidder's bid deposit or bond to the District and the District may award the Contract to the next lowest responsible Bidder, or may call for new bids.

3. Faxed and Electronic Mail Bids

All bids must be under sealed cover. District will not accept any bids or bid modifications submitted by facsimile or electronic mail transmission.

4. Signing of Bids

All Bids submitted shall be executed by the Bidder or its authorized representative. Bidders may be asked to provide evidence in the form of an authenticated resolution of its Board of Directors or a Power of Attorney evidencing the capacity of the person signing the Bid to bind the Bidder to each Bid and to any Contract arising therefrom.

If a Bidder is a joint venture or partnership, it may be asked to submit an authenticated Power of Attorney executed by each joint venturer or partner appointing and designating one of the joint venturers or partners as a management sponsor to execute the Bid on behalf of Bidder. Only that joint venturer or partner shall execute the Bid. The Power of Attorney shall also: (1) authorize that particular joint venturer or partner to act for and bind Bidder in all matters relating to the Bid; and (2) provide that each venturer or partner shall be jointly and severally liable for any and all of the duties and obligations of Bidder assumed under the Bid and under any Contract arising therefrom. The Bid shall be executed by the designated joint venturer or partner on behalf of the joint venture or partnership in its legal name.

5. Modifications

Each Bidder shall submit its Bid in strict conformity with the requirements of the Contract Documents. Unauthorized additions, modifications, revisions, conditions, limitations, exclusions or provisions attached to a Bid may render it non-responsive and may cause its rejection. Bidders shall neither delete, modify, nor supplement the printed matter on the Bid Forms, nor make substitutions thereon. Oral, telephonic and electronic modifications will not be considered, unless the Notice Inviting Bids authorizes the submission of electronic bids and modifications thereto and such modifications are made in accordance with the Notice Inviting Bids.

6. Erasures/Mutilation of Bid Documents

The bid submitted must not contain any erasures, interlineations, or other corrections unless each such correction is suitably authenticated by affixing in the margin immediately opposite the correction the surname or surnames of the person or persons signing the bid.

Contractors should not deface or mutilate the bid documents to the extent that they may not be usable for construction purposes. Bid documents obtained under deposit shall be returned within 10 days after bid opening.

7. Examination of Site and Contract Documents

During the Mandatory Job Walk, each bidder should fully acquaint themselves with the conditions relating to the construction and labor so that they may fully understand the facilities, difficulties, and restrictions attending the execution of the work under the contract. Bidders shall thoroughly examine and be familiar with the drawings and specifications. The failure or omission of any Bidder to receive or examine any contract documents, form, instrument, addendum, or other document or to visit the site and acquaint himself with conditions there existing shall in no way relieve any Bidder from obligations with respect to its bid or to the contract. The Bidder is responsible to obtain any geotechnical and/or soils report pertaining to the site of the work at Bidder's expense. Although any such report does not operate as a warranty or guarantee of site conditions, the submission of a bid shall be taken as prima facie evidence of compliance with all terms of this section.

Discrepancies in, and/or omissions from the Plans, Specifications or other Contract Documents or questions as to their meaning shall be immediately brought to the attention of the District by submission of a written request for an interpretation or correction to the District no later than **12:00 PM on Monday, August 18, 2025**. Such submission, if any, must be sent to the Director of Business Support Services by emailing to jhansen@nsd.us.

Any interpretation of the Contract Documents will be made only by written addenda duly issued and mailed or delivered to each person or firm who has requested notice. The District will not be responsible for any explanations or interpretations provided in any other manner. No person is authorized to make any oral interpretation of any provision in the Contract Documents to any Bidder, and no Bidder should rely on any such oral interpretation.

Bids shall include complete compensation for all items that are noted in the Contract Documents as the responsibility of the Contractor.

- 7.1** Each Bidder, by making his/her bid represents that he has read and understands the Contract and Bid Documents and any and all related reports and information. After executing the Agreement, no consideration will be given to any claim of misunderstanding of the documents.
- 7.2** Each Bidder, by making his/her bid, represents that it has performed all diligence necessary to make an accurate bid, including, but not limited to, visiting the site, inspecting the area of the work, and familiarizing itself with the local conditions under which the work is to be performed, including sub-surface conditions. Such inspection shall specifically consider requirements for accessing the site and determining the work can be completed as required by, and as shown in, the Contract Documents.
- 7.3** With District's approval, including provision of insurance as required, and after scheduling access with the District, each Bidder may conduct additional site investigations at the Bidder's sole cost.

8. Withdrawal of Bids

Prior to bid opening, a Bid may be withdrawn by the Bidder only by means of a written request signed by the Bidder or its properly authorized representative.

9. Agreements and Bonds

The Agreement form, which the successful Bidder, as Contractor, will be required to execute, and the forms and amounts of surety bonds, which will be required to furnish at the time of execution of the Agreement, are included in the contract documents and shall be carefully examined by the Bidder. The required number of executed copies of the Agreement, the Performance Bond, and the Payment Bond for Public Works is as specified in the Special Conditions.

Unless otherwise specified in Special Conditions, Contractor shall furnish a surety bond in an amount equal to 100 percent of contract price as security for faithful performance of this contract and shall furnish a separate bond as security for payment of persons performing labor and furnishing materials in connection with this contract. The Payment Bond must be in the amount of 100 percent of the total amount payable. Both the Payment and the Performance Bonds must be executed by an admitted Surety approved to conduct business in the State of California which meets the highest standards the District is legally permitted to establish. Aforesaid bonds shall be in form set forth in these contract documents. Upon request of the successful Bidder, as Contractor, the District will consider and accept multiple sureties on such bonds.

10. Bidders Interested in More Than One Bid and Bidders Not Qualified to Bid

No person, firm, or corporation shall be allowed to make, or file, or be interested in more than one bid for the same work unless alternate bids are specifically called for. A person, firm, or corporation that has submitted a subproposal to a Bidder, or that has

quoted prices of materials to a Bidder, is not thereby disqualified from submitting a subproposal or quoting prices to other Bidders or making a prime proposal. No person, firm, or corporation shall be allowed to bid who has participated in the preparation of contract specifications; a bid by such a person, firm or corporation shall be determined to be nonresponsive.

11. Award of Contract

Once all Bids are opened and reviewed to determine the lowest responsive and responsible Bidder, the District Governing Board may award the contract. The apparent successful Bidder should provide the following documents: (1) the Performance Bond; (2) the Payment Bond; and (3) the required insurance certificates and endorsements. Once the District notifies the Bidder of the intent to award, the Bidder will have ten (10) calendar days from the date of this notification to supply the District with all requested documents and certifications. Regardless of whether the Bidder supplies the required documents and certifications in a timely manner, the Contract time will begin to run fifteen (15) calendar days from the date of the notice of award. Once the District receives all of the properly drafted and executed documents and certifications from the Bidder, the District may issue a Notice to Proceed to that Bidder.

The District may reject any Bid which, in its opinion when compared to other bids received or to the District's internal estimates, does not accurately reflect the cost to perform the Work. The District may reject as non-responsive any bid which unevenly weights or allocates costs, including but not limited to overhead and profit to one or more particular bid items.

The District reserves the right to reject any or all bids, or to waive any irregularities or informalities in any bids or in the bidding.

12. Additive and Deductive Items: Method of Determining Lowest Bid

Pursuant to Public Contract Code section 20103.8, should this bid solicitation include additive and/or deductive items, the checked [X] method (below) shall be used to determine the lowest bid:

 X (a) The lowest for each project shall be the lowest bid price on the base contract for each project without consideration of the prices on the additive or deductive items.

 (b) The lowest bid shall be the lowest total of the bid prices on the base contract and those additive or deductive items taken in the numerical order set forth in the bid form.

 (c) The lowest bid shall be the lowest total of the bid prices on the base contract and those additive or deductive items taken in order from a specifically identified list of those items that, when in the bid form and added to, or subtracted from, the base contract, are less than, or equal to, a funding amount publicly disclosed by the District before the first bid is opened.

 (d) The lowest bid shall be determined in a manner that prevents any information that would identify any of the Bidders from being revealed to the public entity before the ranking of all Bidders from lowest to highest has been determined.

If no method is checked, sub-paragraph (a) shall be used to determine the lowest bid.

Notwithstanding the method used by the District to determine the lowest responsible Bidder, the District retains the right to add to or deduct from the contract any of the additive or deductive items included in the bid solicitation.

13. Evidence of Responsibility

Upon the request of the District, a Bidder whose bid is under consideration for the award of the contract shall submit promptly to the District satisfactory evidence showing the Bidder's financial resources, its construction experience in the type of work being required by the District, and its organization available for the performance of the contract and any other required evidence of the Bidder's qualifications to perform the proposed contract. The District may consider such evidence before making its decision awarding the proposed contract. Failure to submit requested evidence of a Bidder's responsibility to perform the proposed contract may result in rejection of the bid.

14. Listing Subcontractors

Each Bidder shall submit with his/her or its sealed bid a list of the proposed subcontractors on this project as required by the Subletting and Subcontracting Fair Practices Act (Public Contract Code section 4100 and following). Forms for this purpose are furnished with the contract documents. In addition to these requirements, at the bid opening, Contractor shall provide the address, phone number, **DIR registration number**, and **license number** of each listed subcontractor. If the Bidder fails to provide information within one business day of bid opening, District may in its discretion, reject the bid as nonresponsive.

15. Workers' Compensation

In accordance with the provisions of section 3700 of the Labor Code, Contractor shall secure the payment of compensation to its employees. Contractor shall sign and file with District the following certificate prior to performing the work under this contract:

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.

The form of such certificate is included as part of the contract documents.

16. Substitution of Security / Retention

The Contract Documents call for monthly progress payments based upon the percentage of the work completed. The District will retain five percent (5%) of each progress payment as provided by the Contract Documents. At the request and expense of the successful Bidder, the District will substitute securities for the amount so retained in accordance with Public Contract Code Section 22300.

17. Contractor's License and Certifications

Pursuant to Section 7028.15 of the Business and Professions Code and Section 3300 of the Public Contract Code, all Bidders must possess proper licenses for performance of this Contract prior to submittal of bid documents. Subcontractors must possess the appropriate licenses for each specialty subcontracted prior to submittal of bid documents. Pursuant to Section 7028.5 of the Business and Professions Code, the District shall consider any bid submitted by a contractor not currently licensed in accordance with state law and pursuant to the requirements found in the Contract Documents to be non-responsive, and the District shall reject the Bid. The District shall have the right to request, and Bidders shall provide within five (5) calendar days, evidence satisfactory to the District of all valid license(s) currently held by that Bidder and each of the Bidder's subcontractors, before awarding the Contract.

Bidder must have all Certifications and/or Factory Authorizations required for the project prior to submittal of bid; including but not limited to specified manufacturer certifications located in the Special Conditions section of this document. Subcontractors must have all Certifications and/or Factory Authorizations required for each specialty subcontracted prior to submittal of bid; including but not limited to specified manufacturer certifications located in the Special Conditions section of this document.

18. Storm Water Permit for Construction Activity

It shall be the responsibility of the successful Bidder to file a Notice of Intent and procure a State Water Resources Control Board (State Water Board) National Pollutant Discharge Elimination System General Permit for Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activity (Permit). The successful Bidder shall be responsible for procuring, implementing and complying with the provisions of the Permit and the Storm Water Pollution Prevention Plan (SWPPP), including the standard provisions, monitoring and reporting requirements as required by Permit and as required by Article 70 of the General Conditions. It shall be the responsibility of all Bidders to evaluate and include in the bid the cost of procuring the Permit and/or preparing, complying with (e.g., monitoring), or revising the SWPPP.

19. Ethics in Bidding

The District expects the Bidders to maintain high ethical standards in engaging in the competitive bidding process. The bid amount of one Bidder should not be divulged to another before the award of the subcontract or order, nor should it be used by Contractor to secure a lower proposal from another Bidder on that project (bid shopping). Subcontractors or Suppliers should not request information for the Contractor regarding any sub-bid in order to submit a lower proposal on that project (bid peddling). District will consider any Bidder found to be engaging in such practices to be a non-responsible Bidder and may reject its bid on that ground.

20. Substitutions and Special Brand Names

In accordance with Public Contract Code section 3400, except where the District has established a standard which has been approved by the governing board, requests for review and evaluation of "or equal" items will be considered. Any proposals for substitutions of equipment, materials, or products other than what is specified in the bid documents must be submitted, in writing, to the District within seven (7) calendar days after the release date of the bid documents. After reviewing the request, the District will respond with its decision to all parties who have requested notice. The District has the right to reject any or all requests for substitutions of equipment, materials, or products other than what is specified in the bid documents. The documentation submitted must include any and all illustrations, specifications, and other relevant data including catalogue information which describes the

substituted item or product or work and substantiates that it is an "or equal" to the specified item or product or work. In addition, the submittal documentation must also include a statement of the cost implications of the substitution being requested stating whether and why the substitution will reduce or increase the contract price. The documentation submitted must also include information regarding the durability and life cycle cost of the substituted item, product or work. Substantiating data shall include a signed affidavit from the Bidder stating that the substituted item or product or work is equivalent to the specified item or product or work in every way except as listed on the affidavit. Whenever possible, the same substitution information is to be included in the sealed bid submittal package. Failure to submit all the needed substantiating data, including the signed affidavit, may result in a determination that the bid is nonresponsive.

BIDDERS ARE SPECIFICALLY NOTIFIED THAT THE SUBMISSION OF THIS DOCUMENTATION IN NO WAY OBLIGATES THE DISTRICT OR ITS REPRESENTATIVE TO REVIEW SUCH DOCUMENTATION PRIOR TO CONTRACT AWARD. FURTHERMORE, IF A PROPOSED SUBSTITUTION IS REJECTED, BIDDER SHALL BE RESPONSIBLE TO PROVIDE THE ITEM OR PRODUCT OR WORK AS ORIGINALLY SPECIFIED AT NO ADDITIONAL COST TO THE DISTRICT. DISTRICT HAS THE COMPLETE AND SOLE DISCRETION TO DETERMINE IF AN ITEM OR ARTICLE IS AN "OR EQUAL" ITEM.

21. Fingerprinting

By law it is the District's responsibility to determine whether a contractor must provide fingerprint certification. Pursuant to Education Code section 45125.2, the District considers the totality of the circumstances in order to determine if fingerprinting of employees of a contractor working on a school site is required. Factors to be considered include the length of time the contractor's employees are on school grounds, whether students are in proximity with the location where the contractor's employees are working, and whether the contractor's employees are working alone or with others. A determination regarding whether fingerprint certification is required is contained in the Special Conditions.

22. Registration with Department of Industrial Relations

Pursuant to Labor Code Section 1725.5, contractors and all subcontractors must be registered with the Department of Industrial Relations (DIR) in order to bid on, to be listed in a bid proposal for a public works project or to engage in the performance a public works contract. A complete list of DIR registration numbers of all second and third tier subcontractors included on the project will be due at bid opening. Failure to provide the complete list may result in a determination of non-responsiveness. This Project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

Contractor and any subcontractors engaging in work on the Project are required to review and comply with the provisions of the California Labor Code, Division 2, Part 7, Chapter 1, beginning with Section 1720, and the regulations of the Department of Industrial Relations implementing those provisions. These statutory and regulatory provisions contain specific requirements concerning, for example, the determination and payment of prevailing wages, retention, inspection and auditing of payroll records, use of apprentices, payment of overtime compensation, and various penalties or fines which may be imposed for violations of the requirements of the chapter. Submission of a bid proposal constitutes the bidder's representation that it has thoroughly reviewed these statutory and regulatory requirements and agrees to bind every subcontractor performing work on the Project to these requirements to the extent such requirements are applicable to the subcontractor's work.

23. Disabled Veteran Business Enterprises

Disabled Veteran Business Enterprise (DVBE) incentive is waived for this project.

24. Immigration Reform and Control Act

The Bidder hereby certifies that he or she or it is, and at all times during the performance of work hereunder shall be, in full compliance with the provisions of the Immigration Reform and Control Act of 1986 ("IRCA") in the hiring of its employees and the Bidder shall indemnify, hold harmless and defend the District against any and all actions, proceedings, penalties or claims arising out of the Bidder's failure to comply strictly with the IRCA.

25. Filing of Bid Protests

Bidders may file a "protest" of a Bid with the District's Director of Business Support Services. In order for a Bidder's protest to be considered for review, the protest must;

- a. Be filed in writing within five (5) calendar days of the notice of intent to award;
- b. Clearly identify the specific irregularity or accusation;
- c. Clearly identify the specific District staff determination or recommendation being protested;
- d. Specify, in detail, the grounds of the protest and the facts supporting the protest; and

- e. Include all relevant, supporting documentation with the protest at time of filing.

If the protest does not comply with each of these requirements, it will be rejected as invalid.

If the protest is properly submitted, the District's Director of Business Support Services, or other designated District staff member shall review the basis of the protest and all relevant information. The Director of Business Support Services will provide a written decision to the protestor. The protestor may then appeal the decision of the Director of Business Support Services to the Assistant Superintendent of Business Services.

26. Addenda

The District reserves the right to revise the Contract Documents prior to the bid opening date. Revisions, if any, shall be made by written Addendum. All addenda issued by the District shall be included in the bid and made part of the Contract Documents. Pursuant to Public Contract Code Section 4104.5, if the District issues an Addendum which includes material changes to the Project less than 72 hours prior to the deadline for submission of bids, the District will extend the deadline for submission of bids. The District may determine, in its sole discretion, whether an Addendum warrants postponement of the bid submission date. Each prospective Bidder shall provide District a name, address and email to which Addenda may be sent, as well as a telephone number by which the District can contact the Bidder. Copies of Addenda will be furnished by email, first class mail, express mail or other proper means of delivery without charge to all parties who have obtained a copy of the Contract Documents and provided such current information. Please Note: Bidders are responsible for ensuring that they have received any and all Addenda. To this end, each Bidder should contact the Purchasing Department to verify that it has received all Addenda issued, if any, prior to the bid opening.

27. Submission of Sealed Bids

Once the Bid and supporting documents have been completed and signed as set forth herein, they shall be placed, along with the Bid Guarantee and other required materials in an envelope, sealed, addressed and delivered or mailed, postage prepaid to the District at the place and to the attention of the person indicated in the Notice Inviting Bids. No oral or telephonic bids will be considered. No forms transmitted via the internet, e-mail, facsimile, or any other electronic means will be considered unless specifically authorized by District as provided herein. The envelope shall also contain the following in the lower left-hand corner thereof:

(Contractor's Name)
Bid 25-26-01B
Warehouse Freezer Replacement

Only where expressly permitted in the Notice Inviting Bids, may Bidders submit their bids via electronic transmission pursuant to Public Contract Code Sections 1600 and 1601. District reserves the right to not accept electronically transmitted bids if not specifically authorized in the Notice Inviting Bids, and may reject any bid not strictly complying with District's designated methods for delivery.

28. Delivery and Opening of Bids

Bids will be received by the District at the address shown in the Notice Inviting Bids up to the date and time shown therein. The District will leave unopened any Bid received after the specified date and time, and any such unopened Bid will be returned to the Bidder. It is the Bidder's sole responsibility to ensure that its Bid is received as specified. Bids may be submitted earlier than the dates(s) and time(s) indicated.

Bids will be opened at the date and time stated in the Notice Inviting Bids, and the amount of each Bid will be read aloud and recorded. All Bidders may, if they desire, attend the opening of Bids. The District may in its sole discretion, elect to postpone the opening of the submitted Bids. District reserves the right to reject any or all Bids and to waive any informality or irregularity in any Bid. In the event of a discrepancy between the written amount of the Bid Price and the numerical amount of the Bid Price, the written amount shall govern.

29. Insurance Requirements

The successful Bidder shall procure the insurance in the form and in the amount specified in the General Conditions.

30. Prevailing Wage

The general prevailing rate of per diem wages in the locality in which this work is to be performed for each craft or type of worker needed to execute the Contract may be obtained online at <http://www.dir.ca.gov/dlsr>. Bidders are advised that a copy of these rates must be posted by the successful Bidder at the job site(s).

31. Debarment of Contractors and Subcontractors

In accordance with the provisions of the Labor Code, contractors or subcontractors may not perform work on a public works project with a subcontractor who is ineligible to perform work on a public project pursuant to Section 1777.1 or Section 1777.7 of the Labor Code. Any contract on a public works project entered into between a contractor and a debarred subcontractor is void as a matter of law. A debarred subcontractor may not receive any public money for performing work as a subcontractor on a public works contract. Any public money that is paid to a debarred subcontractor by the Contractor for the Project shall be returned to the District. The Contractor shall be responsible for the payment of wages to workers of a debarred subcontractor who has been allowed to work on the Project.

Contractors who will perform more than \$100,000 in business with the District during the fiscal year must complete the Suspension and Debarment Certification, Certification Regarding Lobbying Form (and, if applicable, Disclosure of Lobbying Activities) forms. The forms are available upon request from the Purchasing Office at 619-336-7784. The District is prohibited from contracting with Contractors that are on the U.S. General Services Administration's Suspension and Debarment List. The Suspension and Debarment Certification is required to document that the Contractor or any of its key employees have not been debarred, proposed for debarment, or suspended by a Federal agency.

32. Sales and Other Applicable Taxes, Permits, and Fees

Contractor and its subcontractors performing work under this Contract will be required to pay California sales tax and other applicable taxes, and to pay for permits, licenses and fees required by the agencies with authority in the jurisdiction in which the work will be located, unless otherwise expressly provided by the General or Special Conditions.

33. Iran Contracting Act of 2010

The Bidder hereby certifies that he/she or it is, and at all times during the performance of work hereunder shall be, in full compliance with the provisions of the Iran Contracting Act of 2010. The Bidder shall indemnify, hold harmless and defend the District against any and all actions, proceedings, penalties or claims arising out of the Bidder's failure to comply strictly with the Iran Contracting Act of 2010.

34. Prequalification

Prospective bidders are required to be pre-qualified for projects in excess of one million dollars (\$1,000,000) in estimated value using any funds received pursuant to the Leroy F. Greene School Facilities Act of 1998 or any funds from any state school bond. Additionally, subcontractors in the trades of mechanical, electrical and plumbing are required to be prequalified. These trades are associated with California State Contractor's License classifications including, but not limited to: C-4, C-7, C-10, C-16, C-20, C-34, C-36, C-38, C-42, C-43, and C-46. The prequalification process may be conducted on a per project basis and/or on scheduled basis, as determined by the needs of the District. Prequalification status is valid for one (1) calendar year. **This Project is subject to prequalification.**

End of Information for Bidders

NATIONAL SCHOOL DISTRICT

WAREHOUSE FREEZER REPLACEMENT Bid 25-26-01B

SECTION 3 CONTRACT BID FORMS

TO: National School District, acting by and through its Governing Board, herein called the "District":

Pursuant to and in compliance with your Request for Bids and the other documents relating thereto, the undersigned Contractor, having thoroughly examined and familiarized himself with the terms of the contract, the local conditions affecting the performance of the contract and the cost of the work at the place where the work is to be done, and with the drawings and specifications and other contract documents, hereby proposes and agrees to perform, within the time stipulated, the contract, including all of its component parts, and everything required to be performed, and to provide and furnish any and all of the labor, materials, tools, expendable equipment, and all utility and transportation services necessary to perform the contract and complete in a workmanlike manner all of the work required in connection with [Warehouse Freezer Replacement Bid 25-26-01B](#) all in strict conformity with the drawings and specifications and other contract documents, including addenda nos. _____, _____, _____, and _____, on file at the office of Assistant Superintendent, Business Services of District for the sum of:

Total Base Bid Amount: \$ (_____)

_____ **Dollars** _____ **Cents**

BID AWARDS: Award for Project will be determined on the lowest base bid on page 1.

BID PRICE GUARANTEED: Prices quoted herein are to remain firm from [August 25, 2025 to December 31, 2025](#).

1. The District has no obligation to award any contracts listed on this Bid Form.
2. It is understood that the District reserves the right to reject this bid and that this bid shall remain open and not be withdrawn for the period specified in the Notice to Contractors Calling for Bids.
3. Document checklist: _____ The required **bid security** is attached hereto.
_____ **Non-collusion** affidavit is attached hereto.
_____ The required list of proposed **subcontractors** is attached hereto.
_____ **Bidder Information Forms** are attached hereto.
4. It is understood and agreed that Bidder shall provide the addresses, telephone numbers, and license numbers of all listed subcontractors at bid opening or Bidder's bid may be rejected as nonresponsive.
5. It is understood and agreed that if written notice of the acceptance of this bid is mailed, telegraphed, or delivered to the undersigned after the opening of the bid, and within the time this bid is required to remain open, or at any time thereafter before this bid is withdrawn, the undersigned will execute and deliver to the District a contract in the form attached hereto in accordance with the bid as accepted. The undersigned will also furnish and deliver to the District the Performance Bond and Payment Bond for Public Works as specified, all within seven (6) days after receipt of notification of intent to award. The work under the contract shall be commenced by the undersigned Bidder, if awarded the contract, on the date to be stated in the District's Notice to Proceed, and shall be completed by the Contractor in the time specified in the contract documents.

6. The names of all persons interested in the foregoing proposal as principals are as follows:

(IMPORTANT NOTICE: If Bidder or other interested person is a corporation, state legal name of corporation, also names of the president, secretary, treasurer, and manager thereof; if a copartnership, state true name of firm, also names of all individual copartners comprising the firm; if Bidder or other interested person is an individual, state first and last names in full.)

7. Bidder certifies that it is licensed in accordance with the law providing for the registration of Contractors, **License No.**_____, **Expiration Date**_____, **class of license** . Copy of Bidders wallet license is **attached hereto.**

I, _____, the _____ of the Bidder, hereby certify under penalty of perjury under the laws of the State of California, that all of the information submitted by the Bidder in connection with this bid and all of the representations made herein are true and correct.

Executed on this _____ day of _____, 20__ at _____ County, California.

Proper Name of Bidder _____

Signature of Bidder _____

NOTE: If Bidder is a corporation, the legal name of the corporation shall be set forth above together with the signatures of authorized officers or agents and the document shall bear the corporate seal; if Bidder is a partnership, the true name of the firm shall be set forth above together with the signature of the partner or partners authorized to sign contracts on behalf of the partnership; and if Bidder is an individual, his or her signature shall be placed above.

Business Address: _____

Place of Residence: _____

Telephone: () _____

BID BOND

THAT _____,
as Principal, and _____, as
Surety, are held firmly bound unto the **NATIONAL SCHOOL DISTRICT** (hereinafter called the
DISTRICT) in the sum of _____
_____ DOLLARS (\$ _____), being not less than ten
percent (10%) of the Total Bid Price; for the payment of which sum will and truly to be made, we
bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally,
firmly by these presents.

WHEREAS, said Principal has submitted a bid to the DISTRICT to perform all Work required for the
construction of the **Warehouse Freezer Replacement, Bid 25-26-01B** as set forth in the Notice
Inviting Bids and accompanying Bid Documents, dated **August 6, 2025**.

NOW, THEREFORE, if said Principal is awarded a Contract for the Work by the DISTRICT and,
within the time and in the manner required by the above- referenced Bid Documents, enters into the
written form of Contract bound with said Bid Documents, furnishes the required bonds (one to
guarantee faithful performance and the other to guarantee payment for labor and materials)
furnishes the required insurance certificates and endorsements, and furnishes any other
certifications as may be required by the Contract, then this obligation shall be null and void;
otherwise it shall remain in full force and effect. In the event suit is brought upon this bond by the
DISTRICT and judgment is recovered, said Surety shall pay all costs incurred by the DISTRICT in
such suit, including reasonable attorneys' fees to be fixed by the court.

SIGNED AND SEALED, this _____ day of _____, 20__.

Principal

Surety

By: _____
Signature

By: _____
Signature

(SEAL)

(SEAL)

LIST OF PROPOSED SUBCONTRACTORS

In compliance with the "Subletting and Subcontracting Fair Practices Act," Sections 4100 through 4114 of the California Public Contract Code, and any amendments thereto, each Bidder shall provide the information requested below for each subcontractor who will perform work, labor or render service to Bidder in or about the construction of the Work in an amount in excess of one-half of one percent (greater than 0.5 %) of the Bidder's Total Bid Price, or, in the case of bids or offers for the construction of streets or highways, including bridges, in excess of one-half of 1 percent of the Contractor's total bid or ten thousand dollars (\$10,000), whichever is greater, and shall further set forth the portion of the Work which will be done by each subcontractor. Bidder shall list only one subcontractor for any one portion of the Work.

The Department of Industrial Relations (**DIR**) **registration number** for each subcontractor will be due no later than **24 hours of bid opening**. Failure to supply DIR registration numbers of all subcontractors may result in a determination of non-responsiveness for the bid proposal.

If the Bidder fails to specify a subcontractor for any portion of the Work to be performed under the Contract, it shall be deemed to have agreed to perform such portion itself, and shall not be permitted to subcontract that portion of the Work except under the conditions hereinafter set forth below.

Subletting or subcontracting of any portion of the Work in excess of one half of one percent (greater than 0.5%) of the Total Bid Price or, in the case of bids or offers for the construction of streets or highways, including bridges, in excess of one-half of 1 percent of the Contractor's total bid or ten thousand dollars (\$10,000), whichever is greater, for which no subcontractor was designated in the original bid shall only be permitted in cases of public emergency or necessity, and then only after District approval.

(Duplicate page if needed for listing additional subcontractors)

Name and Location of Subcontractor

Description of Work to be Subcontracted

Name: _____

Address: _____

Ph: _____ Fax: _____

License No. _____

DIR # _____

Name and Location of Subcontractor

Description of Work to be Subcontracted

Name: _____

Address: _____

Ph: _____ Fax: _____

License No. _____

DIR # _____

NON-COLLUSION AFFIDAVIT

In accordance with Public Contract Code Section 7106, the undersigned, being first duly sworn, deposes and says that he or she holds the position listed below with the Bidder, the party making the foregoing bid, that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the Bidder has not directly or indirectly induced or solicited any other Bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any Bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the Bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the Bidder or any other Bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other Bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the Bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Signature

Typed or Printed Name

Title

Bidder

Subscribed and sworn before me

This ____ day of _____, 20____

Notary Public in and for
the State of California

(Seal)

My Commission Expires: _____

SECTION 3 – C
BIDDER INFORMATION FORMS

IMPORTANT NOTE: This bid may be subject to prequalification. All Bidders, regardless of prequalification status, must complete the following Bidder Information Forms and submit them with their bid.

INFORMATION ABOUT BIDDER

[Indicate not applicable ("N/A") where appropriate.]

NOTE: Where Bidder is a joint venture, pages shall be duplicated and information provided for all parties to the joint venture.

1.0 Name of Bidder: _____

2.0 Type, if Entity: _____

3.0 Bidder Address: _____

_____ Facsimile Number _____ Telephone Number _____

4.0 How many years has Bidder's organization been in business as a Contractor?

5.0 How many years has Bidder's organization been in business under its present name?

5.1 Under what other or former names has Bidder's organization operated?

6.0 If Bidder's organization is a corporation, answer the following:

6.1 Date of Incorporation: _____

6.2 State of Incorporation: _____

6.3 President's Name: _____

6.4 Vice-President's Name(s): _____

6.5 Secretary's Name: _____

6.6 Treasurer's Name: _____

7.0 If an individual or a partnership, answer the following:

7.1 Date of Organization: _____

7.2 Name and address of all partners (state whether general or limited partnership):

8.0 If other than a corporation or partnership, describe organization and name principals:

9.0 List other states in which Bidder's organization is legally qualified to do business.

10.0 What type of work does the Bidder normally perform with its own forces?

11.0 Has Bidder ever failed to complete any work awarded to it? If so, note when, where, and why:

12.0 Within the last five years, has any officer or partner of Bidder's organization ever been an officer or partner of another organization when it failed to complete a contract? If so, attach a separate sheet of explanation:

13.0 On a separate sheet, list the construction experience of the key individuals of Bidder's organization.

(see attached)

14.0 List Trade References:

15.0 List Bank References (Bank, Branch Address, Account Number):

16.0 Name of Bonding Company and Name and Address of Agent:

LIST OF CURRENT PROJECTS (Backlog)

[Attach page for additional current projects.]

<u>Project</u>	<u>Description of Bidder's Work</u>	<u>Completion Date</u>	<u>Estimated Magnitude (\$ m/hrs. etc.)</u>

LIST OF FIVE COMPLETED PROJECTS - LAST FOUR YEARS

[Attach page if needed for listing of additional completed projects.]

Please list any school project first which are similar enough to demonstrate Bidder's ability to perform the required Work followed by all other projects in chronological order.

<u>Project Client</u>	<u>Performance</u>	<u>Magnitude (\$ m/hrs.etc.)</u>	<u>Contract Contact Information Name & Phone Number</u>

EXPERIENCE AND TECHNICAL QUALIFICATIONS QUESTIONNAIRE

Personnel:

The Bidder shall identify the key personnel to be assigned to this project in a management, construction supervision or engineering capacity.

1. List each person's job title, name and percent of time to be allocated to this project:

-
-
2. Summarize each person's specialized education:

3. List each person's years of construction experience relevant to the project:

4. Summarize such experience:

Bidder agrees that personnel named in this Bid will remain on this Project until completion of all relevant Work, unless substituted by personnel of equivalent experience and qualifications approved in advance by the District.

Additional Bidder's Statements:

If the Bidder feels that there is additional information, which has not been included in the questionnaire above, and which would contribute to the qualification review, it may add that information in a statement here or on an attached sheet, appropriately marked:

VERIFICATION AND EXECUTION

These Contract Bid Forms shall be executed only by a duly authorized official of the Bidder:

I declare under penalty of perjury under the laws of the State of California that the foregoing information is true and correct:

Executed on this _____ day of _____, 20____.

By: _____
Type or Print Name

Signature

Title

Subscribed and sworn before me this ____ day of _____, 20____.

Notary Public in and for
the State of California

(Seal)

My Commission Expires: _____

NATIONAL SCHOOL DISTRICT

WAREHOUSE FREEZER REPLACEMENT BID 25-26-01B

SECTION 4 AGREEMENT

CONTRACT AGREEMENT

THIS AGREEMENT, made this ____ day of _____ in the County of _____, State of California, by and between the **National School District**, hereinafter called the District, and _____, hereinafter called the Contractor,

WITNESSETH that the District and the Contractor for the considerations stated herein agree as follows:

ARTICLE 1 - SCOPE OF WORK. The Contractor shall perform within the time stipulated the contract as herein defined, and shall provide all labor, materials, tools, utility services, and transportation to complete in a workmanlike manner all of the work required in connection with the following titled project:

Warehouse Freezer Replacement
Bid 25-26-01B

in strict compliance with the contract documents as specified in Article 4 below.

ARTICLE 2 - TIME FOR COMPLETION. (a) The work shall be commenced on the date stated in the District's notice to proceed, as provided in Section A of the Special Conditions. As specified in District's notice to proceed, the work shall be completed within Twenty Three (23) days from and after the date stated in such notice, which shall include three (3) working days for normal bad weather, taking into consideration the seasonal weather for the time when construction will be undertaken.

(b) In entering into this Agreement, Contractor acknowledges and agrees that the construction duration stipulated herein is adequate and reasonable for the size and scope of the project.

ARTICLE 3 - CONTRACT PRICE. The District shall pay to the Contractor as full consideration for the faithful performance of the contract, subject to any additions or deductions as provided in the contract documents, and including any applicable sales, use or other taxes or costs, the sum of: _____ (\$ _____), the following amounts stipulated in the bid.

ARTICLE 4 - COMPONENT PARTS OF THE CONTRACT. The contract entered into by this Agreement consists of the following contract documents (referred to herein as the contract of the contract documents), all of which are component parts of the contract as if herein set out in full or attached hereto:

Notice to Contractors Calling for Bids
Information for Bidders
Bid, as accepted
Designation of Subcontractors
List of Subcontractor's DIR Registration Numbers
Noncollusion Affidavit
Agreement
Bid Bond
Performance Bond
Payment Bond for Public Works
Recycled Content Certification
Contractor Fingerprinting Requirements
Asbestos-Free Materials Certification
Drug-Free Workplace Certification
Contractor's Certificate Regarding Workers' Compensation
General Conditions and Special Conditions
Project Manual and Specifications
Drawings
Certification of Contractor and Subcontractor Division of Industrial Relations Registration
Addenda Nos. _____, _____, _____, as issued

All of the above-named contract documents are intended to be complementary. Work required by one of the above-named contract documents and not by others shall be done as if required by all. This agreement shall supersede any prior agreement of the parties.

IN WITNESS WHEREOF, this Agreement has been duly executed by the above-named parties, on the day and year first above written.

CONTRACTOR:

DISTRICT:
National School District

License No. _____ DIR # _____

By _____

By _____

Its _____

Its _____

Governing Board Date _____

(Corporate Seal)

WORKERS' COMPENSATION

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 in one or more insurers duly authorized to write compensation insurance in this State.

(b) By securing from the Director of Industrial Relations a certificate of consent to self-insure, 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.

Name

Title

Company

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

00151-00005/3762855.1

NATIONAL SCHOOL DISTRICT

WAREHOUSE FREEZER REPLACEMENT

BID 25-26-01B

**SECTION 5
PERFORMANCE BOND**

PERFORMANCE BOND

WHEREAS the **NATIONAL SCHOOL DISTRICT** (also herein "Obligee") has awarded to _____ (hereinafter "Contractor"), a contract for work consisting of but not limited to, furnishing all labor, materials, tools, equipment, services, and incidentals for the construction of the **Warehouse Freezer Replacement, Bid 25-26-01B**, Project and all other required structures and facilities within the rights-of-way, easements and permits;

WHEREAS, the Work to be performed by the Contractor is more particularly set forth in that certain contract for the said Public Work dated _____ (hereinafter the "Public Work Contract"); and

WHEREAS, the Contractor is required by said Public Work Contract to perform the terms thereof and to provide a bond both for the performance and guaranty thereof,

NOW, _____, THEREFORE, we _____, the undersigned Contractor, as Principal, and _____, a corporation organized and existing under the laws of the State of _____, and duly authorized to transact business under the laws of the State of California, as Surety, are held and firmly bound unto the **NATIONAL SCHOOL DISTRICT** in the sum of _____ dollars, \$ _____, said sum being not less than 100% of the total amount payable by the said Obligee under the terms of the said Public Work Contract, for which payment well and truly to be made, we bind ourselves, our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that if the Principal, his or its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions and agreements in the said Public Work Contract and any alteration thereof made as therein provided, on his or their part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their intent and meaning; and shall faithfully fulfill the one-year guarantee of all materials and workmanship; and indemnify and save harmless the Obligee, its officers and agents, as stipulated in the said Public Work Contract, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect. In the event legal action is required to enforce the provisions of this agreement, the prevailing party shall be entitled to recover reasonable attorneys' fees in addition to court costs, necessary disbursements, and other damages.

In case legal action is required to enforce the provisions of this bond, the prevailing party shall be entitled to recover reasonable attorneys' fees in addition to court costs, necessary disbursements and other consequential damages.

The said Surety, for value received, hereby stipulates and agrees that no change, extensions of time, alteration or addition to the terms of the Public Work Contract or to the Work to be performed thereunder, or the specifications accompanying the same shall in any way affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract, or to the Work or to Specifications.

IN WITNESS WHEREOF, we have hereto set our hands and seals this ___ day of _____, 20__.

Principal/Contractor

By: _____
President

Surety

By: _____
Attorney-in-Fact

The rate of premium on this bond is _____ per thousand.

The total amount of premium charged, \$ _____.

(The above must be filled in by corporate surety.)

STATE OF CALIFORNIA)
) ss.
COUNTY OF _____)

On this ____ day of _____, in the year _____, before me,
_____, a Notary Public in and for said state, personally appeared
_____, known to me (or proved to be on the basis of satisfactory evidence)
to be the person whose name is subscribed to the within instrument as the Attorney-in-Fact of the
_____ (surety) and acknowledged to me that he subscribed the name of the
_____ (surety) thereto and his own name as Attorney-in-Fact.

Notary Public in and for said State

(SEAL)

My Commission expires _____.

This space intentionally left blank.

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, certify that I am the
_____ Secretary of the corporation named as principal to the within
bond; that _____ who signed the said bond on behalf of the principal was
then _____ of said corporation; that I know his signature, and his signature
thereto is genuine; and that said bond was duly signed, sealed and attested for and in behalf of said corporation by
authority of its governing Board.

(Corporate Seal)

Signature

Date

NOTE: A copy of the power of attorney to local representatives of the bonding company may be attached hereto.

This space intentionally left blank.

NATIONAL SCHOOL DISTRICT

WAREHOUSE FREEZER REPLACEMENT

BID 25-26-01B

**SECTION 6
PAYMENT BOND**

PAYMENT BOND

WHEREAS, the National School District (hereinafter designated as "Public Entity"), by action taken or a resolution passed _____, 20____, has awarded to _____, hereinafter designated as the "Principal," a contract for the work described as follows: **Warehouse Freezer Replacement, Bid 25-26-01B** (the "Project"); and

WHEREAS, said Principal is required by California Civil Code Section 9550 et seq. to furnish a bond in connection with said contract;

NOW THEREFORE, we, the Principal and _____, as Surety, are held and firmly bound unto the Public Entity in the penal sum of _____ Dollars (\$_____) lawful money of the United States of America, 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.

THE CONDITION OF THIS OBLIGATION IS SUCH that if said Principal, his or hers or its subcontractors, heirs, executors, administrators, successors or assigns, shall fail to pay (1) any of the persons named in California Civil Code Section 9100, (2) amounts due under the Unemployment Insurance Code with respect to work or labor performed under the contract, or (3) for any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of the contractor and his subcontractors pursuant to Section 13020 of the Unemployment Insurance Code, with respect to such work and labor the surety or sureties will pay for the same, in an amount not exceeding the sum hereinabove specified, and also, in case suit is brought upon this bond, all litigation expenses incurred by the Public Entity in such suit, including reasonable attorneys' fees, court costs, expert witness fees and investigation expenses.

This bond shall inure to the benefit of any of the persons named in California Civil Code Section 9100 so as to give a right of action to such persons or their assigns in any suit brought upon this bond.

It is further stipulated and agreed that the Surety on this bond shall not be exonerated or released from the obligation of this bond by any change, extension of time for performance, addition, alteration or modification in, to, or of any contract, plans, specifications, or agreement pertaining or relating to any scheme or work of improvement hereinabove described, nor by any fraud practiced by any person other than the claimant seeking to recover on the bond and that this bond be construed most strongly against the Surety and in favor of all persons for whose benefit such bond is given, and under no circumstances shall Surety be released from liability to those for whose benefit such bond has been given, by reason of any breach of contract between the owner or Public Entity and original contractor or on the part of any obligee named in such bond, but the sole conditions of recovery shall be that claimant is a person described in California Civil Code Section 9100 , and has not been paid the full amount of his claim and that Surety does hereby waive notice of any such change, extension of time, addition, alteration or modification herein mentioned.

IN WITNESS WHEREOF, this instrument has been duly executed by the Principal and Surety above named, on the _____ day of _____, 20__.

Principal _____

By _____

[Attach required acknowledgments]

Surety _____

By Attorney-in-Fact

NATIONAL SCHOOL DISTRICT

WAREHOUSE FREEZER REPLACEMENT BID 25-26-01B

SECTION 7 GENERAL CONDITIONS

GENERAL CONDITIONS

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GENERAL CONDITIONS

GENERAL CONDITIONS

Article 1 DEFINITIONS

- a. The "District" and "Contractor" are those mentioned as such in the agreement. For convenience and brevity, these terms, as well as terms identifying other persons involved in the contract are treated throughout the contract documents as if they are of singular number and masculine gender.
- b. "Subcontractor," as used herein, includes those having a direct contract with Contractor and one who furnishes material worked to a special design according to plans and specifications of this work, but does not include one who merely furnishes material not soworked.
- c. "Surety" is the person, firm, or corporation, admitted as a California admitted surety, that executes as surety the Contractor's Performance Bond and Payment Bond for Public Works.
- d. "Provide" shall include "provide complete in place," that is, "furnish and install."
- e. Words such as "indicated," "shown," "detailed," "noted," "scheduled," or words of similar meaning shall mean that reference is made to the drawings, unless otherwise noted. It shall be understood that the direction, designation, selection, or similar import of the District is intended, unless stated otherwise.
- f. "Work" of the Contractor or subcontractor includes labor or materials or both.
- g. The term "day" as used herein shall mean calendar day unless otherwise specifically designated.
- h. Where the words "equal," "equivalent," "satisfactory," "directed," "designated," "selected," "as required," and words of similar meaning are used, the written approval, selection, satisfaction, direction, or similar action of the District is required.
- i. Where the word "required" and words of similar meaning are used, it shall mean, "as required to properly complete the work as required by the District," unless stated otherwise.
- j. The word "perform" shall be understood to mean that the Contractor, at Contractor's expense, shall perform all operations necessary to complete the work, including furnishing of necessary labor, tools, and equipment, and further including the furnishing and installing of materials that are indicated, specified, or required to complete such performance.
- k. Where the words "acceptable," "acceptance," or words of similar import are used, it shall be understood that the acceptance of the District is intended.
- l. Where shown, the words "includes," and "including," do not limit the work to the items following those words.

Article 2 DRAWINGS AND SPECIFICATIONS

- a. **Contract Documents.** Contract Documents are complementary, and what is called for by one shall be as binding as if called for by all. The intention of documents is to include all labor and materials, equipment, and transportation necessary for the proper execution of the work. Materials or work described in words which as applied have a well-known technical or trade meaning shall be deemed to refer to such recognized standards.
- b. **Interpretations.** Drawings and specifications are intended to be fully cooperative and to agree. However, if Contractor observes that drawings and specifications are in conflict, he shall promptly notify the District in writing and any necessary changes shall be adjusted as provided in contract for changes in work. If such conflict arises, the following order of precedence shall generally apply, provided, however, that the order of precedence shall not be so rigidly interpreted as to affect an absurd or costly result:
 - 1. Special Conditions shall take precedence over General Conditions.
 - 2. Technical Specifications implement, in additional detail, the requirements of the General Conditions. In the event of conflict between the Technical Specifications and the General Conditions, the General Conditions shall take precedence.
 - 3. In the event of a conflict between the Technical Specifications and the drawings, the higher quality, higher quantity and most stringent requirements shall be deemed to apply and shall govern as to materials, workmanship, and installation procedures.
 - 4. With regard to drawings:
 - (a) Figures govern over scaled dimensions;
 - (b) Larger details govern over general drawings;
 - (c) Addenda/change order drawings govern over contract drawings;
 - (d) Contract drawings govern over standard drawings.
 - 5. Work not particularly shown or specified shall be the same as similar parts that are shown or specified.
- c. Misunderstanding of drawings and specifications shall be clarified by the District, whose decisions shall be final.

- d. Standards, Rules, and Regulations referred to are recognized printed standards and shall be considered as one and a part of these specifications within limits specified.

Article 3 COPIES FURNISHED

Contractor will be furnished, free of charge, copies of drawings and specifications as set forth in Special Conditions. Additional copies may be obtained at cost of reproduction.

Article 4 OWNERSHIP OF DRAWINGS

All drawings, specifications, and copies thereof furnished by District are its property. They are not to be used on other work and with exception of signed contract sets, are to be returned to District on request at completion of work.

Article 5 DETAIL DRAWINGS AND INSTRUCTIONS

- a. **Examination of Contract Documents.** Before commencing any portion of The Work, Contractor shall again carefully examine all applicable Contract Documents, the Project site and other information given to Contractor as to materials and methods of construction and other Project requirements. Contractor shall immediately notify the District Representative of any potential error, inconsistency, ambiguity, conflict or lack of detail or explanation. If Contractor performs, permits, or causes the performance of any Work which is in error, inconsistent or ambiguous, or not sufficiently detailed or explained, Contractor shall bear any and all resulting costs, including, without limitation, the cost of correction. In no case shall the Contractor or any subcontractor proceed with Work if uncertain as to the applicable requirements.
- b. **Additional Instructions.** After notification of any error, inconsistency, ambiguity, conflict or lack of detail or explanation, the District Representative will provide any required additional instructions, by means of drawings or other written direction, necessary for proper execution of Work.
- c. **Quality of Parts, Construction and Finish.** All parts of The Work shall be of the best quality of their respective kinds and the Contractor must use all diligence to inform itself fully as to the required construction and finish. In no case shall Contractor proceed with The Work without obtaining first from the District Representative such Approval may be necessary for the proper performance of Work.
- d. **Contractor's Variation from Contract Document Requirements.** If it is found that the Contractor has varied from the requirements of the Contract Documents including the requirement to comply with all applicable laws, ordinances, rules and regulations, the District Representative may at any time, before or after completion of the Work, order the improper Work removed, remade or replaced by the Contractor at the Contractor's expense.

Article 6 TIME FOR COMPLETION AND LIQUIDATED DAMAGES

- a. Project shall be commenced on or before the date stated in District's notice to the contractor to proceed and shall be completed by Contractor in the time specified in the Special Conditions. The notice to the contractor to proceed shall not be issued until all contract documents, including the Contract, the necessary original Certificates of Insurance, Endorsements of Insurance, Performance Bond, Payment Bond and all other documentation and certification required by the Contract have been received by the District. The District has stipulated in the Bid Form and the Special Conditions the schedule for contract submittals. The District is under no obligation to consider early completion of the project and the contract completion date shall not be amended by the District's acceptance of the Contractor's proposed earlier completion date. Furthermore, Contractor shall not, under any circumstances receive additional compensation from the District for indirect, general, administrative or other forms of overhead costs for the period between the time of earlier completion proposed by the Contractor and the official contract completion date. If the work is not completed in accordance with the foregoing, it is understood that the District will suffer damage. It being impractical and infeasible to determine the amount of actual damage, it is agreed that Contractor shall pay to District as fixed and liquidated damages, and not as a penalty, the sum stipulated in the Special Conditions for each calendar day of delay until work is completed and accepted. Contractor and his surety shall be liable for the amount thereof. Any money due or to become due the Contractor may be retained to cover said liquidated damages. Should such money not be sufficient to cover said liquidated damages, District shall have the right to recover the balance from the Contractor or his sureties, who will pay said balance forthwith. Regardless of the time lines in the schedule submitted by Contractor, no delay claims shall be accepted by District unless the event or occurrence delays the completion of the Project beyond the contractual completion date.
- b. Contractor shall abide by District's determination of what constitutes inclement weather based upon the inspector or geotechnical engineer's recommendation. A bad weather day is a day when the weather causes unsafe work conditions or is unsuitable for work that should not be performed during inclement weather (i.e., exterior finishes). Time extensions shall only be granted when the work that is stopped during inclement weather is on the critical path of the Project schedule. The District's consideration of time extension requests will take into account situations when rain days exceed the normal frequency and amount based on the closest weather station data averaged over the past three years, for the period of this contract and when Contractor can show such rain days impact the critical path. Contractor shall be expected to perform all work he can possibly complete during inclement weather (i.e., interior work).
- c. **Extension of Time.** Contractor shall not be charged liquidated damages because of any delays in completion of work due to unforeseeable causes beyond the control and without the fault or negligence of Contractor including, but not restricted to: acts of God, or of public enemy, acts of Government, acts of District or anyone employed by it or acts of another Contractor in performance of a contract with District, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather or delays of subcontractors due to such causes. Contractor shall within five (5) days of beginning of any such delay (unless District grants a further period of time prior to date of final settlement of the contract) notify District in writing of causes of delay; thereupon District shall ascertain the facts and extent of delay and grant extension of time for completing work when, in its judgment, the findings of fact justify such an extension. The District's findings of fact thereon shall be final and conclusive on all parties. In case of a continuing cause of delay, only one claim is necessary. Time extensions to the project should be requested by the Contractor as they occur and without delay. Regardless of the time lines in the schedule submitted by Contractor, no delay claims shall be accepted by District unless the event or occurrence delays the completion of the project beyond the contractual completion date.

- d. **Determining Damages for Delay.** District's liability to Contractor for delays for which District is responsible shall be limited to an extension of time for delays unless such delays were unreasonable under the circumstances involved and were not within the contemplation of the parties when the contract was awarded. Contractor agrees that the District's representative shall determine the actual costs to Contractor of any delay for which Contractor may claim damages from District. Such costs, if any, shall be directly related to the project, and shall not include costs that would be borne by the Contractor in the regular course of business, including, but not limited to, office overhead and ongoing insurance costs. The District shall not be liable for any damages which the Contractor could have avoided by any reasonable means including, but not limited to, the judicious handling of forces, equipment, or plant.
- e. **Removal or Relocation of Main or Trunkline Utility Facilities.** The Contractor shall not be assessed for liquidated damages for delay in completion of the project, when such delay was caused by the failure of the awarding authority of this contract or the owner of the utility to provide for removal or relocation of the existing main or trunkline utility facilities; however, when the Contractor is aware that removal or relocation of an existing utility has not been provided for, Contractor shall promptly notify the awarding authority and the utility in writing, so that provision for such removal or relocation may be made to avoid and minimize any delay which might be caused by the failure to remove or relocate the main or trunkline utility facilities, or to provide for its removal or relocation. In accordance with section 4215 of the Government Code, if the Contractor while performing the contract discovers any existing main or trunkline utility facilities not identified by the public agency in the contract plans or specifications, he shall immediately notify the public agency and utility in writing. The public utility, where they are the owner, shall have the sole discretion to perform repairs or relocation work or permit the Contractor to do such repairs or relocation work at a reasonable price. The Contractor shall be compensated for the costs of locating, repairing damage not due to the failure of the 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 on the project necessarily idled during such work. Such compensation shall be in accordance with the extra work provisions set out at Article 40 hereof.

