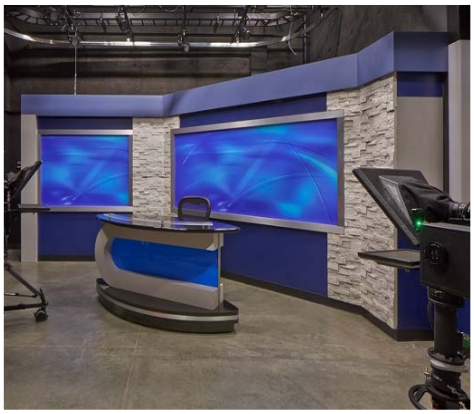
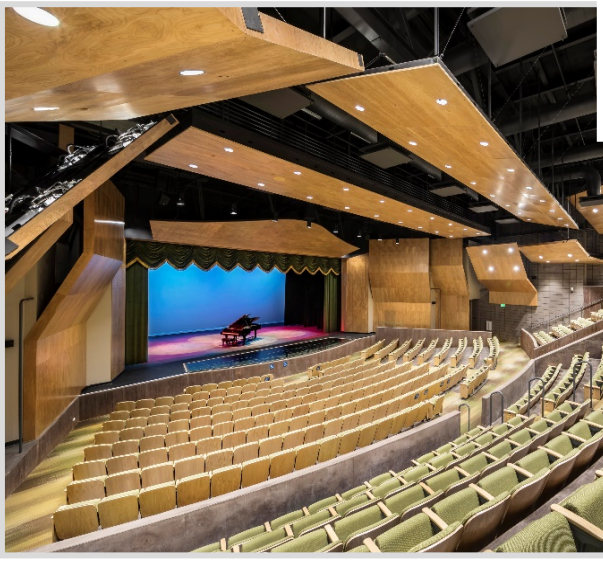
SAN DIEGO UNIFIED SCHOOL DISTRICT

STRATEGIC SOURCING AND CONTRACTS DEPARTMENT





BID NO. CC23-0233-39

HORTON ELEMENTARY SCHOOL
RE-ROOFING AND BEAM REPAIR

ADVERTISEMENT DATES:

JULY 19, 2022
JULY 26, 2022

2351 Cardinal Lane, Building M, San Diego, CA 92123

NOTICE TO CONTRACTORS CALLING FOR BIDS

DISTRICT:	**SAN DIEGO UNIFIED SCHOOL DISTRICT**
PROJECT DESCRIPTION:	**HORTON ELEMENTARY SCHOOL RE-ROOFING AND BEAM REPAIR**
DATE/TIME FOR SUBMITTAL OF BID PROPOSAL:	**1:00 PM ON AUGUST 18, 2022**
PLACE FOR SUBMITTAL OF BID PROPOSALS:	**ELECTRONIC-ONLY BID MUST BE SUBMITTED VIA PLANETBIDS. GO TO:** **HTTPS://WWW.PLANETBIDS.COM/PORTAL/PORTAL.CFM?COMPANYID=43764** **THEN SEARCH UNDER "BID OPPORTUNITIES" FOR "INVITATION NUMBER" CC23-0233-39 HORTON ELEMENTARY SCHOOL RE-ROOFING AND BEAM REPAIR. FOR NEW VENDORS, PLEASE REGISTER UNDER "NEW VENDOR REGISTRATION".**
BID AND CONTRACT DOCUMENTS AVAILABLE AT:	**CRISP IMAGING** **8375 CAMINO SANTA FE, UNIT B** **SAN DIEGO, CA 92121** **(858) 535-0607** **- OR- www.crispimg.com/planwell**
MANDATORY SITE VISIT:	**PREREGISTER WITH THE DISTRICT PRIOR TO ATTENDING THE SITE WALK AT https://sandiegounified.org/sitewalks.** **3:00 PM ON JULY 28, 2022** **OUTSIDE THE MAIN OFFICE OF** **HORTON ELEMENTARY SCHOOL** **5050 GUYMON ST, SAN DIEGO, CA 92102**
ADDRESS:	**STRATEGIC SOURCING AND CONTRACTS DEPARTMENT** **2351 CARDINAL LANE, BLDG. M** **SAN DIEGO, CALIFORNIA 92123**