Article 7 PROGRESS SCHEDULE

- a. Within fourteen (14) days after the date of the Award of the Contract, Contractor shall prepare a baseline progress schedule in hard copy and disk form and shall submit this schedule for the District's approval. The schedule shall clearly identify all staffing and other resources which in the Contractor's judgment are needed to complete the project within the time specified for completion. The schedule shall include milestones and shall include the "critical path" of construction. The Contractor is fully responsible to determine and provide for any and all staffing and resources at levels which allow for good quality and timely completion of the project; the District's approval of the progress schedule does not relieve the Contractor of any such responsibility. Contractor's failure to incorporate all elements of work required for the performance of the contract or any inaccuracy in the schedule shall not excuse the Contractor from performing all work required for a completed project within the specified contract time period, notwithstanding the District's acceptance of the schedule. **The first payment will not be made unless the District has been provided and has accepted the project schedule.**
- b. The schedule shall allow enough time for inclement weather. Such schedule shall indicate graphically the beginning and completion dates of all phases of construction, and shall indicate the critical path for all critical, sequential time related activities. All required schedules shall indicate "float time" for all "slack" or "gaps" in the non-critical activities. Submitted construction schedules shall have a duration which does not exceed the contract time. Excess time may be picked up with "float time" at the discretion of the District. A "bar chart" in reasonably complete detail shall be adequate in contracts over \$1 million and shall show critical path items. All required schedules shall be periodically updated to reflect changes in the status of the job, including weather delays. **At a minimum, the Contractor shall be required to provide and keep updated a monthly schedule in order to prevent delay claims.**

Article 8 CONTRACT SECURITY

Unless otherwise specified in Special Conditions, Contractor shall furnish a surety bond in an amount equal to 100 percent of contract price as security for faithful performance of this contract and shall furnish a separate bond as security for payment of persons performing labor and furnishing materials in connection with this contract. The Payment Bond must be in the amount of 100 percent of the total amount payable. Both the Payment and the Performance Bonds must be executed by an admitted Surety approved to conduct business in the State of California which meets the highest standards the District is legally permitted to establish. Aforesaid bonds shall be in form set forth in these contract documents. Upon request of Contractor, District will consider and accept multiple sureties on such bonds.

Article 9 ASSIGNMENT

Contractor shall not assign this contract or any part thereof without prior written consent of District. Any assignment of money due or to become due under this contract shall be subject to a prior lien for services rendered or material supplied for performance of work called for under said contract in favor of all persons, firms, or corporations rendering such services or supplying such materials to the extent that claims are filed pursuant to the Civil Code, the Code of Civil Procedure, and/or the Government Code.

Article 10 PROHIBITED INTERESTS

No official of District and no District representative who is authorized in such capacity and on behalf of District to negotiate, make, accept, or approve, or to take part in negotiating, making, accepting or approving any engineering, inspection, construction or material supply contract or any subcontract in connection with construction of project, shall be or become directly or indirectly interested financially in this contract or in any part thereof. No officer, employee, attorney, engineer or inspector of or for District who is authorized in such capacity and on behalf of District to exercise any executive, supervisory or other similar functions in connection with construction of project, shall become directly or indirectly interested financially in this contract or in any part thereof.

Article 11 SEPARATE CONTRACTS

District reserves the right to let other contracts in connection with this work or other work at the same site. Contractor shall afford other contractors reasonable opportunity for introduction and storage of their materials and execution of their work and shall properly connect and coordinate his work with theirs.

If any part of Contractor's work depends for proper execution or results upon work of any other contractor, the Contractor shall inspect and promptly report to District any defects in such work that renders it unsuitable for such proper execution and results. His failure to inspect and report shall constitute his acceptance of other contractor's work as fit and proper for reception of his work, except as to defects which may develop in the other contractor's work after execution of contractor's work.

To insure proper execution of his subsequent work, Contractor shall measure and inspect work already in place and shall at once report to the District any discrepancy between executed work and contract documents.

Contractor shall ascertain to his own satisfaction the scope of the project and nature of any other contracts that have been or may be awarded by District in prosecution of project to the end that Contractor may perform this contract in the light of such other contracts, if any. Nothing herein contained shall be interpreted as granting to Contractor exclusive occupancy at site of project. Contractor shall not cause any unnecessary hindrance or delay to any other contractor working on project. If simultaneous execution of any contract for project is likely to cause interference with performance of some other contract or contracts, District shall decide which contractor shall cease work temporarily and which contractor shall continue or whether work can be coordinated so that contractors may proceed simultaneously. District shall not be responsible for any damages suffered or for extra costs incurred by Contractor resulting directly or indirectly from award, performance, or attempted performance of any other contract or contracts on project, or caused by any decision or omission of District respecting the order of precedence in performance of contracts.

Article 12 SUBCONTRACTING

- a. Contractor agrees to bind every subcontractor by terms of the contract as far as such terms are applicable to subcontractor's work. If Contractor subcontracts any part of this contract, Contractor shall be as fully responsible to District for the acts and omissions of his subcontractor and of persons either directly or indirectly employed by his subcontractor, as he is for acts and omissions of persons directly employed by himself. Nothing contained in these contract documents shall create any contractual relation between any subcontractor and District. The District shall be deemed to be the third party beneficiary of the contract between the contractor and the subcontractor.
- b. District's consent to or approval of any subcontractor under this contract shall not in any way relieve Contractor of his obligations under this contract and no such consent or approval shall be deemed to waive any provision of this contract. The District reserves the right of approval of all subcontractors proposed for use on this Project, and to this end, may require financial, performance and such additional information as is needed to secure this approval. If a Subcontractor is not approved, the Contractor shall promptly submit another of the same trade for approval.
- c. Substitution or addition of subcontractors shall be permitted only as authorized in chapter 4 (commencing at section 4100), part 1, division 2 of the California Public Contract Code.

Article 13 DISTRICT'S RIGHT TO TERMINATE CONTRACT

District may, without prejudice to any other right or remedy, serve written notice of intent to terminate upon Contractor and his surety stating its intention to terminate this contract if the Contractor (i) refuses or fails to prosecute the work or any separable part thereof with such diligence as will insure its completion within the time specified or any extension thereof, or (ii) fails to complete said work within such time, or (iii) if the Contractor should file a bankruptcy petition, or (iv) if he should make a general assignment for the benefit of his creditors, or (v) if a receiver should be appointed on account of his insolvency, or (vi) if he should persistently or repeatedly refuse or should fail, except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials to complete the work in time specified, or (vii) if he should fail to make prompt payment to subcontractors or for material or labor, or (viii) persistently disregard laws, ordinances or instructions of District, or (ix) otherwise be guilty of a substantial violation of any provision of the contract, or (x) if he or his subcontractors should violate any of the provisions of this contract. The notice of intent to terminate shall state generally the reasons for such intention to terminate. Unless within five (5) days after the service of such notice, such condition shall cease or such violation shall cease and satisfactory arrangements for the correction thereof be made, this contract shall be deemed to have ceased and terminated. The Contractor then shall not be entitled to receive any further payment until work is finished. Upon the termination of the contract as provided above, District shall immediately serve upon surety and contractor written notice of termination stating that the contract has ceased and terminated. Surety shall have the right to investigate, take over and perform this contract, provided, however, that if surety, within five (5) days after service upon it of said notice of termination, does not give District written notice of its intention to take over and perform this contract and does not commence performance thereof within seven (7) days from the date of service upon it of such notice of termination, District may take over the work and prosecute same to completion by contract or by any other method it may deem advisable for the account and at the expense of Contractor. If Surety does not perform the project work itself, the Surety shall consult with the District regarding its planned choice of a contractor or contractors to complete the project, and upon request by District, Surety shall provide District Evidence of Responsibility of Surety's proposed contractor or contractors. District shall be entitled to reject Surety's choice of contractor or contractors if District determines in its sole discretion that the contractor or contractors are nonresponsible. If Surety provides District written notice of its intention to take over and perform this contract, within fourteen (14) days of such written notice of intent to take over and perform, Surety or its chosen contractor or contractors (if such contractor or contractor's are approved by District) shall provide District a detailed Progress Schedule as specified in Article 7 above. Contractor and his surety shall be liable to District for any excess cost or other damages occasioned the District as a result of Surety or Surety's contractor or contractors takeover and performance. If the District takes over the work as hereinabove provided, the District may, without liability for so doing, take possession of and utilize in completing the work such materials, appliances, plant, and other property belonging to the Contractor as may be on the site of the work and necessary therefor.

If the unpaid balance of the contract price exceeds the expense of finishing work, including compensation for additional managerial and administrative services, such excess shall be paid to Contractor. If such expense shall exceed such unpaid balance, Contractor shall pay the difference to District. Expense incurred by District as herein provided, and damage incurred through Contractor's default, shall be certified by District. Additionally, this Contract may be terminated by the District for convenience with forty-eight (48) hours written notice to Contractor.

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

Notwithstanding the foregoing provisions, this contract may not be terminated or modified where a trustee-in-bankruptcy has assumed the contract pursuant to 11 U.S.C. section 365 (Federal Bankruptcy Act).

Article 14 GUARANTEE

Besides guarantees required elsewhere, Contractor shall, and hereby does, guarantee all work for a period of one year after date of acceptance of work by District. Contractor shall repair or replace any or all such work, together with any other work, which may be displaced in so doing, that may prove defective in workmanship and/or materials within a one-year period from date of acceptance without expense whatsoever to District, ordinary wear and tear, unusual abuse or neglect excepted. District will give notice of observed defects with reasonable promptness. Contractor shall notify District upon completion of repairs.

In the event of failure of Contractor to comply with above-mentioned conditions within one week after being notified in writing, District is hereby authorized to proceed to have defects repaired and made good at the expense of Contractor. Contractor hereby agrees to pay costs and charges therefore immediately on demand.

If, in the opinion of the District, defective work creates a dangerous condition or requires immediate correction or attention to prevent further loss to the District or to prevent interruption of operations of the District, the District will attempt to give the notice required by this article. If the Contractor cannot be contacted or does not comply with the District's request for correction within a reasonable time as determined by the District, the District may, notwithstanding the provisions of this article, proceed to make such correction or provide such attention. The costs of such correction or attention shall be charged against the Contractor. Such action by the District will not relieve the Contractor of the guarantees provided in this article or elsewhere in this contract.

This article does not in any way limit the guarantee 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 District with all appropriate guarantee or warranty certificates upon completion of the project.

Article 15 NOTICE AND SERVICE THEREOF

- a. Any notice from one party to the other under the contract shall be in writing and shall be dated and signed by the party giving such notice or by the duly authorized representative of such party. Any such notice shall not be effective for any purpose whatsoever unless served in one of the following manners:
 1. If notice is given to District, by personal delivery thereof to District's representative or by depositing same in United States mail, enclosed in a sealed envelope addressed to District for attention of said representative or District, postage prepaid and registered;
 2. If notice is given to Contractor, by personal delivery thereof to said Contractor or to his foreman at site of project, or by depositing same in United States mail, enclosed in a sealed envelope addressed to said Contractor at his regular place of business or at such other address as may have been established for the conduct of work under this contract, postage prepaid and registered;
 3. If notice is given to surety or other person, by personal delivery to such surety or other person or by depositing same in United States mail, enclosed in a sealed envelope addressed to such surety or person at the address of such surety or person last communicated by him to party giving notice, postage prepaid and registered.
 4. If notice is served by mail, it shall be deemed received and all time periods associated with the giving of notice shall run from the third day after mailing.

Article 16 WORKERS

- a. Contractor shall at all times enforce strict discipline and good order among his employees. Contractor shall not employ on work any unfit person or any one not skilled in work assigned to him.
- b. Any person in the employ of the Contractor whom District may deem incompetent or unfit shall be dismissed from work and shall not again be employed on it except with the written consent of District.
- c. The District reserves the right to request that the Project Supervisor be replaced immediately.

Article 17 WAGE RATES, PAYROLL RECORDS AND DEBARMENT

- a. The Contractor is aware of the requirements of California Labor Code sections 1720 et seq. and 1770 et seq., and 1815 et seq., as well as California Code of Regulations, Title 8, section 16000 et seq. ("Prevailing Wage Laws"), which require the payment of prevailing wage rates and the performance of other requirements on certain "public works" and "maintenance" projects. Since this Project involves an applicable "public works" or "maintenance" project, as defined by the Prevailing Wage Laws, and since the total compensation is \$1,000 or more, Contractor agrees to fully comply with such Prevailing Wage Laws. The Contractor shall obtain a copy of the prevailing rates of per diem wages at the commencement of this Agreement from the website of the Division of Labor Statistics and Research of the Department of Industrial Relations located at www.dir.ca.gov/dlsr/. Contractor shall make copies of the prevailing rates of per diem wages for each craft, classification or type of worker needed to perform work on the Project available to interested parties upon request, and shall post copies at the Contractor's principal place of business and at the Project site. Contractor shall defend, indemnify and hold the District, its elected officials, officers, employees and agents free and harmless from any claims, liabilities, costs, penalties or interest arising out of any failure or alleged failure to comply with the Prevailing Wage Laws.
- b. The Contractor and each subcontractor shall forfeit as a penalty to the District not more than two hundred dollars (\$200) for each calendar day, or portion thereof, for each worker paid less than the stipulated prevailing wage rate for any work done by him, or by any subcontract under him, in violation of the provisions of the California Labor Code. The difference between such stipulated prevailing wage rate and the amount paid to each

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

- c. As a further material part of this Contract, Contractor agrees to hold harmless and indemnify the District, its Board and each member of the Board, its officers, employees and agents from any and all claims, liability, loss, costs, damages, expenses, fines and penalties, of whatever kind or nature, including all costs of defense and attorneys' fees, arising from any alleged failure of Contractor or its subcontractors to comply with the prevailing wage laws of the State of California. If the District or any of the indemnified parties are named as a party in any dispute arising from the failure of Contractor or its subcontractors to pay prevailing wages, Contractor agrees that the District and the other indemnified parties may appoint their own independent counsel, and Contractor agrees to pay all attorneys' fees and defense costs of the District and the other indemnified parties as billed, in addition to all other damages, fines, penalties and losses incurred by the District and the other indemnified parties as a result of the action.
- d. Accurate payroll records shall be kept by the contractor and each subcontractor, 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 him or her in connection with the public work.
- e. It shall be the responsibility of Contractor to comply with Labor Code section 1776 as it may be amended by the Legislature from time to time with respect to each payroll record.
- f. Debarment. The Contractor, or any subcontractor working under the Contractor may not perform work on a public works project with a subcontractor who is ineligible to perform work on a public project pursuant to Section 1777.1 or Section 1777.7 of the California Labor Code. Any contract on a public works project entered into between the Contractor and a debarred subcontractor is void as a matter of law. A debarred subcontractor may not receive any public money for performing work as a subcontractor on a public works contract. Any public money that is paid, or may have been paid to a debarred subcontractor by the Contractor on the project shall be returned to the District. The Contractor shall be responsible for the payment of wages to workers of a debarred subcontractor who has been allowed to work on the project.

Article 18 APPRENTICES

- a. Contractor's attention is directed to the provisions of Sections 1777.5, 1777.6, and 1777.7 of the California Labor Code concerning employment of apprentices by the Contractor or any subcontractor under him. The Contractor shall be knowledgeable of and comply with all California Labor Code sections including 1727, 1773.5, 1775, 1777, 1777.5, 1810, 1813, 1860, including all amendments; each of these sections is incorporated by reference into this Contract. The responsibility for compliance with these provisions for all apprentice able occupations rests with the Contractor. Knowing violations of Section 1777.5 will result in forfeiture not to exceed \$100 for each calendar day of non-compliance pursuant to Section 1777.7.

Article 19 HOURS OF WORK

- a. 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 the 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 is limited and restricted to eight (8) hours during any one-calendar day and forty (40) hours during any one-calendar week, except as hereinafter provided. Notwithstanding the provisions herein above 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.
- b. The Contractor and every subcontractor shall keep an accurate record showing the name of and actual hours worked each calendar day and each calendar week by each worker employed by him 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 the District and to the Division of Labor Law Enforcement, Department of Industrial Relations of the State of California.
- c. The Contractor shall pay to the District a penalty of twenty-five dollars (\$25) for each worker employed in the execution of this contract by the 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 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.
- d. Any work necessary to be performed after regular working hours, or on Sundays or other holidays shall be performed without additional expense to District. Refer to Special Conditions for information on specific time-of-day and weekend hour restrictions that apply to this contract.

Article 20 WORKERS' COMPENSATION INSURANCE

- a. The Contractor shall provide, during the life of this contract, workers' compensation insurance for all of his employees engaged in work under this contract, on or at the site of the project, and, in case any of his work is sublet, the Contractor shall require the subcontractor similarly to provide workers' compensation insurance for all the latter's employees. Any class of employee or employees not covered by a subcontractor's insurance shall be covered by the Contractor's insurance. In case any class of employees engaged in work under this contract, on or at the site of the project, is not protected under the Workers' Compensation Statutes, the Contractor shall provide or shall cause a subcontractor to provide, adequate insurance coverage for the protection of such employees not otherwise protected. The Contractor shall file with the District certificates of his insurance protecting workers.
- b. Company or companies providing insurance coverage shall be acceptable to the District, and in the following form and coverage.
 - 1. Statutory Workers' Compensation and Employer's Liability Coverage: Contractor shall maintain insurance to afford protection for all claims under California Workers' Compensation Act and other employee benefit acts, and in addition, shall maintain Employer's Liability

Insurance for a minimum limit of \$1,000,000. The Workers' Compensation Policy shall include the following endorsements, copies of which shall be provided to District:

- (a) The Voluntary Compensation Endorsement; and
- (b) Broad Form All States Endorsement; and
- (c) The Longshoremen's and Harbor Workers endorsement, where applicable to the work under this contract; and
- (d) Waiver of Subrogation Endorsement.

Article 21 COMMERCIAL GENERAL LIABILITY AND PROPERTY DAMAGE INSURANCE

- a. Contractor shall procure and maintain during the life of this contract and for such other period as may be required herein, at its sole expense, such comprehensive general liability insurance or commercial general liability and property damage insurance as shall protect Contractor and District from all claims for bodily (personal) injury, including accidental death, as well as claims for property damage arising from operations under this contract, and other covered loss, however occasioned, occurring during the policy term. Such policy shall comply with all the requirements of this article, and shall be in the form and amounts as set forth in the Special Conditions hereof. The limits set forth in the Special Conditions shall not be construed to relieve the Contractor from liability in excess of such coverage, nor shall it limit Contractor's indemnification obligations to District, and shall not preclude the District from taking such other actions available to District under other provisions of the contract documents or law.
- b. Contractor shall make certain that any and all subcontractors hired by Contractor are insured in accordance with this contract. If any subcontractor's coverage does not comply with the foregoing provisions, Contractor shall indemnify and hold District harmless from any damage, loss, cost, or expense, including attorneys' fees, incurred by District as a result thereof.
- c. Company or companies providing insurance coverage shall be acceptable to the District and authorized to conduct business in the State of California.
- d. Any general liability policy provided by Contractor hereunder shall contain an endorsement which applies its coverage to District, members of District's board of trustees, and the officers, agents, employees and volunteers of District, the State Allocation Board, if applicable, the District, and the District's consultants, individually and collectively, as additional insureds using form CG2010 11-85 or equivalent which must include products and completed operations coverage, broad form property damage coverage, coverage for collapse, explosion and underground, and include independent contractor coverage.
- e. The coverage afforded by the additional insured endorsement described in paragraph d above, shall apply as primary insurance, and any other insurance maintained by District, the members of District's Board of Trustees, or its officers, agents, employees and volunteers, or any self-funded program of District, shall be in excess only and not contributing with such coverage.
- f. Contractor shall notify District in writing of the amount, if any, of self-insured retention provided under the General Liability coverage, with a maximum limit of \$25,000. District may approve higher retention amounts, based upon review of documentation submitted by Contractor. Such review shall take into consideration Contractor's net worth and reserves for payment of claims of liability against Contractor, which must be sufficient to adequately compensate for the lack of other insurance coverage required hereunder.
- g. All general liability policies shall be written to apply to all bodily injury, including death, property damage, personal injury and other covered loss, however occasioned, occurring during the policy term, and shall specifically insure the performance by Contractor of that part of the indemnification contained in Article 25 hereof, relating to liability for injury to or death of persons and damage to property. If the coverage contains one or more aggregate limits, a minimum of 50% of any such aggregate limit must remain available at all times; if over 50% of any aggregate limit has been paid or reserved, District may require additional coverage to be purchased by Contractor to restore the required limits. Contractor may combine primary, umbrella, and as broad as possible excess liability coverage to achieve the total limits indicated above. Any umbrella or excess liability policy shall include the additional insured endorsement, products and completed operations coverage and broad form property damage described in paragraphs d and e, above. To the extent that the umbrella insurer requires notice of changes to the primary policy, notice will be considered to be given and not prejudice the District's rights to recover under the umbrella policy.
- h. Contractor and District release each other, and their respective authorized representatives, from any Claims (as defined in Article 25 hereof), but only to the extent that the proceeds received from any policy of liability insurance carried by District or Contractor, other than any self-insurance, covers any such Claim or damage. Included in any policy or policies of liability insurance provided by Contractor hereunder shall be a standard waiver of rights of subrogation against District by the insurance company issuing said policy or policies.
- i. If coverage is written on a "claims made" basis, the Certificate of Insurance shall clearly so state. In addition to the coverage requirements specified above, such policy shall provide that:
 - 1. The policy retroactive date coincides with or precedes Contractor's commencement of work under the Agreement (including subsequent policies purchased as renewals or replacements).
 - 2. Contractor will make every effort to maintain similar insurance during the required extended period of coverage following expiration of the Agreement, including the requirement of adding all additional insureds.
 - 3. If insurance is terminated for any reason, Contractor shall purchase an extended reporting provision of at least two years to report claims arising in connection with the Agreement.
 - 4. The policy allows for reporting of circumstances or incidents that might give rise to future claims.

- j. Contractor's failure to procure the insurance specified herein, or failure to deliver certified copies or appropriate certificates of such insurance, or failure to make the premium payments required by such insurance, shall constitute a material breach of the contract, and District may, at its option, terminate the Agreement for any such default by Contractor.
- k. The requirements as to the types and limits of insurance coverage set forth herein and in the Special Conditions to be maintained by the Contractor, and any approval of said insurance by the District or its insurance advisor(s), are not intended to and shall not in any manner limit or qualify the liabilities and obligations otherwise assumed by the Contractor pursuant to the Agreement, including, but not limited to, the provisions concerning indemnification.
- l. District shall retain the right at any time to review the coverage, form, and amount of insurance required herein and may require Contractor to obtain insurance reasonably sufficient in coverage, form and amount to provide adequate protection against the kind and extent of risk which exists at the time a change in insurance is required.
- m. All deviations from the contractual insurance requirements stated herein must be approved in writing by District's risk manager.

Article 22 AUTOMOBILE LIABILITY INSURANCE

Contractor shall take out and maintain at all times during the term of this Contract Automobile Liability Insurance in the amount of, at least, one million dollars (\$1,000,000). Such insurance shall provide coverage for bodily injury and property damage including coverage for non-owned and hired vehicles, in a form and with insurance companies acceptable to the District.

Article 23 BUILDER'S RISK/APPLICABLE INSTALLATION/FIRE INSURANCE

- a. It is the Contractor's responsibility to maintain or cause to be maintained builder's risk insurance or applicable installation coverage on all work, material, equipment, appliances, tools, and structures which are a part of the contract and subject to loss or damage by fire, extended coverage, and vandalism and malicious mischief. District accepts no responsibility until the contract is formally accepted by the Governing Board for the work. The Contractor is required to file with the District a certificate evidencing builder's risk or applicable installation of not less than the amount identified in the special conditions insurance coverage.
- b. Provide insurance coverage on completed value form, all-risk or special causes of loss coverage.
 - 1. Insurance policies shall be so conditioned as to cover the performance of any extra work performed under the contract.
 - 2. Coverage shall include all materials stored on site and in transit.
 - 3. Coverage shall include Contractor's tools and equipment.
 - 4. Insurance shall include boiler, machinery and material hoist coverage.
- c. Company or companies providing insurance coverage shall be acceptable to the District and authorized to conduct business in the State of California.

Article 24 PROOF OF CARRIAGE OF INSURANCE

- a. Any insurance carrier providing insurance coverage required by the Contract Documents shall be admitted to and authorized to do business in the State of California unless waived, in writing, by the District Risk Manager. Carrier(s) shall have an A.M. Best rating of not less than an A:VIII. Insurance deductibles or self-insured retentions must be declared by the Contractor, and such deductibles and retentions shall have the prior written consent from the District. At the election of the District the Contractor shall either 1) reduce or eliminate such deductibles or self-insured retentions, or 2) procure a bond which guarantees payment of losses and related investigations, claims administration, and defense costs and expenses.
- b. Contractor shall cause its insurance carrier(s) to furnish the District with either 1) a properly executed original Certificate(s) of Insurance and certified original copies of Endorsements effecting coverage as required herein, or 2) if requested to do so in writing by the District Risk Manager, provide original Certified copies of policies including all Endorsements and all attachments thereto, showing such insurance is in full force and effect. The District, its Directors and officers, employees, agents or representatives are named as Additional Insureds and Provide a Waiver of Subrogation in favor of those parties. Further, said Certificate(s) and policies of insurance shall contain the covenant of the insurance carrier(s) that shall provide no less than thirty (30) days written notice be given to the District prior to any material modification or cancellation of such insurance. In the event of a material modification or cancellation of coverage, the District may terminate or Stop Work pursuant to the Contract Documents, unless the District receives, prior to such effective date, another properly executed original Certificate of Insurance and original copies of endorsements or certified original policies, including all endorsements and attachments thereto evidencing coverages set forth herein and the insurance required herein is in full force and effect. Contractor shall not take possession, or use the Project site, or commence operations under this Agreement until the District has been furnished original Certificate(s) of Insurance and certified original copies of Endorsements or policies of insurance including all Endorsements and any and all other attachments as required in this Section. The original Endorsements for each policy and the Certificate of Insurance shall be signed by an individual authorized by the insurance carrier to do so on its behalf.
- c. It is understood and agreed to by the parties hereto and the insurance company(s), that the Certificate(s) of Insurance and policies shall so covenant and shall be construed as primary, and the District's insurance and/or deductibles and/or self-insured retentions or self-insured programs shall not be construed as contributory.
- d. The District reserves the right to adjust the monetary limits of insurance coverage's during the term of this Contract including any extension thereof, if in the District's reasonable judgment, the amount or type of insurance carried by the Contractor becomes inadequate.
- e. Contractor shall pass down the insurance obligations contained herein to all tiers of sub-contractors working under this Contract.

Article 25 INDEMNIFICATION

Contractor shall defend (with counsel of District's choosing), indemnify and hold the District, its officials, officers, agents, employees, and representatives free and harmless from any and all claims, demands, causes of action, costs, expenses, liabilities, losses, damages or injuries ("Claims"), in law or equity, regardless of whether the allegations are false, fraudulent, or groundless, to property or persons, including wrongful death, to the extent arising out of or incident to any acts, omissions or willful misconduct of Contractor, its officials, officers, employees, agents, consultants and contractors arising out of or in connection with the performance of the Work or this Contract, including claims made by subcontractors for nonpayment, including without limitation the payment of all consequential damages and attorney's fees and other related costs and expenses. Contractor shall defend, at Contractor's own cost, expense and risk, with counsel of District's choosing, any and all such aforesaid suits, actions or other legal proceedings of every kind that may be brought or instituted against District, its officials, officers, agents, employees and representatives. To the extent of its liability, Contractor shall pay and satisfy any judgment, award or decree that may be rendered against District, its officials, officers, employees, agents, employees and representatives, in any such suit, action or other legal proceeding. Contractor shall reimburse District, its officials, officers, agents, employees and representatives for any and all legal expenses and costs incurred by each of them in connection therewith or in enforcing the indemnity herein provided. The only limitations on this provision shall be those imposed by Civil Code Section 2782.

Article 26 LAWS AND REGULATIONS

- a. Contractor shall give all notices and comply with all laws, ordinances, rules, and regulations bearing on conduct of work as indicated and specified. If Contractor observes that drawings and specifications are at variance therewith, he shall promptly notify the District in writing and any necessary changes shall be adjusted as provided in contract for changes in work. If Contractor performs any work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to District, he shall bear all costs arising therefrom.
- b. Contractor shall be responsible for familiarity with the Americans with Disabilities Act (ADA) (42 USC 12101 et seq.). Installations of equipment and other devices shall be in compliance with ADA regulations.

Article 27 PERMITS AND LICENSES

Permits and licenses necessary for prosecution of the Work shall be secured and paid for by Contractor, unless otherwise specified in the Contract Documents.

- a. Contractor shall obtain and pay for all other permits and licenses required for the Work, including excavation permit and for plumbing, mechanical and electrical work and for operations in or over public streets or right of way under jurisdiction of public agencies other than the District.
- b. The Contractor shall arrange and pay for all off-site inspection of the Work related to permits and licenses, including certification, required by the specifications, drawings, or by governing authorities, except for such off-site inspections delineated as the District's responsibility pursuant to the Contract Documents.
- c. Before Acceptance of the Project, the Contractor shall submit all licenses, permits, certificates of inspection and required approvals to the District.

Article 28 INSPECTION FEES FOR PERMANENT UTILITIES

All inspection fees and other municipal charges for permanent utilities including, but not limited to, sewer, electrical, phone, gas, water, and irrigation shall be paid for by District. Contractor shall be responsible for arranging the payment of such fees, but inspection fees and other municipal fees relating to permanent utilities shall be paid by District. Contractor may either request reimbursement from District for such fees, or obtain the funds from District prior to paying such fees.

Article 29 EASEMENTS

Easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by District, unless otherwise specified.

Article 30 SURVEYS

Surveys to determine location of property lines and corners will be supplied by District. Surveys to determine locations of construction, grading, and site work shall be provided by Contractor.

Article 31 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 excise tax because it is a sale to a state or local government for its exclusive use, the District, upon request, will execute a certificate of exemption which will certify (1) that the 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 the District. No excise tax for such materials shall be included in any bid price.

Article 32 PATENTS, ROYALTIES, AND INDEMNITIES

The Contractor shall hold and save the District and its officers, agents, and employees harmless from liability of any nature or kind, including cost and expense, for or on account of any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of this contract, including its use by the District, unless otherwise specifically stipulated in the contract documents.

Article 33 MATERIALS

- a. Except as otherwise specifically stated in this contract, Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, superintendency, temporary constructions of every nature, and all other services and facilities of every nature whatsoever necessary to execute and complete this contract within specified time.
- b. Unless otherwise specified, all materials shall be new and both workmanship and materials shall be of good quality.
- c. Materials shall be furnished in ample quantities and at such times as to insure uninterrupted progress of work and shall be stored properly and protected as required. Contractor shall be entirely responsible for damage or loss by weather or other causes to materials or work under this contract.
- d. No materials, supplies, or equipment for work under this contract shall be purchased subject to any chattel mortgage or under a conditional sale or other agreement by which an interest therein or in any part thereof is retained by seller or supplier. Contractor warrants good title to all material, supplies, and equipment installed or incorporated in work and agrees upon completion of all work to deliver premises, together with all improvements and appurtenances constructed or placed thereon by him, to District free from any claims, liens, or charges. He further agrees that neither he nor any person, firm, or corporation furnishing any materials or labor for any work covered by this contract shall have any right to lien upon premises or any improvement or appurtenance thereon, except that Contractor may install metering devices or other equipment of utility companies or of political subdivisions title to which is commonly retained by utility company or political subdivision. In event of installation of any such metering device or equipment, Contractor shall advise District as to owner thereof. Nothing contained in this article, however, shall defeat or impair right of persons furnishing material or labor under any bond given by Contractor for their protection or any rights under any law permitting such persons to look to funds due Contractor in hands of District, 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.
- e. Materials shall be stored on the Project site in such manner so as not to interfere with any operations of the District or any independent contractor.

Article 34 SUBSTITUTION AFTER CONTRACT IS AWARDED

- a. Pursuant to Public Contract Code Section 3400(b) the District may make a finding that is described in the invitation for bids that designates certain products, things, or services by specific brand or trade name.
- b. Refer to Section 20 of the Information for Bidders.

Article 35 SHOP DRAWINGS

- a. Contractor shall check and verify all field measurements and shall submit with such promptness as to cause no delay in his own work or in that of any other contractor, subcontractor, District, other independent contractor or worker on the Project, three (3) copies of all shop or setting drawings, schedules, and materials list, and all other submittals in accordance with other provisions of the contract required for the work of various trades. Contractor shall sign all submittals affirming that submittals have been reviewed and approved by Contractor prior to submission to District. Each signed submittal shall affirm that the submittal meets all the requirements of the contract documents except as specifically and clearly noted and listed on the cover sheet of the submittal.
- b. Contractor shall advise District immediately, if District has not checked and approved with reasonable promptness, such schedules and drawings for conformance with design concept of project and compliance with information given in contract documents. Contractor shall make any corrections required by District, file with him three (3) corrected copies, and furnish such other copies as may be needed for construction. District's approval of such drawings or schedules also shall not relieve Contractor from responsibility for deviations from drawings or specifications unless he has in writing called District's attention to such deviations at time of submission and has secured his written approval. District's approval of such drawings and schedules also shall not relieve contractor from responsibility for errors in shop drawings or schedules. For purposes of this section "reasonable promptness" shall mean such reasonable promptness as to cause no delay in the work or in the activities of the District, Contractor or separate contractors, while allowing sufficient time in the District's professional judgment to permit adequate review.

Article 36 SUBMITTALS

- a. Contractor shall furnish for approval, within eight (8) days following award of contract a log of all samples, material lists and certifications, mix designs, schedules, and other submittals, as required in specifications. Such log shall indicate whether samples will be provided as specified and in accordance with other provisions of this contract.
- b. Contractor will provide samples and submittals, together with catalogs and supporting data required by District within a reasonable time period so as not to cause delays on the project.
- c. This provision shall not authorize any extension of time for performance of this contract. District representative will check and approve such samples, only for conformance with design concept of work and for compliance with information given in contract documents. Work shall be in accordance with approved samples. District action will be taken within ten (10) calendar days after receiving such samples and submittals. If in the District's professional judgment fourteen days is an insufficient amount of time to permit adequate review, District shall, within the initial fourteen (14) day period, notify the Contractor, with a copy to the Inspector and the District, of the amount of time that will be required to respond.
- d. If the District's response results in a change in the project, then such change shall be effected by a written changeorder.

Article 37 CLOSEOUT SUBMITTALS

The Contractor shall be responsible for the timely delivery of the technical manuals, warranties and guarantees as required in the Specifications.
The final payment will not be made until the District representative has had an opportunity to review and accept the required documents.

Article 38 COST BREAKDOWN AND PERIODICAL ESTIMATES

Contractor shall furnish on forms Approved by the District:

- a. Within ten (10) Days of award of the Contract a detailed estimate giving a complete breakdown of the Contract price.
- b. A monthly itemized estimate of Work done for the purpose of making progress payments. In order for the District to consider and evaluate each progress payment application, the Contractor shall submit a detailed measurement of Work performed and a progress estimate of the value thereof before the tenth (10th) Day of the following month.
- c. Contractor shall submit, with each of its payment requests, an adjusted list of actual quantities, verified by the District Representative, for unit price items listed, if any, in the Bid Form.
- d. Following the District's Acceptance of the Work, the Contractor shall submit to the District a written statement of the final quantities of unit price items for inclusion in the final payment request.
- e. The District shall have the right to adjust any estimate of quantity and to subsequently correct any error made in any estimate for payment.

Contractor shall certify under penalty of perjury, that all cost breakdowns and periodic estimates accurately reflect the Work on the Project.

Article 39 PAYMENTS AND RETENTION

- a. Each month as soon as practicable after receipt of approved periodical estimate for partial payment, but in order to avoid the payment of interest, in any event within thirty (30) days of receipt of such periodical estimate, there shall be paid to Contractor a sum equal to ninety-five percent (95%) of the value of work performed up to the last day of the previous month, less the aggregate of previous payments. Upon receipt of a payment request the District shall as soon as practicable determine whether the payment request is proper. If the request is determined not to be a proper payment request suitable for payment, it shall be returned to the Contractor as soon as practicable within seven days after receipt and shall be accompanied by a statement in writing as to the reasons why the payment request is not proper. Monthly payments shall be made only on the basis of monthly estimates which shall be prepared by Contractor on a form approved by District and filed before the fifth day of the month during which payment is to be made. Work completed as estimated shall be an estimate only and no inaccuracy or error in said estimate shall operate to release Contractor or any bondsman from damages arising from such work or from enforcing each and every provision of this contract and District shall have the right subsequently to correct any error made in any estimate for payment. Contractor shall not be entitled to have any payment estimates processed or be entitled to have any payment made for work performed so long as any lawful or proper direction concerning work, or any portion thereof given by the District or District shall remain uncomplied with.
- b. The final payment of five percent (5%) of the value of work done under this contract, if unencumbered, shall be made within sixty (60) days after the date of completion of the work, provided however, that in the event of a dispute between the District and the Contractor, the District may withhold from the final payment an amount not to exceed one hundred and fifty percent (150%) of the disputed amount. Completion means any of the following as provided by Public Contract Code section 7107:
 1. The occupation, beneficial use, and enjoyment of a work of improvement, excluding any operation only for testing, startup, or commissioning, by the public agency, or its agent, accompanied by cessation of labor on the work of improvement.
 2. The acceptance by the public agency, or its agent, of the work of improvement.
 3. For purposes of this contract, the acceptance by the District means acceptance made only by an action of the governing body of District.
 4. in session. Acceptance by Contractor of said final payment shall constitute a waiver of all claims against District arising from this contract.
 5. After the commencement of a work of improvement, a cessation of labor on the work of improvement for a continuous period of 100 days or more, due to factors beyond the control of the Contractor.
 6. After the commencement of a work of improvement, a cessation of labor on the work of improvement for a continuous period of 30 days or more, if the public agency files for record a notice of cessation or a notice of completion.
- c. This contract is subject to the provisions of Public Contract Code section 7107.
- d. At any time after fifty percent (50%) of the work has been completed, if the District, by action of its governing body, finds that satisfactory progress is being made, District may make any of the remaining payments in full for actual work completed or may withhold any amount up to five percent (5%) thereof as District may find appropriate based on the Contractor's progress.
- e. Whenever any part of the work is in a condition suitable for use, and the best interest of the District requires such use, the District may take possession of, connect to, open for public use, or use a part thereof. When so used, maintenance and repairs due to ordinary wear and tear or vandalism will be made at District's expense. The use by the District as contemplated in this section shall in no case be construed as constituting acceptance of the work or any part thereof. Such use shall neither relieve the Contractor of any of his responsibilities under the Contract nor act as a waiver by the District of any of the conditions thereof. Contractor shall continue to maintain all insurance, including Builder's Risk insurance, on the project.

Article 40 PAYMENTS WITHHELD

In addition to amounts which the District may retain under other provisions of the Contract Documents the District may withhold payments due to Contractor as may be necessary to cover:

- a. Stop Notice Claims.
- b. Defective work not remedied.
- c. Failure of Contractor to make proper payments to its subcontractors or suppliers.
- d. Completion of the Contract if there exists a reasonable doubt that the work can be completed for balance then unpaid.
- e. Damage to another contractor or third party.
- f. Amounts which may be due the District for claims against Contractor.
- g. Failure of Contractor to keep the record ("as-built") drawings up to date.
- h. Failure to provide updates on the construction schedule.
- i. Site clean-up.
- j. Failure of the Contractor to comply with requirements of the Contract Documents.
- k. Liquidated damages.
- l. Legally permitted penalties.

Upon completion of the Contract, the District will reduce the final Contract amount to reflect costs charged to the Contractor, back charges or payments withheld pursuant to the Contract Documents.

District may apply such withheld amount or amounts to payment of such claims or obligations at its discretion. In so doing, District shall be deemed the agent of Contractor and any payment so made by District shall be considered as a payment made under contract by District to Contractor and District shall not be liable to Contractor for such payments made in good faith. Such payments may be made without prior judicial determination of claim or obligations. District will render Contractor a proper accounting of such funds disbursed on behalf of Contractor.

Article 41 CHANGES AND EXTRA WORK

a. Change Order Work.

- 1) The District, without invalidating the Contract, may order changes in the Work consisting of additions, deletions or other revisions, the Contract amount and Contract time being adjusted accordingly. All such changes in the Work shall be authorized by Change Order, and shall be performed under the applicable conditions of the Contract Documents. A Change Order signed by the Contractor indicates the Contractor's agreement therewith, including any adjustment in the Contract amount or the Contract time, and the full and final settlement of all costs (direct, indirect and overhead) related to the Work authorized by the Change Order.
- 2) All claims for additional compensation to the Contractor shall be presented in writing before the expense is incurred and will be adjusted as provided herein. No work shall be allowed to lag pending such adjustment, but shall be promptly executed as directed, even if a dispute arises. No claim will be considered after the work in question has been done unless a written contract change order has been issued or a timely written notice of claim has been made by Contractor. Contractor shall not be entitled to claim or bring suit for damages, whether for loss of profits or otherwise, on account of any decrease or omission of any item or portion of Work to be done. Whenever any change is made as provided for herein, such change shall be considered and treated as though originally included in the Contract, and shall be subject to all terms, conditions and provisions of the original Contract.
- 3) District Initiated Change. The Contractor must submit a complete cost proposal, including any change in the Contract time, within seven (7) Days after receipt of a scope of a proposed change order, unless the District requests that proposals be submitted in less than seven (7) Days.
- 4) Contractor Initiated Change. The Contractor must give written notice of a proposed change order required for compliance with the Contract Documents within seven (7) Days of discovery of the facts giving rise to the proposed change order.
- 5) Whenever possible, any changes to the Contract amount shall be in a lump sum mutually agreed to by the Contractor and the District.

- 6) Price quotations from the Contractor shall be accompanied by sufficiently detailed supporting documentation to permit verification by the District.
- 7) If the Contractor fails to submit the cost proposal within the seven (7) Day period (or as requested), the District has the right to order the Contractor in writing to commence the work immediately on a force account basis and/or issue a lump sum change to the contract price in accordance with the District's estimate of cost. If the change is issued based on the District estimate, the Contractor will waive its right to dispute the action unless within fifteen (15) Days following completion of the added/deleted work, the Contractor presents written proof that the District's estimate was in error.
- 8) Estimates for lump sum quotations and accounting for cost-plus-percentage work shall be limited to direct expenditures necessitated specifically by the subject extra work, and shall be segregated as follows:
- (a) Labor. The costs of labor will be the actual cost for wages prevailing locally for each craft or type of worker at the time the extra work is done, plus employer payments of payroll taxes and insurance, health and welfare, pension, vacation, apprenticeship funds, and other direct costs resulting from Federal, State or local laws, as well as assessment or benefits required by lawful collective bargaining agreements. The use of a labor classification which would increase the extra work cost will not be permitted unless the contractor establishes the necessity for such additional costs. Labor costs for equipment operators and helpers shall be reported only when such costs are not included in the invoice for equipment rental.
 - (b) Materials. The cost of materials reported shall be at invoice or lowest current price at which such materials are locally available in the quantities involved, plus sales tax, freight and delivery. Materials cost shall be based upon supplier or manufacturer's invoice. If invoices or other satisfactory evidence of cost are not furnished within fifteen (15) Days of delivery, then the District Representative shall determine the materials cost, at its sole discretion.
 - (c) Tool and Equipment Use. No payment will be made for the use of small tools, tools which have a replacement value of \$1,000 or less. Regardless of ownership, the rates to be used in determining equipment use costs shall not exceed listed rates prevailing locally at equipment rental agencies, or distributors, at the time the work is performed.
 - (d) Overhead, Profit and Other Charges. The mark-up for overhead (including supervision) and profit on work added to the Contract shall be according to the following:
 - i. "Net Cost" is defined as consisting of costs of labor, materials and tools and equipment only excluding overhead and profit. The costs of applicable insurance and bond premium will be reimbursed to the Contractor and subcontractors at cost only, without mark-up.
 - ii. For Work performed by the Contractor's forces the added cost for overhead and profit shall not exceed fifteen (15%) percent of the Net Cost of the Work.
 - iii. For Work performed by a subcontractor, the added cost for overhead and profit shall not exceed fifteen (15%) percent of the Net Cost of the Work to which the Contractor may add five (5%) percent of the subcontractor's Net Cost.
 - iv. For Work performed by a sub-subcontractor the added cost for overhead and profit shall not exceed fifteen (15%) percent of the Net Cost for Work to which the subcontractor and general contractor may each add an additional five (5 %) percent of the Net Cost of the lower tier subcontractor.
 - v. No additional mark-up will be allowed for lower tier subcontractors, and in no case shall the added cost for overhead and profit payable by District exceed twenty-five (25%) percent of the Net Cost as defined herein.
- 9) For added or deducted Work by subcontractors, the Contractor shall furnish to the District the subcontractor's signed detailed estimate of the cost of labor, material and equipment, including the subcontractor markup for overhead and profit. The same requirement shall apply to sub-subcontractors.
- 10) For added or deducted work furnished by a Contractor or supplier, the Contractor shall furnish to the District a detailed estimate or quotation of the cost to the Contractor, signed by such Contractor or supplier.
- 11) Any change in The Work involving both additions and deletions shall indicate a net total cost, including subcontracts and materials. Allowance for overhead and profit, as specified herein, shall be applied if the net total cost is an extra; overhead and profit allowances shall not be applied if the net total cost is a credit. The estimated cost of deductions shall be based on labor and material prices on the date the Contract was executed.
- 12) Contractor shall not reserve a right to assert impact costs, extended job site costs, extended overhead, constructive acceleration and/or actual acceleration beyond what is stated in the change order for work. No claims shall be allowed for impact, extended overhead costs,

constructive acceleration and/or actual acceleration due to a multiplicity of changes and/or clarifications. The Contractor may not change or modify the District's change order form in an attempt to reserve additional rights.

- 13) If the District disagrees with the proposal submitted by Contractor, it will notify the Contractor and the District will provide its opinion of the appropriate price and/or time extension. If the Contractor agrees with the District, a change order will be issued by the District. If no agreement can be reached, the District shall have the right to issue a unilateral change order setting forth its determination of the reasonable additions or savings in costs and time attributable to the extra or deleted work. Such determination shall become final and binding if the Contractor fails to submit a claim in writing to the District within fifteen (15) Days of the issuance of the unilateral change order, disputing the terms of the unilateral change order.
- 14) No dispute, disagreement or failure of the parties to reach agreement on the terms of the change order shall relieve the Contractor from the obligation to proceed with performance of the work, including extra work, promptly and expeditiously.
- 15) Any alterations, extensions of time, extra work or any other changes may be made without securing consent of the Contractor's surety or sureties.

Article 42 DEDUCTIONS FOR UNCORRECTED WORK

If District deems it inexpedient to correct work injured or not done in accordance with contract, an equitable deduction from contract price shall be made therefore.

Article 43 PAYMENTS BY CONTRACTOR

Contractor shall pay:

- a. For all transportation and utility services not later than the 20th day of the calendar month following that in which such services are rendered,
- b. For all materials, tools, and other expendable equipment to the extent of ninety percent (90%) of cost thereof, not later than the 20th day of the calendar month following that in which such materials, tools, and equipment are delivered at site of project and balance of cost thereof not later than the 30th day following completion of that part of work in or on which such materials, tools, and equipment are incorporated or used, and
- c. To each of his subcontractors, not later than the 5th day following each payment to Contractor, the respective amounts allowed Contractor on account of work performed by respective subcontractor to the extent of such subcontractor's interest therein.

Article 44 CONTRACTOR'S SUPERVISION

- a. Unless personally present on the premises where work is being done, Contractor shall keep on the work, during its progress, a competent full-time job (project) superintendent satisfactory to District. The job superintendent shall not be changed except with the written consent of District unless the job superintendent proves to be unsatisfactory to Contractor and ceases to be in his employ. The job superintendent shall represent Contractor in his absence and all directions given to him shall be as binding as if given to Contractor. Other directions shall be so confirmed on written request in each case.
- b. Contractor shall give efficient supervision to work, using his best skill and attention to control safety and job coordination. He shall carefully study and compare all drawings, specifications, and other instructions and shall at once report to District any error, inconsistency or omission which he may discover. The Contractor shall not be liable to District for any damage resulting from errors or deficiencies in the contract documents or other instructions by the District.

Article 45 INSPECTOR'S FIELD OFFICE

A determination regarding whether an inspector's field office is required is contained in the Special Conditions.

When required by provisions set forth in the bid documents:

- a. Contractor shall provide for the use of inspector a separate trailer or temporary private office of not less than seventy-five square feet of floor area to be located as directed by inspector and to be maintained until removal is authorized by District. The Office shall be of substantial waterproof construction with adequate natural light and ventilation by means of stock design windows. Door shall have a key-type lock or padlock hasp. The inspector's field office shall have heating and air-conditioning and shall be equipped with a telephone, a telephone answering machine, a fax machine and use of an on-site copier at Contractor's expense.
- b. A table satisfactory for the study of plans and two chairs shall be provided by Contractor. Contractor shall provide and pay for adequate electric lights, local telephone service, and adequate heat and air conditioning for the field office until authorized removal.
- c. The provisions of this section are intended to be complementary to any requirements provided elsewhere in these contract documents, however in the event of conflicts between this section and other provisions of these contract documents, this section shall prevail.

Article 46 DOCUMENTS ON WORK

- a. Contractor shall keep one copy of all contract documents, including addenda, change orders, Division I, Title 21 of the California Code of Regulations, Parts 1-5 and 12 of Title 24 of the California Code of Regulations, and the prevailing wage rates applicable at the time of the contract,

which are a part of contract documents, on job at all times. Said documents shall be kept in good order and shall be available to District representative, District and his representatives. Contractor shall be acquainted with and comply with the provisions of said Titles 21 and 24 as they relate to this project. (See particularly Duties of the Contractor, Title 24 California Code of Regulations, section 4-343.) Contractor shall also be acquainted with and comply with all California Code of Regulations provisions relating to this project, particularly Titles 17, 19, 21 and 24.)

- b. Contractor shall also make available all books, records, accounts, contracts, bids, etc. upon request of District.

Article 47 RECORD ("AS BUILT") DRAWINGS

- a. Contractor shall maintain a clean, undamaged set of contract drawings and shop drawings. In addition to maintaining one complete set of record drawings (herein referred to as "as-builts"), Contractor shall require each trade to do its own as-builts. The trade as-builts shall contain information showing clean and clear drawings with horizontal and vertical controls suitable for conversion to electronic media. Graphic quality must be equal to clean and clear original drawings; adequacy of the drawings shall be determined by the District's representative or District. Contractor shall mark the set to show the actual installation where the installation varies from the work as originally shown. Contractor shall mark whichever drawings are most capable of showing conditions fully and accurately where shop drawings are used, and shall record a cross-reference at the corresponding location on the contract drawings. Contractor shall give particular attention to concealed elements that would be difficult to measure and record at a later date. Contractor shall use colors to distinguish variations in separate categories of the work.
- b. Contractor shall note related change order numbers where applicable. Contractor shall organize record drawings sheets into manageable sets, bound with durable paper cover sheets and shall print suitable title, dates and other identification on the cover of each set.
- c. At the end of the project, the Contractor shall provide the district representative with a complete set of as-built drawings. The complete set shall contain information showing clean and clear drawings with horizontal and vertical controls suitable for conversion to electronic media. Graphic quality must be equal to clean and clear original drawings; adequacy of the drawings shall be determined by the District's representative or District. The as-builts must show the entire site for each major trade, including but not limited to water, sewer, electrical, data, telephone, cable, fire, alarm, gas, and plumbing.

Article 48 UTILITY USAGE

- a. All temporary utilities, including but not limited to electricity, water, gas, and telephone used on work shall be furnished and paid for by Contractor. Contractor shall furnish and install necessary temporary distribution systems, including meters, if necessary, from distribution points to points on site where utility is necessary to carry on the work. Upon completion of work, Contractor shall remove all temporary distribution systems.
- b. Contractor shall provide necessary and adequate utilities and pay all costs for water, electricity, gas, oil, and sewer charges required for completion of the project.
- c. All permanent meters installed shall be listed in the Contractor's name until completion occurs, as defined in Article 6 hereof, at which time further pro-rating will be determined if necessary. When District begins using the project, charges over and above power actually used for construction will be the responsibility of the District.
- d. If contract is for construction in existing facilities, Contractor may, with written permission of District, use District's existing utilities by making prearranged payments to District for utilities used by Contractor for construction.

Article 49 SANITARY FACILITIES

Contractor shall provide sanitary temporary toilet buildings for the use of all workers. All toilets shall comply with local codes and ordinances. Toilets shall be kept supplied with toilet paper and shall have workable door fasteners. Toilets shall be serviced no less than once weekly and shall be present in a quantity of not less than 1 per 20 workers as required by CAL-OSHA regulation. The toilets shall be maintained in a sanitary condition at all times. Use of toilet facilities in The Work under construction shall not be permitted. Any other Sanitary Facilities required by CAL-OSHA shall be the responsibility of the Contractor.

Article 50 TRENCHES

- a. Trenches Five Feet or More in Depth. The Contractor shall submit to the District, in advance of excavation, a detailed plan showing the design of shoring, bracing, sloping or other provisions to be made for worker protection from the hazard of caving ground during the excavation of any trench or trenches five feet or more in depth. If the plan varies from shoring system standards, the plan shall be prepared by a registered civil or structural engineer. The plan shall not be less effective than the shoring, bracing, sloping, or other provisions of the Construction Safety Orders, as defined in the California Code of Regulations.

Article 51 PROTECTION OF WORK AND PROPERTY

- a. The Contractor shall be responsible for all damages to persons or property that occur as a result of his fault or negligence in connection with the prosecution of this contract. Contractor shall be responsible for the proper care and protection of all materials delivered and work performed until completion and final acceptance by the District. All work shall be solely at the Contractor's risk. Contractor shall adequately protect adjacent property from settlement or loss of lateral support as provided by law and contract documents. Contractor shall take all necessary precautions for the safety of employees on the project and shall comply with all applicable safety laws and building codes to prevent accidents or injury to persons on, about, or adjacent to premises where work is being performed. Contractor shall erect and properly maintain at all times, as required by conditions and progress of work, all necessary safeguards, signs, 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. Contractor shall designate a responsible member

of his organization on the work, whose duty shall be prevention of accidents. The name and position of the person so designated shall be reported to District by Contractor.

- b. In an emergency affecting safety of life or of work or of adjoining property, Contractor, without special instruction or authorization from District or District, is hereby permitted to act, at his discretion, to prevent such threatened loss or injury, and he shall so act, without appeal, if so authorized or instructed by District or District. Any compensation claimed by Contractor on account of emergency work shall be determined by agreement.
- c. 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.
- d. Contractor shall take adequate precautions to protect existing sidewalks, curbs, pavements, utilities, adjoining property, and structures, and to avoid damage thereto, and repair any damage thereto caused by construction operations. Contractor shall:
 - 1. Enclose working area with a substantial barricade, arrange work to cause minimum amount of inconvenience and danger to students and faculty in their regular school activities, and perform work which may interfere with school routine before or after school hours. (This subsection applies to new construction on existing sites.)
 - 2. Provide substantial barricades around any shrubs or trees indicated to be preserved.
 - 3. Deliver materials to the building area over a route designated by District.
 - 4. When directed by District, take preventive measures to eliminate objectionable dust.
 - 5. Confine Contractor's apparatus, the storage of materials, and the operations of his workers to limits indicated by law, ordinances, permits, or directions of District. Contractor shall not unreasonably encumber premises with his materials. Contractor shall enforce all instructions of District and District regarding signs, advertising, fires, danger signals, barricades, and smoking and require that all persons employed on work comply with all regulations while on construction site.
 - 6. Take care to prevent disturbing or covering any survey markers, monuments, or other devices marking property boundaries or corners. If such markers are disturbed by accident, they shall be replaced by an approved civil engineer or land surveyor, licensed in the State of California, at no cost to the District.

Article 52 LAYOUT AND FIELD ENGINEERING

All field engineering required for laying out this work and establishing grades for earthwork operations shall be furnished by the Contractor at his expense. Such work shall be done by a qualified civil engineer or land surveyor licensed in California and approved by the District. Any required "as-built" drawings of site development shall be prepared by the a qualified civil engineer or land surveyor licensed in California and approved by the District.

Article 53 REMOVAL OF HAZARDOUS MATERIALS

- a. Since removal and/or abatement of asbestos, PCBs and other toxic wastes and hazardous materials is a specialized field of work with specialized insurance requirements, unless otherwise specified in the contract documents, district shall contract directly for such specialized services, if required, and shall not require the Contractor to subcontract for such services.
- b. In the event the Contractor encounters on the site material reasonably believed to be asbestos or polychlorinated biphenyl (PCB) which has not been rendered harmless, the Contractor shall immediately stop work in the area affected and report the condition to the District, inspector, and District in writing. The work in the affected area shall not thereafter be resumed except by written agreement of the District and Contractor if in fact the material is asbestos or PCB and has not been rendered harmless. The work in the affected area shall be resumed in the absence of asbestos or PCB, or when it has been rendered harmless, by written agreement of the District and Contractor, or by arbitration under claims resolutions language herein.

Article 54 CUTTING AND PATCHING

- a. Contractor shall do all cutting, fitting, or patching of work as required to make its several parts come together properly and fit it to receive or be received by work of other contractors showing upon, or reasonably implied by, the drawings and specifications for the completed structure. Contractor shall make good after them as District may direct.
- b. All cost caused by defective or ill-timed work shall be borne by party responsible therefore.
- c. Contractor shall not endanger any work by cutting, excavating, or otherwise altering work and shall not cut or alter work of any other contractor save with consent or at the direction of District.

Article 55 CLEANING UP

Contractor at all times shall keep premises free from debris such as waste, rubbish, and excess materials and equipment caused by this work. Contractor shall not leave debris under, in, or about the premises. Upon completion of work, Contractor shall clean the interior and exterior of the building or improvement including fixtures, equipment, walls, floors, ceilings, roofs, window sills and ledges, horizontal projections, and any areas where debris has collected so surfaces are free from foreign material or discoloration. Contractor shall clean and polish all glass, plumbing fixtures, and finish hardware and similar finish surfaces and equipment and contractor shall also remove temporary fencing, barricades, planking and construction toilet and similar temporary facilities from site. See Special Conditions for additional requirements and instructions.

Article 56 CORRECTION OF WORK BEFORE FINAL PAYMENT

- a. Contractor shall promptly remove from the premises all work condemned by District as failing to conform to the contract, whether incorporated or not. Contractor shall promptly replace and re-execute his own work to comply with contract documents without additional expense to District and shall bear the expense of making good all work of other contractors destroyed or damaged by such removal or replacement.
- b. If Contractor does not remove such condemned work within a reasonable time, fixed by written notice, District may remove it and may store the material at Contractor's expense. If Contractor does not pay expenses of such removal within ten (10) days' time thereafter, District may, upon ten (10) days' written notice, sell such materials at auction or at private sale and shall account for net proceeds thereof, after deducting all costs and expenses that should have been borne by Contractor.

Article 57 ACCESS TO WORK

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

Article 58 OCCUPANCY

District reserves the right to occupy buildings at any time before completion, and such occupancy shall not constitute final acceptance of any part of work covered by this contract.

Article 59 DISTRICT'S INSPECTOR

- a. If applicable, an inspector will be employed by District in accordance with requirements of Title 24 of the California Code of Regulations and will be assigned to the work. His or her duties are specifically defined in Part 1, Title 24, Section 4-342 of the California Code of Regulations.
- b. All work shall be under the observation of said inspector. He shall have free access to any or all parts of work at any time. Contractor shall furnish inspector reasonable facilities for obtaining such information as may be necessary to keep him fully informed respecting progress and manner of work and character of materials. Inspection of work shall not relieve Contractor from any obligation to fulfill this contract. Inspector or District shall have authority to stop work whenever the provisions of the contract documents are not being complied with and Contractor shall instruct his employees accordingly.

Article 60 TESTS AND INSPECTIONS

- a. If the Contract Documents, the District Representative, or any instructions, laws, ordinances, or public authority require any part of the Work to be tested or Approved, Contractor shall provide the District Representative at least two (2) working days' notice of its readiness for observation or inspection. If inspection is by a public authority other than the District, Contractor shall promptly inform the District of the date fixed for such inspection. Required certificates of inspection (or similar) shall be secured by Contractor. Costs for District testing and District inspection shall be paid by the District. Costs of tests for Work found not to be in compliance shall be paid by the Contractor.
- b. If any Work is done or covered up without the required testing or approval, the Contractor shall uncover or deconstruct the Work, and the Work shall be redone after completion of the testing at the Contractor's cost in compliance with the Contract Documents.
- c. Where inspection and testing are to be conducted by an independent laboratory or agency, materials or samples of materials to be inspected or tested shall be selected by such laboratory or agency, or by the District, and not by Contractor. All tests or inspections of materials shall be made in accordance with the commonly recognized standards of national organizations.
- d. In advance of manufacture of materials to be supplied by Contractor which must be tested or inspected, Contractor shall notify the District so that the District may arrange for testing at the source of supply. Any materials which have not satisfactorily passed such testing and inspection shall not be incorporated into the Work.
- e. If the manufacture of materials to be inspected or tested will occur in a plant or location outside the geographic limits of District, the Contractor shall pay for any excessive or unusual costs associated with such testing or inspection, including but not limited to excessive travel time, standby time and required lodging.
- f. Reexamination of Work may be ordered by the District. If so ordered, Work must be uncovered or deconstructed by Contractor. If Work is found to be in accordance with the Contract Documents, the District shall pay the costs of reexamination and reconstruction. If such work is found not to be in accordance with the Contract Documents, Contractor shall pay all costs.

Article 61 SOILS INVESTIGATION REPORT

When a soils investigation report obtained from test holes at the site is available, such report shall not be a part of this contract. Nevertheless, with respect to any such soils investigation and/or geotechnical report regarding the site, it shall be the responsibility of the Contractor to review and be familiar with such report. Any information obtained from such 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, and does not form a part of the contract, unless otherwise specifically provided. Contractor is required to make a visual examination of site and must make whatever tests he deems appropriate to determine the underground condition of the soil. Limited soil tests and subsurface investigations, if any, are available for review and consideration by Contractor and were conducted for the purpose of design only. Subsurface

investigation information is made available by District solely as a matter of convenience and general information for Contractor and Contractor is expected to review and be familiar with such information. No representation is made by District or District that information provided is completely representative of all conditions and materials which may be encountered. If such a report is referenced in the contract documents for performance of the Work, such reference shall be to establish minimum requirements only. Further, no representation is made by District or District that information provided is solely adequate for purposes of construction. District disclaims responsibility for interpretations by Contractor of soil and subsurface investigation information, such as in protecting soil-bearing values, rock profiles, presence and scope of boulders and cobbles, soil stability and the presence, level and extent of underground water. Contractor shall determine means, methods, techniques and sequences necessary to achieve required characteristics of completed Work. Conditions found after execution of the Agreement to be materially different from those reported and which are not customarily encountered in the geographic area of the Work shall be governed by provisions of the General Conditions of the Contract for unforeseen conditions.

Article 62 DISTRICT'S STATUS

- a. In general and where appropriate and applicable, the District's Director or Maintenance, Operations, and Facilities shall be the District's representative during the construction period and shall observe the progress and quality of the work on behalf of the District. He shall have the authority to act on behalf of District only to the extent expressly provided in the contract documents. After consultation with the Inspector and after using his best efforts to consult with the District, the District shall have authority to stop work whenever such stoppage may be necessary in his reasonable opinion to insure the proper execution of the contract.
- b. Contractor further acknowledges that the District shall be, in the first instance, the judge of the performance of this contract.

Article 63 DISTRICT'S DECISIONS

Contractor shall promptly notify District in writing if the District fails within a reasonable time, make decisions on all claims of the District or Contractor and on all other matters relating to the execution and progress of the Work.

Article 64 PROVISIONS REQUIRED BY LAW DEEMED INSERTED

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

Article 65 LABOR/EMPLOYMENT SAFETY

The Contractor shall maintain emergency first aid treatment for his employees which complies with the Federal Occupational Safety and Health Act of 1970 (29 USC, section 651 et seq.).

Article 66 NOTICE OF TAXABLE POSSESSORY INTEREST

The terms of this document may result in the creation of a possessory interest. If such a possessory interest is vested in a private party to this document, the private party may be subjected to the payment of personal property taxes levied on such interest.

Article 67 ASSIGNMENT OF ANTITRUST ACTIONS

Contractor or subcontractor offers and agrees to assign to District all rights, title, and interest in and to all causes of action it may have under section 4 of the Clayton Act (15 USC, section 15) or under the Cartwright Act (chapter 2 (commencing with section 17100) of part 2 of division 7 of the Business and Professions Code), arising from the purchase of goods, services, or materials pursuant to this contract or any subcontract. This assignment shall be made and become effective at the time District tenders final payment to the Contractor, without further acknowledgment by the parties.

Article 68 SUBSTITUTION OF SECURITY

- a. Upon the Contractor's request, the District will make payment of funds withheld from progress payments to ensure performance under the contract pursuant to the requirements of Public Contract Code section 22300 if the Contractor deposits in escrow with the District or with a bank acceptable to the District, securities eligible for investment under Government Code section 16430, bank or savings and loan certificates of deposit, or other security mutually agreed to by the Contractor and the District, subject to the following conditions:
 1. The Contractor shall bear the expense of the District and the escrow agent, either the District or the bank, in connection with the escrow deposit made.
 2. Securities or certificates of deposit to be placed in escrow shall be of a value at least equivalent to the amounts of retention to be paid to the Contractor pursuant to this section.
 3. The Contractor shall enter into an escrow agreement satisfactory to the District, which agreement shall include provisions governing inter alia:
 - (a) The amount of securities to be deposited,
 - (b) The providing of powers of attorney or other documents necessary for the transfer of the securities to be deposited,

- (c) Conversion to cash to provide funds to meet defaults by the Contractor, including, but not limited to, termination of the Contractor's control over the work, stop notices filed pursuant to law, assessment of liquidated damages or other amounts to be kept or retained under the provisions of the contract,
 - (d) Decrease in value of securities on deposit,
 - (e) The termination of the escrow upon completion of the contract.
- 4. The Contractor shall obtain the written consent of the surety to such agreement.
 - 5. As an alternative to Contractor depositing into escrow securities of a value equivalent to the amounts of retention to be paid to the Contractor, upon Contractor's request, District will make payment of retentions earned directly to the escrow agent at the expense of Contractor pursuant to and in accordance with Public Contract Code section 22300.

Article 69 EXCAVATIONS DEEPER THAN FOUR FEET

If this contract involves digging trenches or other excavations that extend deeper than four feet below the surface, then all of the following shall apply:

- a. The Contractor shall promptly, and before the following conditions are disturbed, notify the District, in writing, of any:
 - 1. Material that the Contractor believes may be material that is hazardous waste, 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. Subsurface or latent physical conditions at the site differing from those indicated.
 - 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.
- b. Upon receiving any such notice, 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 District shall issue a change order under the procedures described in this contract.
- c. In the event that a dispute arises between the 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 this contract, but shall proceed with all work to be performed under the contract. A contractor shall retain any and all rights provided either by contract or by law which pertain to the resolution of disputes and protests between the contracting parties. (Public Contract Code section 7104).

Article 70 COMPLIANCE WITH STATE STORM WATER PERMIT FOR CONSTRUCTION

- a. The Contractor shall be required to comply with all conditions of the State Water Resources Control Board (State Water Board) National Pollutant Discharge Elimination System General Permit for Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activity (Permit) for all construction activity which results in the disturbance of in excess of one acre of total land area or which is part of a larger common area of development or sale. The Contractor shall be responsible for filing the Notice of Intent and for obtaining the Permit. The Contractor shall be solely responsible for preparing and implementing a Storm Water Pollution Prevention Plan (SWPPP) prior to initiating Work. It shall be Contractor's responsibility to evaluate the cost of compliance with the SWPPP in bidding on this contract. Contractor shall comply with all requirements of the State Water Resources Control Board. Contractor shall include all costs of compliance with specified requirements in the contract amount.
- b. Contractor shall be responsible for implementing and complying with the provisions of the Permit and the SWPPP, including the standard provisions, monitoring and reporting requirements as required by Permit. Contractor shall provide copies of all reports and monitoring information to District.
- c. Contractor shall comply with the lawful requirements of any applicable municipality, the County, drainage district, and other local agencies regarding discharges of storm water to separate storm drain system or other watercourses under their jurisdiction, including applicable requirements in municipal storm water management programs.
- d. Failure to comply with the Permit is a violation of federal and state law. Contractor hereby agrees to indemnify and hold harmless District, its Board Members, officers, agents, employees and authorized volunteers from and against any and all claims, demands, losses or liabilities of any kind or nature which District, its Board Members, officers, agents, employees and authorized volunteers may sustain or incur for noncompliance with the Permit arising out of or in connection with the project, except for liability resulting from the negligence or willful misconduct of District, its Board Members, officers, agents, employees or authorized volunteers. District may seek damages from Contractor for delay in completing the contract in accordance with Article 6 hereof, caused by Contractor's failure to comply with Permit.

Article 71 RESOLUTION OF CONSTRUCTION CLAIMS OF \$375,000 OR LESS

- a. Claims between District and Contractor shall first be resolved using the procedures set forth at Public Contract Code Section 9204. "Claims" are defined, pursuant to Public Contract Code §9204, as a separate demand by Contractor for one of the following: a time extension for relief from penalties for delay; payment of money or damages arising from work done; or payment of an amount disputed by District.

- b. Upon receiving a claim sent by registered or certified mail, District must review and provide a written response within forty-five (45) days that identifies the disputed and undisputed portions of the claim. The forty-five (45) day period to respond may be extended by mutual agreement. The claim is deemed rejected in its entirety if District does not issue a response. Any payment due on an undisputed portion of the claim must be processed within sixty (60) days after District's response. If a claimant disputes District's response or lack thereof, the claimant may demand to meet and confer for settlement of the issues in dispute. Any portion of a claim that remains in dispute after a meet and confer conference will be subject to nonbinding mediation process, as described in Public Contract Code Section 9204. Undisputed and unpaid claims accrue interest at 7% per annum. A subcontractor or lower tier subcontractor may make a claim to District through Contractor, as specified in Public Contract Code Section 9204. However, the procedures in this section shall not supersede the requirements of the Agreement with respect to Contractor's notification to District of such claim or extend the time for the giving of such notice as provided in the Agreement.
- c. For public work claims of \$375,000 or less between Contractor and District, if District has not elected to resolve disputes by arbitration pursuant to article 7.1 (commencing with section 10240) of chapter 1 of part 2 of the Public Contract Code, the provisions of article 1.5 (commencing with section 20104) of chapter 1 of part 3 of the Public Contract Code apply ("Article 1.5").
- d. Each claim shall be submitted in writing before the date of final payment and shall include all necessary substantiating documentation. District shall respond in writing within forty-five (45) days of receipt of the claim if the claim is less than \$50,000 ("\$50,000 claim") or within sixty (60) days of receipt of the claim, if the claim is over \$50,000 but less than or equal to \$375,000 ("\$50,000-\$375,000 claim"). In either case, District may request in writing within thirty (30) days of receipt of the claim, any additional documentation supporting the claim or relating to defenses to the claim the District may have against the claimant. Any additional information shall be requested and provided upon mutual agreement of the District and the claimant. District's written response to the claim shall be submitted to claimant within fifteen (15) days after receipt of the further documentation for \$50,000 claims or within thirty (30) days after receipt of the further documentation for \$50,000-\$375,000 claims or within a period of time no greater than that taken by the claimant in producing the additional information, whichever is greater.
- e. Within fifteen (15) days of receipt of the District's response, if claimant disputes District's written response or within fifteen (15) days of the District's failure to respond within the time prescribed, the claimant shall provide written notification to District demanding an informal conference to meet and confer ("conference") to be scheduled by the District within thirty (30) days. If the claim or any portion of the claim remains in dispute following the meet and confer ("meet and confer conference") to be scheduled by the District within 30 days, the claimant 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 period of time within which a claim must be filed is tolled from the time the claimant submits a written claim until the time the claim is denied, including time utilized as a result of the meet and confer process, including time utilized by the meet and confer process.
- f. If a civil action is filed to resolve claims within sixty (60) days (but no earlier than thirty (30) days) following the filing or responsive pleadings, the court shall submit the matter to nonbinding mediation unless waived by mutual stipulation of both parties. The mediation process shall provide that both parties select a disinterested third person mediator within fifteen (15) days, shall be commenced within thirty (30) days of the submittal and concluded within fifteen (15) days from the commencement of the mediation unless time 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.
- g. 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 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 or 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. The court may, upon request by any party, order any witness to participate in the mediation or arbitration process.
- h. Notwithstanding any other provision of law, upon stipulation of the parties, arbitrators appointed for purposes of this article shall be experienced in construction law and, upon stipulation of the parties, mediators and arbitrators shall be paid necessary and reasonable hourly rates not to exceed their customary rate. Such fees and expenses shall be paid equally by the parties, except in the case of arbitration where the arbitrator, for good cause, determines a different division. In no event shall these fees or expenses be paid by state or county funds. Any party who, after receiving an arbitration award requests a trial de novo but does not obtain a more favorable judgment, shall pay the attorney's fees of the other party arising out of the trial de novo in addition to payment of costs and fees required under chapter 2.5 (commencing with section 1141.10) of title 3 of part 3 of the Code of Civil Procedure. District shall not fail to pay any portion of a claim which is undisputed unless otherwise provided herein and shall pay interest at the legal rate commencing on the date the suit is filed in court on any arbitration award or judgment.
- i. Any arbitration, mediation or other forms of alternate dispute resolution shall be handled within the boundaries of the District unless otherwise mutually agreed.

Article 72 RESOLUTION OF CONSTRUCTION CLAIMS IN EXCESS OF \$375,000

- a. Claims between District and Contractor shall first be resolved using the procedures set forth at Public Contract Code Section 9204. "Claims" are defined, pursuant to Public Contract Code §9204, as a separate demand by Contractor for one of the following: a time extension for relief from penalties for delay; payment of money or damages arising from work done; or payment of an amount disputed by District.
- b. Upon receiving a claim sent by registered or certified mail, District must review and provide a written response within forty-five (45) days that identifies the disputed and undisputed portions of the claim. The forty-five (45) day period to respond may be extended by mutual agreement. The claim is deemed rejected in its entirety if District does not issue a response. Any payment due on an undisputed portion of the claim must be processed within sixty (60) days after District's response. If a claimant disputes District's response or lack thereof, the claimant may demand to meet and confer for settlement of the issues in dispute. Any portion of a claim that remains in dispute after a meet and confer conference will be subject to nonbinding mediation process, as described in Public Contract Code Section 9204. Undisputed and unpaid claims accrue interest at 7% per annum. A subcontractor or lower tier subcontractor may make a claim to District through Contractor, as specified in Public Contract Code Section 9204. However, the procedures in this section shall not supersede the requirements of the Agreement with respect to Contractor's notification to District of such claim or extend the time for the giving of such notice as provided in the Agreement.

- c. If a dispute in excess of a total value of \$375,000, arises out of, or relates to this contract, or the breach thereof, and if said dispute cannot be settled through normal contract negotiations, the parties agree that as a condition precedent to the initiation of litigation, the dispute shall first be submitted to mediation pursuant to this Article. The mediation is voluntary, non-binding, and intended to provide an opportunity for the parties to evaluate each other's cases and arrive at a mutually agreeable resolution of the dispute. These provisions relating to voluntary mediation shall not be construed or interpreted as mandatory arbitration.
- d. Either party may initiate mediation by notifying the other party or parties in writing. A Request for Mediation shall contain a brief statement of the nature of the dispute or claim, and the names, addresses, and phone numbers of all parties to the dispute or claim, and those, if any, who will represent them in the mediation.
- e. The mediation process set forth in this section shall be administered by the American Arbitration Association (AAA) and governed by their rules in effect at the time of filing, or by any other neutral organization agreed to by the parties (hereinafter called "Administrator").
- f. The costs for all mediation, including the administrative fees and mediator compensation, will be shared equally by all parties. Fees shall be jointly negotiated by all parties directly with the Administrator. The expenses of witnesses for any party shall be paid by the party producing such witnesses.
- g. A single mediator, acceptable to all parties, shall be used to mediate the dispute. The mediator will be knowledgeable in construction matters and will be selected from lists furnished by the Administrator. The initial mediation session shall commence within thirty (30) days of filing, unless otherwise agreed by the parties, or at the direction of the mediator.
- h. At least ten (10) days before the first scheduled mediation session, each party shall provide the mediator a brief memorandum setting forth its position with regard to the issues that need to be resolved. At the discretion of the mediator, such memoranda may be mutually exchanged by the parties. At the first session, the parties will be expected to produce all information reasonably required for the mediator to understand the issue presented. The mediator may require each party to supplement such information.
- i. Mediation hearings will be conducted in an informal manner and discovery will not be allowed unless agreed to by all parties. All discussions, statements, or admissions will be confidential to the proceedings and will not be used for any other purpose as they relate to either party's legal position. There shall be no stenographic record of the mediation.
- j. Mediation sessions are private. The parties and their representatives may attend mediation sessions. Other persons may attend only with the permission of the parties and with the consent of the mediator. The parties may have an attorney present and shall advise the other parties no less than five (5) working days before the mediation of their intent to have an attorney present, so that the other parties may also have their attorneys present.
- k. The mediator does not have authority to impose a settlement on the parties but will attempt to assist the parties in reaching a satisfactory resolution of their dispute. The mediator is authorized to conduct joint and separate meetings with the parties and to make oral and written recommendations for settlement. Whenever necessary, the mediator may also obtain expert advice concerning technical aspects of the dispute, provided the parties agree and assume the expenses of obtaining such advice. Arrangements for obtaining such advice shall be made by the mediator or the parties, as the mediator shall determine.
- l. The mediator is authorized to end the mediation whenever, in the mediator's judgment, further efforts at mediation would not contribute to a resolution of the dispute between the parties.
- m. Any resultant agreements from mediation shall be documented in writing, as agreed upon during the mediation, and may be used as the basis for a change order or other directive as appropriate. All mediation results and documentation shall be non-binding and inadmissible for any purpose in any legal proceedings, unless such admission is otherwise agreed in writing by all parties. Mediators shall not be subject to any subpoena or liability and their actions shall not be subject to discovery in subsequent proceedings.
- n. The Mediation shall be terminated by the execution of a Settlement Agreement by the parties; by a written declaration of the Mediator to the effect that further efforts at Mediation are no longer worthwhile; or by a written declaration of a party or parties to the effect that the Mediation proceedings are terminated.
- o. If mediation is unsuccessful in resolving the dispute, the parties thereafter may agree to submit the matter to the Administrator for binding arbitration. The parties agree that the matter shall be submitted to one (1) arbitrator, unless they agree to three (3) arbitrators in writing. The parties further agree that they will faithfully observe this agreement, and that the parties will abide by and perform any award rendered by the arbitrator(s), that a judgment of a court having competent jurisdiction may be entered upon the award, and that such judgment shall be enforceable as a final judgment to the fullest extent under the law. The parties agree to split evenly all arbitration and arbitrator(s) fees and expenses. The arbitration shall be subject to, and proceed in accordance with California Code of Civil Procedure, Section 1280 through 1294.2. If the parties do not agree to submit to binding arbitration, neither party is prevented from pursuing other legal remedies.
- p. Any arbitration, mediation or other forms of alternate dispute resolution shall be handled within the boundaries of the District unless otherwise mutually agreed.

Article 73 GOVERNING LAW AND VENUE

This Contract shall be governed in accordance with the laws of the State of California and venue shall be in San Diego County.

Article 74 FINGERPRINTING

The determination of fingerprinting requirements are set forth in the Special Conditions.

- (a) Contracts for Construction, Reconstruction, Rehabilitation or Repair of a School Facility Involving **More than Limited Contact with Students.**

If the District determines based on the totality of the circumstances concerning the Project that the Contractor and Contractor's employees are subject to the requirements of Education Code section 45125.2 pertaining to Contracts for Construction, Reconstruction, Rehabilitation or Repair of a School Facility because they will have contact other than limited contact with pupils, by execution of the Agreement/Contract, the Contractor acknowledges that Contractor is entering into a contract for the construction, reconstruction, rehabilitation, or repair of a school facility where the Contractor and/or Contractor's employees will have more than limited contact with students and the services to be provided do not constitute an emergency or exceptional situation. In accordance with Education Code section 45125.2 the Contractor shall, at Contractor's own expense, (a) install a physical barrier to limit contact with students by Contractor and/or Contractor's employees, or (b) provide for the continuous supervision and monitoring of the Contractor and/or Contractor's employees by an employee of the Contractor who has received fingerprint clearance from the California Department of Justice, or (c) provide for the surveillance of the Contractor and Contractor's employees by a District employee; and (d) Contractor and Contractor's employees shall not use student restroom facilities;

- (b) Contracts for Construction, Reconstruction Rehabilitation or Repair of a School Facility Involving **Only Limited Contact With Students.**

If the District determines based on the totality of the circumstances concerning the Project that the Contractor and Contractor's employees are subject to the requirements of Education Code section 45125.2 pertaining to Contracts for Construction, Reconstruction, Rehabilitation or Repair of a School Facility because they will have only limited contact with pupils, by execution of the Agreement/Contract, the Contractor acknowledges that Contractor is entering into a contract for the construction, reconstruction, rehabilitation or repair of a school facility involving only limited contact with students. Accordingly, the parties agree that the following conditions apply to any work performed by the Contractor and/or Contractor's employees on a school site: (1) Contractor and/or Contractor's employees shall check in with the school office each day immediately upon arriving at the school site; (2) Contractor and/or Contractor's employees shall inform school office staff of their proposed activities and location at the school site; (3) Once at such location Contractor and/or Contractor's employees shall not change locations without contacting the school office; (4) Contractor and Contractor's employees shall not use student restroom facilities; and (5) If Contractor and/or Contractor's employees find themselves alone with a student, Contractor and Contractor's employees shall immediately contact the school office and request that a member of the school staff be assigned to the work location.

Article 75 COMPLIANCE WITH DTSC GUIDELINES – IMPORTED SOILS

If the project requires the use of imported soils, the Contractor shall be responsible to use and shall certify that the imported material it uses is free of any hazardous and/or toxic substance or material of any nature or type as defined in accordance with California Law and the California Health and Safety Code. The District reserves the right to reject any imported material that has come from agricultural or commercial land uses. Contractor must notify the District of the source of material and comply with the San Diego Regional Water Quality Control Board Resolution 95-63 and when applicable, with the guidelines of the Department of Toxic Substances Control (DTSC).

Article 76 NO ASBESTOS

- a. The Contractor will be required to execute and submit a Certificate Regarding Non-Asbestos Containing Materials.
- b. Should asbestos containing materials be installed by the Contractor in violation of this certification, or if removal of asbestos containing materials is part of the Project, decontaminations and removals will be performed in accordance with the requirements of all applicable laws and will meet the following criteria:
1. Decontamination and removal of work found to contain asbestos or work installed with asbestos containing equipment shall be done only under the supervision of a qualified consultant, knowledgeable in the field of asbestos abatement and accredited by the Environmental Protection Agency (EPA).
 2. The asbestos removal contractor shall be an EPA accredited contractor qualified in the removal of asbestos and shall be chosen and approved by the asbestos consultant who shall have sole discretion and final determination in this matter.
 3. The asbestos consultant shall be chosen and approved by the District which shall have sole discretion and final determination in this matter.
 4. The work will not be accepted until asbestos contamination is reduced to levels deemed acceptable by the asbestos consultant.
- c. If removal of asbestos containing materials is part of the project, the cost of all asbestos removal, including, but not necessarily limited to the cost of the asbestos removal contractor, the cost of the asbestos consultant, analytical and laboratory fees, time delays and additional costs that may be incurred by the District shall be borne entirely by the Contractor.
- d. Hold Harmless: Interface of work for the Project with work containing asbestos shall be executed by the Contractor at his/her risk and at his/her discretion with full knowledge of the currently accepted standards, hazards, risks and liabilities associated with asbestos work and asbestos containing products. By execution of the Agreement, the Contractor acknowledges the above and agrees to the fullest extent permitted by law to hold harmless the District, its Governing Board, employees, agents, representatives, including its District and assigns, for all asbestos liability which may be associated with this work. The Contractor further agrees to instruct his/her employees with respect to the above-mentioned standards, hazards, risk and liabilities.

Article 77 NOTIFICATION OF THIRD PARTY CLAIMS

The District shall provide the Contractor with timely notification of the receipt by the District of any third party claim relating to this contract, and the District may charge back to the Contractor the cost of any such notification.

Article 78 LABOR COMPLIANCE MONITORING AND ENFORCEMENT

- a. Contractor/Subcontractor Registration. A Contractor or subcontractor shall not be qualified to bid on, be listed on a bid proposal (subject to the requirements of Public Contract Code section 4104), or engage in the performance of any contract for public work unless currently registered and qualified to perform public work pursuant to Labor Code section 1725.5, except under the limited circumstances set forth in Labor Code section 1771.1(a). This requirement shall apply to any bid proposal and any contract for public work. The District may not accept a bid or enter into a contract for a public works project with an unregistered contractor.
- b. Compliance Monitoring and Enforcement. Pursuant to Labor Code section 1771.4, this Contract is subject to compliance monitoring and enforcement by the Department of Industrial Relations. Each Contractor and subcontractor performing work on the Project shall be required to comply with the provisions of the California Labor Code, beginning with section 1720, and the regulations of the Department of Industrial Relations' Division of Labor Standards Enforcement (i.e., the Labor Commissioner), including, but not limited to, the standard provisions requiring payment of prevailing wages, maintenance and submission of certified payroll records, and the hiring of apprentices as appropriate. Unless otherwise specified, the Contractor shall be required to post job site notices regarding the requirements of this paragraph, as prescribed by regulation. For all new public works projects, Contractor and each subcontractor shall be required to furnish the records specified in Labor Code section 1776 directly to the Labor Commissioner at least monthly, or more frequently if specified in the Contract Documents, and in a format prescribed by the Labor Commissioner. This requirement shall apply to all projects.
- c. Contractor shall be required to post a notice at the Project site in accordance with Title 8 of the California Code of Regulations, Section 16451.

Article 79 PREQUALIFICATION

- a. Prospective bidders are required to be prequalified for projects in excess of one million dollars (\$1,000,000) in estimated value using any funds received pursuant to the Leroy F. Greene School Facilities Act of 1998 or any funds from any state school bond. Additionally, subcontractors in the trades of mechanical, electrical and plumbing are required to be pre-qualified. These trades are associated with California State Contractor's License classifications including, but not limited to: C-4, C-7, C-10, C-16, C-20, C-34, C-36, C-38, C-42, C-43, and C-46. The prequalification process may be conducted on a per project basis and/or on scheduled basis, as determined by the needs of the District. Prequalification status is valid for one (1) calendar year. This Project is subject to prequalification.
- b. The District has developed a standard questionnaire, requirements, and a rating system in order to pre-qualify prospective bidders. Pre-qualification packets are available from the District by request. In addition, the District has developed an appeals process for those prospective bidders who are deemed not qualified and who desire to appeal the District's prequalification decision.
- c. The District and/or its appointed representatives will conduct an independent review of, evaluate, and score each contractor's/subcontractor's submitted prequalification packets. Letters regarding each contractor/subcontractor's prequalification status will be sent to each contractor/subcontractor upon completion of the review. Contractors/subcontractors who receive a non-qualified status will also be given specific details as to the basis of the non-qualified rating so that they may have an opportunity to re-submit their packet.
- d. If a pre-qualification window is open in conjunction with the Project, prospective bidders must submit pre-qualification packets at least ten (10) days prior to the bid closing deadline. Bidders shall receive notification of their prequalification status at least five (5) days prior to the bid closing deadline. The list of prequalified bidders shall be published at least five (5) days prior to the bid closing timeline. The District will accomplish this task by maintaining an up-to-date list of prequalified bidders and posting it to the District's website.

END OF GENERAL CONDITIONS

NATIONAL SCHOOL DISTRICT

WAREHOUSE FREEZER REPLACEMENT

BID 25-26-01B

**SECTION 8
SPECIAL CONDITIONS**

SPECIAL CONDITIONS

- A. **Time of Performance.** The work shall be commenced on the date stated in the District's notice to the Contractor to proceed; which date will be not less than ten (10) consecutive calendar days from and after the date of the Notice of Award and shall be completed in accordance with the scheduled dates as specified below. District and Contractor each hereby stipulate that the stated performance period is accepted as reasonable and that no other performance period shall be acceptable unless accepted in writing (See Article 2 of Agreement and Article 6 of General Conditions).

Work under this contract shall be scheduled and coordinated in compliance with the following:

1. The anticipated date of the award of the contract is **September 10, 2025**.
2. Contract submittals are due on **September 24, 2025**.
3. **Substitutions to Specified Materials, Processes, or Articles Prior to Bid Submittal:** Any proposals for substitutions of equipment, materials, or products other than what is specified in the bid documents must be submitted, in writing, to the District within **seven (7) calendar days** of the bid documents release date. After reviewing the request, the District will respond with its decision to all parties who have submitted their contact information in accordance with the instructions in the Notice to Contractors. The District has the right to reject any or all requests for substitutions of equipment, materials, or products other than what is specified in the bid documents. The Bidder shall bear all of the District's costs associated with the review of substitution requests.
4. Work shall begin on **or after September 25, 2025**, or as directed by Director of Maintenance, Operations and Facilities.
5. Contractor shall complete work at the under these agreements by **December 31, 2025**.
6. The Contractor acknowledges that it fully understands the Project work to be performed has been scheduled by the District for a specific time period. In addition the Contractor acknowledges that it fully understands that scheduling has been established for this Project in order to promote the best usage of school facilities and to timely provide an appropriate learning environment for students to the fullest extent possible. With these understandings in mind, pursuant to Article 13 of the General Conditions regarding the District's Right to Terminate Contract, it is acknowledged and understood by the Contractor that it is a substantial violation of the Contract for the Contractor to fail to provide all submittals in the time specified and identified. Furthermore, it is acknowledged and understood by the Contractor that it is a substantial violation of the Contract for the Contractor to fail to provide a full work crew or properly skilled workers with proper and sufficient materials and equipment from the first day of Project work scheduled for **July 28, 2025** or such Project work start date as shall be otherwise specified in writing in the District's Notice to Proceed.

If the site will not be available after the Notice to Proceed date, Contractor shall utilize this time period for administrative tasks and initial mobilization and shall coordinate such activities with District.

- B. **Future Work:** All future work awarded from this bid, shall be coordinated with the District Maintenance, Operations, and Facilities Department representative and Contractor. No work shall be started until scheduling has been agreed upon by all parties. Work will be authorized by purchase order(s) referencing bid 25-26-01B and issued by the District's Purchasing Department. After the purchase order is received, it will be the contractor's responsibility to coordinate the work at each site with the Maintenance, Operations, and Facilities Department, (619) 336-7780, so that the work may be accomplished with a minimum of interference to the sites.

- C. **Liquidated Damages – Contract Submittals:** If contract, bonds, and certificates of insurance are not received by the District within the scheduled time period, the agreed liquidated damages established in Article 6 of the General Conditions is Fifty Dollars (\$ 50.00) per day for each calendar date the start date is delayed.

Liquidated Damages – Time of Completion: If work under this contract is not ready for the intended use within the specified time period, the agreed liquidated damages established in Article 6 of the General Conditions is Five Hundred Dollars (\$ 500.00) per day for each calendar date completion is delayed.

- D. **Documents Furnished.** The number of copies of drawings and specifications to be furnished to Contractor free of charge, per Article 3 of the General Conditions, is one (1). Additional copies of the drawings are the responsibility of the contractor.

- E. **Bonds:** Contractor shall provide (i) a bid bond or cashier's check payable to National School District in the amount of ten percent (10%) of the contract price; (ii) a payment bond in the total amount of bid or as specified in the Information to Bidders; and (iii) a performance bond in the amount of one hundred percent (100%) of the contract price or as specified in the Information for Bidders.

- F. **Additional Insurance:** As provided in the General Conditions, Contractor shall procure and maintain and shall require all subcontractors, if any, whether primary or secondary, to procure and maintain:

Commercial General Liability and Property Damage Insurance
(which provides limits of not less than:

(a) Per occurrence (combined single limit)	\$2,000,000
(b) Project Specific Aggregate (for this project only)	\$3,000,000
(c) Products/Completed Operations	\$2,000,000
(d) Personal & Advertising Injury limit	\$1,000,000

- G. **Executed Copies:** The number of executed copies of the Agreement, the Performance Bond, and the Payment Bond for Public Works required is two (2).

- H. **License Classification:** Each bidder shall be a licensed Contractor pursuant to the Business and Professions Code and shall be licensed in the following classification:

A-General Engineering Contractor or B-General Building Contractor

- I. **Certification Requirements:** When specified in the bid documents, the Contractor or Sub Contractor must be certified by the factory or manufacturer to install equipment or other products. Such certifications must be obtained prior to submittal of bid.

- J. **Fingerprinting:**

Pursuant to the provisions of Article 74 of the General Conditions, District Determination of Fingerprinting Requirement Application is as follows:

- a. **The District has considered the totality of the circumstances concerning the Project and has determined that the Contractor and Contractor's employees:**

1. _____ are subject to the requirements of Education Code section 45125.2 and Paragraph (a) of Article 73 of the General Conditions. Fingerprinting and criminal background checks are required for this project.
2. X are not subject to the requirements of Education Code section 45125.2 and are subject to Paragraph (b) of Article 73 of the General Conditions.

- K. **Cleaning Up:** Pursuant to the specific provisions of Article 55, "Cleaning Up", of the General Conditions, the Contractor is responsible at all times to keep the premises free from debris, waste, rubbish and excess materials and dispose of it in disposal site in accordance with provisions of existing law. The Contractor acknowledges and understands that the Project work here is to be performed on existing and functioning school facilities. The Contractor hereby acknowledges and agrees that if and/or when the Contractor fails to fulfill its clean-up responsibility on a daily basis, the District will undertake to authorize additional regular work or overtime work by its own maintenance and/or custodial employees to keep the premises free from debris, waste and rubbish by authorizing regular and/or overtime work for its maintenance and/or custodial employees. This work time shall be charged back to the Contractor and deducted from the Contractor's progress payments and/or final payment at the rate of **\$50.00 per hour for regular time and \$75.00 per hour for overtime**. The Contractor will not be notified in advance of any such clean up of the premises to be performed by the District's employees unless the number of hours required in any work week for such clean up of the premises by District employees is both anticipated and estimated by the District to exceed five (5) total weekly hours of either the regular or overtime rates specified herein or the combined regular and overtime rates specified herein.

- L. **Inspector's Field Office:** Not applicable to this project.
- M. **Calendar and Time-of Day:** The worksite will be available Monday through Friday, 6:00 AM to 3:00 PM, September 25, 2025, through December 30, 2025. The worksite will be not be available November 27 and 28, and also December 24, 25, and 31. A project calendar will be arranged with and at the sole discretion of the Director of Maintenance, Operations, and Facilities.
- N. **Staging and Storing:** The District will not provide secure space for the Contractor to store and stage his/her equipment. The Contractor should have product shipped to their location for transport to various District locations. It is the Contractor's responsibility to provide a haul-a-way or other storage facility if needed. Security of said equipment is the responsibility of the Contractor. The Contractor is responsible for restoring and cleaning classrooms in which they are working, after each workday is completed.
- O. **Project Locations.** The project location is at the District Warehouse, 1300 East 14th Street, National City.

END OF SPECIAL CONDITIONS

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NATIONAL SCHOOL DISTRICT

WAREHOUSE FREEZER REPLACEMENT Bid 25-26-01B

SECTION 9 ESCROW AGREEMENT

ESCROW AGREEMENT FOR SECURITY DEPOSITS IN LIEU OF RETENTION

This Escrow Agreement is made and entered into by and between the **NATIONAL SCHOOL DISTRICT** whose address is **1500 N AVENUE, NATIONAL CITY, CA 91950** (hereinafter called "District") and

whose address is _____ (hereinafter called "Contractor") and
_____ whose address is
_____ (hereinafter called "Escrow Agent").

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

- (1) Pursuant to Section 22300 of the Public Contract Code of the State of California, Contractor has the option to deposit securities with Escrow Agent as a substitute for retention earnings required to be withheld by District pursuant to the Construction Contract entered into between the District and Contractor for **Warehouse Freezer Replacement, Bid 25-26-01B**, in the amount of _____ dated _____ (hereinafter referred to as the "Contract"). Alternatively, on written request of the Contractor, the District shall make payments of the retention earnings directly to the Escrow Agent. When Contractor deposits the securities as a substitute for Contract earnings, the Escrow Agent shall notify the District within 10 days of the deposit. The market value of the securities at the time of the substitution shall be at least equal to the cash amount then required to be withheld as retention under the terms of the Contract between the District and Contractor. Securities shall be held in the name of _____, and shall designate the Contractor as the beneficial District.
- (2) The District shall make progress payments to the Contractor for those funds which otherwise would be withheld from progress payments pursuant to the Contract provisions, provided that the Escrow Agent holds securities in the form and amount specified above.
- (3) When the District makes payment of retention earned directly to the Escrow Agent, the Escrow Agent shall hold them for the benefit of the Contractor until the time that the escrow created under this Escrow Agreement is terminated. The 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 the District pays the 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 the District. These expenses and payment terms shall be determined by the District, Contractor and Escrow Agent.
- (5) The interest earned on the securities or the money market accounts held in escrow and all interest earned on that interest shall be for the sole account of Contractor and shall be subject to withdrawal by Contractor at any time and from time to time without notice to the 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 the District to the Escrow Agent that District consents to the withdrawal of the amount sought to be withdrawn by Contractor.
- (7) The District shall have a right to draw upon the securities in the event of default by the Contractor. Upon seven days' written notice to the Escrow Agent from the District of the default, the Escrow Agent shall immediately convert the securities to cash and shall distribute the cash as instructed by the District.

(8) Upon receipt of written notification from the District certifying that the Contract is final and complete, and that the 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 moneys and securities on deposit and payments of fees and charges.

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

(10) The names of the persons who are authorized to give written notice or to receive written notice on behalf of the District and on behalf of Contractor in connection with the foregoing, and exemplars of their respective signatures are as follows:

On behalf of District:

Title

Name

Signature

Address

On behalf of Contractor:

Title

Name

Signature

Address

On behalf of Escrow Agent:

Title

Name

Signature

Address

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

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

DISTRICT:

CONTRACTOR:

NATIONAL SCHOOL DISTRICT

Title

Title

Name

Name

Signature

Signature

NATIONAL SCHOOL DISTRICT

WAREHOUSE FREEZER REPLACEMENT BID 25-26-01B

<p>SECTION 10</p> <p>CERTIFICATIONS</p>

DRUG-FREE WORKPLACE CERTIFICATION

This Drug-Free Workplace Certification form is part of the Contract made by and between the **NATIONAL SCHOOL DISTRICT** (hereinafter referred to as the "District" and

_____ (hereinafter referred to as the ("Contractor") for the **Warehouse Freezer Replacement, BID 25-26-01B** Project (hereinafter referred to as the (Project)). This form is required from all successful bidders pursuant to the Drug-Free Workplace Act of 1990 (Government Code Section 8350 et seq.) The Drug-Free Workplace Act of 1990 requires that every person or organization awarded a contract or grant for 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. It addition, the Act provides that each contract or grant awarded by a State agency may be subject to suspension of payments or termination, and the contractor or grantee may be subject to debarment from future contracting, if the contracting agency determines that specified acts have occurred.

Pursuant to Government Code Section 8355, every person or organization awarded a contract or grant from a State agency 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 their 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; and
 - 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 by subdivision A, 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 the Drug-Free Workplace Act as it now exists or may hereinafter be amended. Particularly, I shall abide by Government Code Section 8355 when performing the Contract for the Project by:

- A. Publishing a statement notifying employees concerning the prohibition of controlled substance at my 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 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, the Contract awarded herein is subject to termination, suspension of payments, or both. I further understand that if 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 Act.

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

Executed on this _____ day of _____, 20____ at _____.

Name of Contractor (Print or Type)

By _____
Signature

Print Name

Title

Subscribed and sworn before me
this _____ day of _____, 20____

Notary Public in and for
the State of California

(Seal)

My Commission Expires: _____

ASBESTOS-FREE MATERIALS CERTIFICATION

The undersigned declares that he or she is the person who executed the bid for the [Warehouse Freezer Replacement, BID 25-26-01B](#) (hereinafter referred to as the "Project", and submitted it to the **NATIONAL SCHOOL DISTRICT** (hereinafter referred to as the "District" on behalf of

(hereinafter referred to as the "Contractor").

To the best of my knowledge, information and belief, in completing the Contractor's Work for the Project, no material furnished, installed or incorporated into the Project will contain, or in itself be composed of, any materials listed by the federal or state EPA or federal or state health agencies as a hazardous material.

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

Executed on this _____ day of _____, 20____ at _____.

Name of Contractor (Print or Type)

By: _____
Signature

Print Name

Title

Subscribed and sworn before me

this _____ day of _____, 20____

Notary Public in and for
the State of California

My Commission Expires: _____

RECYCLED CONTENT CERTIFICATION

The undersigned declares that he or she is the person who executed the bid for **Warehouse Freezer Replacement, Bid 25-26-01B** (hereinafter referred to as the "Project", and submitted it to the **NATIONAL SCHOOL DISTRICT** (hereinafter referred to as the "District" on behalf of

(hereinafter referred to as the ("Contractor").

Pursuant to Public Contract Code Section 10308.5, all contractors are required to certify in writing under penalty of perjury the minimum (if not exact) percentage of recycled content in materials, goods, or supplies offered or products used in the performance of their contract, regardless of whether the product meets the required recycled product percentage as defined in Sections 12161 and 12200. The recycled content shall include both post consumer material and secondary material as defined in Public Contract Code Sections 12161 and 12200. The contractor may certify that the product contains zero recycled content. For purposes of this Certification, the definitions found in Public Contract Code Sections 12161 and 12200 shall apply.

I declare under penalty of perjury under the laws of the State of California that the following percentages of Postconsumer Material and Secondary Material is in the materials, goods or supplies offered for, or products used in, the performance of the Contract for the Project:

_____ % Postconsumer Material _____ % Secondary Material

Executed on this _____ day of _____, 20____ at _____.

Name of Contractor (Print or Type)

By _____
Signature

Print Name

Title

Subscribed and sworn before me

this _____ day of _____, 20____

Notary Public in and for
the State of California

My Commission Expires: _____

FINGERPRINTING CERTIFICATIONS

CONTRACTOR FINGERPRINTING REQUIREMENTS

CONTRACTOR CERTIFICATION

With respect to the Contract dated _____ 20____ by and between the National School District ("District") and _____ ("Contractor"), Contractor hereby certifies to the District's governing board that it has completed the criminal background check requirements of Education Code Section 45125.1 and that none of its employees that may come in contact with District's pupils have been convicted of a violent felony listed in Penal Code section 667.5(c) or a serious felony listed in Penal Code section 1192.7(c).

Contractor's Representative

Date

CONTRACTOR EXEMPTION

Pursuant to Education Code sections 45125.1 and 45125.2, the National School District ("District") has determined that ("Contractor") is exempt from the criminal background check certification requirements for the contract dated _____ 20____ by and between the District and Contractor ("Contract") because:

- ☒ The Contractor's employees will have limited contact with District students during the course of the Contract;
- ☐ Emergency or exceptional circumstances exist; or
- ☐ With respect to contractors constructing, reconstructing, rehabilitating or repairing a school facility, as provided in Section 45125.2, the Contractor has agreed to ensure the safety of pupils at the school facility by the following method(s) specified in Section 45125.2:

_____ Installation of physical barrier at the work site to limit contact with pupils.
_____ Surveillance of employees of the Contractor by school personnel.
_____ Continual supervision and monitoring of all employees of the Contractor by an employee of the Contractor whom the DOJ has ascertained has not been convicted of a violent or serious felony.

Supervisor's Name: _____

Soc.Sec. No. _____

School District Official

Date

SUBCONTRACTOR'S CERTIFICATION (Required for all Subcontractors)

The National School District ("District") entered into a contract for services with _____ ("Contractor") on or about _____, 20____ ("Contract"). This certification is submitted by _____, a subcontractor to the Contractor for purposes of that Contract ("Subcontractor"). Subcontractor hereby certifies to the District's governing board that it has completed the criminal background check requirements of Education Code section 45125.1 and that none of its employees that may come in contact with District pupils have been convicted of a violent felony listed in Penal Code section 667.5(c) or a serious felony listed in Penal Code section 1192.7(c).

Contractor's Representative

Date

SUBCONTRACTOR'S EXEMPTION

The National School District ("District") entered into a contract for services with ("Contractor") on or about _____ 20_. ("Contract"). Pursuant to Education Code sections 45125.1 and 45125.2, the District has determined that _____, a subcontractor to the Contractor for purposes of that Contract ("Subcontractor"), is exempt from the criminal background check certification requirements for the Contract because:

- ☒ The Subcontractor's employees will have limited contact with District students during the course of the Contract;
- ☐ Emergency or exceptional circumstances exist; or
- ☐ With respect to contractors constructing, reconstructing, rehabilitating or repairing a school facility, as provided in Section 45125.2, the Contractor and/or Subcontractor have agreed to ensure the safety of pupils at the school facility by the following method(s) specified in Section 45125.2:
- _____ Installation of physical barrier at the work site to limit contact with pupils.
_____ Surveillance of employees of the Contractor by school personnel.
_____ Continual supervision and monitoring of all employees of the Contractor by an employee of the Contractor whom the DOJ has ascertained has not been convicted of a violent or serious felony.

Supervisor's Name: _____

Soc.Sec. No. _____

School District Official

Date

CERTIFICATION OF CONTRACTOR AND SUBCONTRACTOR
DIVISION OF INDUSTRIAL RELATIONS REGISTRATION

Pursuant to Labor Code Section 1725.5, contractors and all subcontractors must be registered with the Department of Industrial Relations in order to bid on, to be listed in a bid proposal, or to engage in the performance any defined public work contract.

I _____, _____ certify that
(Name) (Title)

_____ Is currently registered as a contractor with the

Department of Industrial Relations (DIR):

Contractor's DIR Registration Number: _____

Expiration Date: _____

Signee further acknowledges:

1. Contractor shall maintain DIR uninterrupted registered status for the duration of the project.
2. Contractor shall note in the Invitation to Bid and the Information for Bidders the DIR's registration requirement for all subcontractors and their subcontractors.
3. Contractor shall ensure that all first, second, and third tier subcontractors are registered at the time of bid opening and maintain registered status for the duration of the project.
4. Contractor is to furnish DIR Registration Number for all subcontractors within 24 hours of bid opening.
5. Contractor shall substitute any subcontractor with a DIR registered contractor if listed subcontractor is unable to perform the work.

Failure to comply with any of the above listed requirements may result in a determination of non-responsiveness.