NOTICE IS HEREBY GIVEN that the above-named California Public School District, acting by and through its Board of Education, hereinafter "the District" will receive up to, but not later than the above-stated date and time, sealed Bid Proposals for the Contract for the Work of the Project generally described as

NO. CC23-0233-39 -- HORTON ELEMENTARY SCHOOL RE-ROOFING AND BEAM REPAIR

Advertisement for Bids

Notice is hereby given that the San Diego Unified School District, acting by and through its governing board, will receive "**ELECTRONIC-ONLY**" bids for the furnishing of all labor, materials, transportation, equipment, and services for:

HORTON ELEMENTARY SCHOOL RE-ROOFING AND BEAM REPAIR

A mandatory site visit is scheduled for 3:00 p.m. on THURSDAY, JULY 28, 2022, outside the main office of Horton Elementary School, 5050 Guymon Street, San Diego, CA 92102. ALL CONTRACTORS MUST PREREGISTER WITH THE DISTRICT PRIOR TO ATTENDING THE SITE WALK AT https://sandiegounified.org/sitewalks. Site walks will follow the latest District COVID-19 policies which can be found at https://sandiegounified.org/covid-19_status. PLEASE SEE BID FOR DETAILS (No. CC23-0233-39).

GENERAL CONTRACTORS ARE HIGHLY ENCOURAGED TO INVITE SUBCONTRACTORS TO ATTEND THE SITE VISITS.

All bids must be received electronically at or before **1:00 p.m. on AUGUST 18, 2022**. Firms interested in submitting a bid package must go to **https://www.planetbids.com/portal/portal.cfm?CompanyID=43764** then search under "Bid Opportunities" for "Invitation number" CC23-0233-39 Horton Elementary School Re-Roofing and Beam Repair. For new vendors, please register under "New Vendor Registration".

The project estimate is between **$2.7 million and $3.2 million**. This is a PSA project and requires prequalification. The District requires that Bidders possess any of the following classification(s) of California State Contractors License(s), valid and in good standing, at the time of bid opening and contract award: **B, C-39 or other appropriate license, subject to District approval**.

Each bid shall be in accordance with all terms, conditions, plans, specifications and any other documents that comprise the bid package. The Bid and Contract Documents are available in three formats, hard copy, CD, or online from PlanWell. Hard copy bid documents are available at Crisp Imaging, 8375 Camino Santa Fe, Unit B, San Diego, CA 92121, phone number 858-535-0607, for a refundable payment of Two Hundred Dollars ($200) per set; CD's are available for a non-refundable charge of $50. Payments shall be made by check payable to SAN DIEGO UNIFIED SCHOOL DISTRICT. If the payment for Bid and Contract Documents is refundable, refunds will be processed by the District only if the Bid and Contract Documents, including all addendums, are returned intact and in good order to Crisp Imaging within ten (10) days of the issuance of the Final Bid Tabulation. Online documents are available for download on PlanWell through Crisp Imaging. Go to www.crispimg.com, click on PlanWell, Public Planroom, search SDUSD (Questions? 949-285-3171). All bids shall be submitted on bid forms furnished by the District in the bid package beginning July 19, 2022. Bid packages will **only be accepted via PlanetBids**.

PRE-QUALIFICATION OF BIDDERS: Pursuant to Public Contract Code (PCC) §20111.6, each contractor wishing to bid as a prime to the District for projects estimated at $1,000,000 or over, or any subcontractor performing the license classifications of A, B [if performing the work of] C-4, C-7, C-10, C-16, C-20, C-34, C-36, C-38, C-42, C-43 and/or C-46 wishing to submit a bid to a bidding prime contractor must be prequalified in order to bid. ***Projects estimated at 10 million or greater require audited financials. Go online to*** https://www.sandiegounified.org/contractor-prequalification to download the most current prequalification application for your company. ***Completed applications must be submitted to the District no later than August 4, 2022, which is 10 business days before the bid opening due date***. Any questionnaires submitted later than this deadline will not be processed for this Invitation for Bids. The District encourages all general contractors bidding as a prime contractor, and all MEP subcontractors to request a questionnaire, complete it and submit it as soon as possible.