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

Signature

Date

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NATIONAL SCHOOL DISTRICT

WAREHOUSE FREEZER REPLACEMENT BID 25-26-01B

SECTION 11 SPECIFICATIONS

Please disregard pages AD-101, A-002, A-003, A-801, and A-802 of the drawings

PROJECT MANUAL FOR CONSTRUCTION OF

FREEZER REPLACEMENT

at

NATIONAL SCHOOL DISTRICT CENTRAL WAREHOUSE

1400 N AVENUE
NATIONAL CITY, CA 91950

PREPARED FOR THE

NATIONAL SCHOOL DISTRICT

1500 NORTH 18th STREET
NATIONAL CITY, CA 91950

PREPARED BY:

SGPA Architecture & Planning
3111 CAMINO DEL RIO NORTH, STUDIO 500
SAN DIEGO, CA 92018

SGPA PROJECT No. 22439-E-01

FREEZER BID SET

May 01, 2025

DOCUMENT 000110

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END OF SECTION

SECTION 011000

SUMMARY

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Project information.
 - 2. Work covered by Contract Documents.
 - 3. Contractor-furnished, District-installed products.
 - 4. Access to site.
 - 5. Coordination with occupants.
 - 6. Work restrictions.
 - 7. Specification and drawing conventions.
 - 8. Miscellaneous provisions.
- B. Related Requirements:
 - 1. Section 01 50 00 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of District's facilities.

1.3 PROJECT INFORMATION

- A. Project: Central Warehouse Freezer Replacement.
- B. Project Description: Full in-kind replacement of an existing walk-in freezer at the existing District Warehouse including: removal and reinstallation of shelving, electrical and signal connections, new lighting within freezer, new wear slab and slab insulation, new evaporator coils.
- C. Project Location: 1400 N Avenue, National City, California 91950.
- D. District: National School District.
 - 1. 1500 North 18th Street.
 - 2. National City, CA 91950
- E. Architect Identification: The Contract Documents, dated DSA Submission, March 19, 2025, were prepared for Project by: SGPA Architecture & Planning, 3111 Camino del

Rio North, Suite 500, San Diego, California 92108. Attention: Derek Buskirk, Senior Architect, (619) 297-0131, dbuskirk@sgpa.com.

1.4 CONTRACT

- A. The Project will be constructed under a single prime contract.

1.5 PRECONSTRUCTION DOCUMENT PERIOD

- A. The time period of 14 calendar days, starting with the commencement date in the Notice to Proceed, shall be considered the Preconstruction Documentation Period.
 - 1. This time period shall be used for such things as a Preconstruction Meeting, submittal deliverables, Schedule of Values, mobilization, and Baseline Schedule.
 - 2. Nothing else shall be performed at this time without written permission from the District.

1.6 ACCESS TO SITE

- A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- B. Use of Site: Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 - 1. Site areas as indicated in the Drawings.
 - 2. Driveways, Walkways and Entrances: Keep driveways, loading areas, and entrances serving premises clear and available to District, District's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.
- D. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.7 COORDINATION WITH OCCUPANTS

- A. Partial District Occupancy: District will occupy the premises during entire construction period, with the exception of areas under construction. Cooperate with District during construction operations to minimize conflicts and facilitate District usage. Perform the

Work so as not to interfere with District's operations. Maintain existing exits unless otherwise indicated.

1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from District and authorities having jurisdiction.
2. Provide not less than 72 hours' notice to District of activities that will affect District's operations.

1.8 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
 1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work to hours indicated in General Conditions modified by the Supplementary Conditions. Exceptions to these hours include utility shutdowns and noisy activity.
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by District or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
 1. Notify District not less than seven days in advance of proposed utility interruptions.
 2. Obtain District's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, and Odors: Coordinate with District operations that may result in high levels of noise and vibration, odors, or other disruption to District occupancy or neighboring properties.
 1. Notify District not less than seven days in advance of proposed disruptive operations.
 2. Obtain District's written permission before proceeding with disruptive operations.
- E. Controlled Substances: Use of tobacco products and other controlled substances on District property is not permitted.
- F. All work shall be performed per schedule and hours given in the General Conditions.

1.9 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
 - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 - 2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 012500

SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
 - 1. Divisions 02 through 33 Sections for specific product and manufacturer requirements and for limitations on substitutions.

1.3 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor. Substitutions include "or equal" products.

1.4 ACTION SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: As proposed by Contractor and approved by Architect.
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
 - b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by District and separate contractors that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design

- characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
- d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and Districts.
 - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
 - j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - k. Cost information, including a proposal of change, if any, in the Contract Sum.
 - l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
 - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
- a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
 - b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 PRODUCTS

2.1 SUBSTITUTIONS

- A. Submit requests for substitution not later than 35 days after the Notice to Proceed.
 - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Substitution request is fully documented and properly submitted.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.
 - g. Requested substitution provides specified warranty.
 - h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 013100

PROJECT MANAGEMENT AND COORDINATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including the following:
 - 1. Document Control Software.
 - 2. General coordination procedures.
 - 3. Administrative and supervisory personnel.
 - 4. Coordination drawings.
 - 5. RFIs.
 - 6. Project meetings.
- B. Related Requirements:
 - 1. Section 01 32 04 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
 - 2. Section 01 73 00 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 - 3. Section 01 74 19 "Construction Waste Management and Disposal" for procedures for managing construction waste materials.
 - 4. Section 01 77 00 "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

- A. RFI: Request for Information. Request from Contractor seeking information required by or clarifications of the Contract Documents.
- B. District Construction Manager: District Construction Manager is General Contractor's sole point of contact for all communications with District. Direct all District communications to District Construction Manager. District Construction Manager shall disseminate communications to appropriate District personnel as necessary.

- C. Document Control Software: As provided by the Architect and approved by the District.
- D. The Document Control Software includes the following functions:
 - 1. Project directory.
 - 2. Project correspondence.
 - 3. Meeting minutes.
 - 4. Contract modification forms and logs.
 - 5. RFI forms and logs.
 - 6. Task and issue management.
 - 7. Photo documentation.
 - 8. Schedule and calendar management.
 - 9. Submittal forms and logs.
 - 10. Payment application forms.
 - 11. Drawing and specification document hosting, viewing, and updating.
 - 12. Online document collaboration.
 - 13. Reminder and tracking functions.
 - 14. Archiving functions.

1.4 INFORMATIONAL SUBMITTALS

- A. Key Personnel Names: Within ten (10) days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
 - 1. Post copies of list in project meeting room, in temporary field office, in web-based Project software directory, in prominent location in each built facility, and by each temporary telephone. Keep list current at all times.

1.5 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.

- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for District and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities, including those of the District and separate contractors, to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include the following:
 - 1. Preparation of Contractor's construction schedule.
 - 2. Preparation of the schedule of values.
 - 3. Installation and removal of temporary facilities and controls.
 - 4. Delivery and processing of submittals.
 - 5. Progress meetings.
 - 6. Pre-installation conferences.
 - 7. Project closeout activities.
 - 8. Startup and adjustment of systems.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
 - 1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as District's property.
 - 2. Coordinate management and recycling of solid waste generated from construction activities. Refer to Section 01 74 19 "Construction Waste Management and Disposal" for tracking, management and recycling requirements for construction activities related waste.

1.6 REQUESTS FOR INFORMATION (RFIS)

- A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, prepare and submit an RFI using the District's Document Control Software. Immediately notify the District Construction Manager, Project Inspector, District Project Manager, Architect, and Document Controls Specialist of all RFIs submitted.
 - 1. Architect will return RFIs submitted by other entities controlled by Contractor with no response.
 - 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
 - 1. Project name.
 - 2. RFI number, numbered sequentially (for revised RFIs, keep the original RFI number, but add an R1, R2, etc. as a suffix.).
 - 3. Date of RFI Question.
 - 4. Name of Contractor, as well as name of individual from Contractor submitting the RFI.

5. Name of Architect.
 6. RFI subject.
 7. Detailed description of item needing information or interpretation.
 8. Specification Section number and title and related paragraphs, as appropriate.
 9. Drawing number and detail references, as appropriate.
 10. Field dimensions and conditions, as appropriate.
 11. Contractor's suggested resolution, if any. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 12. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. RFI Forms: See Section 01 39 00 "Project Forms" for RFI form. This form will be generated electronically by the Document Control Software from the Contractor's input data.
- D. D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow five (5) working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day. Incomplete RFIs or inaccurately prepared RFIs will be returned without action.
1. RFIs will be returned without action if they are used for any purpose other than a request for information. Such uses include:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Architect's actions on submittals.
 2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
- E. E. RFI Log: The Document Control Software will generate an RFI Log. The Log will be brought to each weekly Project meeting by the District Construction Manager.

1.7 PROJECT MEETINGS

- A. General: Attend all project meetings. District Construction Manager will schedule and conduct meetings and conferences at Project site unless otherwise indicated.
1. Attendees: District Construction Manager will inform participants and others involved, and individuals whose presence is required, of date and time of each meeting.
 2. Minutes: District Construction Manager will record meeting results.

- B. Preconstruction Conference: District Construction Manager will schedule a preconstruction conference before starting construction, at a time convenient to District, but no later than fourteen (14) days after execution of the Notice to Proceed.
1. District Construction Manager will conduct the conference to review responsibilities and personnel assignments.
 2. Attendees: Authorized representatives of District, District's Commissioning Authority, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. Agenda: Discuss items of significance that could affect progress. Include the following:
 - a. Tentative construction schedule.
 - b. Critical work sequencing and long-lead items.
 - c. Designation of key personnel and their duties.
 - d. Lines of communications.
 - e. Procedures for processing field decisions and Change Orders.
 - f. Procedures for RFIs.
 - g. Procedures for testing and inspecting.
 - h. Procedures for processing Applications for Payment.
 - i. Distribution of the Contract Documents.
 - j. Submittal procedures.
 - k. Commissioning requirements and procedures.
 - l. Indoor environmental air quality management during construction.
 - m. Preparation of record documents.
 - n. Use of the premises and existing buildings.
 - o. Work restrictions.
 - p. Working hours.
 - q. District's occupancy requirements.
 - r. Responsibility for temporary facilities and controls.
 - s. Procedures for moisture and mold control.
 - t. Procedures for disruptions and shutdowns.
 - u. Construction waste management and recycling.
 - v. Parking availability.
 - w. Office, work, and storage areas.
 - x. Equipment deliveries and priorities.
 - y. First aid.
 - z. Security.
 - aa. Progress cleaning.
 - bb. Request for Substitution procedures.
 - cc. Use of Document Control Software for RFIs.
 4. District Construction Manager will record meeting results and distribute them to all parties in attendance within two (2) days of meeting.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
1. Attendees: District Construction Manager, Project Inspector, Architect, installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise all attendees of scheduled meeting dates.

2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Submittals.
 - c. Options.
 - d. Related RFIs.
 - e. Related Change Orders.
 - f. Purchases.
 - g. Deliveries.
 - h. Review of mockups.
 - i. Possible conflicts.
 - j. Compatibility requirements.
 - k. Time schedules.
 - l. Weather limitations.
 - m. Manufacturer's written instructions.
 - n. Warranty requirements.
 - o. Compatibility of materials.
 - p. Acceptability of substrates.
 - q. Temporary facilities and controls.
 - r. Space and access limitations.
 - s. Regulations of authorities having jurisdiction.
 - t. Testing and inspecting requirements.
 - u. Installation procedures.
 - v. Coordination with other work.
 - w. Required performance results.
 - x. Protection of adjacent work.
 - y. Protection of construction and personnel.
 - z. Indoor environmental air quality management during construction.
 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Project Closeout Conference: District Construction Manager will schedule and conduct a project closeout conference, at a time convenient to District and Architect, but no later than thirty (30) days prior to the scheduled date of Substantial Completion.
1. Conference will be conducted to review requirements and responsibilities related to Project closeout.
 2. Attendees: Authorized representatives of District, District's Commissioning Authority, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. Agenda: Discuss items of significance that could affect or delay Project closeout including the following:
 - a. Preparation of record documents.

- b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
 - c. Submittal of written warranties.
 - d. Requirements for preparing operations and maintenance data.
 - e. Requirements for delivery of additional stock and spare parts.
 - f. Requirements for demonstration and training.
 - g. Commissioning requirements and procedures.
 - h. Indoor environmental air quality requirements prior to occupancy.
 - i. Preparation of Contractor's punch list.
 - j. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
 - k. Submittal procedures.
 - l. The District's partial occupancy requirements.
 - m. Installation of the District's furniture, fixtures, and equipment.
 - n. Responsibility for removing temporary facilities and controls.
 - 4. Minutes: District Construction Manager will record meeting results and distribute to all parties in attendance within two (2) days of meeting.
- E. Progress Meetings: District Construction Manager will conduct Project Progress Meetings at weekly intervals. Project Progress Meetings are in addition to specific meetings held for other purposes, such as Schedule Review Meetings.
- 1. Attendees: In addition to representatives of District and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 2. Agenda: District Construction Manager will review minutes of previous progress meeting. District Construction Manager will review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Schedule Updating: Revise Look-Ahead Schedule prior to each Progress Meeting. Send (by Email) the revised Look-Ahead Schedule to the District Construction Manager no later than 24 hours before the next Progress Meeting. The Look-Ahead Schedule shall be submitted in PDF electronic file format using computer software acceptable to District Construction Manager.
 - b. Review present and future needs of each entity present including:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site utilization.
 - 8) Temporary facilities and controls.
 - 9) Work hours.
 - 10) Progress cleaning.
 - 11) Quality and work standards.
 - 12) Status of correction of deficient items.
 - 13) Field observations.
 - 14) Status of RFIs.
 - 15) Status of proposal requests.

- 16) Pending changes.
- 17) Status of Change Orders.
- 18) Documentation of information for payment requests.
- 3. Minutes: District Construction Manager will record meeting results and distribute to all parties in attendance within two (2) days of the meeting.

F. Monthly Schedule Review Meetings: See Section 01 32 04 "Construction Progress Documentation."

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 013110

CONTRACTOR PERSONNEL

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 Contractor personnel to be assigned to this Project.
- B. Related Requirements:
 - 1. Section 01 31 00 "Project Management and Coordination" for project management procedures.
 - 2. Section 01 32 04 "Construction Progress Documentation" for scheduler requirements.

1.3 KEY CONTRACTOR PERSONNEL

- A. Contractor shall assign the following minimum personnel to the project:
 - 1. Contractor Construction Superintendent: Part Time on-site.
 - 2. Contractor Construction/Project Manager: Part time on-site.

1.4 REQUIREMENTS FOR KEY PERSONNEL

- A. Contractor Construction/Project Manager shall have a minimum of five years experience as Construction Manager or Superintendent on projects of similar size and scope.
- B. Contractor Construction Superintendent shall have a minimum of five years experience as Construction Superintendent on projects of similar size and scope.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 013204

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Contractor's construction schedule.
 - 2. Daily construction reports.
- B. Related Requirements:
 - 1. Section 01 10 00 "Summary" for phased construction and Preconstruction Document Period.
 - 2. Section 01 31 00 "Project Management and Coordination" for use of Document Control Software.
 - 3. Section 01 33 00 "Submittal Procedures" for submitting schedules and reports.
 - 4. Section 01 40 01 "Quality Requirements, District Laboratory" for submitting schedules of tests and inspections.

1.3 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Except for Milestone Activities, activities included in a schedule consume time and resources.
 - 1. Critical Activity: An activity, if delayed, would result in the delay to the overall completion.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.
 - 4. Milestone Activity: An activity that does not occupy time or resources, but highlights an event.
- B. Activity Codes: Values assigned to schedule activities to organize the schedule into groups for reporting and analysis. Examples include Responsibility, Building, and Site Area.

- C. Calendar: Defines the week for different activities within the CPM schedule. Examples of calendars include 5-day week minus holidays, 7-day week, and 6-day week. Different calendar types may be used in the CPM schedule.
- D. Constraint: In the CPM schedule, a constraint is used to affect the float, duration, or date of an activity.
- E. Cost Loading: Applying the Contract Price to the CPM schedule activities. Each work activity is assigned a value that accurately reflects the estimated cost of the described work, including labor, materials, equipment, etc. The sum of the activities values shall equal the Contract Price. Updates to the cost loaded schedule shall constitute the means by which Progress Payments are determined. CPM Schedules for this Contract shall be cost loaded.
- F. CPM: Critical path method, which is a method of planning and scheduling a project where activities are arranged based on activity relationships.
 - 1. CPM Network: A sequence of inner-connected activities. Network calculations determine the Critical (Longest) Path and when activities can be performed.
- G. Crew Size Loading: Each field work activity is assigned a value that accurately reflects the Contractor's average field labor crew size. CPM Schedules for this Contract shall be crew size loaded.
- H. Critical (Longest) Path: The network of schedule activities that establishes the minimum overall Project duration.
- I. Data Date: The date used as the starting point for schedule calculations. For baseline CPM schedules, the Data Date is the first date of Contract Time. For monthly updates, the Data Date is the first workday of the month.
- J. Delay: An interruption of work.
- K. Milestone: The starting or ending point of an activity or linked series of activities. A milestone in the schedule contains zero duration.
 - 1. Key Milestone: A major event. A Key Milestone includes the following: Notice to Proceed, Substantial Completion, Phase Start Date, and Phase Finish Date. The District Construction Manager may direct the Contractor to add additional Key Milestones.
 - 2. Contractual Milestone: A milestone tied to Liquidated Damages. Substantial Completion is both a Key and Contractual Milestone.
- L. Float: The measure of leeway in starting and completing an activity.
 - 1. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
 - 2. Total float is the amount of time by which a part of the Work may be delayed from its early dates before it delays a succeeding activity.
 - 3. Contract Float: The amount of time between the Contractor's anticipated dates for early completion of the Work, or specified part, and the corresponding Contract Time.
 - 4. Ownership of Float: Total float and contract float belong to the project and are not for the exclusive benefit of any party. Total float and contract float are jointly

owned, and are resources available to the District or the Contractor on a first-come-first-served-basis for the benefit of the project. The District Construction Manager shall monitor float to determine if any float erosion is for the benefit of the project.

5. Float Manipulation: Utilizing unrealistic or inflated durations, imposed dates, artificial logic and/or lags, preferential logic, date constraints, and others that results in an impact to Float. Do not manipulate float. Instead, add detail within the schedule in order to mitigate the use of Float manipulation. Provide a detailed written explanation in the Baseline Narrative for items seen as potential float manipulation if directed by District Construction Manager. After a review of the Baseline Schedule and the detailed written explanation, any such actions ultimately seen as Float manipulation by the District Construction Manager may result in direction for a Baseline revision and re-submittal.

- M. Lag: An adjustment of time between tied CPM schedule activities.
- N. Near-Critical Activity: A non-critical activity with a Total Float value within 10 workdays of the Critical (Longest) Path.
- O. P6: Primavera Professional Project Management, an industry standard CPM scheduling application.
- P. Percent Complete: The portion of an activity that is complete based on the measurement of work accomplished. Percent completes are ultimately decided by the District Construction Manager.
- Q. Relationships: Ties between activities within the CPM schedule.
- R. Target Schedule: A different version of the CPM schedule that can be used as a basis for comparison against another CPM schedule.
- S. TIA: Time Impact Analysis.

1.4 INFORMATIONAL SUBMITTALS

- A. Submit required submittals per the following:
 1. Indication of type of schedule being submitted (Baseline, Monthly Schedule Update, Time Impact Analysis, etc.).
 2. PDF electronic file(s).
 3. Electronic software file (for all CPM schedule submittals). Provide a unique file name in the schedule software for all CPM Schedules.
 - a. Submit a P6 "XER" file and a P6 "XML" file.
 4. Two (2) paper copies of all required reports and charts unless directed otherwise by the District Construction Manager.
- B. Reports: As part of every CPM schedule submittal, submit each of the following reports:
 1. Detailed Gantt Chart: Individual columns on left shall contain activity number, activity description, original duration, remaining duration, early start date, early finish date, calendar identifier, total float, budgeted cost, average crew size,

predecessor details and successor details. Activities shall be grouped in a manner acceptable to the District Construction Manager. All activities shall be depicted, and activities shall be sorted by early start dates, then total float and early finish dates. Gantt Chart shall be on a page of sufficient width required to display entire schedule for Contract Time. Size of paper/sheet is at discretion of District Construction Manager, and sheet size shall range from 11" x 17" to 36" x 48". Gantt Chart shall depict relationship lines between activities and shall also clearly show the Critical (Longest) Path.

- a. Columns on monthly updates shall also include: current month's activity percent complete and cost percent complete.
- b. For Monthly Schedule Updates, Time Impact Analyses, Recovery Schedules and Schedule Revisions, an additional bar shall be depicted on all CPM schedules to indicate the accepted Baseline schedule.
2. Critical Path Gantt Chart: A Detailed Gantt Chart, but filtered to only show Critical (Longest) Path activities. Size of paper/sheet is at discretion of the District Construction Manager, but shall range from 8.5" x 11" to 11" x 17".
3. Progress Payment Summary Layout: For each Monthly Schedule Update submittal, prepare as a layout from the CPM software application. This Layout shall act as the Schedule of Values.
 - a. Activities shall be coded, grouped and summarized in a manner acceptable to the District Construction Manager. See Activity Codes Dictionary at the end of this section.
 - b. Columns shall include: budgeted cost, activity percent complete, cost percent complete, period actual cost, cumulative actual cost, cost to complete, cost completion.
4. Schedule Narrative Report: With every CPM schedule submittal, submit a schedule narrative. The narrative report shall contain the following:
 - a. Baseline Schedule: Explanations of assumptions in baseline schedule development including:
 - 1) General work sequencing, including phasing and interim housing considerations.
 - 2) Crew movements, and flow of work.
 - 3) Justification of Critical (Longest) Path.
 - 4) Long lead equipment or material items.
 - 5) Constraints and challenges to completing the work.
 - 6) Lags used, with a detailed explanation for each use.
 - 7) Constraints used, with a detailed explanation for each use.
 - 8) Coordination assumptions, both with subcontractors (for example, coordination drawings, Building Information Modeling, etc.) and other parties (for example, District, Architect/Engineer, School Site Staff, Utility entities, etc.).
 - 9) Work week schedule, work hours and non-working days, including holidays.
 - 10) Person(s) preparing and providing input towards schedule submittal.
 - b. Monthly Update: Items in this narrative report shall include:
 - 1) Physical progress accomplished during the report period, broken down by each building and site area (for example, parking lot, play field, second floor, etc.).
 - 2) Explanation of Critical (Longest) Path if changed from previous month's update (or accepted Baseline, if first Monthly Schedule Update).

- 3) Explanation of potential delays and/or problems and their estimated impact on performance, Key and Contractual Milestone dates, and the overall Completion date.
 - 4) All Notices of Delay submitted to the District Construction Manager.
 - 5) Alternatives for possible schedule recovery to mitigate delay or potential delay.
 - 6) Known or anticipated problems with delivery of materials or equipment.
 - 7) Approved weather impact dates incurred in previous month, along with affected CPM schedule activity identification numbers and activity descriptions.
 - 8) Description of approved incorporated change orders for the report period, if any.
5. For each Monthly Schedule Update submittal: A copy of the Monthly Schedule Update markup documentation.
 6. Key Plan: Develop a key plan in the form of one or several sketches showing limits of work, lay down areas, site access points, utility connection/tie-in points, phasing, sequencing, and general work procession. Contractor may use Site Plan drawings or similar drawings.
 7. Other variations of the above reports, as directed by the District Construction Manager.
- C. Daily Construction Reports: Submit to District Construction Manager as described herein.

1.5 QUALITY ASSURANCE

- A. Schedule Software: All CPM schedules shall be prepared with a Windows operating system based CPM scheduling computer software program that is Primavera P6 Professional Project Management version 16 or later.
- B. Preconstruction Scheduling Conference: Within the first ten (10) days of Contract Time, the District Construction Manager will chair a meeting to review methods and procedures related to the schedule, including the following:
 1. Proposed sequence of operations.
 2. Software and content and format for reports.
 3. Availability of qualified personnel needed to meet scheduling requirements.
 4. Constraints, including all phasing, work stages, area separations, interim milestones, and partial District occupancy.
 5. Organization of activities within schedule.
 6. Time required for submittals.
 7. Requirements for tests and inspections.
 8. Time required for completion and startup procedures.
 9. Schedule submittal requirements and procedures.
 10. Procedures for updating schedule.
 11. Other CPM schedule requirements (for example, Time Impact Analysis, Recovery Schedule, etc.).
 12. Contractor personnel required to attend the meeting are the Contractor's Project Manager and Scheduler, at a minimum. The District Construction Manager will distribute meeting minutes to attendees for this conference within two (2) workdays of this meeting.

1.6 COORDINATION

- A. Coordinate Contractor's construction schedule with the list of subcontracts, submittal register, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from entities involved.
 - 2. Coordinate each activity in the network with other activities and schedule them in proper sequence.

PART 2 PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, SHORT-TERM CPM SCHEDULE

- A. Prepare and submit a Short-Term CPM Schedule submittal to the District Construction Manager. The Short-Term Schedule shall detail the plan for the first ninety (90) days of Contract Time, and shall be used to measure performance and determine progress payments until the Contractor's Baseline Construction Schedule is accepted.
- B. The same requirements for the Baseline CPM Schedule shall apply to the Short-Term CPM Schedule, with the following exceptions: (i) only those activities covering the first ninety (90) days of Contract Time shall be reviewed; (ii) all reports described herein shall only cover the first ninety (90) days of Contract Time.
- C. Within the first twenty-eight (28) days of Contract Time, the Short-Term CPM Schedule submittal shall be submitted to the District Construction Manager.
 - 1. The deduction for Contractor's delayed submission of the complete Short-Term CPM Schedule submittal is \$150 per day; the same amount applies to late re-submittals. Any deduction shall occur on the first progress payment after the Short-Term CPM Schedule has been accepted. Refer to paragraph 1.4 herein regarding Submittal items.
- D. The District Construction Manager will notify the Contractor that the Short-Term CPM schedule submittal has been accepted, accepted as noted, or requires a revision and re-submittal within seven (7) days of receipt. At the District Construction Manager's discretion, the Contractor, the Scheduler, and the District Construction Manager will have a Short-Term CPM Schedule Review Meeting to review and make any necessary adjustments. If a re-submittal is required, the Contractor has five (5) days after the receipt of comments to submit a revision to the District Construction Manager. The District Construction Manager will notify the Contractor that the re-submittal has been accepted, accepted as noted, or requires a revision and re-submittal within five (5) days of receipt. At the District Construction Manager's discretion, another Review Meeting may be required. The cycle of seven (7) days to prepare a re-submittal, and five (5) days for District Construction Manager review shall continue until the Short-Term CPM Schedule has been accepted. Because the cost-loaded CPM schedule is the means by which progress payments are determined, no progress payments will occur until the District Construction Manager accepts the Short-Term CPM Schedule.

- E. Upon acceptance, the Short-Term CPM Schedule shall represent the Contractor's plan for performance of the work during the first ninety (90) days of Contract Time. The Short-Term CPM Schedule shall be incorporated into first ninety (90) days of the Contractor's Baseline CPM Schedule. Submit to the District Construction Manager an update, for acceptance or rejection, of the short-term CPM schedule each month, until the complete Baseline Schedule is accepted. If a Short-Term CPM Schedule is accepted late in a month, the Contractor is still required to submit a Monthly Schedule Update for the previous period (for example, if a Short-Term CPM Schedule is accepted on January 26, the Contractor is required to submit Monthly Schedule Update with a January 1 Data Date).

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, BASELINE

- A. Baseline Schedule: Prepare and submit a baseline CPM schedule that shows the breakdown of all work into activities to the extent required to effectively plan and execute the Project, track and report work progress, effectively analyze time impacts and show all logical relationships (ties) between activities. The District Construction Manager will accept, accept as noted, or direct the Contractor to revise and re-submit, the Baseline Schedule submittal. The District Construction Manager's Baseline Schedule review will be based on the District Construction Manager's evaluation of the Baseline Schedule's reasonableness and compliance with the Contract Documents. The Contract CPM Schedule shall be the basis for monitoring the Contractor's progress against milestone dates and Contract Time, and the evaluation and reconciliation of extensions in Contract Time. The Baseline Schedule shall communicate and constitute the Contractor's detailed intent for planning and executing the work. Construct the Baseline Schedule based on the Contract Documents, including any addenda received during the bid phase. Coordinate with all subcontractors when developing the Baseline Schedule.
1. Breakout of Work into multiple Schedules: Even if multiple school sites or DSA numbers are attributed to a Contract, multiple schedules that break out work by school site, DSA number, etc., are not allowed.
 2. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Substantial Completion.
 - a. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
 - b. Early Completion: If the District Construction Manager accepts an early completion schedule and the District Construction Manager does not revise the Contract completion date, the Baseline must first include a float activity that fills the time between the early completion and the contractual substantial completion date. The Contractor agrees to forego any extended overhead between early completion noted in the Baseline and the contractual substantial completion date.
 3. Activities in the Baseline Schedule shall comply with the following:
 - a. Activity Duration: Estimate the amount of time to start and complete each activity. Define field work activities so no activity is longer than 15 workdays, unless specifically allowed by District Construction Manager.
 - b. Units of Time: Workdays shall be the default unit of time for an activity in the schedule. Indicate nonworking days and holidays incorporated into the schedule to correlate with Contract Time.

- c. Critical (Longest) Path: Critical (Longest) Path is to be easily identifiable. Any part of the Baseline Schedule's Critical (Longest) Path deemed unreasonable by the District Construction Manager may result in direction for a Baseline Schedule revision and re-submittal.
- d. Percentage of Activities within Critical (Longest) Path: Plan the Work and provide for and allocate resources in the execution of the Work so that the proportion of incomplete schedule activities with total float of 20 workdays or less within the Critical (Longest) Path shall not exceed 33 percent of all incomplete schedule activities, unless acceptance for a greater proportion is granted by the District Construction Manager.
- e. Procurement Cycle Activities: Procurement cycle activities include submittals, shop drawing submittals, submittal reviews and approvals, purchasing, fabrication, and delivery. Unless waived by the District Construction Manager, include detailed procurement cycle activities as separate activities in the Baseline Schedule for each Specification section number. The detailed Procurement Cycle activities shall constitute the Submittal Schedule, and shall align with the Submittal Register. Procurement Cycle activities shall be logically tied in the Baseline Schedule to the associated construction activities. Unless waived by the District Construction Manager, include detailed procurement cycle activities as separate activities in the Baseline Schedule for each Specification Section number, with separate activities for the following:
 - 1) Submittal Preparation.
 - 2) Submittal Review / Approval.
 - 3) Procurement / Fabrication.
 - 4) Delivery.
 - 5) Note: Include the Specification Section number either within the activity's identification number or activity's name/description.
- f. Submittal Review Time: Include specified submittal review times in Baseline Schedule.
- g. Relationships and CPM Network: CPM networks shall be closed, whereby every activity shall have, at a minimum, one predecessor and one successor relationship. The exceptions to this closed network rule are the network's start and finish milestones.
- h. Constraints: Constraints shall be scrutinized and shall only be used to reflect contractually and/or environmentally imposed conditions. Add schedule activities and detail to mitigate the use of Constraints. Constraints are not permitted where an activity or logical relationship is appropriate, unless specifically accepted by the District Construction Manager. The District Construction Manager may direct the Contractor to provide a detailed written explanation in the Baseline Narrative for any and all Constraints. After a review of the Baseline Schedule and the detailed written explanation, any Constraints ultimately deemed unreasonable by the District Construction Manager may result in direction for a Baseline revision and re-submittal.
- i. Lags: Lags shall be scrutinized. Add schedule activities and detail to mitigate the use of Lags. Lags of less than -1 are not permitted, unless specifically accepted by the District Construction Manager. The District Construction Manager may direct the Contractor to provide a detailed written explanation in the Baseline Narrative for relationships with negative lag less than -1. After a review of the Baseline Schedule and the detailed written explanation, any

- lags ultimately deemed unreasonable by the District Construction Manager may result in direction for a Baseline revision and re-submittal.
- j. **Schedule Settings:** The setting in the CPM scheduling software shall be set so that the logic is retained when calculating the schedule. Critical activities shall be defined as Critical (Longest) Path. The "progress override" option shall not be utilized, unless directed otherwise by the District Construction Manager. Autocost, Resource, and Schedule calculation rules shall be set to the default settings. Default percent complete to be used is the duration percent complete.
 - k. **Activity Detail:** Field work activities shall not reflect a combining of work located in separate buildings or site areas, work corresponding to different Specifications Sections or Uniformat Sections, work performed by different Subcontractors, or rough and finish work of the same trade. The CPM Schedule shall include activities and appropriate time for temporary items (for example, scaffolding and concrete formwork), curing, testing, items that interface with work performed by others (for example, Owner Furnished Owner Installed items), regulatory agency approvals, permitting, City of San Diego and utility activities, physical checkout, startup, mobilization, operational and maintenance manual preparation, equipment and systems training, cleanup, and contractor's internal punch list.
 - l. **Activity Descriptions:** Descriptions for schedule activities shall provide adequate detail that defines the activity, scope and location.
 - m. **Activity Coding:** Activities shall be mapped to the Activity Code Dictionary located at the end of this Section. Contractor may use Work Breakdown Structure (WBS) functionality in lieu of Activity Codes, or a combination of Activity Coding and WBS coding.
 - n. **Milestones:** Include Key Milestones and Contractual Milestones indicated in the Contract Documents in Schedule.
 - o. **Negative Float:** The Baseline Schedule shall not contain negative float.
 - p. **Weather:** The Baseline Schedule shall include, during the period from the start of mobilization (or start of field work activity, whichever starts first) through the date of Substantial Completion, workdays for anticipated weather delays affecting the Critical (Longest) Path.
 - 1) This weather allowance shall be incorporated into the Contract Time. Incorporate weather allowance days into schedule activities per the following table:

Weather Table												
	Month											
Anticipate d Weather Days	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	7	5	7	2	1	1	0	0	1	2	3	5

- a) If the Contract Time starts or ends in the middle of a month, the weather allowance shall be prorated. For example, if mobilization starts on February 1 and Substantial Completion is November 20 of the same year, the weather allowance is 21 workdays.
- 2) Unused weather allowance days become jointly owned float.

- 3) If the number of approved weather days in a month exceed the number depicted in the Weather Table, or if the grand total of approved weather days exceed the number allotted in the contract, the number of weather days in excess are excusable and non-compensable.
 - 4) Weather or the results of weather on non-scheduled workdays will not be considered. Reference documents shall include CPM schedules and Look Ahead schedules to determine scheduled workdays.
 - 5) If the Contractor considers weather or the results of weather as an impact to the Critical (Longest) Path and/or a Contractual Milestone, the Contractor has two (2) workdays from the date in question to provide written justification for the weather day request, describing the Primavera activity/activities impacted, as well as describing how over 50 percent of the Critical (Longest) Path work for the requested day was impacted. Describe work done to mitigate weather impact.
 - 6) The District Construction Manager determines if a weather day has been incurred, and the Critical (Longest) Path and/or Contractual Milestone so affected. If the Contractor does not provide written justification regarding weather impacts, the District Construction Manager can still determine if weather days have been incurred.
 - 7) If weather impacts a Contractual Milestone for a phase that is not on the Critical (Longest) Path, the District Construction Manager will grant excusable and non-compensable relief equal to the number of days impacted by weather.
- q. Cost Loading:
- 1) Costs are applied to one activity resource that is to be titled "COST". Resource curves shall only be Linear, and P6 Expenses are not to be used.
 - 2) Estimated values for each work activity shall be assigned to the activity's budgeted cost in the CPM software application. Round amounts off to the nearest whole dollar.
 - 3) No activity shall have a budgeted cost exceeding \$100,000, unless specifically accepted by the District Construction Manager.
 - 4) The Contractor's General Conditions costs shall be set apart as a separate activity that spans the Contract Time.
 - 5) The following are to be separate and distinct cost-loaded activities in the CPM Schedule:
 - a) Bonds.
 - b) Insurance.
 - c) CPM Scheduling (preparation, updates, maintenance, etc.).
 - 6) Do not cost load submittal or procurement activities except as accepted or directed by the District Construction Manager.
 - 7) For materials that are eligible for payment as provided by the Contract Documents and deemed acceptable by the District Construction Manager, the Contractor may load the value of the materials on a one-day delivery activity.
 - 8) Payment for uninstalled materials/equipment is limited to major items as determined by the District Construction Manager. 80 percent of the material/equipment delivery cost shall be loaded on to the delivery activity, and the remaining 20 percent shall be loaded on to the associated construction activity/activities. Unless otherwise permitted, delivery costs are to be broken out by building number.

- 9) Mobilization: Mobilization shall be a separate activity in the CPM schedule, and shall not exceed 1 percent (1%) of the Contract Price. If requested by the District Construction Manager, provide detailed backup documentation, at a level of detail to the satisfaction of the District Construction Manager, to substantiate the Contractor's mobilization dollar amount.
 - 10) Demobilization and Close-Out Submittals each shall be separate activities in the CPM schedule, shall be cost-loaded, and shall not be considered in any Critical (Longest) Path assessment.
 - 11) Allowances: If the Work includes items covered by allowances, include activities in the schedule for each allowance that is loaded with the cost of that allowance.
 - 12) Change Orders: Upon District approval of a Change Order, add separate cost loaded activities for each Change Order. Change Order activities shall have the activity identification prefix of "CO" plus the Change Order number. Change Order activities must also comply with the Activity Codes Dictionary at the end of this Section, as well as the Time Impact Analysis provisions described in this Section.
- r. Average Crew Sizes:
- 1) Assign an average crew size per day for each field work activity, using the "CREW" activity code per Activity Codes Dictionary at the end of this Section. Round amounts off to the nearest integer.
 - 2) Non field work activities, curing, milestones, work done by others (for example, inspections by District Inspectors, Owner Furnished Owner Installed items), and allowances shall be excluded from the average crew size requirement.
 - 3) Time Impact Analyses: Provide average crew size amounts to field work activities that are part of any Time Impact Analysis.
- B. Work Restrictions: Include any work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
1. Work by District: Include a separate activity for each portion of the Work performed by District, including Owner Furnished Contractor Installed (OFCI) and Owner Furnished Owner Installed (OFOI) items.
 2. District-Furnished Products: Include a separate activity for each product. Delivery dates indicated stipulate the earliest possible delivery date.
 3. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with any existing construction.
 - b. Limitations of continued occupancies.
 - c. Partial occupancy before Substantial Completion.
 4. Use of premises and any site-specific restrictions.
- C. Baseline Schedule: Submittal, Review and Acceptance. Within the timeline specified below (Schedule Table 1), submit the Baseline Schedule to the District Construction Manager for review and acceptance.

D. Schedule Table 1

Description	Calendar Days for Individual Item	Cumulative Calendar Days
Contract Time Start Date, per Notice to Proceed	0	0
Contractor submits complete Baseline Schedule submittal to District Construction Manager for review (cost loading included)	60	60
District Construction Manager provides review comments (and possible acceptance) to Contractor (Meeting may be required, at District Construction Manager's discretion)	14	74

1. The deduction for Contractor's delayed submission of the complete Baseline Schedule submittal is \$250 per day; this deduction also applies to re-submittals. Such deductions shall occur on the first progress payment after the Baseline Schedule has been accepted.
2. Upon submittal by the Contractor, the District Construction Manager will review the Baseline Schedule and provide comments within the timeframe shown in Schedule Table 1. The District Construction Manager may question any aspect of the Baseline Schedule submittal. If the District Construction Manager raises questions or identifies schedule deficiencies or noncompliance with the Contract Documents, a revision and re-submittal is required. Make appropriate adjustments or corrections and deliver to the District Construction Manager the Baseline Schedule re-submittal within 7 days of receipt of the District Construction Manager's comments. Indicate in writing the adjustments or corrections made by the Contractor, including individual responses to every comment made by the District Construction Manager on the previous submittal. The District Construction Manager will review and return written comments on the re-submitted Baseline Schedule within 7 days of receipt of the Contractor's re-submittal. The above process shall be repeated until the District Construction Manager provides written notification to the Contractor that the Baseline Schedule has been accepted.
 - a. If the District Construction Manager conditionally accepts the Baseline Schedule submittal, the Contractor has seven (7) days to provide another Baseline Schedule submittal that addresses the conditional notes, to the satisfaction of the District Construction Manager. The District Construction Manager will review and comment on the re-submittal within five (5) days of receipt. If the Contractor fails to submit a Baseline Schedule submittal that addresses the conditional notes to the District Construction Manager's satisfaction, then the Baseline Schedule status will be revised from "Accepted as Noted" to "Revise and Re-submit".
 - b. If the Baseline is not accepted after the first ninety (90) days, payments to the Contractor will cease until the Baseline is accepted. The District Construction Manager may also stop the Work if the Baseline Schedule has

- not been accepted after the first ninety (90) days. Delays here shall be deemed inexcusable.
3. Upon acceptance of the Baseline Schedule, all activities and their relationships shown on the Baseline Schedule may not be changed, added, or deleted without the consent of the District Construction Manager. The Contractor may not alter activity identification numbers, or rename activities without the District Construction Manager's consent. The Contractor must request written approval from the District Construction Manager to remove activities from the CPM Schedule, and must retain the removed activities within the electronic project schedule files that are submitted to the District Construction Manager. The Contractor may appropriately code the approved removed activities to filter the same out of the reports.
 4. The initial accepted Baseline Schedule is a schedule that shall reflect no progress on schedule activities. For monthly schedule updates, the baseline schedule shall serve as the primary baseline, and the previous month's update schedule shall serve as the secondary baseline. If a Revised Schedule or Recovery Schedule is submitted by the Contractor and accepted by the District Construction Manager, then the Revised Schedule or the Recovery Schedule shall serve as the primary baseline.
 5. If a Baseline Schedule is accepted late in a month, the Contractor is still required to submit a Monthly Schedule Update for the previous period (for example, if a Baseline Schedule is accepted on January 26, the Contractor is required to submit Monthly Schedule Update with a January 1 Data Date).
 6. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of District Construction Manager's acceptance of the schedule.

PART 3 EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, MONTHLY SCHEDULE UPDATES

- A. Contractor's Construction Schedule Updating: At monthly intervals update the schedule to reflect actual progress and forecast the remainder of the work. Submit the Monthly Schedule Update to the District Construction Manager who will either accept it, accept it with notes, or direct the Contractor to revise and resubmit. On the last workday of each month or other day determined by District Construction Manager, submit a draft schedule update for review. The Data Date shall be the 1st day of the month. For example, if the monthly update is to capture all work accomplished in April the Data Date shall be May 1st. the Draft Monthly Schedule Update shall consist of the following:
 1. A hardcopy print out of the Detailed Gantt Chart distributed to the District Construction Manager. Sheets for this item are to be no larger than 11" x 17".
 2. A markup of the hard copy print out showing percent completes, actual start dates and actual finish dates to indicate work accomplished during the month. Also indicate the expected finish dates or remaining duration for activities that have started but have not yet completed; remaining duration shall be the Contractor's best estimate of the time required to complete activities.

3. Within three (3) days of the draft Monthly Schedule Update submittal, meet with District Construction Manager to finalize the Monthly Schedule Update, as well as discuss required corrections and proposed revisions to the schedule.
 4. After the meeting, make any needed adjustments to the schedule as directed by the District Construction Manager, make final entries in the schedule software, recalculate the schedule, and submit the final Monthly Schedule Update submittal. The Monthly Schedule Update submittal, including Progress Payment submittal items, is due no later than three (3) days following this meeting. A complete Monthly Schedule Update submittal submitted after the 10th day of the month is subject to a \$100 per day deduction that shall occur no later than the next progress payment.
 5. Upon receipt and review of the Monthly Schedule Update submittal, if the Monthly Schedule Update indicates a late completion to a Contractual Milestone and/or Contract Time, a Monthly Schedule Review meeting shall occur to discuss issues related to late completion, possible revisions, and possible Recovery Schedule submittal and/or Time Impact Analysis methodology and deliverables. Such a meeting shall include the District Construction Manager, District Scheduler, and Contractor (Project Manager, Superintendent and Scheduler), and shall occur prior to the following Monthly Schedule Update submittal.
- B. Progress Payments:
1. The amount payable to date for an activity shall equal the activity's percent complete multiplied by the activity's budgeted cost, prior to the retention calculation.
 2. The District Construction Manager will provide an Application for Progress Payment form for the Contractor to submit with each Monthly Schedule Update.
- C. Monthly Schedule Update:
1. Requirements: Unless directed in writing by the District Construction Manager, the Monthly Schedule Update shall not be used to delete activities, add activities, make title changes, make activity coding changes, make Budgeted Cost changes, make Average Crew Size changes, or to make logic changes.
 - a. If the Contractor proposes to make activity additions/deletions and/or logic changes and/or duration changes within a Monthly Schedule Update, simultaneously submit two distinct Primavera schedules:
 - 1) Monthly Schedule Update, showing progress in just-completed month, without proposed changes.
 - 2) Monthly Schedule Update, showing progress in just-completed month, with proposed changes. Provide detail in the Monthly Schedule Update Narrative explaining why changes were caused and needed.
 2. Distribution: The Contractor must submit the Monthly Schedule Update package to the District Construction Manager before the District will process an Application for Progress Payment for each month.
 3. Other activities in Schedule: The only activities to be added to the Monthly Schedule Updates are the following:
 - a. Approved Change Orders.
 - b. Approved Time Impact Analysis.
 - c. Approved Weather Dates (one Activity per approved Weather Date).
 - 1) The original duration for the weather allowance activity shall be reduced each month by the number of approved weather days.

- d. Procurement Cycle re-submittals (i.e., Specification re-submittal after rejection, Specification re-submittal review).
- 4. Review: The District Construction Manager will either accept, accept with comments, or direct a revise-and-resubmit of the Monthly Schedule Update submittal. Allow ten (10) days for the District Construction Manager's review of the Monthly Schedule Update submittal.
 - a. Completeness of Submittal: The District may withhold up to 5 percent of the pre-retention progress payment if, in the District Construction Manager's opinion, the Contractor has failed to meet the Monthly Schedule Update submittal requirements.
 - b. Acceptance of the Monthly Schedule Update submittal by the District Construction Manager shall be a condition precedent to the processing of the subsequent Progress Payment.
- 5. Monthly Schedule Update upon Substantial Completion:
 - a. Upon Substantial Completion, prepare and submit to the District Construction Manager a Monthly Schedule Update that shows all actual start and actual finish dates through Substantial Completion.
 - b. The District Construction Manager will estimate the cost of the Monthly Schedule Update and add this item to the final Punchlist. Upon the District Construction Manager's acceptance of this Monthly Schedule Update, the District Construction Manager will release payment of this estimated cost.

3.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, SCHEDULE CORRECTION

- A. Each month, address corrections to the schedule that were identified by the District Construction Manager during the review of the last Monthly Schedule Update. These corrections generally include correction of inaccurate or missing actual dates, correction of logic for activities being driven by the data date, incorrect percent complete, and out of sequence progress. The District Construction Manager reserves the right to require the Contractor adjust, add to, or clarify any portion of the schedule that may be considered insufficient to monitor the work. No additional compensation shall be provided for such adjustments, additions, or clarifications.
- B. If the Monthly Schedule Update submittal is rejected, the Contractor must individually respond to every correction and review comment received from the District Construction Manager in the re-submittal of the Monthly Schedule Update package.
- C. If the submittal is conditionally accepted with noted exceptions, respond to every correction and review comment via the next Monthly Schedule Update submittal. Failure of the Contractor to specifically respond to each of the District Construction Manager's previous review comments may result in rejection of the following submittal.

3.3 CONTRACTOR'S CONSTRUCTION SCHEDULE, LOOK AHEAD SCHEDULES

- A. Look Ahead Schedule: Prepare and submit a report indicating activities performed in the one week prior and three weeks following the day of week as determined by the District Construction Manager. Due to the District Construction Manager in electronic

format no later than 24 hours before the start of each weekly progress meeting, the Look Ahead Schedule shall include the following:

1. Columns on left hand side of report, indicating the following:
 - a. Activity number, corresponding to the same field in the CPM schedule.
 - 1) Potential or approved change orders shall be included as activities with temporary activity identification numbers (for example, RFI or CCD number).
 - b. Activity description, including work performed and location of work (for example, Install Footing Rebar at Building 700).
 - c. Responsibility.
 - d. Average estimate crew size during this time.
2. Dates on the right-hand section of report, with marks noting the specific dates that activity was performed / will be performed for each of the look ahead activities. Note with "S" on days when an activity starts, "X" for an activity in-progress, and "F" for when an activity finishes.
3. Generated in Microsoft Excel.
4. Details shall include material and equipment deliveries, non-work days such as holidays, and approved weather days.
5. Other information or formatting, at the discretion of the District Construction Manager.
6. If a progress meeting is not held in a week, a Look Ahead Schedule is still due.
7. The first Look Ahead Schedule is due no later than the day of the Preconstruction Conference.

- B. Look Ahead Schedule Corrections: Upon request from the District Construction Manager, submit a revised look ahead schedule if there are significant corrections to the look ahead schedule noted during the weekly progress meeting. The revised look ahead schedule is due no later than two (2) workdays after the request has been made by the District Construction Manager.

3.4 CONTRACTOR'S DAILY REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events relating to this Contract:
1. List of subcontractors at Project site.
 2. List of separate contractors at Project site.
 3. Count of personnel and hours worked at Project site by trade.
 4. Visitor(s) to the Project site.
 5. Major Equipment at Project site.
 6. Material and/or equipment deliveries.
 7. Work activities performed at Project site, including CPM schedule activity identification numbers. Include separate line items for any Time & Material, RFI, ASI, CCD, potential Change Order, or approved Change Order work.
 8. High and low temperatures and general weather conditions, including any precipitation totals.
 9. Site Conditions.
 10. Request for weather day, include CPM schedule activity identification number(s) and activity description(s) affected.
 11. Action(s) taken to prepare for anticipated upcoming weather event.
 12. Accidents and near-accidents.

13. Meetings and significant decisions.
 14. Issues incurred or addressed.
 15. Unusual events.
 16. Stoppages, delays, shortages, and losses.
 17. Meter readings and similar recordings.
 18. Emergency procedures.
 19. Orders and requests of authorities having jurisdiction.
 20. Change Orders received and implemented.
 21. Change Directives, Field Work Orders, or Architect's Supplemental Instructions received and implemented.
 22. Services connected and disconnected.
 23. Equipment or system tests and startups.
 24. Partial completions and occupancies.
 25. Substantial Completions authorized.
- B. Daily Reports are to be prepared in such a way that all text is Optical Character Recognition (OCR) searchable. Hand-written text is not acceptable.
- C. Upon receipt, the District Construction Manager will review each Daily Report. If needed, corrections to Daily Reports may be required.
- D. Starting with the first day of construction activity or any activity on site, submit a separate and distinct Daily Report for each day. Daily Reports for the previous week are due no later than Monday of the following week. For example, the Daily Reports for Monday April 1st through Friday April 5th are due to the District Construction Manager no later than Monday April 8th.

3.5 CONTRACTOR'S CONSTRUCTION SCHEDULE, RECOVERY SCHEDULE

- A. If Work progress or the sequencing of the Work activities differs from that indicated in the Baseline Schedule or previous Monthly Update Schedules, the District Construction Manager may direct the Contractor to submit a Recovery Schedule. The Contractor is required to prepare and submit a Recovery Schedule if the current monthly schedule update depicts negative float exceeding minimum thresholds set forth herein, or as otherwise deemed appropriate by the District Construction Manager.
1. The Contractor is required to prepare and submit a Recovery Schedule if the current monthly schedule update, during the first third (1/3) of the Contract Time, depicts negative float in excess of thirty (30) days.
 2. The Contractor is required to prepare and submit a Recovery Schedule if the current monthly schedule update, during the second third (1/3) of the Contract Time, depicts negative float in excess of twenty (20) days.
 3. The Contractor is required to prepare and submit a Recovery Schedule if the current monthly schedule update, during the final third (1/3) of the Contract Time, depicts negative float in excess of ten (10) days.
 4. Within fifteen (15) days of the District Construction Manager's direction, prepare and submit a Recovery Schedule to the District Construction Manager demonstrating the Contractor's plan to recover lost time, achieve all contractual milestones, and complete the work within the Contract Time. The District Construction Manager will review the Recovery Schedule and provide

documented comments within ten (10) days. Appropriate recovery actions include assignments of additional labor or equipment, shift or overtime work, expediting of submittals or deliveries, overlapping of activities, or sequencing changes to increase activity concurrence. The accompanying narrative shall describe the cause of the problems and the actions planned by the Contractor to recover the schedule.

5. If the delay necessitating the Recovery Schedule is caused by the Contractor, all costs for recovery shall be borne by the Contractor.

3.6 CONTRACTOR'S CONSTRUCTION SCHEDULE, SCHEDULE REVISION

- A. Schedule Revisions are defined as any changes to schedule activities or logic other than the updating of actual start and completion dates, percent complete or remaining duration; Schedule Revisions shall not be used to address delay.
- B. Revise the Baseline Schedule or Monthly Schedule Update when the District Construction Manager determines that it is no longer useful as a status and control mechanism.
 1. If directed by the District Construction Manager, prepare and submit within fourteen (14) days the Schedule Revision submittal for review and possible acceptance. Provide a separate narrative, the electronic data file from the CPM schedule software, and Detailed Gantt Chart showing the revised activities and how the Contractor proposes to tie them into the accepted CPM Schedule. The specific activities added and their logical ties to existing schedule activities shall be explained in detail in the schedule narrative. Provide a Primavera P6 Schedule Comparison report. The District Construction Manager will provide comments to the Contractor within ten (10) days of receipt. If the District Construction Manager accepts the specific activities and logic changes proposed in the schedule revision, promptly incorporate the revision into the next Monthly Schedule Update. Contract Time, including all contracted milestone dates, cannot be changed without an approved Contract Change Order. The Revised Schedule must be accepted by the District Construction Manager prior to its use as a target schedule for a Monthly Schedule Update.
- C. The District Construction Manager shall determine causality regarding need for Schedule Revision, and shall determine if any compensation is warranted, up to a maximum fee of \$1,000.00.

3.7 CONTRACTOR'S CONSTRUCTION SCHEDULE, TIME IMPACT ANALYSIS (TIA)

- A. Time Impact Analyses shall demonstrate the impacts of the delay to the Critical (Longest) Path, and shall be completed per the following:
 1. If the Contractor experienced what they consider to be an excusable delay to the Critical (Longest) Path and/or contractual milestone, submit a Time Impact Analysis within ten (10) days of the completion of the delay event.
 2. The District Construction Manager may also request a TIA within fourteen (14) days from the Contractor. The District Construction Manager's TIA request may be the result of viewing a monthly schedule update that indicates a late completion to the Critical (Longest) Path and/or contractual milestone, or some

- other event the District Construction Manager may consider to be a cause for a TIA.
3. All efforts shall be made to rectify TIAs contemporaneously.
 4. Notes:
 - a. The Time Impact Analysis submittal shall consist of a CPM schedule sub-network (fragnet) derived by adding activities and relationships representing the delay into the first accepted Monthly Schedule Update after the finish of the delay event that impacted the Critical (Longest) Path and/or Contractual Milestone.
 - b. The TIA submittal should address the Critical (Longest) Path depicted in Monthly Schedule Updates. If the TIA is to address a Contractual Milestone that is not on the Critical (Longest) Path, the TIA should address the Critical activities related to the Contractual Milestone.
 - c. If the Contractor does not submit a complete Time Impact Analysis submittal within the timeframes noted herein, a deduction of \$150 per day shall be applied.
- B. Multiple issues are not to be combined into a single Time Impact Analysis submittal, and such TIAs that combine issues in a single TIA submittal shall be returned to the Contractor with a status of revise-and-resubmit.
- C. Include the following items with all Time Impact Analysis Request submittals:
1. A fragnet where impacts to the Critical (Longest) Path can be clearly viewed, with separate activities for each component of the Time Impact Analysis, breaking out activities by Responsible party (Contractor, Architect/Engineer, District, etc.), trade (Mechanical contractor, Concrete contractor, etc.), and site area (for example, parking lot, second floor staff restroom, library, etc.).
 2. A written narrative that notes the following:
 - a. The number of days requested.
 - b. A detailed description on the cause and effect of delay.
 - c. A detailed description of the Contractor's daily activities relating to the delay on each day during the delay period, as well as a description of the Contractor's diligence in mitigating the delay; the mere submittal of contractor/subcontractor daily reports does not satisfy this requirement.
 - d. A list of additions, deletions and/or changes to activities, logic, and durations.
 3. All supporting backup documentation (for example, Requests for Information, Field Work Orders, Correspondence, Notice(s) of Delay, etc.).
 4. An electronic copy of the CPM schedule application file(s) used for the TIA.
- D. Allow ten (10) days after receipt of the Time Impact Analysis submittal for the District Construction Manager to accept or reject the request.
- E. Do not incorporate any part of the Time Impact Analysis into the Monthly Schedule Update until the associated Change Order has been approved.
- F. If a Time Impact Analysis submitted by the Contractor is rejected by the District Construction Manager, request a Meet and Confer with the District Construction Management Director within seven (7) days of rejection to discuss and resolve issues related to the request. If agreement is not reached, the Contractor will be allowed thirty (30) days from the receipt of a written decision from the District Construction Management Director following the Meet and Confer meeting to give notice.

- G. Where the District Construction Manager has not rendered formal decision on the Contractor's Time Impact Analysis for adjustment of Contract Time, and the parties are unable to agree as to amount of adjustment to be reflected in the CPM Schedule, reflect that amount of time adjustment in the CPM Schedule as the District Construction Manager may accept as appropriate for the interim. It is understood and agreed that such interim acceptance by the District Construction Manager will not be binding and will be made only for purpose of continuing to schedule work, until such time as a formal decision as to an adjustment, if any, of the Contract Time or any Contractual Milestone dates acceptable to the District Construction Manager has been rendered.
- H. The Contractor is responsible for all costs associated with the preparation of the Time Impact Analysis for inexcusable or concurrent delays. For Critical (Longest) Path delays or delays to contractual milestones approved as excusable by the District, the Contractor will be paid up to a maximum fee of \$1,000.00 per Time Impact Analysis submittal, to be invoiced as a separate Change Order after incorporation into the accepted CPM schedule. A Time Impact Analysis request without merit will not be approved, and hence, not reimbursed.
- I. If a forward-looking TIA that attempts to forecast estimated upcoming impact to the Critical (Longest) Path and/or Contractual Milestone is required, immediately coordinate with the District Construction Manager to address such an issue.

3.8 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Procedures: In addition to what is specified herein, comply with procedures contained in The Associated General Contractors of America's "Construction Planning & Scheduling Manual".
- B. Timely submissions of the schedules described in this Section are of great importance, and lack of or late receipt diminishes their value to the Project.
- C. Because the schedule is a requirement for a proper progress payment, it is incumbent on the Contractor to submit satisfactory Short-Term Schedule and Baseline Schedule submittals within the timelines depicted herein; Look-Ahead

Schedules do not satisfy the requirement regarding "Construction Progress Schedule".

- D. Any CPM Schedule submittal item submitted after 3:00PM will be considered received on the following workday.

UNIF	UNIFORMAT		
	A1010	Standard Foundations	
	A1020	Special Foundations	
	A1030	Slab On Grade	
	A2010	Basement Excavation	
	A2020	Basement Walls	
	B1010	Superstructure - Floor Construction	
	B1020	Superstructure - Roof Construction	
	B2010	Exterior Walls	
	B2020	Exterior Windows	
	B2030	Exterior Doors	
	B3010	Roof Coverings	
	B3020	Roof Openings	
	C1010	Interior Construction - Partitions	
	C1020	Interior Doors	
	C1030	Interior Construction - Fittings	
	C2010	Stair Construction	
	C2020	Stair Finishes	
	C3010	Wall Finishes	
	C3020	Floor Finishes	
	C3030	Ceiling Finishes	
	D1010	Elevators & Lifts	
	D1020	Escalators & Moving Walks	
	D1090	Other Conveying Systems	
	D2010	Plumbing Fixtures	
	D2020	Domestic Water Distribution	
	D2030	Sanitary Waste	
	D2040	Rain Water Drainage	
	D2090	Other Plumbing Systems	
	D3010	HVAC - Energy Supply	
	D3020	Heat Generating Systems	
	D3030	Cooling Generating Systems	
	D3040	HVAC - Distribution Systems	
	D3050	Terminal & Package Units	
	D3060	Controls & Instrumentation	
	D3070	Systems Testing & Balancing	
	D3090	Other HVAC Systems & Equipment	

	D4010	Fire Protection - Sprinklers	
	D4020	Fire Protection - Standpipes	
	D4030	Fire Protection Specialties	
	D4090	Other Fire Protection Systems	
	D5010	Electrical Service & Distribution	
	D5020	Lighting and Branch Wiring	
	D5030	Electrical - Communications & Security	
	D5090	Other Electrical Systems	
	D8020	Technology Electrical Infrastructure	
	D8021	Structured Cabling	
	D8022	Low Voltage - Main Distribution Frames	
	D8023	Wireless LAN Systems	
	D8024	Multimedia Technology Systems	
	D8041	Intrusion Detection and Access Control	
	D8042	Video Surveillance and Control Systems	
	D8060	Local Sound Systems	
	D8061	VoIP Systems	
	D8062	Campus-Wide Emergency Communications	
	D8063	Clock and Bell Systems	
	D8064	Video Communications / CATV Systems	
	E1010	Commercial Equipment	
	E1020	Institutional Equipment	
	E1030	Vehicular Equipment	
	E2010	Fixed Furnishings	
	E2020	Moveable Furnishings	
	F1010	Special Structures	
	F1020	Integrated Construction	
	F1030	Special Construction	
	F1040	Special Facilities	
	F1050	Special Controls and Instrumentation	
	F2010	Building Elements Demolition	
	F2020	Hazardous Components Abatement	
	G1010	Site Clearing	
	G1020	Site Demolition and Relocation	
	G1030	Earthwork	
	G1040	Hazardous Earth Remediation	
	G2010	Roads	

	G2020	Parking Lots	
	G2030	Pedestrian Paving	
	G2040	Site Development	
	G2050	Landscaping	
	G3010	Water Supply	
	G3020	Sanitary Sewer	
	G3030	Storm Sewer	
	G3040	Heating Distribution	
	G3050	Cooling System	
	G3060	Fuel Distribution	
	G3090	Other Site Mechanical Utilities	
	G4010	Electrical Distribution	
	G4020	Site Lighting	
	G4030	Site Communications and Security	
	G4090	Other Site Electrical Utilities	
	G9010	Service Tunnels	
	G9090	Other Site Systems	
	Z1010	Administration	
	Z1020	Quality Requirements	
	Z1030	Temporary Facilities	
	Z1040	Project Closeout	
	Z1050	Permit, Insurance and Bonds	
	Z9999	Allowances	
	Note: Only use Z9999 if an Allowance cannot be coded to a single Uniformat Level 3 code.		

END OF SECTION

SECTION 013233

PHOTOGRAPHIC DOCUMENTATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Preconstruction photographs.
- B. Related Requirements:
 - 1. Section 01 33 00 "Submittal Procedures" for submitting photographic documentation.

1.3 INFORMATIONAL SUBMITTALS

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- B. Color Digital Photographs: Submit image files within three days of taking photographs.
 - 1. Digital Camera: Minimum sensor resolution of 8 megapixels.
 - 2. Format: Minimum 3200 by 2400 pixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.
 - 3. Identification: Provide the following information with each image description in file metadata tag:
 - a. Name of Project.
 - b. Name of Contractor.
 - c. Date photograph was taken.
 - d. Description of location, vantage point, and direction (by compass point), and elevation or story of construction.
 - e. Unique sequential identifier keyed to accompanying key plan.

1.4 USAGE RIGHTS

- A. If a professional photographer is engaged to take photographs or video recordings, obtain and transfer copyright usage rights from photographer to District for unlimited reproduction of photographic documentation.

1.5 PHOTOGRAPHIC MEDIA

- A. Digital Images: Provide images in both RAW and JPG format, produced by a digital camera with minimum sensor size of 8 megapixels, and at an image resolution of not less than 3200 by 2400 pixels.

1.6 PHOTOGRAPHS

- A. General: Take color photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
 - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
 - 1. Date and Time: Include date and time in file name for each image.
- C. Preconstruction Photographs: Before commencement of excavation or commencement of demolition, take photographs that show preconstruction conditions of existing landscape materials; on-site paving; building interior finishes to include ceilings, walls and floors; and interior and exterior equipment that are to remain in place.
 - 1. The photographs will be used to determine responsibility for damage that might appear to have been caused by construction activities. It will be the Contractor's responsibility, through photographs, to show that damage was preexisting.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 013300

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Requirements:
 - 1. Section 01 31 00 "Project Management and Coordination" for use of Document Control Software.
 - 2. Section 01 32 04 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
 - 3. Section 01 40 01 "Quality Requirements / District Laboratory" for submitting quality control schedules and reports.
 - 4. Section 01 40 02 "Quality Requirements / Contractor Laboratory" for submitting quality control schedules and reports.
 - 5. Section 01 77 00 "Closeout Procedures" for submitting closeout submittals and maintenance material submittals.
 - 6. Section 01 78 23 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
 - 7. Section 01 78 39 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
 - 8. Section 01 79 00 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of District's personnel.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not

complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

- C. Document Control Software: The Architect will provide, and the District will approve "Document Control Software." Use this system for all Project Submittals unless noted otherwise.
- D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 SUBMITTAL SCHEDULE

- A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect or District and additional time for handling and reviewing submittals required by those corrections.
 - 1. Coordinate submittal schedule with Contractor's construction schedule.
 - 2. Initial Submittal: Submit concurrently with Baseline Schedule.
 - 3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
 - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
 - 4. Format: Arrange the following information in a tabular format:
 - a. Scheduled date for first submittal.
 - b. Specification Section number and title.
 - c. Submittal category: Action; informational.
 - d. Name of subcontractor.
 - e. Description of the Work covered.
 - f. Scheduled date for Architect's final release or approval.
 - g. Scheduled date of fabrication.
 - h. Scheduled dates for purchasing.
 - i. Scheduled dates for installation.
 - j. Activity or event number.

1.5 SUBMITTAL FORMATS

- A. Architect's Digital Data Files:
 - 1. Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings.
 - a. Digital data drawings files will only be made available with Contractor's signed acceptance of Architect's electronic files/documents use disclaimer.
 - b. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
 - c. Digital Drawing Software Program: The Contract Drawings are available in Autodesk Revit 2021.

- d. Execute a data licensing agreement in form acceptable to District and Architect.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
 - 3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
 - 4. Coordinate transmittal timing of submittals for related parts of the Work specified in different Sections so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
 - 1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 - 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 - 3. Resubmittal Review: Allow 15 days for review of each resubmittal.
 - 4. Sequential Review: Where sequential review of submittals by Architect's consultants, District, or other parties is indicated, allow 21 days for initial review of each submittal.
 - 5. DSA review: Where submittal must be reviewed by DSA, allow 35 days for review of submittal.
- D. Options: Identify options requiring selection by Architect. Make all submittals electronically using District's Document Control Software.
- E. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations.
- F. Electronic Submittals: Provide submittals using Document Control Software. Immediately notify Architect, District Construction Manager, Project Inspector, and Document Control Specialist of all submittals made.
- G. Resubmittals: Make resubmittals in same manner as initial submittal.
 - 1. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

- H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- I. Furnish one copy of each final action submittal marked with approval notation from Architect's action stamp to Project Inspector.
- J. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

1.6 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
 - 1. Post electronic submittals as PDF electronic files directly to Document Control Software.
 - a. Architect will post annotated file and notify Contractor of posting.
 - 2. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Provide certificates and certifications signed by an officer or other individual authorized to sign documents on behalf of that entity.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 - 1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
 - 2. Mark each copy of each submittal to show which products and options are applicable.
 - 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 - 4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams showing factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 - 5. Submit Product Data before Shop Drawings, and before or concurrent with Samples.
 - 6. Submit Product Data in the following format:
 - a. PDF electronic file.

- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal based on Architect's digital data drawing files is otherwise permitted.
 - 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional engineer if specified.
 - 2. Prepare Shop Drawings on same digital data software program, version, and operating system as original Drawings.
 - 3. Submit Shop Drawings in the following format:
 - a. PDF electronic file.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
 - 1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 - 2. Identification: Permanently attach label on unexposed side of Samples that includes the following:
 - a. Project name and submittal number.
 - b. Generic description of Sample.
 - c. Product name and name of manufacturer.
 - d. Sample source.
 - e. Number and title of applicable Specification Section.
 - f. Specification paragraph number and generic name of each item.
 - 3. Provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
 - 4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as District's property, are the property of Contractor.
 - 5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit two full sets of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return one submittal with options selected.
 - 6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in

manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

- a. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a project record sample.
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
 1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
 2. Manufacturer and product name, and model number if applicable.
 3. Number and name of room or space.
 4. Location within room or space.
 5. Submit product schedule in the following format:
 - a. PDF electronic file.
- F. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- G. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
- H. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- I. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- J. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- K. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

- L. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- M. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- N. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - 1. Name of evaluation organization.
 - 2. Date of evaluation.
 - 3. Time period when report is in effect.
 - 4. Product and manufacturers' names.
 - 5. Description of product.
 - 6. Test procedures and results.
 - 7. Limitations of use.
- O. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- P. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- Q. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- R. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of applicable codes and regulations, and calculations, list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

1.7 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

- B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file and three paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
 - 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

1.8 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
 - 1. Architect will not review submittals that do not have Contractor's review and approval.

1.9 ARCHITECT'S REVIEW

- A. Action Submittals: Architect will review each submittal, make marks to indicate corrections or revisions required, and post review on Document Control Software. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action, as follows:
 - 1. No Exceptions Noted.
 - 2. Make Corrections Noted.
 - 3. Submit Specified Item.
 - 4. Revise and Resubmit.
 - 5. Rejected.
- B. Informational Submittals: Architect will review each submittal and will post submittal review on Document Control Software only if it does not comply with requirements.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Submittals received from sources other than Contractor will be returned by the Architect without action or may be discarded.

- F. Submittals not required by the Contract Documents will be returned by the Architect without action or may be discarded.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 014001

QUALITY REQUIREMENTS, DISTRICT LABORATORY

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control related to tests and inspections performed by District's Testing Agency.
- B. Testing and inspection services specified in this Section will be performed by a Testing Agency selected and employed by the District.
- C. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that include those activities. Requirements in those Sections also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-assurance and -control services required by other Sections are not limited by provisions of this Section.
- D. Related Requirements:
 - 1. Section 01 40 02 "Quality Requirements / Contractor Laboratory."
 - 2. Section 01 73 00 "Execution."

1.3 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the

Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by District.

- C. Testing Agency: For this Section, an entity engaged by the District to perform specific tests, inspections, or both.

1.4 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, District will comply with the most stringent requirement.
- B. Minimum Quantity or Quality Levels: Provide or perform quantity or quality level shown or specified. Comply exactly with the minimum quantity or quality specified, or exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements.

1.5 INFORMATIONAL SUBMITTALS

- A. Schedule of Tests and Inspections: District will prepare in tabular form and include the following:
 - 1. Specification Section number and title.
 - 2. Description of test and inspection.
 - 3. Number of tests and inspections required.
 - 4. Time schedule or time span for tests and inspections.
 - 5. Requirements for obtaining samples.

1.6 QUALITY ASSURANCE

- A. Testing and inspections required by governing authorities will be performed by an independent testing laboratory selected and employed by the District and approved by the Division of the State Architect (DSA). Qualification of a testing agency or laboratory will be under the jurisdiction of the DSA Office of Regulations (ORS) Structural Safety Section (SSS) when applicable. Procedural and acceptance criteria are set forth in CBC Sections 110 and 1701A, and California Code of Regulations (CBC) Title 24 Part 1, Administrative Code, and the DSA Interpretation of Regulations.
- B. Testing and inspection services which are performed will be in accordance with requirements of CBC Title 24 Part 1, Administrative Code, and as specified herein.
- C. When specified, testing and inspections not required by governing authorities (NON-DSA) will also be performed by an independent Testing Agency selected and employed by the District.
- D. Testing and inspection services will verify that work meets the requirements of the Contract Documents.

- E. In general, tests and inspections for structural materials include all items enumerated on the Statement of Structural Tests and Special Inspections (DSA Form 103) for this project as prepared and distributed by the Architect.
- F. Testing Agency will submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, District Construction Manager, and Project Inspector, with copy to Contractor. Testing Agency will interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 - 1. Testing Agency will notify Architect, District Construction Manager, Project Inspector and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 - 2. Testing Agency will submit a certified written report of each test, inspection, and similar quality-control service to Architect, District Construction Manager, and Project Inspector, with copy to Contractor and to authorities having jurisdiction.
 - 3. Testing Agency will interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 - 4. Testing Agency will retest and reinspect corrected work.
 - 5. Testing Agency will not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.
 - 6. Testing Agency will not perform any duties of the Contractor.
- G. Test reports will include all tests made, regardless of whether such tests indicate that the material is satisfactory or unsatisfactory. Samples taken, but not tested will also be reported. Records of special sampling operations as required will be reported. The reports will show that the material or materials were sampled and tested in accordance with the requirements of CBC Title 24 Part 1 Administrative Code, Part 2 California Building Code, and with the DSA approved specifications. They will also state definitely whether or not the material or materials tested comply with requirements.
- H. Reporting Test Failures:
 - 1. Immediately upon Testing Agency determination of a test failure, the Agency will notify Contractor and other interested parties.

1.7 PAYMENTS

- A. Costs of initial testing and inspection, except as specifically modified herein, or specified otherwise in technical sections, will be paid by the District. Initial tests and inspections are defined as the first tests and inspections as herein specified.
- B. In the event a test or inspection indicates failure of a material or procedure to meet requirements of Contract Documents, costs for retesting and additional work related to failure will be paid by the District and backcharged to the Contractor.
- C. Additional tests and inspections, not herein specified, but requested by District, will be paid by District unless results of such tests and inspections are found to be not in compliance with Contract Documents, in which case the District will pay all costs for

initial testing as well as retesting, reinspection and additional work related to non-compliance. District will then backcharge the Contractor for these costs.

- D. Costs for additional tests or inspections required because Contractor changed materials or changed source or supply will be paid by District and backcharged to the Contractor.
- E. Costs for tests or inspections that are required to correct deficiencies will be paid by the District and backcharged to the Contractor.
- F. Extra Testing Agency expenses resulting from a failure to notify the Testing Agency will be paid by the District and backcharged to the Contractor.
- G. Charges due to insufficient advance notice of cancellations or time extension will be paid for by the District and backcharged to the Contractor.
- H. Cost of testing that is required solely for the convenience of Contractor in his scheduling and performance of work will be paid by the District and backcharged to the Contractor.
- I. Overtime costs for testing and inspections performed outside the regular work day hours, including weekends and holidays, due to fault of Contractor will be paid for by the District and backcharged to the Contractor. Such costs include overtime costs for District personnel.
- J. Should it be considered necessary or advisable by the District at any time before final acceptance of the entire work to make an examination of work already completed by removing or tearing out the completed work, promptly furnish necessary facilities, labor and materials on request. If such work is found to be defective in any respect due to fault of the Contractor or his subcontractor, pay for all expenses of such examinations and of satisfactory reconstruction at no additional cost to the District. If, however, such work is found to meet the requirements of the Contract, District will reimburse to the Contractor additional cost of labor and material necessarily involved in the examination and replacement.

1.8 QUALITY CONTROL

- A. Contractor Responsibilities:
 - 1. Notify District Construction Manager and Testing Agencies at least 48 hours in advance of time when Work that requires testing or inspecting will be performed.
 - 2. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 - 3. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor and the Contract Sum will be adjusted by Change Order.
- B. Contractor Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as

requested. Notify Testing Agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field-curing of test samples.
5. Preliminary design mix proposed for use for material mixes that require control by Testing Agency.
6. Security and protection for samples and for testing and inspecting equipment at Project site.
7. Selection of the material required to be tested will be by the Testing Agency or the District and not by the Contractor.

C. Notify the Testing Agency a minimum of 3 working days in advance of the manufacture of material to be supplied by Contractor under the Contract Documents, which must by terms of the Contract be tested. Agency will arrange for the testing of such material at the source of supply.

1. Do not incorporate into the Project any material shipped by the Contractor from the source of supply before having satisfactorily passed such testing and inspection, or before the receipt of notice from the District that such testing and inspection will not be required.

D. Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.9 PROJECT INSPECTOR

A. An Inspector employed by the District in accordance with the requirements of CBC Title 24 Part 1 Administrative Code will be assigned to the work. Inspector's duties are specifically defined in CBC Title 24 Part 1, Sec. 4-342.

B. Notify the Inspector a minimum of two working days in advance of execution of all work that requires inspection.

C. The work of construction in all stages of progress is subject to the personal continuous observation of the Inspector. Provide Inspector with free access to any or all parts of the work at any time. Provide Inspector with reasonable facilities for obtaining such information necessary to for the Inspector to be fully informed respecting the progress and manner of the work and the character of the materials. Inspection of the work does not relieve the Contractor from any obligation to comply with the Contract requirements.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 DSA TESTS AND INSPECTIONS

- A. Test and inspections for the following will be performed in conformance with the California Building Code, Title 24, Part 2, of the California Code of Regulations, and the DSA Interpretations of Regulations (IR) Manual.
- B. Structural tests and inspections will be performed in accordance with CBC Chapter 17A.
- C. Concrete (CBC Chapter 19A).
 - 1. Cast-In-Place Concrete: CBC Table 1705A.3.
 - a. Material Verification and Testing:
 - 1) Design Mix: verification.
 - 2) Reinforcing Steel: CBC Section 1913A.2; ASTM A370; DSA IR 17-10.
 - 3) Slump, Temperature, Air Content: ASTM C172; ASTM C31.
 - 4) Compression: ACI 318 Section 5.6; CBC Section 1905A.1.2; ASTM C39.
 - b. Inspection:
 - 1) Batch Plant Inspection: CBC Section 1705A.3.2.
 - 2) Batch Plant Inspection: CBC Section 1705A.3.3.
 - 3) Placement of formwork, reinforcing steel, embedded items.
 - 4) Verify concrete strength prior to removal of forms.
 - 2. Post-Installed Anchors:
 - a. Inspect installation: CBC Table 1705A.3.
 - b. Test post-installed anchors: CBC Section 1913A.7.
- D. Other.
 - 1. Grounding: CEC Section 25 0. 56.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 01 73 00 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION

SECTION 014002

QUALITY REQUIREMENTS, CONTRACTOR LABORATORY

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control related to tests and inspections performed by Contractor's Testing Agency.
- B. Testing and inspection services specified in this Section will be performed by a Testing Agency selected and employed by the Contractor.
- C. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-assurance and -control services required by other Sections are not limited by provisions of this Section.
 - 4. Specific tests and inspections are not specified in this Section.
- D. Related Requirements:
 - 1. Section 01 40 01 "Quality Requirements, District Laboratory."
 - 2. Section 01 73 00 "Execution."

1.3 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by District.
- C. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- D. Testing Agency: For this Section, an entity engaged by the Contractor to perform specific tests, inspections, or both.

1.4 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: Provide or perform quantity or quality level shown or specified. Comply exactly with the minimum quantity or quality specified, or exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect before proceeding.

1.5 INFORMATIONAL SUBMITTALS

- A. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of three recent test reports issued by the Testing Agency on projects of comparable size and complexity.
- B. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
 - 1. Specification Section number and title.
 - 2. Description of test and inspection.
 - 3. Identification of applicable standards.
 - 4. Number of tests and inspections required.
 - 5. Time schedule or time span for tests and inspections.
 - 6. Requirements for obtaining samples.

1.6 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, and telephone number of testing agency.
 - 4. Dates and locations of samples and tests or inspections.

5. Names of individuals making tests and inspections.
 6. Description of the Work and test and inspection method.
 7. Identification of product and Specification Section.
 8. Complete test or inspection data.
 9. Test and inspection results and an interpretation of test results.
 10. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 11. Name and signature of laboratory inspector.
 12. Recommendations on retesting and reinspecting.
- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of technical representative making report.
 2. Statement on condition of substrates and their acceptability for installation of product.
 3. Statement that products at Project site comply with requirements.
 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 6. Statement of whether conditions, products, and installation will affect warranty.
 7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of factory-authorized service representative making report.
 2. Statement that equipment complies with requirements.
 3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 4. Statement of whether conditions, products, and installation will affect warranty.
 5. Other required items indicated in individual Specification Sections.

1.7 QUALITY ASSURANCE

- A. Testing and inspection services which are performed will be in accordance with requirements of CBC Title 24 Part 1, Administrative Code, where applicable.
- B. Testing and inspection services will verify that work meets the requirements of the Contract Documents.
- C. Provide test reports signed by a Registered Engineer licensed in the State of California for the specific type of testing required.
- D. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

- E. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- F. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to District Construction Manager and Project Inspector. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 - 1. Notify Architect, District Construction Manager, Project Inspector and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 - 2. Submit a certified written report of each test, inspection, and similar quality-control service to Architect, District Construction Manager, and Project Inspector, with copy to Contractor.
 - 3. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 - 4. Retest and reinspect corrected work.
 - 5. Cooperate with Architect, District Construction Manager, Project Inspector, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
 - 6. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.
 - 7. Do not perform any duties of the Contractor.
- G. Test reports will include all tests made, regardless of whether such tests indicate that the material is satisfactory or unsatisfactory. Samples taken but not tested will also be reported. Records of special sampling operations as required will be reported. The reports will show that the material or materials were sampled and tested in accordance with the requirements of the Contract Documents. They will also state definitely whether or not the material or materials tested comply with requirements.
- H. Reporting Test Failures:
 - 1. Immediately upon Testing Agency determination of a test failure, the Agency will notify the District Construction Manager by either telephone or e-mail. On the same day, the Testing Agency will send written test results to the Architect, District Construction Manager, Project Inspector, and Contractor.

1.8 PAYMENTS

- A. Pay for costs of initial testing and inspection, except as specifically modified herein, or specified otherwise in technical sections. Initial tests and inspections are defined as the first tests and inspections as herein specified.
- B. In the event a test or inspection indicates failure of a material or procedure to meet requirements of Contract Documents, pay for costs for retesting and additional work related to failure at no additional expense to the District.
- C. Additional tests and inspections, not herein specified but requested by District, will be paid by District unless results of such tests and inspections are found to be not in

compliance with Contract Documents, in which case the District will pay all costs for initial testing as well as retesting and reinspection. District will then backcharge the Contractor for these costs.

- D. At no additional expense to the District, pay for costs for additional tests or inspections required because Contractor changed materials or changed source or supply.
- E. At no additional expense to the District, pay for costs of tests or inspections that are required to correct deficiencies.
- F. At no additional expense to the District, pay for extra Testing Agency expenses resulting from a failure to notify the Testing Agency.
- G. At no additional expense to the District, pay for charges due to insufficient advance notice of cancellations or time extension.
- H. Cost of testing that is required solely for the convenience of Contractor in his scheduling and performance of work shall be paid by the Contractor.
- I. At no additional expense to the District, pay for overtime costs of testing and inspections performed outside the regular work day hours, including weekends and holidays. Such costs include overtime costs for the District's Representative.
- J. Should it be considered necessary or advisable by the District at any time before final acceptance of the entire work to make an examination of work already completed by removing or tearing out the completed work, promptly furnish necessary facilities, labor and materials. If such work is found to be defective in any respect due to fault of the Contractor or his subcontractor, pay for all expenses of such examinations and of satisfactory reconstruction at no additional cost to the District. If, however, such work is found to meet the requirements of the Contract, District will reimburse to the Contractor additional cost of labor and material necessarily involved in the examination and replacement.

1.9 QUALITY CONTROL

- A. Contractor Responsibilities:
 - 1. Engage a qualified testing agency to perform these quality-control services.
 - a. Do not employ same entity engaged by District.
 - 2. Notify testing agencies at least 48 hours in advance of time when Work that requires testing or inspecting will be performed.
 - 3. Submit a certified written report, in duplicate, of each quality-control service.
 - 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 - 5. Pay for costs of retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents.
- B. Contractor Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as

requested. Notify Testing Agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field-curing of test samples.
5. Preliminary design mix proposed for use for material mixes that require control by Testing Agency.
6. Security and protection for samples and for testing and inspecting equipment at Project site.
7. Selection of the material required to be tested will be by the Testing Agency or the District's Representative and not by the Contractor.

- C. Notify the Testing Agency a minimum of 3 working days in advance of the manufacture of material to be supplied under the Contract Documents, which must by terms of the Contract be tested. Agency will arrange for the testing of such material at the source of supply.
1. Do not incorporate into the Project material shipped by the Contractor from the source of supply before having satisfactorily passed such testing and inspection or before the receipt of notice from the District that such testing and inspection will not be required.
- D. Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- E. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 01 33 00 "Submittal Procedures."
- F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- G. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule concurrently with Project Baseline Schedule.
1. After District review, distribute schedule to District Construction Manager, Project Inspector, Testing Agency, and each party involved in performance of portions of the Work where tests and inspections are required.
 2. Give sufficient advance notice to Testing Agency in the event of cancellation or time extension of a scheduled test or inspection.

1.10 PROJECT INSPECTOR

- A. An Inspector employed by the District will be assigned to the Work.
- B. Notify the Inspector a minimum of two working days in advance of execution of all work that requires inspection.
- C. The work of construction in all stages of progress is subject to the personal continuous observation of the Inspector. Provide Inspector with free access to any or all parts of the work at any time. Provide Inspector with reasonable facilities for obtaining such information as may be necessary for the Inspector to be fully informed respecting the progress and manner of the work and the character of the materials. Inspection of the work does not relieve the Contractor from any obligation to comply with the Contract requirements.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
 - 1. Date test or inspection was conducted.
 - 2. Description of the Work tested or inspected.
 - 3. Date test or inspection results were transmitted to District Construction Manager.
 - 4. Identification of Testing Agency conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for District's reference during normal working hours.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 01 73 00 "Execution."

- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION

SECTION 014200

REFERENCES

PART 1 GENERAL

1.1 SUMMARY

1.2 RELATED DOCUMENTS

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

1.3 DEFINITIONS

- A. General: Basic Contract definitions are included in the General Conditions of the Contract.
- B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the General Conditions of the Contract.
- C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.
- H. "Provide": Furnish and install, complete in place and ready for the intended use.
- I. "City": City of San Diego, unless specified otherwise.
- J. "Includes", "Including", and variations thereof: "Includes, but not limited to,...".

1.4 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.
- D. Sources for complete titles of individual Industry Standards:
 - 1. Internet search engines.
 - 2. United Master Reference List (UMRL) at <https://www.wbdg.org/FFC/DOD/UMRL/UMRL.pdf>.

1.5 ABBREVIATIONS AND ACRONYMS

- A. Abbreviations and acronyms are to mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States." For abbreviations and acronyms not included in these references, use internet search engine according to appropriate context and subject matter.
- B. Industry Organizations, Code Agencies, Federal and State Government Agencies, Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities.
- C. Where duplicates occur, use according to appropriate context and subject matter.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 015000

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
 - 1. Section 01 10 00 "Summary" for work restrictions and limitations on utility interruptions.

1.3 USE CHARGES

- A. District's existing water system and electric power are available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations. Allow other entities to use temporary services and facilities without cost, including District, Architect, testing agencies, and authorities having jurisdiction.

1.4 SUBMITTALS

- A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel. Adhere to locations indicated on Drawings. If locations are not indicated on Drawings, request locations from District Construction Manager.
- B. Project Identification and Temporary Signs: Show materials, fabrication, fasteners, attachment methods, and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.
- C. Moisture-Protection Plan as specified herein.
- D. Dust-Control Plan: Submit coordination drawing and narrative that indicates the dust-control measures proposed for use, proposed locations, and proposed time frame for

their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:

1. Locations of dust-control partitions at each phase of work.
2. Waste handling procedures.
3. Other dust-control measures.

1.5 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Moisture-Protection: Protect materials and construction from water absorption and damage. Protect during delivery, handling, and storage. Discard water-damaged materials, mitigate water intrusion into completed Work, and replace water damaged Work.
- C. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- D. Accessible Temporary Egress: Comply with applicable provisions in the United States Access Board's ADA-ABA Accessibility Guidelines and CBC.

1.6 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before District's acceptance, regardless of previously assigned responsibilities.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Portable Chain-Link Fencing: Minimum 2-inch, 0.148-inch-thick, galvanized-steel, chain-link fabric fencing; minimum 8 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch-OD line posts and 2-7/8-inch-OD corner and pull posts, with 1-5/8-inch-OD top and bottom rails. Provide concrete or galvanized-steel bases for supporting posts.
 1. Provide securely fastened continuous screening fabric on portable chain link fence.
- B. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil minimum thickness, with flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2.
- C. Dust-Control Adhesive-Surface Walk-off Mats: Provide mats minimum 36 by 60 inches.

2.2 TEMPORARY FACILITIES

- A. All field offices and sanitary facilities must comply with applicable codes and regulations, including disabled accessibility regulations.
- B. District Field Offices:
 - 1. Field Office:
 - a. The field office, its toilet rooms and its equipment are for the Contractor's, Architect's and District's use.
 - b. Provide a trailer for use by the Project Inspector, District Construction Manager, Controls Personnel and other District personnel.
 - c. Provide a UFER ground, 5/8" x 8' ground rod connected to the ground buss in the field office electrical panel with a #6 solid CU conductor.
 - d. The trailer shall contain one (1) 8' x 15' conference room.
 - e. The field office shall be installed and completely furnished within two weeks of the Notice to Proceed. This field office must remain on site during the entire Project and cannot be removed without prior written authorization from the District. It shall remain fully operational until Final Completion.
 - f. The trailer layout and location shall be approved by the District Construction Manager.
 - g. This office shall be of substantial waterproof construction, heated, air-conditioned, with adequate natural light and ventilation, tied down, and resting on temporary foundations adequate for normal office loading.
 - h. Provide and mount a 2' x 4' sign titled "National School District Construction Office" and containing the proposition logos. District will provide.jpg and.png format files for proposition logos.
 - i. The windows shall be operable, tinted on the exterior, and equipped with window blinds.
 - j. The exterior door shall have access to the outside with landings, stairs, a key-type lock, and a deadbolt key lock.
 - k. Both the window and door glass shall be protected with security bars.
 - l. Notify the Project Inspector forty-eight (48) hours prior to the date of hook-up of temporary utilities.
 - m. All facilities described here shall be either in a new or like new condition and shall remain the property of the Contractor. If the facilities are not new, the facilities shall be in a condition acceptable to the District.
 - n. Service, repair and maintain facilities (including utilities, garbage and cleaning services) in good working order.
 - 2. Toilets:
 - a. The field office shall have adjacent a portable toilet with handwashing facilities as required by applicable law.
 - b. Each portable toilet room shall have a locking door and be equipped with a toilet (also with toilet tissue dispenser, toilet seat cover dispenser). Handwashing facility shall contain a lavatory with cold water service, soap dispenser, and hand-towel dispenser.
 - c. Maintain the toilet and handwashing facilities in a neat, clean, and orderly manner, and refill all consumables semi-monthly.
 - 3. Equipment:
 - a. Provide one (1) 4' x 8', one (1) waste paper receptacles, adequate electric lights, and bottled drinking water dispenser with paper cups.

- b. Service and supply one (1) multifunction color printer/scanner/fax/copier (Canon Advance C33301 with AL-1, G-1 or equal). Multifunction printer shall scan in color. Multifunction printer shall print/copy/scan paper sizes of 8½ x11, 8½ x14 and 11x 17. Provide a service plan and supplies including paper and toner for multifunction printer.
- c. All equipment and furnishings described here shall be provided in either a new or like-new condition and shall remain the property of the Contractor. If equipment is not new, the equipment shall be in a condition acceptable to the District.
- d. Re-supply, service, repair and maintain equipment in good working order, including paper and inks/toner.

2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 EXECUTION

3.1 TEMPORARY FACILITIES, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.
- C. Conservation: Coordinate construction and use of temporary facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Connect to existing service.
 - 1. Arrange with utility company, District, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Water Service: Connect to District's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to District. At Substantial Completion, restore these facilities to condition existing before initial use.
- C. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

- D. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
- E. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas. Isolate work area from occupied areas of building.
 - 1. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
 - 2. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.
- F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
 - 1. Provide dehumidification systems when required to reduce substrate moisture levels to level required to allow installation or application of finishes.
- G. Electric Power Service: Connect to District's existing electric power service. Maintain equipment in a condition acceptable to District.
- H. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
 - 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

3.3 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:
 - 1. Provide construction for temporary offices, shops, and sheds located within construction area.
 - 2. Maintain support facilities until Substantial Completion.
- B. Traffic Controls: Comply with requirements of authorities having jurisdiction.
 - 1. Protect existing site improvements to remain including curbs, pavement, and utilities.
 - 2. Maintain access for fire-fighting equipment and access to fire hydrants.
- C. Parking: Use designated areas of District's existing parking areas for construction personnel.
- D. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

- E. Project Signs: Provide construction for project signs as indicated. Unauthorized signs are not permitted. Maintain and touch up signs so they are legible at all times.
- F. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 01 73 00 "Execution." Comply with requirements specified in Section 01 74 19 "Construction Waste Management and Disposal."
- G. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
 - 1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
 - 1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain prior written permission from the District.
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- C. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each work day.
- D. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
 - 1. Provide and maintain temporary barricades at all hazardous areas to protect both pedestrians and vehicles at all times. This protection shall be for students, faculty and all others at both offsite and onsite work. Adjust and relocate barricades as necessary for protection as work progresses to different locations. Areas that require barricades include such things as trenches, changes to sidewalks/driveways and projections above ground.
- E. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- F. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by District from fumes and noise.
 - 1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant-treated plywood on construction operations side.

2. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
 3. Insulate partitions to control noise transmission to occupied areas.
 4. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
 5. Protect air-handling equipment.
 6. Provide walk-off mats at each entrance through temporary partition.
- G. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
1. Prohibit smoking on District property.
 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

3.5 MOISTURE AND MOLD CONTROL

- A. Contractor's Moisture-Protection Plan: Describe delivery, handling, storage, installation, and protection provisions for materials subject to water absorption or water damage.
1. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
 2. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
 3. Avoid trapping water in finished work. Indicate methods to be used to avoid trapping water in finished work.
 4. Document visible signs of mold that may appear during construction.
- B. Controlled Construction Phase of Construction: After completing and sealing of the building enclosure, maintain as follows:
1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
 2. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.
 - a. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 48 hours are considered defective.
 - b. Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record readings beginning at time of exposure and continuing daily for 48 hours. Identify

materials containing moisture levels higher than allowed. Report findings in writing to the District Construction Manager.

- c. Remove materials that cannot be completely restored to their manufactured moisture level within 48 hours.

3.6 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 1. Materials and facilities that constitute temporary facilities are property of Contractor. District reserves right to take possession of Project identification signs.
 2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 01 77 00 "Closeout Procedures."

END OF SECTION

SECTION 016000

PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and "or equal" products.
- B. Related Requirements:
 - 1. Section 01 25 00 "Substitution Procedures" for requests for substitutions.
 - 2. Section 01 42 00 "References" for applicable industry standards for products specified.

1.3 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
 - 3. "or equal" Product: Product that is demonstrated and approved through the substitution request process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish significant qualities related to type, function, dimension, in-service

performance, physical properties, appearance, and other characteristics for purposes of evaluating "or equal" products of additional manufacturers.

1.4 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
- B. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
 - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 - 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 - 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 - 4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.
- C. Storage:
 - 1. Store products to allow for inspection and measurement of quantity or counting of units.
 - 2. Store materials in a manner that will not endanger Project structure.
 - 3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
 - 4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
 - 5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
 - 6. Protect stored products from damage and liquids from freezing.

1.6 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 - 1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to District.
 - 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for District.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
 - 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 - 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
 - 3. See other Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Section 01 77 00 "Closeout Procedures."

PART 2 PRODUCTS

2.1 PRODUCTS NOT ALLOWED

- A. Do not provide products that contain asbestos, lead, or coal tar.

2.2 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
 - 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 - 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 - 3. District reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
 - 4. Where products are accompanied by the term "as selected," Architect will make selection.
 - 5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
 - 6. For products specified by name and accompanied by the term "or equal," comply with requirements of Section 01 25 00 "Substitution Procedures" to obtain approval for use of an unnamed product.

- B. Product Selection Procedures:
 - 1. Where Specifications name a single manufacture's product and indicate "no substitution", provide the named product that complies with requirements. "or equal" products (substitutions) will not be considered.
 - 2. Where Specifications name a single manufacturer or source and indicate "no substitution", provide a product by the named manufacturer or source that complies with requirements. "or equal" products (substitutions) will not be considered.
 - 3. Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. "or equal" products (substitutions) will be considered.
 - 4. Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. "or equal" products (substitutions) will be considered unless expressly specified otherwise.
 - 5. Basis-of-Design Product: Where Specifications name a product as the basis-of-design product, or refer to a product indicated on Drawings as the basis-of-design product, provide the specified or indicated product. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. "or equal" products (substitutions) will be considered.
- C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
 - 1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 01 25 00 "Substitution Procedures" for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select features such as color, gloss, pattern, density, texture from manufacturer's product line.

PART 3 EXECUTION

3.1 COLOR CONSISTENCY

- A. All like finish products within a given visible area shall be from the same dye lot or color run.
- B. If like finish products within a given visible area vary slightly in color, mix and blend varying colors to avoid distinct areas of color variation.

END OF SECTION

SECTION 017300

EXECUTION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work, including the following:
 - 1. Construction layout.
 - 2. Installation of the Work.
 - 3. Cutting and patching.
 - 4. Progress cleaning.
 - 5. Starting and adjusting.
 - 6. Protection of installed construction.
 - 7. Correction of the Work.
- B. Related Requirements:
 - 1. Section 01 10 00 "Summary" for limits on use of Project site.
 - 2. Section 01 33 00 "Submittal Procedures" for submitting surveys.
 - 3. Section 01 77 00 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of District-accepted deviations from indicated lines and levels, and final cleaning.
 - 4. Section 02 41 19 "Selective Demolition" for demolition and removal of selected portions of the building.
 - 5. Section 07 84 13 "Penetration Firestopping" for patching penetrations in fire-rated construction.

1.3 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.4 QUALITY ASSURANCE

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
 - 1. Structural Elements: When cutting and patching structural elements, notify the District Construction Manager of locations and details of cutting, and await directions from the District Construction Manager before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
 - 2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:
 - a. Primary operational systems and equipment.
 - b. Fire separation assemblies.
 - c. Air or smoke barriers.
 - d. Fire-suppression systems.
 - e. Plumbing piping systems.
 - f. Mechanical systems piping and ducts.
 - g. Control systems.
 - h. Communication systems.
 - i. Fire-detection and -alarm systems.
 - j. Conveying systems.
 - k. Electrical wiring systems.
 - l. Operating systems of special construction.
 - m. Weather barriers.
 - n. Thermal protection systems, including insulation assemblies.
 - 3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include the following:
 - a. Water, moisture, or vapor barriers.
 - b. Membranes and flashings.
 - c. Equipment supports.
 - d. Piping, ductwork, vessels, and equipment.
 - e. Noise- and vibration-control elements and systems.
 - 4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in the District Construction Manager's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services, and other utilities.
 - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site to District Construction Manager 10 days prior to start of work.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine surfaces, substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - 3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
 - 1. Description of the Work.
 - 2. List of detrimental conditions, including substrates.
 - 3. List of unacceptable installation tolerances.
 - 4. Recommended corrections.
- D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to local utility and District Construction Manager that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Section 01 31 00 "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify the District Construction Manager promptly.
- B. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- C. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect and project Inspector.

3.4 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.

- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.
- F. Tools and Equipment: Where possible, select tools or equipment that minimize production of excessive noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by the District Construction Manager.
 - 2. Allow for building movement, including thermal expansion and contraction.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- J. Hazardous Materials: Use only products, cleaners, and installation materials that are not considered hazardous.
- K. Underground Detectable Warning Tapes: Ensure that completed work provides fully functional underground detectable warning tapes per requirements specified in other Sections.

3.5 CUTTING AND PATCHING

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces and assemblies to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials, assemblies, and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 01 10 00 "Summary."
- F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.
- G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping.
 - 2. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Cut or form holes for penetrations accurately to allow for proper sealing. Temporarily cover openings when not in use.
 - 3. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 4. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 5. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
 - 6. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 - 7. Proceed with patching after construction operations requiring cutting are complete.
- H. Notify District Construction Manager 48 hours prior to closing openings. Allow Inspector to view conditions prior to closing.

- I. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
 - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
 - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
 - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition.
 - 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 - 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance. Replace ceiling tiles damaged by cutting and patching work.
 - 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- J. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.6 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
 - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 - 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
 - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
 - a. Use containers intended for holding waste materials of type to be stored.
 - 4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- B. Site: Maintain Project site free of waste materials and debris.

- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - 1. Remove liquid spills promptly.
 - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 01 74 19 "Construction Waste Management and Disposal."
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.7 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: Comply with qualification requirements in Section 01 40 02 "Quality Requirements, Contractor Laboratory."

3.8 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.
- C. Comply with manufacturer's written instructions for temperature and relative humidity.

3.9 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.
 - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION

SECTION 017419

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Salvaging nonhazardous demolition, and construction waste.
 - 2. Recycling nonhazardous demolition waste.
 - 3. Disposing of nonhazardous demolition, and construction waste.

1.2 DEFINITIONS

- A. Construction Waste: Building, structure, and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building, structure, and site improvement materials resulting from demolition operations.
- C. Disposal: Removal of demolition or construction waste and subsequent salvage, sale, recycling, or deposit in landfill, incinerator acceptable to authorities having jurisdiction, or designated spoil areas on Owner's property.
- 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.

1.3 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition and construction waste becomes property of Contractor.

1.4 ACTION SUBMITTALS

- A. Waste Management Plan: Submit plan within 7 days of date established for the Notice to Proceed.

1.5 INFORMATIONAL SUBMITTALS

- A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Use Form CWM-7 for construction waste, and Form CWM-8 for demolition waste.
- B. 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.
- C. 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.
- D. Refrigerant Recovery: Comply with requirements in Section 02 41 19 "Selective Demolition" for refrigerant recovery submittals.

1.6 QUALITY ASSURANCE

- A. Waste Management Coordinator Qualifications: Experienced firm, or individual employed and assigned by General Contractor, with a record of successful waste management coordination of projects with similar requirements. Superintendent may serve as Waste Management Coordinator.
- B. Refrigerant Recovery Technician Qualifications: certified by EPA-approved certification program.
- C. Refrigerant Recovery Technician Qualifications: Comply with requirements in Section 02 41 19 "Selective Demolition."
- D. Regulatory Requirements: Comply with transportation and disposal regulations of authorities having jurisdiction.
- E. Waste Management Conference(s): Conduct conference(s) at Project site to comply with requirements in Section 01 31 00 "Project Management and Coordination." 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 each contractor and 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.

1.7 WASTE MANAGEMENT PLAN

- A. General: Develop a waste management plan according to requirements in this Section and the City of San Diego. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.

PART 2 PRODUCTS

2.1 RECYCLING RECEIVERS AND PROCESSORS

- A. Subject to compliance with requirements, available recycling receivers and processors shall be as approved by the National City and the County of San Diego.

2.2 PERFORMANCE REQUIREMENTS

- A. General: Achieve end-of-Project rates for salvage/recycling of 65 percent by weight of total nonhazardous solid waste generated by the Work. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials.

PART 3 EXECUTION

3.1 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 operation, termination, and removal requirements in Section 01 50 00 "Temporary Facilities and Controls."
- B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.
 - 1. Distribute waste management plan to everyone concerned within three 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.

- C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged and recycled.
 - 2. Comply with Section 01 50 00 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 SALVAGING DEMOLITION WASTE

- A. Comply with requirements in Section 02 41 19 "Selective Demolition" for salvaging demolition waste.
- B. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
 - 3. Store items in a secure area until installation.
 - 4. Protect items from damage during transport and storage.
 - 5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.
- C. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
 - 3. Store items in a secure area until delivery to Owner.
 - 4. Transport items to Owner's storage area on-site.
 - 5. Protect items from damage during transport and storage.
- D. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.

3.3 RECYCLING, DEMOLITION AND CONSTRUCTION WASTE, GENERAL

- 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 be shared equally by Owner and Contractor.
- C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.

- D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.
 - 1. Provide appropriately marked containers or bins for controlling recyclable waste until 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 from Owner's property and transport to recycling receiver or processor as often as required to prevent overfilling bins.

3.4 DISPOSAL OF WASTE

- A. General: Except for items or materials to be salvaged or recycled, 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.

END OF SECTION

SECTION 017700
CLOSEOUT PROCEDURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including:
 - 1. Substantial Completion procedures.
 - 2. Final completion procedures.
 - 3. List of Incomplete Items.
 - 4. Warranties.
 - 5. Final cleaning.
 - 6. Repair of the Work.
- B. Related Requirements:
 - 1. Section 01 73 00 "Execution" for progress cleaning of Project site.
 - 2. Section 01 78 23 "Operation and Maintenance Data" for additional operation and maintenance manual requirements.
 - 3. Section 01 78 39 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
 - 4. Section 01 79 00 "Demonstration and Training" for requirements to train the Owner's maintenance personnel to adjust, operate, and maintain products, equipment, and systems.

1.3 DEFINITIONS

- A. List of Incomplete Items: Contractor-prepared list of items to be completed or corrected, prepared for the Architect's use prior to Architect's inspection, to determine if the Work is substantially complete.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of cleaning agent.
- B. Contractor's List of Incomplete Items.

- C. Certified List of Incomplete Items: Final submittal at final completion.

1.5 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.
- C. Certificate of Construction-Phase Commissioning Process Completion.
- D. Field Report: For pest control inspection.
- E. Site Waste Management Summary: Final summary of construction waste management data as specified in Section 01 74 19 "Construction Waste Management and Disposal."

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.7 SUBSTANTIAL COMPLETION PROCEDURES

- A. Submittals Prior to Substantial Completion: Complete the following prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's "punch list"), indicating the value of each item on the list and reasons why the Work is incomplete.
 - 2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
 - 3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by District Construction Manager. Label with manufacturer's name and model number where applicable.
 - a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain District Construction Manager's signature for receipt of submittals.
 - 5. Submit testing, adjusting, and balancing records.
 - 6. Submit changeover information related to District's occupancy, use, operation, and maintenance.

- B. Procedures Prior to Substantial Completion: Complete the following prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - 1. Advise District that site is ready for final changeover of permanent locks. District will make final changeover.
 - 2. Complete startup and testing of systems and equipment.
 - 3. Perform preventive maintenance on equipment used prior to Substantial Completion.
 - 4. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 - 5. Complete final cleaning requirements.
 - 6. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- C. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of seven days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect and Project Inspector will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
 - 1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 - 2. Results of completed inspection will form the basis of requirements for final completion.