SENATE BILL (SB) 854 REQUIREMENTS: Effective July 1, 2014, no contractor or subcontractor may be listed on a bid proposal, or awarded a contract for a public works project (awarded on or after April 1, 2015) unless registered with the Department of Industrial Relations (DIR) pursuant to Labor Code §1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code §1771.1(a)]. This project is subject to compliance monitoring and enforcement by the DIR.

Prime contractors must add the DIR Registration Number for each of their listed subcontractors to the Subcontractors List AND submit a certificate of registration for their own firm and those of their listed subcontractors upon request by the District. Failure of the bidding prime contractor to list their subcontractors DIR Registration Number on the Subcontractors List at time of bid may result in rejection of their bid as non-responsive.

Refer to the following DIR Website for further information: www.dir.ca.gov/Public-Works/PublicWorks.html

PREVAILING WAGES: Prevailing wage requirements apply to all public works projects and must be followed per Article 17 of the General Conditions of this bid. The applicable wage determination for this contract is 2022-1, and will be 2022-1 for the duration of the contract. This includes amendments, change orders, and warranty work relating to this contract number. The following is a link to the Department of Industrial Relations website to obtain rate information, and any applicable predetermine increases www.dir.ca.gov/oprl/dprewagedetermination.htm.

PROJECT STABILIZATION AGREEMENT (PSA): This project is subject to the Project Stabilization Agreement (PSA) adopted by the Board of Education on July 28, 2009. The complete agreement is available for viewing and downloading at www.sandi.net - Proposition S & Z and YY

DISABLED VETERAN BUSINESS ENTERPRISE PARTICIPATION PROGRAM: Pursuant to Resolution In Support of Service Disabled Veterans Owned Businesses (SDVOB) and Disabled Veteran Business Enterprises (DVBE) approved on May 10, 2011 by the Board of Education, the Bidder is required to satisfy a minimum DVBE participation percentage of at least three percent (3%) for this project. In compliance with this Program, the Bidder shall satisfy all requirements enumerated in the bid package.

Each bid must be submitted on the Bid Form provided in the bid package and shall be accompanied by a satisfactory bid security in the form of either a bid bond executed by the bidder and Surety Company, or a certified or cashier's check in favor of the San Diego Unified School District, in an amount equal to ten percent (10%) of their bid value. Said bid security shall be given to guarantee that the Bidder will execute the contract as specified, within five (5) working days of notification by the District.

WITHDRAWAL OF BID PROPOSALS

Bid Proposals may not be withdrawn by any Bidder for a period of **ninety (90) days** after the opening of Bid Proposals. During this time, all Bidders shall guarantee prices quoted in their respected Bid Proposals. A successful bidder shall not be relieved of the bid submitted without the District's consent or bidder's recourse to Public Contract Code §5100 et seq. For information regarding bidding, please email mmoyers1@sandi.net.

SAN DIEGO UNIFIED SCHOOL DISTRICT
Linda Hippe
Strategic Sourcing and Contracts Director (TOC)
Strategic Sourcing and Contracts Department

Advertisement Dates:
07/19/2022
07/26/2022
CC23-0233-39

REQUIRED EXECUTABLE DOCUMENTS AND TIMELINE
(NOTE: This listing does not contain all the documents required during the construction phase)

THE FOLLOWING DOCUMENTS MUST BE COMPLETED AND SIGNED AT TIME OF BID OPENING

DESCRIPTION	PAGE NUMBER
Bid Proposal	E-1
Subcontractors List	E-5
Non-Collusion Declaration	E-8
Bid Security Bond or cashier's check	E-9
DVBE/SDVOB Bidder Declaration	E-29