1.8 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
 - 1. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list). Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 - a. Certified:
 - 1) Signed and dated by person with authority to represent Contractor.
 - 2) Subsequent to 1) above, signed and dated by person with authority to represent Architect.
 - 2. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 - 3. Instruct District's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 01 79 00 "Demonstration and Training."
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of seven days prior to date the work will be completed and ready for final

inspection and tests. On receipt of request, Project Inspector will either proceed with inspection or notify Contractor of unfulfilled requirements.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.9 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
 1. Organize list of spaces in sequential order, starting with exterior areas first.
 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
 3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Page number.
 4. Submit List of Incomplete items in the following format:
 - a. PDF electronic file.

1.10 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
 4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- C. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
 - 1. Use cleaning products that comply with San Diego Air Pollution Control District allowable VOC levels.

PART 3 EXECUTION

3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are not planted, mulched, or paved, to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - g. Sweep concrete floors broom clean in unoccupied spaces.
 - h. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
 - i. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.

- j. Remove labels that are not permanent.
 - k. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - l. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - m. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - n. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
 - o. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
 - p. Leave Project clean and ready for occupancy.
- C. Construction Waste Disposal: Comply with waste disposal requirements in Section 01 74 19 "Construction Waste Management and Disposal."

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
 - 1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
 - 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration.
 - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
 - 3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
 - 4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION

SECTION 017823

OPERATION AND MAINTENANCE DATA

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Systems and equipment operation manuals.
 - 2. Systems and equipment maintenance manuals.
- B. Related Requirements:
 - 1. Section 01 33 00 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.

1.3 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

- A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
 - 1. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Architect and District Construction Manager will comment on whether general scope and content of manual are acceptable.

- C. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect and District will return copy with comments.
 - 1. Correct or revise each manual to comply with Architect's and District's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's and District's comments and prior to commencing demonstration and training.
- D. Delivery Media: Submit operation and maintenance manuals to District Construction Manager in the following media:
 - 1. Submit by uploading to web-based project software site. Enable reviewer comments on draft submittals.

1.5 FORMAT OF OPERATION AND MAINTENANCE MANUALS

- A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
 - 1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 - 2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

1.6 COMMON REQUIREMENTS FOR OPERATION, AND MAINTENANCE MANUALS

- A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 - 1. Title page.
 - 2. Table of contents.
 - 3. Manual contents.
- B. Title Page: Include the following information:
 - 1. Subject matter included in manual.
 - 2. Name and address of Project.
 - 3. Name and address of District.
 - 4. Date of submittal.
 - 5. Name and contact information for Contractor.
 - 6. Name and contact information for District Construction Manager.
 - 7. Name and contact information for Architect.
 - 8. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
 - 9. Cross-reference to related systems in other operation and maintenance manuals.

- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
 - 1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."
- F. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
 - 1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
- G. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
 - 1. Do not use original project record documents as part of operation and maintenance manuals.

1.7 SYSTEMS AND EQUIPMENT OPERATION MANUALS

- A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.
 - 1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 - 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by District's operating personnel.

- B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
 - 1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 - 2. Performance and design criteria if Contractor has delegated design responsibility.
 - 3. Operating standards.
 - 4. Operating procedures.
 - 5. Operating logs.
 - 6. Wiring diagrams.
 - 7. Control diagrams.
 - 8. Piped system diagrams.
 - 9. Precautions against improper use.
 - 10. License requirements including inspection and renewal dates.
- C. Descriptions: Include the following:
 - 1. Product name and model number. Use designations for products indicated on Contract Documents.
 - 2. Manufacturer's name.
 - 3. Equipment identification with serial number of each component.
 - 4. Equipment function.
 - 5. Operating characteristics.
 - 6. Limiting conditions.
 - 7. Performance curves.
 - 8. Engineering data and tests.
 - 9. Complete nomenclature and number of replacement parts.
- D. Operating Procedures: Include the following, as applicable:
 - 1. Startup procedures.
 - 2. Equipment or system break-in procedures.
 - 3. Routine and normal operating instructions.
 - 4. Regulation and control procedures.
 - 5. Instructions on stopping.
 - 6. Normal shutdown instructions.
 - 7. Seasonal and weekend operating instructions.
 - 8. Required sequences for electric or electronic systems.
 - 9. Special operating instructions and procedures.
- E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- F. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

1.8 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive

maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by District's operating personnel.
- B. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranties and bonds as described below.
- C. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- D. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:
1. Standard maintenance instructions and bulletins; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
 - a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 3. Identification and nomenclature of parts and components.
 4. List of items recommended to be stocked as spare parts.
- E. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
1. Test and inspection instructions.
 2. Troubleshooting guide.
 3. Precautions against improper maintenance.
 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 5. Aligning, adjusting, and checking instructions.
 6. Demonstration and training video recording, if available.

- F. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
 - 1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
 - 2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
- G. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- H. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- I. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 017839

PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
 - 1. Record Drawings.
 - 2. Record Specifications.
 - 3. Record Product Data.
 - 4. Miscellaneous record submittals.
- B. Related Requirements:
 - 1. Section 01 77 00 "Closeout Procedures" for general closeout procedures.
 - 2. Section 01 78 23 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.3 CLOSEOUT SUBMITTALS

- A. Record Drawings: Submit one electronic copy of marked-up record prints.
- B. Record Specifications: Submit one electronic copy of marked-up record specifications, including addenda and contract modifications.
- C. Record Product Data: Submit one electronic copy of each submittal.
 - 1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.
- D. Construction Waste Management Plan: Submit one electronic copy of construction waste management plan and a final summary of construction waste management data as specified in Section 01 74 19 "Construction Waste Management and Disposal."

1.4 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued, depicting the current status of the Work.
 - 1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an acceptable drawing technique.
 - c. Record data as soon as possible after obtaining it.
 - d. Record and check the markup before enclosing concealed installations.
 - 2. Content: Types of items requiring marking include:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Depths of foundations.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Duct size and routing.
 - i. Locations of concealed internal utilities.
 - j. Changes made by Change Order, Construction Change Directive, or Field Work Order.
 - k. Changes made following Architect's written orders.
 - l. Details not on the original Contract Drawings.
 - m. Field records for variable and concealed conditions.
 - n. Record information on the Work that is shown only schematically.
 - o. Changes made by responses to Requests for Information (RFI's).
 - 3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
 - 4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 - 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
 - 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, allowances applied, and similar identification, where applicable.

1.5 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Note related Change Orders where applicable.

1.6 RECORD PRODUCT DATA

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes.
- B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Note related Change Orders where applicable.

1.7 RECORDING AND MAINTENANCE

- A. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's, Project Inspector's, and District Construction Manager's reference during normal working hours.
- B. Review Record Documents weekly with Project Inspector. Indicate to Project Inspector the items incorporated in Project Record Documents concurrent with progress of the Work, including modifications, concealed conditions, field changes, product selections, and other notations incorporated.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 017900

DEMONSTRATION AND TRAINING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for instructing District's personnel, including the following:
 - 1. Demonstration of operation of systems, subsystems, and equipment.
 - 2. Training in operation and maintenance of systems, subsystems, and equipment.
- B. Related Requirements:
 - 1. Divisions 2 through 33 Sections for specific requirements for demonstration and training of products and systems in those Sections.

1.3 INFORMATIONAL SUBMITTALS

- A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
 - 1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products.
- B. Qualification Data: For facilitator.
- C. Attendance Record: For each training module, submit list of participants and length of instruction time.

1.4 CLOSEOUT SUBMITTALS

- A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module.
 - 1. Identification: On each copy, provide an applied label with the following information:
 - a. Name of Project.
 - b. Name of Architect.

- c. Name of District Construction Manager.
 - d. Name of Contractor.
 - e. Names of Contractor Construction Manager, Project Manager, and Superintendent.
2. At completion of training, submit complete training manual(s) for District's use in PDF electronic file format.

1.5 QUALITY ASSURANCE

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.
- B. Instructor Qualifications: A factory-authorized service representative experienced in operation and maintenance procedures and training.
- C. Pre-instruction Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 "Project Management and Coordination." Review methods and procedures related to demonstration and training including:
 - 1. Inspect and discuss locations and other facilities required for instruction.
 - 2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
 - 3. Review required content of instruction.
 - 4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.6 COORDINATION

- A. Coordinate instruction schedule with District's operations. Adjust schedule as required to minimize disrupting District's operations and to ensure availability of District's personnel.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data have been reviewed by Architect.

1.7 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:
 - 1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.
 - b. Performance and design criteria if Contractor is delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
 - 2. Documentation: Review the following items in detail:
 - a. Emergency manuals.
 - b. Systems and equipment operation manuals.
 - c. Systems and equipment maintenance manuals.
 - d. Product maintenance manuals.
 - e. Project record documents.
 - f. Identification systems.
 - g. Warranties and bonds.
 - h. Maintenance service agreements and similar continuing commitments.
 - 3. Emergencies: Include the following, as applicable:
 - a. Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
 - 4. Operations: Include the following, as applicable:
 - a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - l. Required sequences for electric or electronic systems.

- m. Special operating instructions and procedures.
- 5. Adjustments: Include the following:
 - a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.
- 6. Troubleshooting: Include the following:
 - a. Diagnostic instructions.
 - b. Test and inspection procedures.
- 7. Maintenance: Include the following:
 - a. Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Procedures for routine cleaning.
 - e. Procedures for preventive maintenance.
 - f. Procedures for routine maintenance.
 - g. Instruction on use of special tools.
- 8. Repairs: Include the following:
 - a. Diagnosis instructions.
 - b. Repair instructions.
 - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - d. Instructions for identifying parts and components.
 - e. Review of spare parts needed for operation and maintenance.

1.8 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 01 78 23 "Operation and Maintenance Data."
- B. Set up instructional equipment at instruction location.

1.9 INSTRUCTION

- A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and District for number of participants, instruction times, and location.
- B. Engage qualified instructors to instruct District's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
 - 1. District will furnish a representative to describe District's operational philosophy.
 - 2. District will furnish Contractor with names and positions of participants.

- C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide instruction addressing seasonal operations variations.
 - 1. Schedule training with District, through District Construction Manager, with at least seven days' advance notice.
- D. Training Location: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. When necessary, provide classroom training.
 - 1. Webinar training is not acceptable.
- E. Reference Material: Conduct training using final operation and maintenance data submittals.
- F. Cleanup: Collect used and leftover educational materials and give to District. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 024119

SELECTIVE DEMOLITION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Demolition and removal of selected portions of building or structure.
 - 2. Salvage of existing items to be reused or recycled.
- B. Related Requirements:
 - 1. Section 01 10 00 "Summary" for use of the premises, phasing requirements, interim housing considerations, coordination with occupants, etc.
 - 2. Section 01 32 04 "Construction Progress Documentation".
 - 3. Section 01 32 33 "Photographic Documentation" for preconstruction photographs taken before building demolition.
 - 4. Section 01 50 00 "Temporary Facilities and Controls" for temporary construction and environmental protection measures for selective demolition operations.
 - 5. Section 01 74 19 "Construction Waste Management and Disposal".
 - 6. Section 01 73 00 "Execution" for cutting and patching procedures.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.
- B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and deliver to the District ready for reuse.
- C. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.
- E. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.5 PRE-INSTALLATION MEETINGS

- A. Pre-demolition Conference: Conduct conference at Project site.
 - 1. Inspect and discuss condition of construction to be selectively demolished.
 - 2. Review structural load limitations of existing structure.
 - 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
 - 5. Review areas where existing construction is to remain and requires protection.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For refrigerant recovery technician.
- B. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control and for noise control. Indicate proposed locations and construction of barriers.
- C. Pre-demolition Photographs or Video: Show existing conditions of adjoining construction, including finish surfaces that might be misconstrued as damage caused by demolition operations. Comply with Section 01 32 33 "Photographic Documentation." Submit before Work begins.
- D. 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.

1.7 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.
- B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.8 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

1.9 FIELD CONDITIONS

- A. The District will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so the District operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by the District as far as practical.
- C. Notify the District Construction Manager of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. If suspected hazardous materials are encountered, do not disturb; immediately notify the District Construction Manager.
- E. Termite Infestation: It is not expected that active termite infestations will be encountered in the Work.
 - 1. If active termite infestations are encountered, do not disturb; immediately notify the District Construction Manager who will have the infestations investigated. Allow three days when no work will be permitted on those portions of the Work suspected of having active termite infestations.
- F. Storage or sale of removed items or materials on-site is not permitted.
- G. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

1.10 COORDINATION

- A. Arrange selective demolition schedule so as not to interfere with the District operations.

PART 2 PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI / ASSE A10.6 and NFPA 241.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by the District. The District does not guarantee that existing conditions are same as those indicated in Project Record Documents.
- C. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
 - 1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
- D. Survey of Existing Conditions: Record existing conditions by use of measured drawings, preconstruction photographs or video.
 - 1. Comply with requirements specified in Section 01 32 33 "Photographic Documentation."
 - 2. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.
- E. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to District Construction Manager.

3.2 PREPARATION

- A. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Arrange to shut off utilities with utility companies.
 - 2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.

3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.
 - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
 - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
 - e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to the District.
 - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
 - g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.
 - h. Fire-Suppression Systems: Provide temporary fire protection per Contractor's approved Emergency Safety and Health (ES&H) Execution Plan.
4. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
 - a. Where entire wall is to be removed, existing services/systems may be removed with removal of the wall.

3.4 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
 5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 01 50 00 "Temporary Facilities and Controls."
- B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
 1. Strengthen or add new supports when required during progress of selective demolition.
- C. Remove temporary barricades and protections where hazards no longer exist.

3.5 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 - 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
 - 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations.
 - 5. Maintain active fire watch and portable fire-suppression devices during flame-cutting operations.
 - 6. Maintain active fire watch after flame-cutting operations per Contractor's approved Emergency Safety and Health (ES&H) Execution Plan.
 - 7. Maintain adequate ventilation when using cutting torches.
 - 8. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 - 9. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 - 10. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 - 11. Dispose of demolished items and materials promptly. Comply with requirements in Section 01 74 19 "Construction Waste Management and Disposal."
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- C. Removed and Salvaged Items:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 3. Store items in a secure area until delivery to the District.
 - 4. Transport items to the District storage area designated by District.
 - 5. Protect items from damage during transport and storage.
- D. Removed and Reinstalled Items: Including storage racks, casework and air curtain, and as indicated on Drawings.
 - 1. Clean and repair items to functional condition adequate for intended reuse.
 - 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 - 3. Protect items from damage during transport and storage.
 - 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

- E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by District Construction Manager, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.6 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, and then remove concrete between saw cuts.
- B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.
- C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.
- D. Air-Conditioning Equipment: Remove equipment without releasing refrigerants. Cap all ducts to remain, if new equipment is not immediately installed.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 - 4. Comply with requirements specified in Section 01 74 19 "Construction Waste Management and Disposal."
- B. Burning: Do not burn demolished materials.

3.8 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION

SECTION 072100
THERMAL INSULATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Foam board insulation.
 - 2. Vapor Barrier.
 - 3. Accessories.

1.2 ADMINISTRATIVE REQUIREMENTS

- A. Coordination Procedures:
 - 1. Coordinate Work results of this section with Concrete Work.

1.3 ACTION SUBMITTALS

- A. Product Data.

1.4 INFORMATIONAL SUBMITTALS

- A. Test and Evaluation Reports: Manufacturer or Independent testing agency test results showing:
 - 1. Thermal performance.
 - 2. Surface burning characteristics.
 - 3. Combustibility.
 - 4. Density.

1.5 QUALITY ASSURANCE

- A. Qualifications:
- B. Certifications: From Contractor for specified performance.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Storage and Handling Requirements:
 - 1. Store insulation in dry location, protected from elements.
 - 2. Handle insulation to prevent soiling and damage.
 - 3. Foam Board: Protect combustible insulation against ignition.

PART 2 PRODUCTS

2.1 FOAM BOARD INSULATION

- A. Glass-Fiber-Mat Faced Polyisocyanurate Boardreinforced polymneric facers on each side: ASTM C1289, Type II.
 - 1. Manufacturers and Products:
 - a. Rmax by Sika Corp.; Rmax Below Grade.
 - b. Or approved equal.
 - 2. Class 1 and 2, Grade 2, 20 p.
 - 3. Density: 2.0 psf per ASTM D1622.
 - 4. R value: 40.0 per 6 inches of thickness.

2.2 INSULATION ATTACHMENT

- A. Insulation Adhesives: Products compatible with insulation and substrates, capable of securing insulation to substrate without damaging insulation or substrates.

2.3 VAPOR BARRIER

- A. Vapor Barrier: Visqueen vapor barrier, 6 mil thick.

2.4 ACCESSORIES

- A. Building Felt: ASTM D 226/D 226M, asphalt-saturated organic filts, nonperforated.
 - 1. Type: Type I.
 - 2. Weight: 15 pound.
- B. Sealer and Dampproofing: Asphalt Emulsion comprised of selected asphalt, emulsified with bentonite clay and water, containing no solvents, and meeting the requirements of ASTM C 1227-95, Type III, Class I and ASTM D1187-97, Type I.

PART 3 EXECUTION

3.1 PREPARATION

- A. Clean substrates and remove projections and appurtenances that may damage insulation or inhibit adhesion.

3.2 INSTALLATION - GENERAL

- A. Extend insulation to cover entire area shown to be insulated.
- B. Insulate tightly around obstructions and penetrations.

- C. Foam Board Insulation: Protect from extended sunlight exposure beyond manufacturers stated limits.

3.3 INSTALLATION OF BELOW-SLAB INSULATION

- A. Horizontal Surfaces: Loosely lay insulation, butt units tightly. Stagger end joints.
 - 1. Insulation Coverage: Entire surface.
 - 2. Install Vapor Barrier, Building Felt and Dampproofing/Sealer as indicated on Drawings and as recommended by product manufacturers.

3.4 PROTECTION

- A. Protect insulation from damage due to weather, ultraviolet radiation, physical abuse, and other causes. Provide temporary coverings or enclosures until permanent construction is completed.

END OF SECTION

SECTION 220719
PLUMBING PIPING INSULATION

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 insulating the following plumbing piping services:
 - 1. Domestic hot-water piping.
 - 2. Domestic recirculating hot-water piping.
 - 3. Supplies and drains for handicap-accessible lavatories and sinks.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include thermal conductivity, water-vapor permeance thickness, and jackets (both factory- and field-applied, if any).
- B. LEED Submittals:
 - 1. Product Data for Credit IEQ 4.1: For adhesives and sealants, documentation including printed statement of VOC content and chemical components.
- C. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
 - 1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.
 - 2. Detail attachment and covering of heat tracing inside insulation.
 - 3. Detail insulation application at pipe expansion joints for each type of insulation.
 - 4. Detail insulation application at elbows, fittings, flanges, valves, and specialties for each type of insulation.
 - 5. Detail removable insulation at piping specialties, equipment connections, and access panels.
 - 6. Detail application of field-applied jackets.
 - 7. Detail application at linkages of control devices.
- D. Samples: For each type of insulation and jacket indicated. Identify each Sample, describing product and intended use. Sample sizes are as follows:

1. Preformed Pipe Insulation Materials: 12 inches long by NPS 2.
2. Jacket Materials for Pipe: 12 inches long by NPS 2.
3. Sheet Jacket Materials: 12 inches square.
4. Manufacturer's Color Charts: For products where color is specified, show the full range of colors available for each type of finish material.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets, with requirements indicated. Include dates of tests and test methods employed.
- C. Field quality-control reports.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.
- B. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84 by a testing agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.
- C. with appropriate markings of applicable testing agency.
 1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
 2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.
- D. Comply with the following applicable standards and other requirements specified for miscellaneous components:
 1. Supply and Drain Protective Shielding Guards: ICC A117.1.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

1.7 COORDINATION

- A. Coordinate clearance requirements with piping Installer for piping insulation application. Before preparing piping Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.
- B. Coordinate installation and testing of heat tracing.

1.8 SCHEDULING

- A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.
- B. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

- A. Comply with requirements in "Piping Insulation Schedule, General," "Indoor Piping Insulation Schedule," "Outdoor, Aboveground Piping Insulation Schedule," and "Outdoor, Underground Piping Insulation Schedule" articles for where insulating materials shall be applied.
- B. Products shall not contain asbestos, lead, mercury, or mercury compounds.
- C. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.
- D. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.
- E. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.
- F. Mineral-Fiber Blanket Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 553, Type II and ASTM C 1290, Type I. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. CertainTeed Corp.; SoftTouch Duct Wrap.
 - b. Johns Manville; Microlite.
 - c. Knauf Insulation; Friendly Feel Duct Wrap.
 - d. Manson Insulation Inc.; Alley Wrap.

e. Owens Corning; SOFTR All-Service Duct Wrap.

G. Mineral-Fiber, Preformed Pipe Insulation:

1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Fibrex Insulations Inc.; Coreplus 1200.
 - b. Johns Manville; Micro-Lok.
 - c. Knauf Insulation; 1000-Degree Pipe Insulation.
 - d. Manson Insulation Inc.; Alley-K.
Owens Corning; Fiberglas Pipe Insulation.
2. Type I, 850 Deg F (454 Deg C) Materials: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 547, Type I, Grade A, with factory-applied ASJ-SSL. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

2.2 ADHESIVES

A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated, unless otherwise indicated.

1.

B. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.

1. Products: Subject to compliance with requirements, provide one of the following
 - a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-127.
 - b. Eagle Bridges - Marathon Industries; 225.
 - c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 85-60/85-70.
 - d. Mon-Eco Industries, Inc.; 22-25.
2. For indoor applications, adhesive shall have a VOC content of 80 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

C. ASJ Adhesive, and FSK Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.

1. Products: Subject to compliance with requirements, provide one of the following
 - a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-82.
 - b. Eagle Bridges - Marathon Industries; 225.
 - c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 85-20.
 - d. Mon-Eco Industries, Inc.; 22-25.
2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.3 MASTICS

A. Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-PRF-19565C, Type II.

1. For indoor applications, use mastics that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- B. Vapor-Barrier Mastic: Water based; suitable for indoor use on below-ambient services.
 1. Products: Subject to compliance with requirements, provide one of the following
 - a. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 30-80/30-90.
 - b. Vimasco Corporation; 749.
 2. Water-Vapor Permeance: ASTM E 96/E 96M, Procedure B, 0.013 perm at 43-mil dry film thickness.
 3. Service Temperature Range: Minus 20 to plus 180 deg F.
 4. Solids Content: ASTM D 1644, 58 percent by volume and 70 percent by weight.
 5. Color: White.
- C. Vapor-Barrier Mastic: Solvent based; suitable for indoor use on below-ambient services.
 1. Products: Subject to compliance with requirements, provide one of the following
 - a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-30.
 - b. Eagle Bridges - Marathon Industries; 501.
 - c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 30-35.
 - d. Mon-Eco Industries, Inc.; 55-10.
 2. Water-Vapor Permeance: ASTM F 1249, 0.05 perm at 35-mil dry film thickness.
 3. Service Temperature Range: 0 to 180 deg F.
 4. Solids Content: ASTM D 1644, 44 percent by volume and 62 percent by weight.
 5. Color: White.
- D. Vapor-Barrier Mastic: Solvent based; suitable for outdoor use on below-ambient services.
 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; Encacel.
 - b. Eagle Bridges - Marathon Industries; 570.
 - c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 60-95/60-96.
 2. Water-Vapor Permeance: ASTM F 1249, 0.05 perm at 30-mil dry film thickness.
 3. Service Temperature Range: Minus 50 to plus 220 deg F.
 4. Solids Content: ASTM D 1644, 33 percent by volume and 46 percent by weight.
 5. Color: White.
- E. Breather Mastic: Water based; suitable for indoor and outdoor use on above-ambient services.
 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-10.
 - b. Eagle Bridges - Marathon Industries; 550.
 - c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 46-50.

- d. Mon-Eco Industries, Inc.; 55-50.
Vimasco Corporation; WC-1/WC-5.
2. Water-Vapor Permeance: ASTM F 1249, 1.8 perms at 0.0625-inch dry film thickness.
3. Service Temperature Range: Minus 20 to plus 180 deg F.
4. Solids Content: 60 percent by volume and 66 percent by weight.
5. Color: White.

2.4 LAGGING ADHESIVES

- A. Description: Comply with MIL-A-3316C, Class I, Grade A, and shall be compatible with insulation materials, jackets, and substrates.
 1. For indoor applications, use lagging adhesives that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 2. Products: Subject to compliance with requirements, provide one of the following:
 - a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-50 AHV2.
 - b. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 30-36.
 - c. Vimasco Corporation; 713 and 714.
 3. Fire-resistant, water-based lagging adhesive and coating for use indoors to adhere fire-resistant lagging cloths over pipe insulation.
 4. Service Temperature Range: 0 to plus 180 deg F.
 5. Color: White.

2.5 SEALANTS

- A. Joint Sealants:
- B. FSK and Metal Jacket Flashing Sealants:
 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-76.
 - b. Eagle Bridges - Marathon Industries; 405.
 - c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 95-44.
 - d. Mon-Eco Industries, Inc.; 44-05.
 2. Materials shall be compatible with insulation materials, jackets, and substrates.
 3. Fire- and water-resistant, flexible, elastomeric sealant.
 4. Service Temperature Range: Minus 40 to plus 250 deg F.
 5. Color: Aluminum.
 6. For indoor applications, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- C. ASJ Flashing Sealants, and Vinyl, PVDC, and PVC Jacket Flashing Sealants:
 1. Products: Subject to compliance with requirements, provide one of the following:

- a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-76.
2. Materials shall be compatible with insulation materials, jackets, and substrates.
3. Fire- and water-resistant, flexible, elastomeric sealant.
4. Service Temperature Range: Minus 40 to plus 250 deg F.
5. Color: White.
6. For indoor applications, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.6 FACTORY-APPLIED JACKETS

- A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:
 1. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C 1136, Type I.
 2. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip; complying with ASTM C 1136, Type I.
 3. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing; complying with ASTM C 1136, Type II.

2.7 FIELD-APPLIED FABRIC-REINFORCING MESH

- A. Woven Glass-Fiber Fabric: Approximately 2 oz./sq. yd. with a thread count of 10 strands by 10 strands/sq. in. for covering pipe and pipe fittings.
 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; Chil-Glas Number 10.
- B. Woven Polyester Fabric: Approximately 1 oz./sq. yd. with a thread count of 10 strands by 10 strands/sq. in., in a Leno weave, for pipe.
 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; Mast-A-Fab.
 - b. Vimasco Corporation; Elastafab 894.

2.8 FIELD-APPLIED CLOTHS

- A. Woven Glass-Fiber Fabric: Comply with MIL-C-20079H, Type I, plain weave, and presized a minimum of 8 oz./sq. yd.
 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Alpha Associates, Inc.; Alpha-Maritex 84215 and 84217/9485RW, Luben 59.

2.9 FIELD-APPLIED JACKETS

- A. Field-applied jackets shall comply with ASTM C 921, Type I, unless otherwise indicated.
- B. PVC Jacket: High-impact-resistant, UV-resistant PVC complying with ASTM D 1784, Class 16354-C; thickness as scheduled; roll stock ready for shop or field cutting and forming. Thickness is indicated in field-applied jacket schedules.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Johns Manville; Zeston.
 - b. P.I.C. Plastics, Inc.; FG Series.
 - c. Proto Corporation; LoSmoke.
 - d. Speedline Corporation; SmokeSafe..
 - 2. Adhesive: As recommended by jacket material manufacturer.
 - 3. Color: White.
 - 4. Factory-fabricated fitting covers to match jacket if available; otherwise, field fabricate.
 - a. Shapes: 45- and 90-degree, short- and long-radius elbows, tees, valves, flanges, unions, reducers, end caps, soil-pipe hubs, traps, mechanical joints, and P-trap and supply covers for lavatories.
- C. Metal Jacket:
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; Metal Jacketing Systems.
 - b. ITW Insulation Systems; Aluminum and Stainless Steel Jacketing.
 - c. RPR Products, Inc.; Insul-Mate.
 - 2. Aluminum Jacket: Comply with ASTM B 209, Alloy 3003, 3005, 3105, or 5005, Temper H-14.
 - a. Factory cut and rolled to size.
 - b. Finish and thickness are indicated in field-applied jacket schedules.
 - c. Moisture Barrier for Indoor Applications: 1-mil- thick, heat-bonded polyethylene and kraft paper.
 - d. Moisture Barrier for Outdoor Applications: 3-mil- thick, heat-bonded polyethylene and kraft paper.
 - e. Factory-Fabricated Fitting Covers:
 - 1) Same material, finish, and thickness as jacket.
 - 2) Preformed 2-piece or gore, 45- and 90-degree, short- and long-radius elbows.
 - 3) Tee covers.
 - 4) Flange and union covers.
 - 5) End caps.
 - 6) Beveled collars.
 - 7) Valve covers.
 - 8) Field fabricate fitting covers only if factory-fabricated fitting covers are not available.

2.10 TAPES

- A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. ABI, Ideal Tape Division; 428 AWF ASJ.
 - b. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0836.
 - c. Compac Corporation; 104 and 105.
 - d. Venture Tape; 1540 CW Plus, 1542 CW Plus, and 1542 CW Plus/SQ.
 - 2. Width: 3 inches.
 - 3. Thickness: 11.5 mils.
 - 4. Adhesion: 90 ounces force/inch in width.
 - 5. Elongation: 2 percent.
 - 6. Tensile Strength: 40 lbf/inch in width.
 - 7. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.
- B. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C 1136.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. ABI, Ideal Tape Division; 491 AWF FSK.
 - b. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0827.
 - c. Compac Corporation; 110 and 111.
 - d. Venture Tape; 1525 CW NT, 1528 CW, and 1528 CW/SQ.
 - 2. Width: 3 inches.
 - 3. Thickness: 6.5 mils.
 - 4. Adhesion: 90 ounces force/inch in width.
 - 5. Elongation: 2 percent.
 - 6. Tensile Strength: 40 lbf/inch in width.
 - 7. FSK Tape Disks and Squares: Precut disks or squares of FSK tape.
- C. Aluminum-Foil Tape: Vapor-retarder tape with acrylic adhesive.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. ABI, Ideal Tape Division; 488 AWF.
 - b. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0800.
 - c. Compac Corporation; 120.
 - d. Venture Tape; 3520 CW.
 - 2. Width: 2 inches.
 - 3. Thickness: 3.7 mils.
 - 4. Adhesion: 100 ounces force/inch in width.
 - 5. Elongation: 5 percent.
 - 6. Tensile Strength: 34 lbf/inch in width.

2.11 SECUREMENTS

- A. Bands:
 - 1. Products: Subject to compliance with requirements, provide one of the following:

- a. ITW Insulation Systems; Gerrard Strapping and Seals.
 - b. RPR Products, Inc.; Insul-Mate Strapping and Seals.
 - 2. Stainless Steel: ASTM A 167 or ASTM A 240/A 240M, Type 304 or Type 316; 0.015 inch thick, 1/2 inch or 3/4 inch wide with wing seal.
 - 3. Aluminum: ASTM B 209, Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch thick, 1/2 inch or 3/4 inch wide with wing seal.
- B. Staples: Outward-clinching insulation staples, nominal 3/4-inch- wide, stainless steel or Monel.
- C. Wire: 0.062-inch soft-annealed, stainless steel.
- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. C & F Wire.

2.12 PROTECTIVE SHIELDING GUARDS

- A. Protective Shielding Pipe Covers:
- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Plumberex.
 - b. Truebro; a brand of IPS Corporation.
 - 2. Description: Manufactured plastic wraps for covering plumbing fixture hot-water supply and trap and drain piping. Comply with Americans with Disabilities Act (ADA) requirements.
- B. Protective Shielding Piping Enclosures:
- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Truebro; a brand of IPS Corporation.
 - b. Zurn Industries, LLC; Tubular Brass Plumbing Products Operation.
 - 2. Description: Manufactured plastic enclosure for covering plumbing fixture hot- and cold-water supplies and trap and drain piping. Comply with ADA requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.
- 1. Verify that systems to be insulated have been tested and are free of defects.
 - 2. Verify that surfaces to be insulated are clean and dry.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.
- B. I adversely affect insulation application.
- C. Surface Preparation: Clean and prepare surfaces to be insulated. Before insulating, apply a corrosion coating to insulated surfaces as follows:
 - 1. Stainless Steel: Coat 300 series stainless steel with an epoxy primer 5 mils thick and an epoxy finish 5 mils thick if operating in a temperature range between 140 and 300 deg F. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.
 - 2. Carbon Steel: Coat carbon steel operating at a service temperature between 32 and 300 deg F with an epoxy coating. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.
- D. Coordinate insulation installation with the trade installing heat tracing. Comply with requirements for heat tracing that apply to insulation.
- E. Mix insulating cements with clean potable water; if insulating cements are to be in contact with stainless-steel surfaces, use demineralized water.

3.3 GENERAL INSTALLATION REQUIREMENTS

- A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of piping including fittings, valves, and specialties.
- B. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of pipe system as specified in insulation system schedules.
- C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.
- D. Install insulation with longitudinal seams at top and bottom of horizontal runs.
- E. Install multiple layers of insulation with longitudinal and end seams staggered.
- F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.
- G. Keep insulation materials dry during application and finishing.
- H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.
- I. Install insulation with least number of joints practical.

- J. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.
 - 1. Install insulation continuously through hangers and around anchor attachments.
 - 2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
 - 3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
 - 4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.
- K. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.
- L. Install insulation with factory-applied jackets as follows:
 - 1. Draw jacket tight and smooth.
 - 2. Cover circumferential joints with 3-inch- wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.
 - 3. Overlap jacket longitudinal seams at least 1-1/2 inches. Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 2 inches o.c.
 - a. For below-ambient services, apply vapor-barrier mastic over staples.
 - 4. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.
 - 5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to pipe flanges and fittings.
- M. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.
- N. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.
- O. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.
- P. For above-ambient services, do not install insulation to the following:
 - 1. Vibration-control devices.
 - 2. Testing agency labels and stamps.
 - 3. Nameplates and data plates.
 - 4. Cleanouts.

3.4 PENETRATIONS

- A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.
 - 1. Seal penetrations with flashing sealant.
 - 2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
 - 3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches below top of roof flashing.
 - 4. Seal jacket to roof flashing with flashing sealant.
- B. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.
 - 1. Seal penetrations with flashing sealant.
 - 2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
 - 3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
 - 4. Seal jacket to wall flashing with flashing sealant.
- C. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.
- D. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions.
 - 1. Comply with requirements in Division 07 Section "Penetration Firestopping" for firestopping and fire-resistive joint sealers.
- E. Insulation Installation at Floor Penetrations:
 - 1. Pipe: Install insulation continuously through floor penetrations.
 - 2. Seal penetrations through fire-rated assemblies. Comply with requirements in Division 07 Section "Penetration Firestopping."

3.5 GENERAL PIPE INSULATION INSTALLATION

- A. Requirements in this article generally apply to all insulation materials except where more specific requirements are specified in various pipe insulation material installation articles.
- B. Insulation Installation on Fittings, Valves, Strainers, Flanges, and Unions:
 - 1. Install insulation over fittings, valves, strainers, flanges, unions, and other specialties with continuous thermal and vapor-retarder integrity unless otherwise indicated.
 - 2. Insulate pipe elbows using preformed fitting insulation or mitered fittings made from same material and density as adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Fill joints,

- seams, voids, and irregular surfaces with insulating cement finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.
3. m contour that is uniform with adjoining pipe insulation.
 4. Insulate tee fittings with preformed fitting insulation or sectional pipe insulation of same material and thickness as used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.
 5. Insulate valves using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.
 6. e insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.
 7. Insulate strainers using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, and irregular surfaces with insulating cement. Insulate strainers so strainer basket flange or plug can be easily removed and replaced without damaging the insulation and jacket. Provide a removable reusable insulation cover. For below-ambient services, provide a design that maintains vapor barrier.
 8. r. Fill joints, seams, and irregular surfaces with insulating cement. Insulate strainers so strainer basket flange or plug can be easily removed and replaced without damaging the insulation and jacket. Provide a removable reusable insulation cover. For below-ambient services, provide a design that maintains vapor barrier.
 9. reusable insulation cover. For below-ambient services, provide a design that maintains vapor barrier.
 10. Insulate flanges and unions using a section of oversized preformed pipe insulation. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker.
 11. Cover segmented insulated surfaces with a layer of finishing cement and coat with a mastic. Install vapor-barrier mastic for below-ambient services and a breather mastic for above-ambient services. Reinforce the mastic with fabric-reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.
 12. ll-shaped contour.
 13. For services not specified to receive a field-applied jacket except for flexible elastomeric and polyolefin, install fitted PVC cover over elbows, tees, strainers, valves, flanges, and unions. Terminate ends with PVC end caps. Tape PVC covers to adjoining insulation facing using PVC tape.
 14. Stencil or label the outside insulation jacket of each union with the word "union." Match size and color of pipe labels.
- C. Insulate instrument connections for thermometers, pressure gages, pressure temperature taps, test connections, flow meters, sensors, switches, and transmitters on insulated pipes. Shape insulation at these connections by tapering it to and around the connection with insulating cement and finish with finishing cement, mastic, and flashing sealant.

- D. Install removable insulation covers at locations indicated. Installation shall conform to the following:
1. Make removable flange and union insulation from sectional pipe insulation of same thickness as that on adjoining pipe. Install same insulation jacket as adjoining pipe insulation.
 2. When flange and union covers are made from sectional pipe insulation, extend insulation from flanges or union long at least two times the insulation thickness over adjacent pipe insulation on each side of flange or union. Secure flange cover in place with stainless-steel or aluminum bands. Select band material compatible with insulation and jacket.
 3. nsulation and jacket.
 4. Construct removable valve insulation covers in same manner as for flanges, except divide the two-part section on the vertical center line of valve body.
 5. When covers are made from block insulation, make two halves, each consisting of mitered blocks wired to stainless-steel fabric. Secure this wire frame, with its attached insulation, to flanges with tie wire. Extend insulation at least 2 inches over adjacent pipe insulation on each side of valve. Fill space between flange or union cover and pipe insulation with insulating cement. Finish cover assembly with insulating cement applied in two coats. After first coat is dry, apply and trowel second coat to a smooth finish.
 6. Unless a PVC jacket is indicated in field-applied jacket schedules, finish exposed surfaces with a metal jacket.

3.6 INSTALLATION OF MINERAL-FIBER INSULATION

- A. Insulation Installation on Straight Pipes and Tubes:
1. Secure each layer of preformed pipe insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
 2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
 3. For insulation with factory-applied jackets on above-ambient surfaces, secure laps with outward clinched staples at 6 inches o.c.
 4. For insulation with factory-applied jackets on below-ambient surfaces, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.
- B. Insulation Installation on Pipe Flanges:
1. Install preformed pipe insulation to outer diameter of pipe flange.
 2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
 3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with mineral-fiber blanket insulation.
 4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch, and seal joints with flashing sealant.
- C. Insulation Installation on Pipe Fittings and Elbows:
1. Install preformed sections of same material as straight segments of pipe insulation when available.

2. When preformed insulation elbows and fittings are not available, install mitered sections of pipe insulation, to a thickness equal to adjoining pipe insulation. Secure insulation materials with wire or bands.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed sections are not available, install mitered sections of pipe insulation to valve body.
3. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
4. Install insulation to flanges as specified for flange insulation application.

3.7 FIELD-APPLIED JACKET INSTALLATION

A. Where glass-cloth jackets are indicated, install directly over bare insulation or insulation with factory-applied jackets.

1. Draw jacket smooth and tight to surface with 2-inch overlap at seams and joints.
2. Embed glass cloth between two 0.062-inch- thick coats of lagging adhesive.
3. Completely encapsulate insulation with coating, leaving no exposed insulation.

B. Where FSK jackets are indicated, install as follows:

1. Draw jacket material smooth and tight.
2. Install lap or joint strips with same material as jacket.
3. Secure jacket to insulation with manufacturer's recommended adhesive.
4. Install jacket with 1-1/2-inch laps at longitudinal seams and 3-inch- wide joint strips at end joints.
5. Seal openings, punctures, and breaks in vapor-retarder jackets and exposed insulation with vapor-barrier mastic.

C. Where PVC jackets are indicated, install with 1-inch overlap at longitudinal seams and end joints. Seal with manufacturer's recommended adhesive.

1. Apply two continuous beads of adhesive to seams and joints, one bead under lap and the finish bead along seam and joint edge.

D. Where metal jackets are indicated, install with 2-inch overlap at longitudinal seams and end joints. Overlap longitudinal seams arranged to shed water. Seal end joints with weatherproof sealant recommended by insulation manufacturer. Secure jacket with stainless-steel bands 12 inches o.c. and at end joints.

3.8 FINISHES

A. Insulation with ASJ, Glass-Cloth, or Other Paintable Jacket Material: Paint jacket with paint system identified below and as specified in Division 09 painting Sections.

1. Flat Acrylic Finish: Two finish coats over a primer that is compatible with jacket material and finish coat paint. Add fungicidal agent to render fabric mildew proof.
 - a. Finish Coat Material: Interior, flat, latex-emulsion size.

- B. Flexible Elastomeric Thermal Insulation: After adhesive has fully cured, apply two coats of insulation manufacturer's recommended protective coating.
- C. Color: Final color as selected by Architect. Vary first and second coats to allow visual inspection of the completed Work.
- D. Do not field paint aluminum or stainless-steel jackets.

3.9 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Perform tests and inspections.
- C. Tests and Inspections:
 - 1. Inspect pipe, fittings, strainers, and valves, randomly selected by Architect, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to three locations of straight pipe, three locations of threaded fittings, three locations of welded fittings, two locations of threaded strainers, two locations of welded strainers, three locations of threaded valves, and three locations of flanged valves for each pipe service defined in the "Piping Insulation Schedule, General" Article.
- D. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

3.10 PIPING INSULATION SCHEDULE, GENERAL

- A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.
- B. Items Not Insulated: Unless otherwise indicated, do not install insulation on the following:
 - 1. Drainage piping located in crawl spaces.
 - 2. Underground piping.
 - 3. Chrome-plated pipes and fittings unless there is a potential for personnel injury.

3.11 INDOOR PIPING INSULATION SCHEDULE (INSULATION THICKNESS SHALL COMPLY WITH CALIFORNIA PLUMBING CODE)

- A. Domestic Hot and Recirculated Hot Water:
 - 1. NPS 1-1/4 and Smaller: Insulation shall be one of the following (Insulation Thickness Shall Comply with California Plumbing Code):
 - a. Mineral-Fiber, Preformed Pipe Insulation, Type I.
 - 2. NPS 1-1/2 and Larger: Insulation shall be one of the following (Insulation Thickness Shall Comply with California Plumbing Code):

- a. Mineral-Fiber, Preformed Pipe Insulation, Type I.
 - B. Exposed Sanitary Drains, Domestic Water, Domestic Hot Water, and Stops for Plumbing Fixtures for People with Disabilities:
 - 1. All Pipe Sizes: Insulation shall be one of the following:
 - a. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1/2 inch thick.
 - C. Floor Drains, Traps, and Sanitary Drain Piping within 10 Feet of Drain Receiving Condensate and Equipment Drain Water below 60 Deg F:
 - 1. All Pipe Sizes: Insulation shall be one of the following:
 - a. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.
- 3.12 INDOOR, FIELD-APPLIED JACKET SCHEDULE
- A. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.
 - B. If more than one material is listed, selection from materials listed is Contractor's option.
 - C. Piping, Concealed:
 - 1. None.
 - D. Piping, Exposed:
 - 1. None.
- 3.13 OUTDOOR, FIELD-APPLIED JACKET SCHEDULE
- A. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.
 - B. If more than one material is listed, selection from materials listed is Contractor's option.
 - C. Piping, Concealed:
 - 1. Aluminum, Corrugated: 0.016 inch thick.
 - D. Piping, Exposed:
 - 1. Aluminum, Corrugated: 0.016 inch thick.

END OF SECTION

SECTION 221116
DOMESTIC WATER PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Copper tube and fittings.
 - 2. Piping joining materials.
 - 3. Encasement for piping.
 - 4. Transition fittings.
 - 5. Dielectric fittings.

1.2 ACTION SUBMITTALS

- A. Product Data: For transition fittings and dielectric fittings.

1.3 FIELD CONDITIONS

- A. Interruption of Existing Water Service: Do not interrupt water service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water service according to requirements indicated:
 - 1. Notify Construction Manager and Owner no fewer than two days in advance of proposed interruption of water service.
 - 2. Do not interrupt water service without Construction Manager's written permission.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

- A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.
- B. Potable-water piping and components shall comply with NSF 14, NSF 61, and NSF 372. Include marking "NSF-pw" on piping.
- C. Copper pipe shall be made in USA only.

2.2 COPPER TUBE AND FITTINGS

- A. Hard Copper Tube: ASTM B 88, Type L (ASTM B 88M, Type B) water tube, drawn temper.
- B. Soft Copper Tube: ASTM B 88, Type K (ASTM B 88M, Type A) water tube, annealed temper.
- C. Cast-Copper, Solder-Joint Fittings: ASME B16.18, pressure fittings.
- D. Wrought-Copper, Solder-Joint Fittings: ASME B16.22, wrought-copper pressure fittings.
- E. Bronze Flanges: ASME B16.24, Class 150, with solder-joint ends.
- F. Copper Unions:
 - 1. MSS SP-123.
 - 2. Cast-copper-alloy, hexagonal-stock body.
 - 3. Ball-and-socket, metal-to-metal seating surfaces.
 - 4. Solder-joint or threaded ends.
- G. Copper, Brass, or Bronze Pressure-Seal-Joint Fittings:
 - 1. Fittings: Cast-brass, cast-bronze or wrought-copper with EPDM O-ring seal in each end. Sizes NPS 2-1/2 (DN 65) and larger with stainless steel grip ring and EPDM O-ring seal.
 - 2. Minimum 200-psig (1379-kPa) working-pressure rating at 250 deg F (121 deg C).
- H. Copper Push-on-Joint Fittings:
 - 1. Description:
 - a. Cast-copper fitting complying with ASME B16.18 or wrought-copper fitting complying with ASME B 16.22.
 - b. Stainless-steel teeth and EPDM-rubber, O-ring seal in each end instead of solder-joint ends.
- I. Copper-Tube, Extruded-Tee Connections:
 - 1. Description: Tee formed in copper tube according to ASTM F 2014.
- J. Appurtenances for Grooved-End Copper Tubing:
 - 1. Bronze Fittings for Grooved-End, Copper Tubing: ASTM B 75/B 75M copper tube or ASTM B 584 bronze castings.
 - 2. Mechanical Couplings for Grooved-End Copper Tubing:
 - a. Copper-tube dimensions and design similar to AWWA C606.
 - b. Ferrous housing sections.
 - c. EPDM-rubber gaskets suitable for hot and cold water.
 - d. Bolts and nuts.
 - e. Minimum Pressure Rating: 300 psig (2070 kPa).

2.3 PIPING JOINING MATERIALS

- A. Pipe-Flange Gasket Materials:
 - 1. AWWA C110/A21.10, rubber, flat face, 1/8 inch (3.2 mm) thick or ASME B16.21, nonmetallic and asbestos free unless otherwise indicated.
 - 2. Full-face or ring type unless otherwise indicated.
- B. Metal, Pipe-Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.
- C. Solder Filler Metals: ASTM B 32, lead-free alloys.
- D. Flux: ASTM B 813, water flushable.
- E. Brazing Filler Metals: AWS A5.8M/A5.8, BCuP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.
- F. Solvent Cements for Joining CPVC Piping and Tubing: ASTM F 493.
- G. Solvent Cements for Joining PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.
- H. Plastic, Pipe-Flange Gaskets, Bolts, and Nuts: Type and material recommended by piping system manufacturer unless otherwise indicated.

2.4 ENCASEMENT FOR PIPING

- A. Standard: ASTM A 674 or AWWA C105/A21.5.
- B. Form: Sheet or tube.
- C. Color: Black or natural.

2.5 TRANSITION FITTINGS

- A. General Requirements:
 - 1. Same size as pipes to be joined.
 - 2. Pressure rating at least equal to pipes to be joined.
 - 3. End connections compatible with pipes to be joined.
- B. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.
- C. Sleeve-Type Transition Coupling: AWWA C219.
- D. Plastic-to-Metal Transition Fittings:
 - 1. Description:
 - a. CPVC or PVC one-piece fitting with manufacturer's Schedule 80 equivalent dimensions.

- b. One end with threaded brass insert and one solvent-cement-socket or threaded end.
- E. Plastic-to-Metal Transition Unions:
 - 1. Description:
 - a. CPVC or PVC four-part union.
 - b. Brass or stainless-steel threaded end.
 - c. Solvent-cement-joint or threaded plastic end.
 - d. Rubber O-ring.
 - e. Union nut.

2.6 DIELECTRIC FITTINGS

- A. General Requirements: Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.
- B. Dielectric Unions:
 - 1. Standard: ASSE 1079.
 - 2. Pressure Rating: 125 psig (860 kPa) minimum at 180 deg F (82 deg C).
 - 3. End Connections: Solder-joint copper alloy and threaded ferrous.
- C. Dielectric Flanges:
 - 1. Standard: ASSE 1079.
 - 2. Factory-fabricated, bolted, companion-flange assembly.
 - 3. Pressure Rating: 125 psig (860 kPa) minimum at 180 deg F (82 deg C).
 - 4. End Connections: Solder-joint copper alloy and threaded ferrous; threaded solder-joint copper alloy and threaded ferrous.
- D. Dielectric-Flange Insulating Kits:
 - 1. Nonconducting materials for field assembly of companion flanges.
 - 2. Pressure Rating: 150 psig (1035 kPa).
 - 3. Gasket: Neoprene or phenolic.
 - 4. Bolt Sleeves: Phenolic or polyethylene.
 - 5. Washers: Phenolic with steel backing washers.
- E. Dielectric Nipples:
 - 1. Standard: IAPMO PS 66.
 - 2. Electroplated steel nipple complying with ASTM F 1545.
 - 3. Pressure Rating and Temperature: 300 psig (2070 kPa) at 225 deg F (107 deg C).
 - 4. End Connections: Male threaded or grooved.
 - 5. Lining: Inert and noncorrosive, propylene.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of domestic water piping. Indicated locations and arrangements are used to size pipe and calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.
- B. Install copper tubing under building slab according to CDA's "Copper Tube Handbook."
- C. Install underground copper tube in PE encasement according to ASTM A 674 or AWWA C105/A21.5.
- D. Rough-in domestic water piping for water-meter installation according to utility company's requirements.
- E. Install seismic restraints on piping. Comply with requirements for seismic-restraint devices in Section 22 0548 "Vibration and Seismic Controls for Plumbing Piping and Equipment."
- F. Install piping concealed from view and protected from physical contact by building occupants unless otherwise indicated and except in equipment rooms and service areas.
- G. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal, and coordinate with other services occupying that space.
- H. Install piping to permit valve servicing.
- I. Install nipples, unions, special fittings, and valves with pressure ratings the same as or higher than the system pressure rating used in applications below unless otherwise indicated.
- J. Install piping free of sags and bends.
- K. Install fittings for changes in direction and branch connections.
- L. Install unions in copper tubing at final connection to each piece of equipment, machine, and specialty.
- M. Install sleeves for piping penetrations of walls, ceilings, and floors.
- N. Install sleeve seals for piping penetrations of concrete walls and slabs.

3.2 JOINT CONSTRUCTION

- A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

- B. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.
- C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - 1. Apply appropriate tape or thread compound to external pipe threads.
 - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.
- D. Brazed Joints for Copper Tubing: Comply with CDA's "Copper Tube Handbook," "Brazed Joints" chapter.
- E. Soldered Joints for Copper Tubing: Apply ASTM B 813, water-flushable flux to end of tube. Join copper tube and fittings according to ASTM B 828 or CDA's "Copper Tube Handbook."
- F. Push-on Joints for Copper Tubing: Clean end of tube. Measure insertion depth with manufacturer's depth gage. Join copper tube and push-on-joint fittings by inserting tube to measured depth.
- G. Extruded-Tee Connections: Form tee in copper tube according to ASTM F 2014. Use tool designed for copper tube; drill pilot hole, form collar for outlet, dimple tube to form seating stop, and braze branch tube into collar.
- H. Joint Construction for Grooved-End Copper Tubing: Make joints according to AWWA C606. Roll groove ends of tubes. Lubricate and install gasket over ends of tubes or tube and fitting. Install coupling housing sections over gasket with keys seated in tubing grooves. Install and tighten housing bolts.
- I. Flanged Joints: Select appropriate asbestos-free, nonmetallic gasket material in size, type, and thickness suitable for domestic water service. Join flanges with gasket and bolts according to ASME B31.9.
- J. Joints for Dissimilar-Material Piping: Make joints using adapters compatible with materials of both piping systems.

3.3 TRANSITION FITTING INSTALLATION

- A. Install transition couplings at joints of dissimilar piping.
- B. Transition Fittings in Underground Domestic Water Piping:
 - 1. Fittings for NPS 1-1/2 (DN 40) and Smaller: Fitting-type coupling.
 - 2. Fittings for NPS 2 (DN 50) and Larger: Sleeve-type coupling.
- C. Transition Fittings in Aboveground Domestic Water Piping NPS 2 (DN 50) and Smaller: Plastic-to-metal transition fittings or unions.

3.4 DIELECTRIC FITTING INSTALLATION

- A. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.
- B. Dielectric Fittings for NPS 2 (DN 50) and Smaller: Use dielectric couplings or nipples.
- C. Dielectric Fittings for NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Use dielectric flanges.

3.5 INSTALLATION OF HANGERS AND SUPPORTS

- A. Comply with requirements for seismic-restraint devices.
- B. Comply with requirements for hangers, supports, and anchor devices.
 - 1. Vertical Piping: MSS Type 8 or 42, clamps.
 - 2. Individual, Straight, Horizontal Piping Runs:
 - a. 100 Feet (30 m) and Less: MSS Type 1, adjustable, steel clevis hangers.
- C. Install hangers for copper tubing and piping, with maximum horizontal spacing and minimum rod diameters, to comply with MSS-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.
- D. Support vertical runs of copper tubing and piping to comply with MSS-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.

3.6 CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. When installing piping adjacent to equipment and machines, allow space for service and maintenance.
- C. Connect domestic water piping to exterior water-service piping. Use transition fitting to join dissimilar piping materials.
- D. Connect domestic water piping to water-service piping with shutoff valve; extend and connect to the following:
 - 1. Domestic Water Booster Pumps: Cold-water suction and discharge piping.
 - 2. Water Heaters: Cold-water inlet and hot-water outlet piping in sizes indicated, but not smaller than sizes of water heater connections.
 - 3. Plumbing Fixtures: Cold- and hot-water-supply piping in sizes indicated, but not smaller than that required by plumbing code.
 - 4. Equipment: Cold- and hot-water-supply piping as indicated, but not smaller than equipment connections. Provide shutoff valve and union for each connection. Use flanges instead of unions for NPS 2-1/2 (DN 65) and larger.

3.7 IDENTIFICATION

- A. Identify system components.
- B. Label pressure piping with system operating pressure.

3.8 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 - 1. Piping Inspections:
 - a. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
 - b. During installation, notify authorities having jurisdiction at least one day before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:
 - 1) Roughing-in Inspection: Arrange for inspection of piping before concealing or closing in after roughing in and before setting fixtures.
 - 2) Final Inspection: Arrange for authorities having jurisdiction to observe tests specified in "Piping Tests" Subparagraph below and to ensure compliance with requirements.
 - c. Reinspection: If authorities having jurisdiction find that piping will not pass tests or inspections, make required corrections, and arrange for reinspection.
 - d. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.
 - 2. Piping Tests:
 - a. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
 - b. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit a separate report for each test, complete with diagram of portion of piping tested.
 - c. Leave new, altered, extended, or replaced domestic water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.
 - d. Cap and subject piping to static water pressure of 50 psig (345 kPa) above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow it to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.

3.9 CLEANING

- A. Clean and disinfect potable domestic water piping as follows:
 - 1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
 - 2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction; if methods are not prescribed, use procedures described in either AWWA C651 or AWWA C652 or follow procedures described below:

- a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
 - b. Fill and isolate system according to either of the following:
 - 1) Fill system or part thereof with water/chlorine solution with at least 50 ppm (50 mg/L) of chlorine. Isolate with valves and allow to stand for 24 hours.
 - 2) Fill system or part thereof with water/chlorine solution with at least 200 ppm (200 mg/L) of chlorine. Isolate and allow to stand for three hours.
 - c. Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.
 - d. Repeat procedures if biological examination shows contamination.
 - e. Submit water samples in sterile bottles to authorities having jurisdiction.
 - B. Clean non-potable domestic water piping as follows:
 1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
 2. Use purging procedures prescribed by authorities having jurisdiction or; if methods are not prescribed, follow procedures described below:
 - a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
 - b. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedures if biological examination shows contamination.
 - C. Prepare and submit reports of purging and disinfecting activities. Include copies of water-sample approvals from authorities having jurisdiction.
 - D. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.
- 3.10 PIPING SCHEDULE
- A. Transition and special fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.
 - B. Flanges and unions may be used for aboveground piping joints unless otherwise indicated.
 - C. Fitting Option: Extruded-tee connections and brazed joints may be used on aboveground copper tubing.
 - D. Under-building-slab, domestic water, building-service piping, NPS 3 (DN 80) and smaller, shall be the following:
 1. Soft copper tube, ASTM B 88, Type K (ASTM B 88M, Type A); wrought-copper, solder-joint fittings; and brazed copper pressure-seal fittings; and pressure-sealed joints.
 - E. Under-building-slab, domestic water, building-service piping, NPS 4 to NPS 8 (DN 100 to DN 200) and larger, shall be the following:

1. Soft copper tube, ASTM B 88, Type K (ASTM B 88M, Type A); wrought-copper, solder-joint fittings; and brazed joints.
- F. Aboveground domestic water piping, NPS 2 (DN 50) and smaller, shall be the following:
 1. Hard copper tube, ASTM B 88, Type L (ASTM B 88M, Type B) wrought copper, solder-joint fittings; and brazed joints.
- G. Aboveground domestic water piping, NPS 2-1/2 to NPS 4 (DN 65 to DN 100), shall be the following:
 1. Hard copper tube, ASTM B 88, Type L (ASTM B 88M, Type B) wrought-copper, solder-joint fittings; and brazed joints.

3.11 VALVE SCHEDULE

- A. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:
 1. Shutoff Duty: Use ball or gate valves for piping NPS 2 (DN 50) and smaller. Use butterfly, ball, or gate valves with flanged ends for piping NPS 2-1/2 (DN 65) and larger.
 2. Throttling Duty: Use ball or globe valves for piping NPS 2 (DN 50) and smaller. Use butterfly or ball valves with flanged ends for piping NPS 2-1/2 (DN 65) and larger.
 3. Hot-Water Circulation Piping, Balancing Duty: Calibrated balancing valves.
 4. Drain Duty: Hose-end drain valves.
- B. Use check valves to maintain correct direction of domestic water flow to and from equipment.
- C. Iron grooved-end valves may be used with grooved-end piping.

END OF SECTION

SECTION 221119

DOMESTIC WATER PIPING SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Vacuum breakers.
 - 2. Backflow preventers.
 - 3. Water pressure-reducing valves.
 - 4. Balancing valves.
 - 5. Temperature-actuated, water mixing valves.
 - 6. Strainers.
 - 7. Outlet boxes.
 - 8. Hose bibbs.
 - 9. Water-hammer arresters.
 - 10. Trap-seal primer valves.
 - 11. Flexible connectors.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.3 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For domestic water piping specialties to include in emergency, operation, and maintenance manuals.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PIPING SPECIALTIES

- A. Potable-water piping and components shall comply with NSF 61 and NSF 14
- B. Comply with NSF 372 for low lead.

2.2 PERFORMANCE REQUIREMENTS

- A. Minimum Working Pressure for Domestic Water Piping Specialties: 125 (860) psig (kPa) unless otherwise indicated.

2.3 VACUUM BREAKERS

- A. Pipe-Applied, Atmospheric-Type Vacuum Breakers:
 - 1. Standard: ASSE 1001.
 - 2. Size: NPS 1/4 to NPS 3 (DN 8 to DN 80), as required to match connected piping.
 - 3. Body: Bronze.
 - 4. Inlet and Outlet Connections: Threaded.
 - 5. Finish: Rough bronze Chrome plated.
- B. Hose-Connection Vacuum Breakers:
 - 1. Standard: ASSE 1011.
 - 2. Body: Bronze, nonremovable, with manual drain.
 - 3. Outlet Connection: Garden-hose threaded complying with ASME B1.20.7.
 - 4. Finish: Chrome or nickel plated.
- C. Pressure Vacuum Breakers:
 - 1. Standard: ASSE 1020.
 - 2. Operation: Continuous-pressure applications.
 - 3. Pressure Loss: 5 (35) psig (kPa) maximum, through middle third of flow range.
 - 4. Size: 3/4" NPS (DN).
 - 5. Accessories:
 - a. Valves: Ball type, on inlet and outlet.

2.4 BACKFLOW PREVENTERS

- A. Reduced-Pressure-Principle Backflow Preventers:
 - 1. Standard: ASSE 1013.
 - 2. Operation: Continuous-pressure applications.
 - 3. Pressure Loss: 12 (83) psig (kPa) maximum, through middle third of flow range.
 - 4. Body: Bronze for NPS 2 (DN 50) and smaller; cast iron with interior lining that complies with AWWA C550 or that is FDA approved for NPS 2-1/2 (DN 65) and larger.
 - 5. End Connections: Threaded for NPS 2 (DN 50) and smaller; flanged for NPS 2-1/2 (DN 65) and larger.
 - 6. Accessories:
 - a. Valves NPS 2 (DN 50) and Smaller: Ball type with threaded ends on inlet and outlet.
 - b. Valves NPS 2-1/2 (DN 65) and Larger: Outside-screw and yoke-gate type with flanged ends on inlet and outlet.
 - c. Air-Gap Fitting: ASME A112.1.2, matching backflow-preventer connection.
- B. Hose-Connection Backflow Preventers:
 - 1. Standard: ASSE 1052.
 - 2. Operation: Up to 10-foot head of water (30-kPa) back pressure.
 - 3. Inlet Size: NPS 1/2 or NPS 3/4 (DN 15 or DN 20).
 - 4. Outlet Size: Garden-hose thread complying with ASME B1.20.7.
 - 5. Capacity: At least 3-gpm (0.19-L/s) flow.
- C. Backflow-Preventer Test Kits:

1. Description: Factory calibrated, with gages, fittings, hoses, and carrying case with test-procedure instructions.

2.5 WATER PRESSURE-REDUCING VALVES

A. Water Regulators:

1. Standard: ASSE 1003.
2. Pressure Rating: Initial working pressure of 150 psig (1035 kPa).
3. Body: Bronze with chrome-plated finish for NPS 2 (DN 50) and smaller; cast iron with interior lining that complies with AWWA C550 or that is FDA approved for NPS 2-1/2 and NPS 3 (DN 65 and DN 80).
4. Valves for Booster Heater Water Supply: Include integral bypass.
5. End Connections: Threaded for NPS 2 (DN 50) and smaller; flanged for NPS 2-1/2 and NPS 3 (DN 65 and DN 80).

2.6 AUTOMATIC WATER SHUTOFF VALVES

A. Standards: NSF 61 and NSF 372.

B. Shutoff Control Ball Valve:

1. Control Valve: Two-piece, full-port brass ball valve, MSS SP-110.
 - a. End Connections: Threaded, female.
 - b. Seats: PTFE.
 - c. O-Rings: FKM.
 - d. Stem: Low lead brass. Blowout proof.
 - e. CWP Rating: 600 (4140) psig (kPa).
2. Manual override control turn-knob for emergency operation of the valve.

C. Clothes Washer Shutoff Control Valve: Two-way, four-port, low-zinc bronze alloy valve.

1. End Connections: Male hose connections, NPS 3/4 (DN 20).
2. Pressure Rating: 400 psi (2758 kPa) at 32 to 150 deg F (0 to 65.6 deg C).
3. Maximum Test Pressure: 1200 psig (8274 kPa).
4. Stem Travel: 0.16 inch (4.0 mm).
5. Maximum Temperature: 250 deg F (121 deg C).
6. Valve Stem: Burnished Type 303 stainless steel.
7. Valve Stem Packing: Double EPDM.
8. Valve Seat: Integral bronze.
9. Valve Disc and Plunger: EPDM.
10. Valve Spring: Stainless steel.
11. Hoses: Two, 9-inch (229-mm) steel braided.
12. Hose End Connections: One straight and one 90-degree elbow connection; both hoses.

2.7 BALANCING VALVES

A. Copper-Alloy Calibrated Balancing Valves:

1. Type: Ball valve with two readout ports and memory-setting indicator.
2. Body: Brass or bronze.

3. Size: Same as connected piping, but not larger than NPS 2 (DN 50).
4. Accessories: Meter hoses, fittings, valves, differential pressure meter, and carrying case.

2.8 TEMPERATURE-ACTUATED, WATER MIXING VALVES

- A. Manifold, Thermostatic, Water Mixing-Valve Assemblies:
 1. Description: Factory-fabricated, exposed-mounted, thermostatically controlled, water mixing-valve assembly in two-valve parallel arrangement.
 2. Large-Flow Parallel: Thermostatic, water mixing valve and downstream-pressure regulator with pressure gages on inlet and outlet.
 3. Intermediate-Flow Parallel: Thermostatic, water mixing valve and downstream-pressure regulator with pressure gages on inlet and outlet.
 4. Small-Flow Parallel: Thermostatic, water mixing valve.
 5. Thermostatic Mixing Valves: Comply with ASSE 1017. Include check stops on hot- and cold-water inlets and shutoff valve on outlet.
 6. Water Regulator(s): Comply with ASSE 1003. Include pressure gage on inlet and outlet.
 7. Pressure Rating: 125 psig (860 kPa) minimum unless otherwise indicated.
 8. Cabinet: Factory fabricated, stainless steel, for surface mounting and with hinged, stainless-steel door.
 9. Selected Large-Flow, Tempered-Water Valve Size:
 10. Tempered-Water Setting: 140 deg F (deg C).
- B. Individual-Fixture, Water Tempering Valves:
 1. Standard: ASSE 1016, thermostatically controlled, water tempering valve.
 2. Pressure Rating: 125 psig (860 kPa) minimum unless otherwise indicated.
 3. Body: Bronze body with corrosion-resistant interior components.
 4. Temperature Control: Adjustable.
 5. Inlets and Outlet: Threaded.
 6. Finish: Rough or chrome-plated bronze.
 7. Tempered-Water Setting: 105 deg F (deg C).
 8. Tempered-Water Design Flow Rate: 1.5 gpm (L/s).

2.9 STRAINERS FOR DOMESTIC WATER PIPING

- A. Y-Pattern Strainers:
 1. Pressure Rating: 125 psig (860 kPa) minimum unless otherwise indicated.
 2. Body: Bronze for NPS 2 (DN 50) and smaller; cast iron with interior lining that complies with AWWA C550 or that is FDA approved, epoxy coated and for NPS 2-1/2 (DN 65) and larger.
 3. End Connections: Threaded for NPS 2 (DN 50) and smaller; flanged for NPS 2-1/2 (DN 65) and larger.
 4. Screen: Stainless steel with round perforations unless otherwise indicated.
 5. Drain: Factory-installed, hose-end drain valve.

2.10 OUTLET BOXES

A. Clothes Washer Outlet Boxes:

1. Mounting: Recessed.
2. Material and Finish: Enameled-steel, epoxy-painted-steel, or plastic box and faceplate.
3. Faucet: Combination valved fitting or separate hot- and cold-water valved fittings complying with ASME A112.18.1. Include garden-hose thread complying with ASME B1.20.7 on outlets.
4. Supply Shutoff Fittings: NPS 1/2 (DN 15) gate, globe, or ball valves and NPS 1/2 (DN 15) copper, water tubing.
5. Drain: NPS 2 (DN 50) standpipe and P-trap for direct waste connection to drainage piping.
6. Inlet Hoses: Two 60-inch- (1500-mm-) long, rubber household clothes washer inlet hoses with female, garden-hose-thread couplings. Include rubber washers.
7. Drain Hose: One 48-inch- (1200-mm-) long, rubber household clothes washer drain hose with hooked end.

B. Ice maker Outlet Boxes:

1. Mounting: Recessed.
2. Material and Finish: Enameled-steel, epoxy-painted-steel, or plastic box and faceplate.
3. Faucet: Valved fitting complying with ASME A112.18.1. Include NPS 1/2 (DN 15) or smaller copper tube outlet.
4. Supply Shutoff Fitting: NPS 1/2 (DN 15) gate, globe, or ball valve and NPS 1/2 (DN 15) copper, water tubing.

2.11 HOSE BIBBS

A. Hose Bibbs:

1. Standard: ASME A112.18.1 for sediment faucets.
2. Body Material: Bronze.
3. Seat: Bronze, replaceable.
4. Supply Connections: NPS 1/2 or NPS 3/4 (DN 15 or DN 20) threaded or solder-joint inlet.
5. Outlet Connection: Garden-hose thread complying with ASME B1.20.7.
6. Pressure Rating: 125 psig (860 kPa).
7. Vacuum Breaker: Integral or field-installation, nonremovable, drainable, hose-connection vacuum breaker complying with ASSE 1011.
8. Finish for Equipment Rooms: Rough bronze, or chrome or nickel plated.
9. Finish for Service Areas: Chrome or nickel plated.
10. Finish for Finished Rooms: Chrome or nickel plated.
11. Operation for Equipment Rooms: Wheel handle or operating key.
12. Operation for Service Areas: Operating key.
13. Operation for Finished Rooms: Operating key.
14. Include operating key with each operating-key hose bibb.
15. Include integral wall flange with each chrome- or nickel-plated hose bibb.

2.12 DRAIN VALVES

- A. Ball-Valve-Type, Hose-End Drain Valves:
 - 1. Standard: MSS SP-110 for standard-port, two-piece ball valves.
 - 2. Pressure Rating: 400-psig (2760-kPa) minimum CWP.
 - 3. Size: NPS 3/4 (DN 20).
 - 4. Body: Copper alloy.
 - 5. Ball: Chrome-plated brass.
 - 6. Seats and Seals: Replaceable.
 - 7. Handle: Vinyl-covered steel.
 - 8. Inlet: Threaded or solder joint.
 - 9. Outlet: Threaded, short nipple with garden-hose thread complying with ASME B1.20.7 and cap with brass chain.
- B. Gate-Valve-Type, Hose-End Drain Valves:
 - 1. Standard: MSS SP-80 for gate valves.
 - 2. Pressure Rating: Class 125.
 - 3. Size: NPS 3/4 (DN 20).
 - 4. Body: ASTM B62 bronze.
 - 5. Inlet: NPS 3/4 (DN 20) threaded or solder joint.
 - 6. Outlet: Garden-hose thread complying with ASME B1.20.7 and cap with brass chain.
- C. Stop-and-Waste Drain Valves:
 - 1. Standard: MSS SP-110 for ball valves or MSS SP-80 for gate valves.
 - 2. Pressure Rating: 200-psig (1380-kPa) minimum CWP or Class 125.
 - 3. Size: NPS 3/4 (DN 20).
 - 4. Body: Copper alloy or ASTM B62 bronze.
 - 5. Drain: NPS 1/8 (DN 6) side outlet with cap.

2.13 WATER-HAMMER ARRESTERS

- A. Water-Hammer Arresters:
 - 1. Standard: ASSE 1010 or PDI-WH 201.
 - 2. Type: Copper tube with piston.
 - 3. Size: ASSE 1010, Sizes AA and A through F, or PDI-WH 201, Sizes A through F.

2.14 TRAP-SEAL PRIMER DEVICE

- A. Supply-Type, Trap-Seal Primer Device:
 - 1. Standard: ASSE 1018.
 - 2. Pressure Rating: 125 psig (860 kPa) minimum.
 - 3. Body: Bronze.
 - 4. Inlet and Outlet Connections: NPS 1/2 (DN 15) threaded, union, or solder joint.
 - 5. Gravity Drain Outlet Connection: NPS 1/2 (DN 15) threaded or solder joint.
 - 6. Water closet flush valve connection: NPS 1/2 (DN 15) threaded, union, or solder joint.
 - 7. Finish: Chrome plated, or rough bronze for units used with pipe or tube that is not chrome finished.

2.15 FLEXIBLE CONNECTORS

- A. Bronze-Hose Flexible Connectors: Corrugated-bronze tubing with bronze wire-braid covering and ends brazed to inner tubing.
 - 1. Working-Pressure Rating: Minimum 200 psig (1380 kPa) 250 psig (1725 kPa).
 - 2. End Connections NPS 2 (DN 50) and Smaller: Threaded copper pipe or plain-end copper tube.
 - 3. End Connections NPS 2-1/2 (DN 65) and Larger: Flanged copper alloy.
- B. Stainless-Steel-Hose Flexible Connectors: Corrugated-stainless-steel tubing with stainless-steel wire-braid covering and ends welded to inner tubing.
 - 1. Working-Pressure Rating: Minimum 200 psig (1380 kPa) 250 psig (1725 kPa).
 - 2. End Connections NPS 2 (DN 50) and Smaller: Threaded steel-pipe nipple.
 - 3. End Connections NPS 2-1/2 (DN 65) and Larger: Flanged steel nipple.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Water-Hammer Arresters: Install in water piping according to PDI-WH 201.
- B. Supply-Type, Trap-Seal Primer Device: Install with outlet piping pitched down toward drain trap a minimum of 1 percent, and connect to floor-drain body, trap, or inlet fitting. Adjust valve for proper flow.
- C. Drainage-Type, Trap-Seal Primer Device: Install as lavatory trap with outlet piping pitched down toward drain trap a minimum of 1 percent, and connect to floor-drain body, trap, or inlet fitting.
- D. Trap-Seal Primer Systems: Install with outlet piping pitched down toward drain trap a minimum of 1 percent, and connect to floor-drain body, trap, or inlet fitting. Adjust system for proper flow.

3.2 CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. When installing piping specialties adjacent to equipment and machines, allow space for service and maintenance.

END OF SECTION

SECTION 221316

SANITARY WASTE AND VENT PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Hubless, cast-iron soil pipe and fittings.
 - 2. PVC pipe and fittings.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For hubless, single-stack drainage system. Include plans, elevations, sections, and details.

1.3 FIELD CONDITIONS

- A. Interruption of Existing Sanitary Waste Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:
 - 1. Notify Construction Manager and Owner no fewer than two days in advance of proposed interruption of sanitary waste service.
 - 2. Do not proceed with interruption of sanitary waste service without Construction Manager's written permission.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Components and installation shall be capable of withstanding the following minimum working pressure unless otherwise indicated:
 - 1. Soil, Waste, and Vent Piping: 10-foot head of water (30 kPa).
 - 2. Waste, Force-Main Piping: 50 psig (345 kPa).
- B. Seismic Performance: Soil, waste, and vent piping and support and installation shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

2.2 PIPING MATERIALS

- A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

- B. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

2.3 HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS

- A. Pipe and Fittings: ASTM A 888 or CISPI 301.
- B. Single-Stack Aerator Fittings: ASME B16.45, hubless, cast-iron aerator and deaerator drainage fittings.
- C. CISPI, Hubless-Piping Couplings:
 - 1. Standards: ASTM C 1277 and CISPI 310.
 - 2. Description: Stainless-steel corrugated shield with stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve with integral, center pipe stop.
- D. Heavy-Duty, Hubless-Piping Couplings:
 - 1. Standards: ASTM C 1277 and ASTM C 1540.
 - 2. Description: Stainless-steel shield with stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve with integral, center pipe stop.
- E. Cast-Iron, Hubless-Piping Couplings:
 - 1. Standard: ASTM C 1277.
 - 2. Description: Two-piece ASTM A 48/A 48M, cast-iron housing; stainless-steel bolts and nuts; and ASTM C 564, rubber sleeve with integral, center pipe stop.

2.4 PVC PIPE AND FITTINGS

- A. Comply with NSF 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-dwv" for plastic drain, waste, and vent piping and "NSF-sewer" for plastic sewer piping.
- B. Solid-Wall PVC Pipe: ASTM D 2665, drain, waste, and vent.
- C. Cellular-Core PVC Pipe: ASTM F 891, Schedule 40.
- D. PVC Socket Fittings: ASTM D 2665, made to ASTM D 3311, drain, waste, and vent patterns and to fit Schedule 40 pipe.
- E. Adhesive Primer: ASTM F 656.
- F. Solvent Cement: ASTM D 2564.

2.5 SPECIALTY PIPE FITTINGS

- A. Transition Couplings:

1. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.
 2. Unshielded, Non-pressure Transition Couplings:
 - a. Standard: ASTM C 1173.
 - b. Description: Elastomeric, sleeve-type, reducing or transition pattern. Include shear ring and corrosion-resistant-metal tension band and tightening mechanism on each end.
 - c. End Connections: Same size as and compatible with pipes to be joined.
 - d. Sleeve Materials:
 - 1) For Cast-Iron Soil Pipes: ASTM C 564, rubber.
 - 2) For Plastic Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC.
 - 3) For Dissimilar Pipes: ASTM D 5926, PVC, or other material compatible with pipe materials being joined.
 3. Shielded, Non-pressure Transition Couplings:
 - a. Standard: ASTM C 1460.
 - b. Description: Elastomeric or rubber sleeve with full-length, corrosion-resistant outer shield and corrosion-resistant-metal tension band and tightening mechanism on each end.
 - c. End Connections: Same size as and compatible with pipes to be joined.
- B. Dielectric Fittings:
1. Dielectric Unions:
 - a. Description:
 - 1) Standard: ASSE 1079.
 - 2) Pressure Rating: 125 psig (860 kPa) minimum at 180 deg F (82 deg C).
 - 3) End Connections: Solder-joint copper alloy and threaded ferrous.
 2. Dielectric Flanges:
 - a. Description:
 - 1) Standard: ASSE 1079.
 - 2) Factory-fabricated, bolted, companion-flange assembly.
 - 3) Pressure Rating: 125 psig (860 kPa) minimum at 180 deg F (82 deg C).
 - 4) End Connections: Solder-joint copper alloy and threaded ferrous; threaded solder-joint copper alloy and threaded ferrous.
 3. Dielectric-Flange Insulating Kits:
 - a. Description:
 - 1) Nonconducting materials for field assembly of companion flanges.
 - 2) Pressure Rating: 150 psig (1035 kPa).
 - 3) Gasket: Neoprene or phenolic.
 - 4) Bolt Sleeves: Phenolic or polyethylene.
 - 5) Washers: Phenolic with steel backing washers.
 4. Dielectric Nipples:
 - a. Description:
 - 1) Standard: IAPMO PS 66.
 - 2) Electroplated steel nipple.
 - 3) Pressure Rating: 300 psig (2070 kPa) at 225 deg F (107 deg C).
 - 4) End Connections: Male threaded or grooved.
 - 5) Lining: Inert and noncorrosive, propylene.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems.
 - 1. Indicated locations and arrangements were used to size pipes and calculate friction loss, expansion, pump sizing, and other design considerations.
 - 2. Install piping as indicated unless deviations to layout are approved on coordination drawings.
- B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- E. Install piping to permit valve servicing.
- F. Install piping at indicated slopes.
- G. Install piping free of sags and bends.
- H. Install fittings for changes in direction and branch connections.
- I. Install piping to allow application of insulation.
- J. Install required seismic restraints on piping.
- K. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends.
 - 1. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical.
 - 2. Use long-turn, double Y-branch, and 1/8-bend fittings if two fixtures are installed back to back or side by side with common drain pipe.
 - a. Straight tees, elbows, and crosses may be used on vent lines.
 - 3. Do not change the direction of flow more than 90 degrees.
 - 4. Use proper size of standard increasers and reducers if pipes of different sizes are connected.
 - a. Reducing the size of waste piping in the direction of flow is prohibited.
- L. Lay buried building waste piping beginning at low point of each system.
 - 1. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream.
 - 2. Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.

3. Maintain swab in piping and pull past each joint as completed.
- M. Install soil and waste and vent piping at the following minimum slopes unless otherwise indicated:
 1. Building Sanitary Waste: 2 percent downward in direction of flow for piping NPS 3 (DN 80) and smaller; 2 percent downward in direction of flow for piping NPS 4 (DN 100) and larger; 1 percent as noted on plans for piping NPS 4 (DN 100) and larger.
 2. Horizontal Sanitary Waste Piping: 2 percent downward in direction of flow.
 3. Vent Piping: 1 percent down toward vertical fixture vent or toward vent stack.
- N. Install aboveground cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."
- O. Install underground PVC piping according to ASTM D 2321.
- P. Install force mains at elevations indicated.
 1. Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers in sanitary waste gravity-flow piping.
 - a. Install cleanout fitting with closure plug inside the building in sanitary drainage force-main piping.
 - b. Comply with requirements for cleanouts specified in Section 22 1319 "Sanitary Waste Piping Specialties."
 2. Install drains in sanitary waste gravity-flow piping.
 - a. Comply with requirements for drains specified in Section 22 1319 "Sanitary Waste Piping Specialties."
- Q. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.
- R. Install sleeves for piping penetrations of walls, ceilings, and floors.
 1. Comply with requirements for sleeves specified in Section 22 0517 "Sleeves and Sleeve Seals for Plumbing Piping."
- S. Install sleeve seals for piping penetrations of concrete walls and slabs.
 1. Comply with requirements for sleeve seals specified in Section 22 0517 "Sleeves and Sleeve Seals for Plumbing Piping."

3.2 JOINT CONSTRUCTION

- A. Join hubless, cast-iron soil piping according to CISPI 310 and CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for hubless-piping coupling joints.
- B. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1.
 1. Cut threads full and clean using sharp dies.
 2. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - a. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
 - b. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.

- c. Do not use pipe sections that have cracked or open welds.

- C. Plastic, Non-pressure Piping, Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
 - 1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
 - 2. ABS Piping: Join according to ASTM D 2235 and ASTM D 2661 appendixes.
 - 3. PVC Piping: Join according to ASTM D 2855 and ASTM D 2665 appendixes.

3.3 SPECIALTY PIPE FITTING INSTALLATION

- A. Transition Couplings:
 - 1. Install transition couplings at joints of piping with small differences in ODs.
 - 2. In Waste Drainage Piping: Shielded, non-pressure transition couplings.
 - 3. In Aboveground Force Main Piping: Fitting-type transition couplings.
 - 4. In Underground Force Main Piping:
 - a. NPS 1-1/2 (DN 40) and Smaller: Fitting-type transition couplings.
 - b. NPS 2 (DN 50) and Larger: Pressure transition couplings.
- B. Dielectric Fittings:
 - 1. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.
 - 2. Dielectric Fittings for NPS 2 (DN 50) and Smaller: Use dielectric unions.
 - 3. Dielectric Fittings for NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Use dielectric flange kits.
 - 4. Dielectric Fittings for NPS 5 (DN 125) and Larger: Use dielectric flange kits.

3.4 INSTALLATION OF HANGERS AND SUPPORTS

- A. Comply with requirements for seismic-restraint devices specified in Section 22 0548 "Vibration and Seismic Controls for Plumbing Piping and Equipment."
- B. Comply with requirements for pipe hanger and support devices and installation specified in Section 22 0529 "Hangers and Supports for Plumbing Piping and Equipment."
 - 1. Install carbon-steel pipe hangers for horizontal piping in noncorrosive environments.
 - 2. Install stainless-steel pipe hangers for horizontal piping in corrosive environments.
 - 3. Install carbon-steel pipe support clamps for vertical piping in noncorrosive environments.
 - 4. Install stainless-steel pipe support clamps for vertical piping in corrosive environments.
 - 5. Vertical Piping: MSS Type 8 or Type 42, clamps.
 - 6. Install individual, straight, horizontal piping runs:
 - a. 100 Feet (30 m) and Less: MSS Type 1, adjustable, steel clevis hangers.

- C. Install hangers for cast-iron soil piping, with maximum horizontal spacing and minimum rod diameters, to comply with MSS-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.
- D. Install hangers for PVC piping, with maximum horizontal spacing and minimum rod diameters, to comply with manufacturer's written instructions, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.
- E. Support horizontal piping and tubing within (300 mm) of each fitting, valve, and coupling.
- F. Support vertical runs of cast iron soil piping to comply with MSS-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.
- G. Support vertical runs of PVC piping to comply with manufacturer's written instructions, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.

3.5 CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.
- C. Connect waste and vent piping to the following:
 - 1. Plumbing Fixtures: Connect waste piping in sizes indicated, but not smaller than required by plumbing code.
 - 2. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by authorities having jurisdiction.
 - 3. Plumbing Specialties: Connect waste and vent piping in sizes indicated, but not smaller than required by plumbing code.
 - 4. Install test tees (wall cleanouts) in conductors near floor and floor cleanouts with cover flush with floor.
 - 5. Install horizontal backwater valves with cleanout cover flush with floor.
 - 6. Comply with requirements for backwater valves, cleanouts and drains specified in Section 22 13 19 "Sanitary Waste Piping Specialties."
- D. Where installing piping adjacent to equipment allow space for service and maintenance of equipment.
- E. Make connections according to the following unless otherwise indicated:

3.6 IDENTIFICATION

- A. Identify exposed sanitary waste and vent piping.
- B. Comply with requirements for identification.

3.7 FIELD QUALITY CONTROL

- A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.
 - 1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
 - 2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.
- B. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections, and arrange for reinspection.
- C. Test sanitary waste and vent piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:
 - 1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired.
 - 2. Leave uncovered and unconcealed new, altered, extended, or replaced waste and vent piping until it has been tested and approved.
 - a. Expose work that was covered or concealed before it was tested.
 - 3. Roughing-in Plumbing Test Procedure: Test waste and vent piping except outside leaders on completion of roughing-in.
 - a. Close openings in piping system and fill with water to point of overflow, but not less than 10-foot head of water (30 kPa).
 - b. Test waste and vent cast iron piping at 5 PSI for 15 minutes.
 - c. From 15 minutes before inspection starts to completion of inspection, water level must not drop.
 - d. Inspect joints for leaks.
 - 4. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
- D. Test force-main piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:
 - 1. Leave uncovered and unconcealed new, altered, extended, or replaced force-main piping until it has been tested and approved.
 - a. Expose work that was covered or concealed before it was tested.
 - 2. Cap and subject piping to static-water pressure of 50 psig (345 kPa) above operating pressure, without exceeding pressure rating of piping system materials.
 - a. Isolate test source and allow to stand for four hours.
 - b. Leaks and loss in test pressure constitute defects that must be repaired.
 - 3. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
 - 4. Prepare reports for tests and require corrective action.

3.8 CLEANING AND PROTECTION

- A. Clean interior of piping. Remove dirt and debris as work progresses.
- B. Protect sanitary waste and vent piping during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.

- C. Place plugs in ends of uncompleted piping at end of day and when work stops.
- D. Exposed PVC Piping: Protect plumbing vents exposed to sunlight with two coats of water-based latex paint.
- E. Repair damage to adjacent materials caused by waste and vent piping installation.

3.9 PIPING SCHEDULE

- A. Flanges and unions may be used on aboveground pressure piping unless otherwise indicated.
- B. Aboveground, soil and waste piping NPS 4 (DN 100) and smaller shall be the following:
 - 1. Hubless, cast-iron soil pipe and fittings and hubless, single-stack aerator fittings; CISPI heavy-duty hubless-piping couplings; and coupled joints.
- C. Aboveground, soil and waste piping NPS 5 (DN 125) and larger shall be the following:
 - 1. Hubless, cast-iron soil pipe and fittings and hubless, single-stack aerator fittings; CISPI heavy-duty hubless-piping couplings; and coupled joints.
- D. Aboveground, vent piping NPS 4 (DN 100) and smaller shall be the following:
 - 1. Hubless, cast-iron soil pipe and fittings; CISPI heavy-duty hubless-piping couplings; and coupled joints.
- E. Aboveground, vent piping NPS 5 (DN 125) and larger shall be the following:
 - 1. Hubless, cast-iron soil pipe and fittings; CISPI heavy-duty hubless-piping couplings; and coupled joints.
- F. Underground, soil, waste, and vent piping NPS 4 (DN 100) and smaller shall be the following:
 - 1. Solid wall PVC pipe, PVC socket fittings, and solvent-cemented joints.
 - 2. Dissimilar Pipe-Material Couplings: Shielded, non-pressure transition couplings.
- G. Underground, soil and waste piping NPS 5 (DN 125) and larger shall be the following:
 - 1. Solid-wall PVC pipe; PVC socket fittings; and solvent-cemented joints.
 - 2. Dissimilar Pipe-Material Couplings: Shielded, non-pressure transition couplings.

END OF SECTION

SECTION 221319

SANITARY WASTE PIPING SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Backwater valves.
 - 2. Cleanouts.
 - 3. Floor drains.
 - 4. Trench drains.
 - 5. Floor sinks.
 - 6. Roof flashing assemblies.
 - 7. Through-penetration firestop assemblies.
 - 8. Miscellaneous sanitary drainage piping specialties.
 - 9. Flashing materials.

1.3 DEFINITIONS

- A. ABS: Acrylonitrile-butadiene-styrene plastic.
- B. FOG: Fats, oils, and grease.
- C. FRP: Fiberglass-reinforced plastic.
- D. HDPE: High-density polyethylene plastic.
- E. PE: Polyethylene plastic.
- F. PP: Polypropylene plastic.
- G. PVC: Polyvinyl chloride plastic.

1.4 ACTION SUBMITTALS

- A. Shop Drawings: Show fabrication and installation details for frost-resistant vent terminals.
 - 1. Wiring Diagrams: Power, signal, and control wiring.

1.5 INFORMATIONAL SUBMITTALS

- A. Manufacturer Seismic Qualification Certification: Submit certification that grease interceptors, oil interceptors, accessories, and components will withstand seismic forces. Include the following:
 - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."
 - 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 - 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- B. Field quality-control test reports.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For drainage piping specialties to include in emergency, operation, and maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Drainage piping specialties shall bear label, stamp, or other markings of specified testing agency.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Comply with NSF 14, "Plastics Piping Components and Related Materials," for plastic sanitary piping specialty components.

1.8 COORDINATION

- A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.
- B. Coordinate size and location of roof penetrations.

PART 2 - PRODUCTS

2.1 BACKWATER VALVES

- A. Horizontal, Cast-Iron Backwater Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Josam Company; Josam Div.
 - b. Smith, Jay R. Mfr. Co.; Division of Smith Industries, Inc.
 - c. Tyler Pipe; Wade Div.
 - d. Watts Drainage Products Inc.
 - e. Zurn Plumbing Products Group; Specification Drainage Operation.
 - f.
2. Standard: ASME A112.14.1.
3. Size: Same as connected piping.
4. Body: Cast iron.
5. Cover: Cast iron with bolted access check valve.
6. End Connections: Hubless.
7. Type Check Valve: Removable, bronze, swing check, factory assembled or field modified to hang open for airflow unless subject to backflow condition.
8. Extension: ASTM A 74, Service class; full-size, cast-iron, soil-pipe extension to field-installed cleanout at floor; replaces backwater valve cover.

2.2 CLEANOUTS

A. Exposed Metal Cleanouts:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Josam Company; Josam Div.
 - b. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
 - c. Tyler Pipe; Wade Div.
 - d. Watts Drainage Products Inc.
 - e. Zurn Plumbing Products Group; Specification Drainage Operation.
2. Standard: ASME A112.36.2M for cast iron for cleanout test tee.
3. Size: Same as connected drainage piping
4. Body Material: Hubless, cast-iron soil pipe test tee as required to match connected piping.
5. Closure: Raised-head, cast-iron plug.
6. Closure Plug Size: Same as or not more than one size smaller than cleanout size.
7. Closure: Stainless-steel plug with seal.

B. Metal Floor Cleanouts:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Josam Company; Josam Div.
 - b. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
 - c. Tyler Pipe; Wade Div.
 - d. Watts Drainage Products Inc.
 - e. Zurn Plumbing Products Group; Light Commercial Operation.
 - f. Zurn Plumbing Products Group; Specification Drainage Operation.
2. Standard: ASME A112.36.2M for cast-iron soil pipe with cast-iron ferrule cleanout.
3. Size: Same as connected branch.
4. Type: Cast-iron soil pipe with cast-iron ferrule .

5. Body or Ferrule: Cast iron .
6. Clamping Device: Not required.
7. Outlet Connection: Threaded.
8. Closure: Cast-iron plug.
9. Adjustable Housing Material: Cast iron with threads.
10. Frame and Cover Material and Finish: Rough bronze .
11. Frame and Cover Shape: Round .
12. Top Loading Classification: Light or Medium Duty.
13. Riser: ASTM A 74, Service class, cast-iron drainage pipe fitting and riser to cleanout.

C. Cast-Iron Wall Cleanouts:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Josam Company; Josam Div.
 - b. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
 - c. Tyler Pipe; Wade Div.
 - d. Watts Drainage Products Inc.
 - e. Zurn Plumbing Products Group; Specification Drainage Operation.
2. Standard: ASME A112.36.2M. Include wall access.
3. Size: Same as connected drainage piping.
4. Body: Hubless, cast-iron soil pipe test tee as required to match connected piping.
5. Closure: Raised head, cast-iron plug.
6. Closure Plug Size: Same as or not more than one size smaller than cleanout size.
7. Wall Access: Round, flat, chrome-plated brass or stainless-steel cover plate with screw.
8. Wall Access: Round, nickel-bronze, copper-alloy, or stainless-steel wall-installation frame and cover.

2.3 FLOOR DRAINS

A. Cast-Iron Floor Drains:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Josam Company; Josam Div.
 - b. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
 - c. Zurn Plumbing Products Group; Specification Drainage Operation.
2. Standard: ASME A112.6.3.
3. Pattern: Floor drain.
4. Body Material: Gray iron.
5. Seepage Flange: Not required.
6. Anchor Flange: Required.
7. Clamping Device: Not required.
8. Outlet: Bottom or Side.
9. Backwater Valve: Not required.
10. Coating on Interior and Exposed Exterior Surfaces: Not required.
11. Sediment Bucket: Not required.
12. Top or Strainer Material: Bronze or Nickel bronze.
13. Top of Body and Strainer Finish: Rough bronze.

14. Top Shape: Round.
15. Dimensions of Top or Strainer:
16. Top Loading Classification: Light Duty or Medium Duty.
17. Funnel: Not required.
18. Inlet Fitting: Not required.
19. Trap Material: Cast iron.
20. Trap Pattern: Standard P-trap.
21. Trap Features: Trap-seal primer valve drain connection.

2.4 FLOOR SINKS

1. Cast-Iron Floor Sinks: Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Josam Company; Josam Div.
 - b. Prier Products, Inc.
 - c. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
 - d. Tyler Pipe; Wade Div.
 - e. Watts Drainage Products Inc.
 - f. Zurn Plumbing Products Group; Specification Drainage Operation.
2. Standard: ASME A112.6.3.
3. Pattern: Sanitary drain.
4. Body Material: Gray iron.
5. Seepage Flange: Required.
6. Anchor Flange: Required.
7. Clamping Device: Required.
8. Outlet: Bottom.
9. Backwater Valve: Not required.
10. Coating on Interior and Exposed Exterior Surfaces: Acid-resistant enamel.
11. Sediment Bucket: Not required.
12. Top or Strainer Material: Nickel bronze.
13. Top of Body and Strainer Finish: Nickel bronze.
14. Top Shape: Square.
15. Top Loading Classification: Medium Duty.
16. Inlet Fitting: Not required.
17. Trap Material: Cast iron.
18. Trap Pattern: Standard P-trap.

2.5 ROOF FLASHING ASSEMBLIES

- A. Roof Flashing Assemblies:
 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Acorn Engineering Company; Elmdor/Stoneman Div.
 - b. Thaler Metal Industries Ltd.
- B. Description: Manufactured assembly made of 6.0-lb/sq. ft., 0.0938-inch- thick, lead flashing collar and skirt extending at least 8 inches from pipe, with galvanized-steel boot reinforcement and counterflashing fitting.
 1. Open-Top Vent Cap: Without cap.

2. Low-Silhouette Vent Cap: With vandal-proof vent cap.
3. Extended Vent Cap: With field-installed, vandal-proof vent cap.

2.6 THROUGH-PENETRATION FIRESTOP ASSEMBLIES

A. Through-Penetration Firestop Assemblies:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. ProSet Systems Inc.
2. Standard: UL 1479 assembly of sleeve and stack fitting with firestopping plug.
3. Size: Same as connected soil, waste, or vent stack.
4. Sleeve: Molded PVC plastic, of length to match slab thickness and with integral nailing flange on one end for installation in cast-in-place concrete slabs.
5. Stack Fitting: ASTM A 48/A 48M, gray-iron, hubless-pattern, wye branch with neoprene O-ring at base and gray-iron plug in thermal-release harness. Include PVC protective cap for plug.

2.7 MISCELLANEOUS SANITARY DRAINAGE PIPING SPECIALTIES

A. Deep-Seal Traps:

1. Description: Cast-iron or bronze casting, with inlet and outlet matching connected piping and cleanout trap-seal primer valve connection.
2. Size: Same as connected waste piping.
 - a. NPS 2: 4-inch- minimum water seal.
 - b. NPS 2-1/2 and Larger: 5-inch- minimum water seal.

B. Open Drains:

1. Description: Shop or field fabricate from ASTM A 74, Service class, hub-and-spigot, cast-iron, soil-pipe fittings. Include P-trap, hub-and-spigot riser section; and where required, increaser fitting joined with ASTM C 564, rubber gaskets.
2. Size: Same as connected waste piping with increaser fitting of size indicated.

C. Floor-Drain, Trap-Seal Primer Fittings:

1. Description: Cast iron, with threaded inlet and threaded or spigot outlet, and trap-seal primer valve connection.
2. Size: Same as floor drain outlet with NPS 1/2 side inlet.

D. Air-Gap Fittings:

1. Standard: ASME A112.1.2, for fitting designed to ensure fixed, positive air gap between installed inlet and outlet piping.
2. Body: Bronze or cast iron.
3. Inlet: Opening in top of body.
4. Outlet: Larger than inlet.
5. Size: Same as connected waste piping and with inlet large enough for associated indirect waste piping.

E. Sleeve Flashing Device:

1. Description: Manufactured, cast-iron fitting, with clamping device, that forms sleeve for pipe floor penetrations of floor membrane. Include galvanized-steel pipe extension in top of fitting that will extend 1 inch above finished floor and galvanized-steel pipe extension in bottom of fitting that will extend through floor slab.
 2. Size: As required for close fit to riser or stack piping.
- F. Stack Flashing Fittings:
1. Description: Counterflashing-type, cast-iron fitting, with bottom recess for terminating roof membrane, and with threaded or hub top for extending vent pipe.
 2. Size: Same as connected stack vent or vent stack.
- G. Expansion Joints:
1. Standard: ASME A112.21.2M.
 2. Body: Cast iron with bronze sleeve, packing, and gland.
 3. End Connections: Matching connected piping.
 4. Size: Same as connected soil, waste, or vent piping.

2.8 FLASHING MATERIALS

- A. Lead Sheet: ASTM B 749, Type L51121, copper bearing, with the following minimum weights and thicknesses, unless otherwise indicated:
1. General Use: 4.0-lb/sq. ft., 0.0625-inch thickness.
 2. Vent Pipe Flashing: 3.0-lb/sq. ft., 0.0469-inch thickness.
 3. Burning: 6-lb/sq. ft., 0.0938-inch thickness.
- B. Copper Sheet: ASTM B 152/B 152M, of the following minimum weights and thicknesses, unless otherwise indicated:
1. General Applications: 12 oz./sq. ft.
 2. Vent Pipe Flashing: 8 oz./sq. ft.
- C. Zinc-Coated Steel Sheet: ASTM A 653/A 653M, with 0.20 percent copper content and 0.04-inch minimum thickness, unless otherwise indicated. Include G90 hot-dip galvanized, mill-phosphatized finish for painting if indicated.
- D. Elastic Membrane Sheet: ASTM D 4068, flexible, chlorinated polyethylene, 40-mil minimum thickness.
- E. Fasteners: Metal compatible with material and substrate being fastened.
- F. Metal Accessories: Sheet metal strips, clamps, anchoring devices, and similar accessory units required for installation; matching or compatible with material being installed.
- G. Solder: ASTM B 32, lead-free alloy.
- H. Bituminous Coating: SSPC-Paint 12, solvent-type, bituminous mastic.

2.9 MOTORS

- A. General requirements for motors are specified in Division 22 Section "Common Motor Requirements for Plumbing Equipment."
 - 1. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.
 - 2. Controllers, Electrical Devices, and Wiring: Electrical devices and connections are specified in Division 26 Sections.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Equipment Mounting: Install grease interceptors on concrete equipment base(s). Comply with requirements for equipment bases specified in Division 03 Section
 - 1. Coordinate sizes and locations of concrete bases with actual equipment provided.
 - 2. Construct bases to withstand, without damage to equipment, seismic force required by code.
 - 3. Construct concrete bases 4 inches high and extend base not less than 6 inches in all directions beyond the maximum dimensions of grease interceptors, unless otherwise indicated or unless required for seismic anchor support.
 - 4. Minimum Compressive Strength: 3000 psi at 28 days.
 - 5. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
 - 6. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base, and anchor into structural concrete floor.
 - 7. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 8. Install anchor bolts to elevations required for proper attachment to supported equipment.
- B. Install backwater valves in building drain piping. For interior installation, provide cleanout deck plate flush with floor and centered over backwater valve cover, and of adequate size to remove valve cover for servicing.
- C. Install cleanouts in aboveground piping and building drain piping according to the following, unless otherwise indicated:
 - 1. Size same as drainage piping up to NPS 4. Use NPS 4 for larger drainage piping unless larger cleanout is indicated.
 - 2. Locate each change in direction of piping greater than 45 degrees.
 - 3. Locate at minimum intervals of 50 feet for piping NPS 4 and smaller and 100 feet for larger piping.
 - 4. Locate at base of each vertical soil and waste stack.
- D. For floor cleanouts for piping below floors, install cleanout deck plates with top flush with finished floor.

- E. For cleanouts located in concealed piping, install cleanout wall access covers, of types indicated, with frame and cover flush with finished wall.
- F. Install floor drains at low points of surface areas to be drained. Set grates of drains flush with finished floor, unless otherwise indicated.
 - 1. Position floor drains for easy access and maintenance.
 - 2. Set floor drains below elevation of surrounding finished floor to allow floor drainage. Set with grates depressed according to the following drainage area radii:
 - a. Radius, 30 Inches or Less: Equivalent to 1 percent slope, but not less than 1/4-inch total depression.
 - b. Radius, 30 to 60 Inches: Equivalent to 1 percent slope.
 - c. Radius, 60 Inches or Larger: Equivalent to 1 percent slope, but not greater than 1-inch total depression.
 - 3. Install floor-drain flashing collar or flange so no leakage occurs between drain and adjoining flooring. Maintain integrity of waterproof membranes where penetrated.
 - 4. Install individual traps for floor drains connected to sanitary building drains, unless otherwise indicated.
- G. Install roof flashing assemblies on sanitary stack vents and vent stacks that extend through roof.
- H. Install through-penetration firestop assemblies in plastic stacks at floor penetrations.
- I. Assemble open drain fittings and install with top of hub 2 inches above floor.
- J. Install deep-seal traps on floor drains and other waste outlets, if indicated.
- K. Install floor-drain, trap-seal primer fittings on inlet to floor drains that require trap-seal primer connection.
 - 1. Exception: Fitting may be omitted if trap has trap-seal primer connection.
 - 2. Size: Same as floor drain inlet.
- L. Install air-gap fittings on draining-type backflow preventers and on indirect-waste piping discharge into sanitary drainage system.
- M. Install sleeve flashing device with each riser and stack passing through floors with waterproof membrane.
- N. Install frost-resistant vent terminals on each vent pipe passing through roof in applicable climate zones. Maintain 1-inch clearance between vent pipe and roof substrate.
- O. Install expansion joints on vertical stacks and conductors. Position expansion joints for easy access and maintenance.
- P. Install wood-blocking reinforcement for wall-mounting-type specialties.
- Q. Install traps on plumbing specialty drain outlets. Omit traps on indirect wastes unless trap is indicated.

3.2 CONNECTIONS

- A. Piping installation requirements are specified in other Division 22 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to equipment to allow service and maintenance.
- C. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

3.3 FLASHING INSTALLATION

- A. Fabricate flashing from single piece unless large pans, sumps, or other drainage shapes are required. Join flashing according to the following if required:
 - 1. Lead Sheets: Burn joints of lead sheets 6.0-lb/sq. ft. (30-kg/sq. m), 0.0938-inch (2.4-mm) thickness or thicker. Solder joints of lead sheets 4.0-lb/sq. ft. (20-kg/sq. m), 0.0625-inch (1.6-mm) thickness or thinner.
- B. Install sheet flashing on pipes, sleeves, and specialties passing through or embedded in floors and roofs with waterproof membrane.
 - 1. Pipe Flashing: Sleeve type, matching pipe size, with minimum length of 10 inches, and skirt or flange extending at least 8 inches around pipe.
 - 2. Sleeve Flashing: Flat sheet, with skirt or flange extending at least 8 inches around sleeve.
 - 3. Embedded Specialty Flashing: Flat sheet, with skirt or flange extending at least 8 inches around specialty.
- C. Set flashing on floors and roofs in solid coating of bituminous cement.
- D. Secure flashing into sleeve and specialty clamping ring or device.
- E. Install flashing for piping passing through roofs with counterflashing or commercially made flashing fittings, according to Division 07 Section "Sheet Metal Flashing and Trim."
- F. Fabricate and install flashing and pans, sumps, and other drainage shapes.

3.4 LABELING AND IDENTIFYING

- A. Equipment Nameplates and Signs: Install engraved plastic-laminate equipment nameplate or sign on or near each of the following:
 - 1. Grease interceptors.
 - 2. Oil interceptors.
- B. Distinguish among multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations, in addition to identifying unit. Nameplates and signs are specified in Division 22 Section "Identification for Plumbing Piping and Equipment."

3.5 PROTECTION

- A. Protect drains during the remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.
- B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

END OF SECTION

SECTION 260500

BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL REQUIREMENTS

1.1 RELATED DOCUMENTS

- A. The general conditions and Division 1 are part of this section and the contract for this work and apply to this section as fully as if repeated herein. This section, 260500, applies to all Division 26 categories.
- B. Reference to other sections: The applicable requirements from other Division 26 sections required for a complete and operational system shall form a part of the electrical work and each section shall be thoroughly reviewed by the Contractor for application to all other sections.

1.2 EXPLANATION OF DRAWINGS

- A. These construction documents are intended to be diagrammatic and reflect the scope, quality, and character of the work to be performed; all miscellaneous materials and work required for a complete and operational system, though not specifically mentioned, shall be furnished and installed by the Contractor.
- B. The Contractor shall confirm sizes, dimensions, weights and locations of all devices, light fixtures, and equipment prior to installation. Dimensioned architectural drawings shall take precedence over diagrammatic layouts shown on these contract documents.
- C. The specifications and the drawings are an integral document and shall be considered complementary to each other. In the case of a conflict between the specifications and the drawings, the more constricting condition shall be enforced.
- D. The Contractor shall be responsible for reporting any discrepancies, errors, or omissions noted prior to bid.
- E. It is the intent of the drawings to indicate schematic routing and placement of devices, fixtures, equipment and conduit. Equipment or devices requiring a precise location shall be dimensioned on other trade documents (architectural, mechanical, etc.). Offsets, elbows, or extensions shall be furnished and installed by the Contractor as necessary to avoid structure, piping, and clearances and to provide a complete and workmanlike installation.

1.3 QUALITY ASSURANCE

- A. All work, material or equipment shall comply with the codes, ordinances and regulations of the local government having jurisdiction, including the regulations of serving utilities and any participating government agencies having jurisdiction.
- B. All electrical work shall comply with the latest edition under enforcement, including all amendments, modifications and supplements, of the following codes and standards or other regulations which may apply:
 - 1. American Disabilities Act (ADA)
 - 2. American National Standards Institute (ANSI)
 - 3. American Society for Testing and Materials (ASTM)
 - 4. Institute of Cable Engineers Association (ICEA)
 - 5. Institute of Electrical and Electronic Engineers (IEEE)
 - 6. Local Code Enforcement Agency Requirements
 - 7. National Electrical Code (NEC)
 - 8. National Electrical Contractor's Association (NECA)
 - 9. National Electrical Manufacturer's Association (NEMA)
 - 10. National Electrical Testing Association (NETA)
 - 11. National Fire Protection Association (NFPA)
 - 12. Underwriters' Laboratories, Inc. (UL)
 - 13. International Building Code (IBC)

No requirement of these drawings and specifications shall be construed to void any of the provisions of the above standards. Any conflicts or changes required to the contract documents in order to obtain compliance with applicable codes shall be brought to the immediate attention of the Engineer, Architect, and Owner's Representative by the Contractor.

- C. All items shall be listed by Underwriter's Laboratories and shall bear the U.L. label.
- D. Equipment shown to scale is approximate only and based upon a general class of equipment specified. The Contractor shall verify all dimensions and clearances prior to commencement of work.
- E. The Contractor shall verify all points of connection with the manufacturer's requirements, instructions, or recommendations prior to installation. The actual dimensions, weights, clearance requirements and installation requirements shall be verified and coordinated by the Contractor.

1.4 SUBMITTALS

- A. Shop drawings for materials, equipment, devices, fixtures, and systems shall be submitted by the Contractor for review within 30 days after award of the contract. In addition to the requirements for submittals stated herein, the Contractor shall be responsible for compliance with the requirements of Division 1.
- B. The Contractor shall bear the responsibility for any materials installed which were not submitted for review or not installed in compliance with the review comments and the contract documents.

- C. Verbal modification of submittal documents or changes to the requirements of the contract documents shall not be acceptable. All submittal material must be documented in a written format.
- D. All submittal packages must be submitted at one time and in accordance with the specification section appropriate for the material. All packages must be identical and clearly labeled indicating the specification section, project name, submittal date, Contractor's name, Engineer's name, preparer's name and submission version (first submission, resubmittal #1, etc.).
- E. Product catalog cutsheets and descriptive literature shall be cross-referenced to the specification section by paragraph.
- F. All submittal packages shall be permanently bound in brochure or booklet format. A minimum quantity of six (6) submittal booklets shall be provided by the Contractor; additional printed copies may be required if so noted. Electronic copies of completed submittal packages, furnished on a USB memory stick, in pdf format, may be furnished in lieu of printed copies.
- G. Materials which bear a certification or approval of a testing agency, performance criteria, society, agency, of other organization shall be submitted with all labels identified.
- H. The submittal shall be complete and with catalog data and information properly marked to show, among other things, materials, capacity and performance data to meet the specified requirements.
- I. Incomplete submittals will be rejected at the discretion of the reviewing Engineer.
- J. Review of the submittal is only for general conformance with the contract documents. The Contractor is responsible for confirmation and coordination of dimensions, quantities, sizes, fabrication, installation methods, and for coordination of work of other trades with electrical work.
- K. Detailed working drawings shall be prepared and submitted showing items which are to be fabricated including transformer mounting racks, unistrut mounting frames, equipment room layouts, pull boxes, splice boxes, gutters, etc.
- L. Minimum scale for submitted drawings shall be 1/8". Details shall be drawn to 1/4" scale. All drawings shall be 8.5"x11" or larger.
- M. Submittal brochures shall be complete and descriptive of the type, make, manufacturer, application, quantity, performance, capacity, ratings, options, dimensions, clearances, weights, nameplate data, special installation requirements, mounting method, NEMA type, NEMA class, environmental restrictions, layout requirements or other information as may be necessary for review of the material.
- N. Submittal brochures for switchgear shall include, as a minimum, the following: singleline diagrams; fault current ratings of buses and devices; device identification, ratings, layout and characteristics; dimensions; circuit identification; identification label

type and method of affixing; mounting; conduit entry point and quantities; NEMA enclosure type; and additional data as required for a complete review.

- O. Submittal brochures for lighting systems shall include, as a minimum, the following: manufacturer; detailed drawing or photograph; dimensions; lamp data; ballast data; certified photometric data from a third-party testing agency; U.L. label listing; fixture number or identification from the drawings; finish color and material; mounting equipment; socket type and rating; environmental ratings (damp location, watertight, explosion-proof, etc.); voltage; input wattage; and additional information as necessary for a complete review.
- P. The Contractor shall be responsible for all aspects of substitutions of material including any additional cost or delay incurred as a result of the substitution. The Contractor shall coordinate all substitutions with other trades, verify code compliance, verify clearances, photometric performance, appearance, suitability, constructability, and availability of the material prior to submitting the substitution for review. The Contractor shall bear the responsibility of any increased costs to other trades which are directly related to the substitution.

1.5 MATERIAL HANDLING

- A. The Contractor shall deliver all equipment and material to the site in the manufacturer's original packaging without seals broken.
- B. The Contractor shall handle, store, protect, and unpack all equipment and materials in accordance with the manufacturer's recommendations.
- C. The Contractor shall inspect the equipment and materials in a timely manner to ensure the completeness and appropriateness of the shipment.
- D. The Contractor shall immediately replace damaged or defective equipment or materials with identical new equipment or material at no cost, inconvenience, or delay to the Owner.

1.6 EXISTING CONDITIONS

- A. The Contractor shall verify all existing conditions prior to bid and include all costs associated with the existing conditions in bid.
- B. The Contractor shall match the finish and appearance of all existing conditions where constructing new work adjacent to existing surfaces or equipment.
- C. Coordinate with the Owner's Representative for all ongoing projects or the work of other trades which may affect the Contractor's work. Verify Owner schedule requirements for special or standard events which may impact the Contractor's work.
- D. Coordinate work to be performed in occupied areas and comply with the Owner's requirements such that the Owner's work or ongoing activities are not disrupted by the Contractor. Verify the need for work to be performed during premium hours, evenings,

weekends, or holidays prior to bid and include all costs in bid. Bring to the Owner's attention the need and locations for all disruptive work prior to commencement of work.

1.7 TEMPORARY CONSTRUCTION UTILITY REQUIREMENTS

- A. Power, telephone or other temporary construction utility services required by the Contractor shall be the responsibility of the Contractor.
- B. Arrangements for temporary construction utility services shall be made by the Contractor in coordination with the Owner's Representative and the serving utility company.

1.8 CONTINUITY OF SERVICE

- A. The Contractor shall coordinate all shutdowns, outages, and service interruptions with the Owner's Representative. Electrical shutdowns shall be kept to the minimum number necessary to complete the work.
- B. The Contractor shall coordinate all work done on overtime or premium time with Owner's Representative prior to commencement of work.
- C. All work performed in or through occupied spaces, or other work disruptive to existing occupants shall be considered as performed during premium time or as overtime for the purposes of the bid; include all costs in bid.
- D. The Contractor shall notify Owner's Representative of all shutdowns or disruptive work a minimum of 72 hours prior to commencement of work. The Contractor shall obtain written approval from the Owner's Representative prior to commencement of work.
- E. The Contractor shall provide all necessary temporary power, including temporary power generation, to accommodate shutdowns and minimize disruption of the Owner's activities.
- F. The Owner reserves the right to provide emergency repairs or temporary power to maintain service continuity at the Contractor's cost in the event Contractor fails to provide adequate service continuity.

1.9 RECORD DOCUMENTS

- A. The Contractor shall prepare as-built documents depicting all revisions to branch circuits, conduit routing, equipment, panel schedules, lighting control schedules, or materials. Drawings shall be in AutoCAD .dwg format and Adobe .pdf formats. Contractor shall provide (1) full-size hard copy print and (1) USB memory stick of all as-built drawings and files. Hand-drawn or "red-line" drawings shall not be accepted. Drawings shall be legible, reproducible, and properly identified such they may be used as a reference for maintenance or construction.

- B. The Contractor shall provide a minimum of three copies of the operation and maintenance manuals to the Owner's Representative at the completion of the project. Each copy shall be bound in a three-ring binder and labeled indicating: the project name; system name; Contractor's name, telephone number, and contact person; and Owner's name. The Contractor shall provide the following minimum information within each manual:
1. List of the Subcontractors performing work on the system including contact names, telephone numbers, and email addresses.
 2. Routine and emergency service contact names, telephone numbers, and email addresses for each system.
 3. Description of system operation.
 4. Single line diagrams and control wiring diagrams.
 5. Detailed product literature with technical information.
 6. Local factory representative contact name, telephone number, and email address.
 7. Sequence of starting, shutdown and operation.
 8. Installation instructions and safety requirements.
 9. Maintenance schedule, testing instructions and performance parameters.
 10. Parts list including recommended spare parts.

1.10 GUARANTEE

- A. All electrical work, materials and equipment provided under this contract shall be guaranteed for a period of one year from the date of acceptance of the work by the Owner. Any failures, problems, or deficiencies experienced during this period due to defective materials or faulty workmanship shall be immediately corrected by the Contractor without cost to the Owner. The Contractor shall be responsible for all damages to the Owner's facility, production, or work product due to deficiencies in the electrical system. Equipment guarantees in excess of one year shall not be superseded by this guarantee.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. All materials shall be new, of prime quality, listed as suitable for the application, and bear factory-applied U.L. labels.
- B. Materials shall be currently in production and shall be supported by spare parts, repair service, maintenance, and factory technical support.
- C. Materials of one assembly (switchboards, substations, motor control centers, etc.) shall be of one manufacturer unless specifically stated otherwise in the contract documents.

PART 3 - EXECUTION

3.1 INSTALLATION REQUIREMENTS

- A. All work shall conform to National Electrical Contractors Association standards of installation and the requirements of the manufacturer, Division 1, Division 26, and the Owner's Representative.
- B. The Contractor shall field-verify all dimensions and coordinate dimensions with equipment sizes and locations.
- C. The Contractor shall coordinate and install all penetrations, openings, slots, chases, or sleeves as necessary for the routing and installation of raceways, conductors, or equipment. The Contractor shall provide approved fire sealant to maintain fire ratings at all penetrations.
- D. The Contractor shall coordinate the placement and sequence of installation of all mounting bolts, conduits, sleeves, etc. which are to be set in poured-in-place concrete slabs, concrete walls, and post-tension slabs per the structural drawings.
- E. The Contractor shall verify and coordinate all equipment points of connection, voltages, wiring requirements, disconnecting means, fuse sizes, overcurrent protection, etc. with the equipment supplier. The Contractor shall immediately notify the Engineer of any discrepancies with the construction documents.
- F. The Contractor shall install access panels in walls or ceilings in coordination with the Architect for all junction boxes or electrical equipment that require access.
- G. All equipment shall be installed plumb, parallel, or orthogonal to structure and in a neat orderly fashion. All material shall be accessible for maintenance, inspection, servicing or replacement.
- H. Verify final locations of devices, equipment, and fixtures during the rough-in phase with dimensioned architectural drawings, fabrication drawings, or other space planning requirements included in the contract documents.
- I. The Contractor shall coordinate and arrange for the proper sequence of construction including scheduling of long-lead items, shutdowns, work of other trades, and Owner-scheduled events.
- J. The Contractor shall provide adequate and qualified supervision for the work performed; no work shall be performed without the supervision of a representative of the Contractor.
- K. The Contractor shall coordinate and cooperate with all other trades for a successful completion of the project.

3.2 SEISMIC BRACING

- A. The Contractor shall seismically brace all equipment in accordance with requirements of the California Code of Regulations, Title 24, Seismic Design Category D and provide

certification of seismic compliance upon request, including structural calculations as required.

3.3 CUTTING AND PATCHING

- A. The Contractor shall provide cutting and patching as required to install the electrical system in this contract.
- B. Coordinate the schedule of all cutting such that the work may be performed in an expeditious manner with minimum inconvenience to the Owner.
- C. Remove or cut structures or materials as necessary for demolition prior to the installation of new electrical work.
- D. The Contractor shall protect all surfaces, structure, furnishings, and finishes not directly affected by cutting or patching.
- E. Provide dust and moisture barriers as required during cutting and prior to patching openings.
- F. All penetrations through roofs shall be performed per architectural requirements, including compliance with the roofing manufacturers' requirements.
- G. Patching shall be performed with materials which exactly match the adjacent surfaces in color, texture, character, and appearance.
- H. All patches must maintain the fire ratings of the original surface and shall be sealed with a U.L. listed and Fire Marshal approved sealant.

3.4 COMMISSIONING

- A. The Contractor shall initiate start up of all electrical equipment including operation of all devices, switches, generators, transfer switches, overcurrent protection, disconnect switches, etc. to verify normal operation of all moving parts and electrical performance.
- B. The Contractor shall test, adjust, aim, align, label, clean and complete all systems prior to acceptance by the Owner's Representative.
- C. The Contractor shall demonstrate that all systems operate within the manufacturer's recommended performance characteristics, the electrical construction documents, system requirements, and Owner requirements.
- D. The Contractor shall test each system per the manufacturer's requirements and shall perform the following system tests:
 - 1. Inspect cables for physical damage and proper connection.
 - 2. Torque test cable connection and tighten in accordance with termination manufacturers recommendations.
 - 3. Infrared scan all connections under loaded conditions and provided color printed images.

4. Insulation resistance test of each cable.
5. Inspect ground system connections.
6. Voltage drop tests on the main grounding electrode of system.
7. Determine the ground resistance between the main grounding system and all major electrical equipment frames, system neutral points.
8. Check rated voltage and phase balance at all equipment, motors and selected devices at full load conditions. Measure no load voltage conditions at each location.
9. Furnish all material, equipment, instruments and labor as required to complete testing.
10. Provide all test results properly bound in a three-ring binder.

3.5 TRAINING

- A. Furnish at least one copy operating instructions from the manufacturer for all electrical equipment to the Owner's Representative. Instructions shall be clean, legible, and properly bound in a three-ring binder.
- B. The Contractor shall provide training for the Owner's staff as directed by the Owner's Representative for a minimum of one man-day (eight hours).
- C. Provide classroom training by a qualified instructor for the operation, installation, and maintenance of designated equipment or systems including, but not limited to, generation systems, transfer switches, uninterruptible power supplies, energy management systems, lighting control systems, power distributions systems, and other systems which may require instruction.

3.6 CLEANING

- A. Contractor shall clean all equipment, panelboard interiors, conduit interiors, fixtures, devices, etc. of all extraneous paint, drywall mud, overspray, dust, dirt, debris, trash, grease or markings. All cleaning shall be performed by the Contractor in accordance with the appropriate manufacturer's recommendations.

END OF SECTION

SECTION 260519

WIRE AND CABLE

PART 1 GENERAL REQUIREMENTS

1.1 RELATED DOCUMENTS

- A. The general conditions, Division 1, and Basic Electrical Requirements (Section 260500) are part of this section and the contract for this work and apply to this section as fully as if repeated herein.
- B. Reference to other sections: The applicable requirements from other Division 26 sections required for a complete and operational system shall form a part of the electrical work and each section shall be thoroughly reviewed by the Contractor for application to all other sections.

1.2 QUALITY ASSURANCE AND STANDARDS

- A. All work, material or equipment shall comply with the codes, ordinances and regulations of the local government having jurisdiction, including the regulations of serving utilities and any participating government agencies having jurisdiction.
- B. All electrical work shall comply with the latest edition under enforcement including all amendments, modifications, and supplements of the following codes and standards or other regulations which may apply:
 - 1. American Disabilities Act (ADA)
 - 2. American National Standards Institute (ANSI)
 - 3. American Society for Testing and Materials (ASTM)
 - 4. Institute of Cable Engineers Association (ICEA)
 - 5. Institute of Electrical and Electronic Engineers (IEEE)
 - 6. Local Code Enforcement Agency Requirements
 - 7. National Electrical Code (NEC)
 - 8. National Electrical Contractor's Association (NECA)
 - 9. National Electrical Manufacturer's Association (NEMA)
 - 10. National Electrical Testing Association (NETA)
 - 11. National Fire Protection Association (NFPA)
 - 12. Underwriter's Laboratories, Inc.(UL)
 - 13. International Building Code (IBC)
- C. No requirement of these drawings and specifications shall be construed to void any of the provisions of the above standards. Any conflicts or changes required to the contract documents in order to obtain compliance with applicable codes shall be brought to the immediate attention of the Engineer, Architect, and Owner's Representative by the contractor.

- D. All items shall be listed by Underwriter's Laboratories and shall bear the UL label.
- E. Equipment shown to scale is approximate only and based upon a general class of equipment specified. The Contractor shall verify all dimensions and clearances prior to commencement of work.
- F. The Contractor shall verify all points of connection with the manufacturer's requirements, instructions, or recommendations prior to installation. The actual dimensions, weights, clearance requirements and installation requirements shall be verified and coordinated by the contractor.

1.3 SUBMITTALS

- A. Submit shop drawings per Section 260500 for review including the following:
 - 1. Conductor materials and stranding.
 - 2. Connector and termination materials.
 - 3. Installation materials and methods.
 - 4. Termination materials and methods.

PART 2 PRODUCTS

- 2.1 Conductors size #12AWG and smaller shall be solid, conductors size #10AWG and larger shall be stranded. Conductors shall be minimum size #12AWG for power and lighting circuits; control circuits shall use a minimum conductor size of #14AWG.
- 2.2 Feeders or branch circuits 100A or more may be aluminum unless noted otherwise on the drawings. All conductor less than 100A shall be copper.
- 2.3 Insulation shall be type THW or THHN/THWN for all branch circuits up to and including size #2AWG. Insulation for conductors over size #2AWG shall be XHHW.
- 2.4 Jackets shall be nylon or PVC material.
- 2.5 All cables shall be UL listed for the application.
- 2.6 All conductors shall be installed in conduit in the field, unless specifically noted otherwise in these documents. Type AC and type NM cable is not acceptable; type MC cable may be used where specifically noted for purposes of flexibility, maintenance, or ease of installation but shall not be used without explicit permission and direction of the Engineer.
- 2.7 Electrical connectors shall be UL listed and suitable for the conductor material being connected and rated appropriately. Connectors shall be solderless helical metal spring pressure type for conductors #10AWG and smaller. Push-in connectors (WAGO) shall not be used. Connectors shall be compression type for conductors #8AWG and larger.

PART 3 EXECUTION

- 3.1 All wiring methods shall comply with the latest enforced edition of the National Electrical Code and the authority having jurisdiction.
- 3.2 Conductors shall be installed in clean raceways using nylon cord, polypropylene cord, hemp rope, or other material which will not damage the conductors or conduit. Do not use metal fish tape to pull conductors. Use a listed cable pulling lubricant when necessary for pulling.
- 3.3 Conductors shall be pulled into conduit simultaneously so as to not damage conductors during pulling.
- 3.4 Conductors installed at outlets and switches shall have a minimum of 6" pigtail left in the box for future connections. All conductors not connected to devices shall be terminated with splice caps and tape.
- 3.5 Conductors shall be terminated such that no copper material is exposed. Conductors shall be trained and labeled at terminations in a neat and workmanlike manner.
- 3.6 Mechanical lugs for conductor terminations at equipment (switchboard bussing, circuit breakers, disconnect switches, etc.) shall be sized and rated to accept the conductors specified. Oversized conductors shall utilize reducing pins to facilitate terminations.
- 3.7 All terminations shall be mechanically sound, featuring helical twisting of the terminating conductors prior to the application of an electrical connector. The electrical connector shall not be used for the mechanical connection of the conductors.
- 3.8 All terminations shall comply with the manufacturer's installation and torquing requirements.
- 3.9 Splices on conductors #10AWG and smaller shall be made with splice caps twisted onto the conductors. Tape all splices.
- 3.10 Splices on conductors #8AWG and larger shall be made with pressure connectors and terminal lugs. Where exposed to water, damp air, or moisture splices shall be watertight.
- 3.11 Splices shall be not be made in feeders; splices to branch circuits shall not be made within panelboards or similar enclosures.
- 3.12 When combining homeruns, the Contractor shall derate all conductors per NEC requirements including reducing the conductor ampacity and using high temperature insulation where necessary. Conduit sizes shall be adjusted by the Contractor, per NEC requirements, for any conductor revisions.
- 3.13 The Contractor shall provide a code-sized insulated grounding conductor, in addition to the feeder conductors indicated on the drawings, for all feeder circuits.
- 3.14 Conductors shall be color-coded as follows:

208Y/120V	Phase	480Y/277V
Black	A	Brown
Red	B	Orange
Blue	C	Yellow
White	Neutral	Gray
Green	Ground	Green

- 3.15 Where tape or labels are used for color-coding, apply material at each end of the conductor, at all splices, within all boxes, and at all terminations.

END OF SECTION

SECTION 260526

GROUNDING AND BONDING

PART 1 GENERAL REQUIREMENTS

1.1 RELATED DOCUMENTS

- A. The general conditions, Division 1, and Basic Electrical Requirements (Section 260500) are part of this section and the contract for this work and apply to this section as fully as if repeated herein.
- B. Reference to other sections: The applicable requirements from other Division 26 sections required for a complete and operational system shall form a part of the electrical work and each section shall be thoroughly reviewed by the Contractor for application to all other sections.

1.2 SCOPE

- A. Permanently and effectively ground conduit systems, supports, cabinets, switchboards, equipment cases, motor frames, lighting standards, landscape lighting, etc., and system neutral conductors per National Electrical Code.
- B. Grounding details, symbols and singlelines shown on plans are schematic only. If additional equipment, such as ground rods, clamps, conductors, etc., is required per National Electrical Code furnish and install without additional cost to Owner.

1.3 QUALITY ASSURANCE AND STANDARDS

- A. The latest revision of standards listed below form an integral part of this specification.
 - 1. American Disabilities Act (ADA)
 - 2. American National Standards Institute (ANSI)
 - 3. American Society for Testing and Materials (ASTM)
 - 4. Institute of Cable Engineers Association (ICEA)
 - 5. Institute of Electrical and Electronic Engineers (IEEE)
 - 6. Local Code Enforcement Agency Requirements
 - 7. National Electrical Code (NEC)
 - 8. National Electrical Contractor's Association (NECA)
 - 9. National Electrical Manufacturer's Association (NEMA)
 - 10. National Electrical Testing Association (NETA)
 - 11. National Fire Protection Association (NFPA)
 - 12. Underwriters' Laboratories, Inc. (UL)
 - 13. International Building Code (IBC)
- B. Furnish products listed by Underwriters Laboratories, Inc. as suitable for purposes specified and shown.

1.4 SUBMITTALS

- A. Submit shop drawings per Section 260500 for review.
- B. Manufacturer's data on grounding and bonding products and associated accessories.

1.5 ACCEPTABLE MANUFACTURERS

- A. Burndy Corporation
- B. Cadweld Division
- C. Crouse-Hinds
- D. Thomas and Betts Corporation
- E. Okonite Company
- F. Tecto Weld

PART 2 PRODUCTS

2.1 GROUNDING MATERIAL

- A. Mechanical Connectors: Material shall be copper and of sound continuity when installed.
- B. Exothermic Connectors: Material shall be of low emission, electric-start type and of sound continuity when installed.
- C. Bare Ground Conductors
 - 1. Conductor shall be 7-strand annealed copper.
 - 2. Individual members of stranded conductor shall meet the requirements of ASTM B-3.
 - 3. Stranded conductors shall be assembled in accordance with the requirements of ASTM B-8.
- D. Insulated Conductor (Equipment grounding conductor)
 - 1. Size in accordance with NEC Article 250-95 unless otherwise shown as oversize.
- E. Bonding Plates, Connectors, Terminals and Clamps
 - 1. Bonding Plates, Connectors, Terminals and Clamps: Provide electrical bonding plates, connectors, terminals, lugs and clamps as recommended by bonding plate, connector, terminal and clamp manufacturers for indicated applications.
- F. Jumpers
 - 1. Copper braided or leaf-type flexible jumper, size as necessary.
- G. Electrical Grounding Connection Accessories

1. Electrical Grounding Connection Accessories: Provide electrical insulating tape, heat-shrinkable insulating tubing, welding materials, bonding straps, as recommended by accessories manufacturers for type service indicated.
- H. Field Welding
1. Field Welding: Comply with AWS Code for procedures, appearance, and quality of welds; and for methods used in correction welding work. Provide welded connections where grounding conductors connect to underground grounding and plate electrodes.

PART 3 EXECUTION

3.1 GENERAL

- A. Install electrical grounding and bonding systems as indicated, in accordance with manufacturer's instructions and applicable portions of NEC, NECA's Standard of Installation, and in accordance with recognized industry practices to ensure that products comply with requirements.
- B. Coordinate with other electrical work as necessary to interface installation of electrical grounding and bonding system work with other work.
- C. Ground each separately-derived system neutral to nearest cold water piping, service entrance equipment grounding electrodes, and electrically continuous building steel.
- D. Connect together system neutral, service equipment enclosures, electrically continuous building steel, exposed non-current carrying metal parts of electrical equipment, metal raceway systems, grounding conductor in raceways and cables, receptacle ground connectors, and plumbing systems.
- E. Apply corrosion-resistant finish to field-connections, buried metallic grounding and bonding products, and places where factory applied protective coatings have been destroyed, which are subjected to corrosive action.

3.2 GROUND INSTALLATION

- A. Equipment Grounding Conductor
 1. Provide separate, insulated conductor within each feeder and branch circuit raceway including lighting circuits.
 2. Terminate each end on suitable lug, bus, bushing, or device.
- B. Motors or equipment rated at 480V shall have bonded ground jumpers from feeder conduit to motor frame.
- C. Grounding bushing shall be used wherever conduits are grounded.
- D. Ground the electrical service system neutral at service entrance equipment to the grounding electrode system.

- E. Install rod electrodes at locations indicated.
- F. Provide grounding well pipe with cover at rod locations where indicated. Install well pipe top flush with finished grade.
- G. Install products in accordance with manufacturers' instructions.
- H. Use mechanical connections in above ground and accessible locations and use exothermic connectors in underground and inaccessible locations.
- I. Provide bonding to meet Regulatory Requirements. Include bonding of metallic gas and sprinkler piping systems.
- J. Install ground clamps specifically designed for grounding purposes. Where grounded conductor is in conduit, use ground clamp which grounds both conductor and conduit. Strap metal is not acceptable for grounding and bonding.

END OF SECTION

SECTION 260529

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL REQUIREMENTS

1.1 RELATED DOCUMENTS

- A. The general conditions, Division 1, and Basic Electrical Requirements (Section 260500) are part of this section and the contract for this work and apply to this section as fully as if repeated herein.
- B. Reference to other sections: The applicable requirements from other Division 26 sections required for a complete and operational system shall form a part of the electrical work and each section shall be thoroughly reviewed by the Contractor for application to all other sections.

1.2 QUALITY ASSURANCE AND STANDARDS

- A. All work, material or equipment shall comply with the codes, ordinances and regulations of the local government having jurisdiction, including the regulations of serving utilities and any participating government agencies having jurisdiction.
- B. All electrical work shall comply with the latest edition under enforcement, including all amendments, modifications, and supplements of the following codes and standards or other regulations which may apply:
 - 1. American Disabilities Act (ADA)
 - 2. American National Standards Institute (ANSI)
 - 3. American Society for Testing and Materials (ASTM)
 - 4. Institute of Cable Engineers Association (ICEA)
 - 5. Institute of Electrical and Electronic Engineers (IEEE)
 - 6. Local Code Enforcement Agency Requirements
 - 7. National Electrical Code (NEC)
 - 8. National Electrical Contractor's Association (NECA)
 - 9. National Electrical Manufacturer's Association (NEMA)
 - 10. National Electrical Testing Association (NETA)
 - 11. National Fire Protection Association (NFPA)
 - 12. Underwriter's Laboratories, Inc. (UL)
 - 13. International Building Code (IBC)

No requirement of these drawings and specifications shall be construed to void any of the provisions of the above standards. Any conflicts or changes required to the contract documents in order to obtain compliance with applicable codes shall be brought to the immediate attention of the Engineer, Architect, and Owner's Representative by the contractor.

- C. All items shall be listed by Underwriter's Laboratories and shall bear the U.L. label.
- D. Equipment shown to scale is approximate only and based upon a general class of equipment specified. The Contractor shall verify all dimensions and clearances prior to commencement of work.
- E. The Contractor shall verify all points of connection with the manufacturer's requirements, instructions, or recommendations prior to installation. The actual dimensions, weights, clearance requirements and installation requirements shall be verified and coordinated by the contractor.

1.3 SUBMITTALS

- A. Submit shop drawings per Section 260500 for review including the following:
 - 1. Support materials
 - 2. Attachment and anchor materials
 - 3. Installation materials and methods

PART 2 PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Cooper B-Line, Inc.; a division of Cooper Industries.
 - b. Thomas & Betts Corporation.
 - c. Unistrut; Tyco International, Ltd.
 - 3. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
 - 4. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
 - 5. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
 - 6. Channel Dimensions: Selected for applicable load criteria.
- B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.
- C. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
- D. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of

conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.

- E. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following and shall be compatible with all building surfaces and materials:
1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
 - a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the work include, but are not limited to, the following:
 - b. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Hilti Inc.
 - 2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 2. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
 - a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - b. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Hilti Inc.
 - 2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
 4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
 5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
 6. Toggle Bolts: All-steel springhead type.
 7. Hanger Rods: Threaded steel.

PART 3 EXECUTION

3.1 APPLICATION

- A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.
- B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and GRC as required by the NEC. Minimum rod size shall be 3/8 inch in diameter.
- C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.

- D. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

3.2 SUPPORT INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

- A. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.

END OF SECTION

SECTION 260533

RACEWAYS

PART 1 GENERAL REQUIREMENTS

1.1 RELATED DOCUMENTS

- A. The general conditions, Division 1, and Basic Electrical Requirements (Section 260500) are part of this section and the contract for this work and apply to this section as fully as if repeated herein.
- B. Reference to other sections: The applicable requirements from other Division 26 sections required for a complete and operational system shall form a part of the electrical work and each section shall be thoroughly reviewed by the Contractor for application to all other sections.

1.2 QUALITY ASSURANCE AND STANDARDS

- A. All work, material or equipment shall comply with the codes, ordinances and regulations of the local government having jurisdiction, including the regulations of serving utilities and any participating government agencies having jurisdiction.
- B. All electrical work shall comply with the latest edition under enforcement, including all amendments, modifications, and supplements of the following codes and standards or other regulations which may apply:
 - 1. American Disabilities Act (ADA)
 - 2. American National Standards Institute (ANSI)
 - 3. American Society for Testing and Materials (ASTM)
 - 4. Institute of Cable Engineers Association (ICEA)
 - 5. Institute of Electrical and Electronic Engineers (IEEE)
 - 6. Local Code Enforcement Agency Requirements
 - 7. National Electrical Code (NEC)
 - 8. National Electrical Contractor's Association (NECA)
 - 9. National Electrical Manufacturer's Association (NEMA)
 - 10. National Electrical Testing Association (NETA)
 - 11. National Fire Protection Association (NFPA)
 - 12. Underwriter's Laboratories, Inc. (UL)
 - 13. International Building Code (IBC)
- C. No requirement of these drawings and specifications shall be construed to void any of the provisions of the above standards. Any conflicts or changes required to the contract documents in order to obtain compliance with applicable codes shall be brought to the immediate attention of the Engineer, Architect, and Owner's Representative by the contractor.

- D. All items shall be listed by Underwriter's Laboratories and shall bear the U.L. label.
- E. Equipment shown to scale is approximate only and based upon a general class of equipment specified. The Contractor shall verify all dimensions and clearances prior to commencement of work.
- F. The Contractor shall verify all points of connection with the manufacturer's requirements, instructions, or recommendations prior to installation. The actual dimensions, weights, clearance requirements and installation requirements shall be verified and coordinated by the contractor.

1.3 SUBMITTALS

- A. Submit shop drawings per Section 260500 for review including the following:
 - 1. Raceway materials
 - 2. Fitting materials
 - 3. Installation materials and methods

PART 2 PRODUCTS

2.1 RIGID GALVANIZED STEEL (RGS) CONDUIT

- A. Continuous hot-dipped galvanized manufactured per UL and ANSI requirement.
- B. Rigid aluminum conduit is not acceptable.
- C. Conduit bodies for use with steel conduit, rigid or flexible, shall be manufactured per UL requirements and shall be cast metal with gasketed closures.
- D. Fittings for RGS conduit shall be malleable iron or forged steel with cadmium or zinc coating.
- E. Union couplings for joining rigid conduit at intermediate runs shall be of the same material as the conduit. Couplings shall be threaded concrete-tight to permit completing conduit runs when neither conduit can be turned and to permit breaking the conduit run at the union.
- F. Set screw connectors or threadless type are not acceptable.
- G. Minimum raceway size shall not be less than $\frac{3}{4}$ ".

2.2 ELECTRICAL METALLIC TUBING (EMT)

- A. Conduit shall be cold rolled zinc coated steel and manufactured per UL and ANSI requirements.
- B. Fittings for EMT shall be watertight steel or malleable gripping ring compression type.

- C. Pressure cast material for nuts of compression ring type fittings and set-screw connections are not acceptable.
- D. Minimum raceway size shall be $\frac{3}{4}$ ".

2.3 ELECTRICAL NON-METALLIC TUBING (ENT)

- A. Conduit shall be manufactured in accordance with NEMA TC13 standards and shall be UL listed.
- B. Fittings for ENT shall be snap-on type threaded male adapters and locknuts.
- C. Minimum raceway size shall be $\frac{3}{4}$ ".

2.4 FLEXIBLE METALLIC CONDUIT

- A. Flexible conduit shall bear the UL label and be zinc coated steel.
- B. Fittings for flexible metallic conduit shall be steel or malleable iron. Fittings shall clamp to conduit securely.
- C. Screw in type, sheet metal or set-screw type fittings are not acceptable.
- D. Minimum raceway size shall not be less than $\frac{3}{4}$ ".

2.5 LIQUID TIGHT FLEXIBLE CONDUIT

- A. Conduit shall be manufactured in accordance with UL and ANSI requirements. Conduit shall be approved for grounding and compatible with approved fittings. Flexible steel conduit shall be hot dipped galvanized with extruded PVC covering manufactured per UL requirements.
- B. Fittings shall be liquid tight type with body and gland nut of steel or malleable iron with provisions for grounding flexible conduit to fittings.
- C. Minimum raceway size shall be $\frac{3}{4}$ ".

2.6 POLYVINYL CHLORIDE (PVC) CONDUIT

- A. PVC shall be constructed of a virgin homopolymer PVC compound and be manufactured according to NEMA and UL specifications. PVC conduit shall be Schedule 40 or 80.
- B. Minimum raceway size shall be $\frac{3}{4}$ ".

PART 3 EXECUTION

3.1 RIGID GALVANIZED STEEL (RGS) CONDUIT

- A. RGS shall be used where exposed to weather or where subject to physical damage in exposed areas below 8'0" above finished floor.
- B. RGS shall be used in NEC classified hazardous locations with seal connections per NEC requirements.

3.2 ELECTRICAL METALLIC TUBING (EMT)

- A. EMT shall be run indoors concealed in drywall type construction, above suspended ceilings, and exposed indoors not less than 8'0" above finished floor in unfinished areas.
- B. EMT shall not be installed underground, outdoors, or embedded in concrete.

3.3 ELECTRICAL NON-METALLIC TUBING (ENT)

- A. ENT shall be run indoors concealed in drywall type construction where permissible by Code and by the local authority. ENT shall not be installed in any exposed areas.
- B. ENT to be installed embedded in concrete shall be approved by the Structural Engineer prior to installation. All embedded installations shall comply with the installation requirements provided by the Structural Engineer.

3.4 FLEXIBLE METALLIC CONDUIT

- A. Flexible conduit shall be used for indoor lighting connections in suspended ceiling areas and shall not exceed 6'0" in length.
- B. Flexible conduit shall be used for final connection to control equipment and not to exceed 2'0" in length.
- C. The conduit grounding system shall be continuous as recommended by the manufacturer and UL approved.

3.5 LIQUID TIGHT FLEXIBLE CONDUIT

- A. Liquid tight flexible conduit shall be used for final connection to machines, motors, transformers and equipment that requires vibration isolation.
- B. Liquid tight flexible conduit shall be used for final connection to equipment in wet or damp locations or where exposed to grease, water, dust, dirt, vapors, or chemicals.
- C. The conduit grounding system shall be continuous as recommended by the manufacturer and UL requirements.

3.6 POLYVINYL CHLORIDE (PVC) CONDUIT

- A. All sweeps, bends, and risers shall be concrete encased Schedule 80.
- B. All underground conduit, telephone conduit, service entrance conduit and feeders 100A and over shall have 3" of red mixed concrete cover and a metallic locating tape installed 6" above the top of the conduit.
- C. All PVC conduit feeders shall contain a copper green grounding conductor sized per NEC requirements and continuity shall be maintained throughout conduit runs and pullboxes.

3.7 CONDUIT INSTALLATION

- A. All conduit installation methods shall comply with the latest enforced edition of the National Electrical Code and the authority having jurisdiction.
- B. All conduit runs containing segments exposed to different temperatures shall utilize listed fittings suitable for expansion, expansion-deflection, and deflection.
- C. All conduit installations shall comply with the manufacturer's installation requirements.
- D. All spare conduit shall be cleaned, mandrelled, and provided with a pullwire.
- E. All underground conduits shall slope away from buildings and towards substructures (manholes, vaults, etc.) to prevent water intrusion into buildings.
- F. Provide conduit sealing bushings at all cable entrances into buildings and at all cable entrances into substructures (manholes, vaults, etc.) to prevent water intrusion into conduits.

END OF SECTION

SECTION 260534

BOXES

PART 1 GENERAL REQUIREMENTS

1.1 RELATED DOCUMENTS

- A. The general conditions, Division 1, and Basic Electrical Requirements (Section 260500) are part of this section and the contract for this work and apply to this section as fully as if repeated herein.
- B. Reference to other sections: The applicable requirements from other Division 26 sections required for a complete and operational system shall form a part of the electrical work and each section shall be thoroughly reviewed by the Contractor for application to all other sections.

1.2 QUALITY ASSURANCE AND STANDARDS

- A. All work, material or equipment shall comply with the codes, ordinances and regulations of the local government having jurisdiction, including the regulations of serving utilities and any participating government agencies having jurisdiction.
- B. All electrical work shall comply with the latest edition under enforcement including all amendments, modifications, and supplements of the following codes and standards or other regulations which may apply:
 - 1. American Disabilities Act (ADA)
 - 2. American National Standards Institute (ANSI)
 - 3. American Society for Testing and Materials (ASTM)
 - 4. Institute of Cable Engineers Association (ICEA)
 - 5. Institute of Electrical and Electronic Engineers (IEEE)
 - 6. Local Code Enforcement Agency Requirements
 - 7. National Electrical Code (NEC)
 - 8. National Electrical Contractor's Association (NECA)
 - 9. National Electrical Manufacturer's Association (NEMA)
 - 10. National Electrical Testing Association (NETA)
 - 11. National Fire Protection Association (NFPA)
 - 12. Underwriters' Laboratories, Inc. (UL)
 - 13. International Building Code (IBC)
- C. No requirement of these drawings and specifications shall be construed to void any of the provisions of the above standards. Any conflicts or changes required to the contract documents in order to obtain compliance with applicable codes shall be brought to the immediate attention of the Engineer, Architect, and Owner's Representative by the contractor.

- D. All items shall be listed by Underwriter's Laboratories and shall bear the U.L. label.
- E. Equipment shown to scale is approximate only and based upon a general class of equipment specified. The Contractor shall verify all dimensions and clearances prior to commencement of work.
- F. The Contractor shall verify all points of connection with the manufacturer's requirements, instructions, or recommendations prior to installation. The actual dimensions, weights, clearance requirements and installation requirements shall be verified and coordinated by the contractor.

1.3 SUBMITTALS

- A. Submit shop drawings per Section 260500 for review including the following:
 - 1. Box materials
 - 2. Accessory materials

PART 2 PRODUCTS

- 2.1 Boxes shall be flat rolled steel sized as required by code and as suitable for the application. Boxes shall have mounting holes and knock-outs in sides and back. Grounding shall be accommodated by means of threaded holes.
- 2.2 Provide accessories, extension rings, gaskets, supports, trim rings, hangers, straps, and other material as necessary for a complete code complying installation.
- 2.3 Boxes installed outdoors shall be weathertight, dusttight, and corrosion resistant. Provide gaskets and conduit hubs.
- 2.4 Provide type FS boxes for surface mounted applications.
- 2.5 Provide additional support for boxes as necessary when mounting fixtures or devices from boxes.
- 2.6 Provide ganged boxes for multiple switches and devices; provide barriers for boxes served by separate voltages.
- 2.7 Acceptable manufacturers shall be Appleton, Crouse Hinds, Steel City, or Racor.

PART 3 EXECUTION

- 3.1 All box installation methods shall comply with the latest enforced edition of the National Electrical Code and the authority having jurisdiction.
- 3.2 Install all boxes plumb, square, and securely fastened to structure.
- 3.3 Boxes shall be placed such that they are readily accessible.

- 3.4 Cover or plug all unused openings in boxes where knockout blanks have been removed.
- 3.5 Install boxes such that they are flush with the finished surface of the wall or surface within which they are mounted.
- 3.6 Install all boxes at mounting heights per architectural plans, NEC requirements, and ADA requirements.
- 3.7 Boxes shall not be mounted back to back in walls. Minimum offset shall be 12".
- 3.8 Boxes in sealed environments shall be sealed with an approved sealant suitable for the application.
- 3.9 Boxes penetrating fire rated walls or surfaces shall be sealed with a Fire Marshal approved fire sealant to maintain the fire rating of the wall or surface.
- 3.10 Boxes located above inaccessible ceilings shall be made accessible by means of access doors or hatches in the ceiling.
- 3.11 Install all boxes per manufacturer's recommendations and requirements.
- 3.12 Provide for ground continuity at all boxes.

END OF SECTION

SECTION 262726

WIRING DEVICES AND CONNECTORS

PART 1 GENERAL REQUIREMENTS

1.1 RELATED DOCUMENTS

- A. The general conditions, Division 1, and Basic Electrical Requirements (Section 260500) are part of this section and the contract for this work and apply to this section as fully as if repeated herein.
- B. Reference to other sections: The applicable requirements from other Division 26 sections required for a complete and operational system shall form a part of the electrical work and each section shall be thoroughly reviewed by the Contractor for application to all other sections.

1.2 QUALITY ASSURANCE AND STANDARDS

- A. All work, material or equipment shall comply with the codes, ordinances and regulations of the local government having jurisdiction, including the regulations of serving utilities and any participating government agencies having jurisdiction.
- B. All electrical work shall comply with the latest edition under enforcement including all amendments, modifications, and supplements of the following codes and standards or other regulations which may apply:
 - 1. American Disabilities Act (ADA)
 - 2. American National Standards Institute (ANSI)
 - 3. American Society for Testing and Materials (ASTM)
 - 4. Institute of Cable Engineers Association (ICEA)
 - 5. Institute of Electrical and Electronic Engineers (IEEE)
 - 6. Local Code Enforcement Agency Requirements
 - 7. National Electrical Code (NEC)
 - 8. National Electrical Contractor's Association (NECA)
 - 9. National Electrical Manufacturer's Association (NEMA)
 - 10. National Electrical Testing Association (NETA)
 - 11. National Fire Protection Association (NFPA)
 - 12. Underwriter's Laboratories, Inc. (UL)
 - 13. International Building Code (IBC)
- C. No requirement of these drawings and specifications shall be construed to void any of the provisions of the above standards. Any conflicts or changes required to the contract documents in order to obtain compliance with applicable codes shall be brought to the immediate attention of the Owner's Representative by the contractor.
- D. All items shall be listed by Underwriter's Laboratories and shall bear the UL label.

- E. Equipment shown to scale is approximate only and based upon a general class of equipment specified. The Contractor shall verify all dimensions and clearances prior to commencement of work.
- F. The Contractor shall verify all points of connection with the manufacturer's requirements, instructions, or recommendations prior to installation. The actual dimensions, weights, clearance requirements and installation requirements shall be verified and coordinated by the contractor.

1.3 SUBMITTALS

- A. Submit shop drawings per Section 260500 for review including the following:
 - 1. Receptacles
 - 2. Switches
 - 3. Wiring devices
 - 4. Accessories

PART 2 PRODUCTS

2.1 RECEPTACLES

- A. Wiring devices shall be UL listed and suitable for the application.
- B. Devices shall be color coded per the system to which they are connected: normal power shall be white; emergency power shall be red; dedicated outlets shall be grey; unless otherwise noted on the construction documents.
- C. Receptacles shall be heavy duty, screw type, side wired, 120V, 20A, duplex type, unless noted otherwise on the construction documents. Verify NEMA configuration with construction documents.
- D. Controlled receptacles shall feature a permanent label, provided by the manufacturer, indicating a controlled device, per NEC 406.3(E).
- E. Receptacles shall be tamper-resistant, as required by NEC 406.12.
- F. Weathertight receptacles shall be gasketed in cast metal boxes with cast metal coverplates. Coverplates shall have spring-loaded in-use hinged covers.
- G. Ground fault interrupting receptacles shall be duplex type and capable of detecting a leaking current of 5mA.

2.2 TOGGLE SWITCHES

- A. Toggle wall switches shall be quiet AC type, rated 120/277V, 20A and UL listed for the application.
- B. Switches shall be single pole, double throw with white finish unless noted otherwise.

2.3 COVERPLATES

- A. Single, combination coverplates shall be used at all ganged device locations.
- B. Provide white plastic coverplates with white screws in all office areas. Provide stainless steel coverplates with matching screws in janitorial, mechanical, laboratory, process, manufacturing, and clean room areas or as noted on the construction documents. Provide weatherproof in-use covers for all exterior locations.
- C. Provide labeled plates as noted on the construction documents.
- D. Provide labeled plates at all receptacles with circuit and panel designation. Labeling method shall utilize clear adhesive printed labels with black bold letters.

2.4 ACCEPTABLE MANUFACTURERS

- A. Acceptable manufacturers shall be Arrow Hart, Hubbell, Leviton, or Pass and Seymour.

PART 3 EXECUTION

- 3.1 Installation method of wiring devices shall comply with the latest enforced edition of the National Electrical Code and the authority having jurisdiction.
- 3.2 Installation of receptacles in dwelling unit bedrooms shall comply with NEC section 210-12(b) and shall be protected by an arc fault circuit interrupter.
- 3.3 Installation of receptacles in kitchen and food-service areas shall comply with NEC section 201-8(b) and shall be protected by a ground fault circuit interrupter.
- 3.4 Install all devices in accordance with the manufacturer's recommendations and requirements.
- 3.5 Contractor shall verify installation orientation of duplex outlets (ground pin up or down) with Owner's representative prior to installation.
- 3.6 Contractor shall verify device color and style (standard or Decora) with the Architect prior to installation.
- 3.7 Coordinate device mounting height, location and type with architectural and interior drawings. Coordinate with other trades to identify conflicts with device locations and notify the Engineer of any conflicts.
- 3.8 Install devices only in clean boxes.
- 3.9 Install all trim rings and coverplates in coordination with other trades and their installation schedules.
- 3.10 Tighten and inspect all connections prior to covering devices and reconnect or repair

wiring as necessary.

- 3.11 Test all devices for voltage level, continuity, ground fault, and short circuits.
- 3.12 Install all devices plumb and square to structure and adjacent surfaces.
- 3.13 Connect and inspect all ground bonds prior to covering device.
- 3.14 Demonstrate the proper operation of all ground fault interrupting devices.

END OF SECTION

SECTION 262816

CIRCUIT AND MOTOR DISCONNECTS

PART 1 GENERAL REQUIREMENTS

1.1 RELATED DOCUMENTS

- A. The general conditions, Division 1, and Basic Electrical Requirements (Section 260500) are part of this section and the contract for this work and apply to this section as fully as if repeated herein.
- B. Reference to other sections: The applicable requirements from other Division 26 sections required for a complete and operational system shall form a part of the electrical work and each section shall be thoroughly reviewed by the Contractor for application to all other sections.

1.2 QUALITY ASSURANCE AND STANDARDS

- A. All work, material or equipment shall comply with the codes, ordinances and regulations of the local government having jurisdiction, including the regulations of serving utilities and any participating government agencies having jurisdiction.
- B. All electrical work shall comply with the latest edition under enforcement including all amendments, modifications, and supplements of the following codes and standards or other regulations which may apply:
 - 1. American Disabilities Act (ADA)
 - 2. American National Standards Institute (ANSI)
 - 3. American Society for Testing and Materials (ASTM)
 - 4. Institute of Cable Engineers Association (ICEA)
 - 5. Institute of Electrical and Electronic Engineers (IEEE)
 - 6. Local Code Enforcement Agency Requirements
 - 7. National Electrical Code (NEC)
 - 8. National Electrical Contractor's Association (NECA)
 - 9. National Electrical Manufacturer's Association (NEMA)
 - 10. National Electrical Testing Association (NETA)
 - 11. National Fire Protection Association (NFPA)
 - 12. Underwriter's Laboratories, Inc. (UL)
 - 13. International Building Code(IBC)
- C. No requirement of these drawings and specifications shall be construed to void any of the provisions of the above standards. Any conflicts or changes required to the contract documents in order to obtain compliance with applicable codes shall be brought to the immediate attention of the Engineer, Architect and Owner's Representative by the contractor.

- D. All items shall be listed by Underwriter's Laboratories and shall bear the UL label.
- E. Equipment shown to scale is approximate only and based upon a general class of equipment specified. The Contractor shall verify all dimensions and clearances prior to commencement of work.
- F. The Contractor shall verify all points of connection with the manufacturer's requirements, instructions, or recommendations prior to installation. The actual dimensions, weights, clearance requirements and installation requirements shall be verified and coordinated by the contractor.

1.3 SUBMITTALS

- A. Submit shop drawings per Section 260500 for review including the following:
 - 1. Voltage and current ratings
 - 2. NEMA enclosure type
 - 3. Horsepower and fault current rating
 - 4. Dimensions
 - 5. Fuse type and class

PART 2 PRODUCTS

- 2.1 Disconnects shall NEMA 1, indoor type, or rated for the locations in which they are installed as noted on the construction documents.
- 2.2 Disconnects shall be UL listed and suitable for the application.
- 2.3 Disconnects in exterior, wet, cold, warm, or hot environments shall be raintight, have raintight hubs, and be rated NEMA 3R.
- 2.4 Disconnects shall be heavy-duty type, rated 600V with current capacity as noted on the construction documents. Verify NEMA configuration with construction documents.
- 2.5 Disconnects shall have hinged, lockable, dead-front doors with permanently marked ON/OFF indicators. Enclosures shall be baked enamel factory painted steel with conduit knockouts.
- 2.6 Disconnects shall be operated by a handle accessible from the exterior of the enclosure. Handles shall have provision to be padlocked in the OFF position.
- 2.7 All current carrying parts shall be high conductivity copper designed to carry rated load without damage from heat and plated to resist corrosion.
- 2.8 Switch mechanism shall be a quick-make, quick-break type such that the operation of the contact is restrained by the handle during the closing or opening operation.
- 2.9 Switches shall have a minimum fault current rating of 200,000A RMS.
- 2.10 All switches shall be fused unless specifically noted otherwise.

- 2.11 The disconnect door cover shall have an interlocking mechanism to prevent opening the cover when the switch is in the ON position.
- 2.12 Fuses serving motor loads shall be Class L and Class RK1, 250V and 600V, time delay, dual element unless noted otherwise on the construction documents.
- 2.13 Fuses serving non-motor loads shall be Class L and Class RK1, 250V and 600V, fast acting, dual element unless noted otherwise on the construction documents.
- 2.14 Provide built-in fuse pullers.
- 2.15 Acceptable manufacturers shall be ABB, Siemens, Eaton, or Square D. Fuses shall be Gould-Shawmut or Bussman.

PART 3 EXECUTION

- 3.1 Installation method of disconnects shall comply with the latest enforced edition of the National Electrical Code and the authority having jurisdiction.
- 3.2 Install all disconnects in accordance with the manufacturer's recommendations and requirements.
- 3.3 Coordinate disconnect mounting height, location and type with architectural, mechanical, and interior drawings. Coordinate with other trades to identify conflicts with device locations and notify the Engineer of any conflicts. Mount switches 42" above finished floor unless noted otherwise.
- 3.4 Provide suitable galvanized metal strut framework where no wall or structure is available for the mounting of disconnects.
- 3.5 Provide flexible conduit connections for disconnects mounted to strut framework, motors, or vibrating equipment.
- 3.6 Tighten and inspect all connections and reconnect or repair wiring as necessary.
- 3.7 Test all disconnects for voltage level, continuity, ground fault, and short circuits. Check switch mechanism operation under no load conditions prior to operating under load.
- 3.8 Install all disconnects plumb and square to structure and adjacent surfaces.
- 3.9 Provide and install all fuses sized per the equipment manufacturer's recommendation.

END OF SECTION