THE FOLLOWING DOCUMENTS MUST BE COMPLETED AND SUBMITTED WITHIN TWENTY-FOUR (24) HOURS AFTER BID OPENING

Completed Subcontractors List	E-5
Prime Contractor's Project Stabilization Agreement Letter of Assent	E-11
Completed SDVOB/DVBE Bidder Declaration	E-29
Bidder's DVBE Statement & Required Certifications	E-27

THE FOLLOWING DOCUMENTS MUST BE COMPLETED, SIGNED, AND SUBMITTED WITHIN 3 BUSINESS DAYS AFTER WRITTEN NOTIFICATION

Electronic Signature Acknowledgement & Agreement	E-10
Agreement	E-12
Certificate of Workers' Compensation Insurance	E-18
Drug-Free Work Place Certification	E-19
Guarantee	E-20
Contractor Certification Regarding Background Checks	E-21
List of Employees "Attachment A"	E-22
Certification, Public Contract Code Section 3006	E-23
Electricians Certification (if required)	See Instruction to Bidders I-2
Certificates of DIR Registration (pursuant to SB854)	See Instruction to Bidders I-2

THE FOLLOWING DOCUMENTS MUST BE COMPLETED, SIGNED AND SUBMITTED WITHIN 5 BUSINESS DAYS AFTER WRITTEN NOTIFICATION

Labor and Material Payment Bond	E-14
Performance Bond	E-16
Project Stabilization Agreement Subcontractor Contact Information List	E-11a
Original Insurance Certificate(s) for General and Auto Liability and Workers Compensation	

THE FOLLOWING DOCUMENTS MUST BE COMPLETED AND SUBMITTED WITHIN FIFTEEN (15) DAYS OF NOTICE TO PROCEED

Schedule of Values, including Cost Breakdown to CM	See GC's Article 7.1

THE FOLLOWING DOCUMENTS MUST BE COMPLETED, SIGNED AND SUBMITTED ON A MONTHLY BASIS (BY THE 5TH DAY OF EACH MONTH)

Application for Progress Payment to Construction Office	See GC's Article 7.2

* N O T I C E *

YOUR DEPOSIT FOR HARD COPY BID PACKAGES WILL BE FORFEITED IF PLANS AND SPECIFICATIONS, INCLUDING ALL ADDENDA, ARE NOT RETURNED IN GOOD CONDITION* WITHIN

TEN (10) CALENDAR DAYS

AFTER FINAL BID TABULATION IS ISSUED.

***Good condition is complete and bound, as it was distributed. Moderate highlighting and markings are allowed.**

If you are the apparent low bidder, or a listed subcontractor to the apparent low bidder, please keep your plans and call the office to have your check released.

DOCUMENT LIST

FOR

HORTON ELEMENTARY SCHOOL RE-ROOFING AND BEAM REPAIR

Bid Documents

- Notice Calling For Bids
- Bid Advertisement
- Required Executable Documents and Timeline
- Instructions to Bidders
- Bid Proposal
- Subcontractors List
- Non-Collusion Declaration
- Prime Contractor's Project Stabilization Agreement Letter of Assent
- Project Stabilization Agreement Subcontractor Contact Information List
- Bid Security Bond
- DVBE Participation Program Overview and Resources & DVBE/SDVOB Bidder Declaration Certification, Public Contract Code Section 3006

Contract Documents

- Electronic Signature Acknowledgement & Agreement
- Agreement
- Labor and Materials Payment Bond
- Performance Bond
- Workers Compensation Certificate
- Drug-Free Workplace Certification
- Guarantee
- Contractor Certification Regarding Background Checks
- List of Employees "Attachment A"
- General Conditions
- Supplementary Conditions
- Specifications
- Drawings

1. SUBMITTAL OF BID PROPOSALS

All Bid Proposals shall be submitted **"electronic-only"** based on the information supplied by Strategic Sourcing and Contracts Department, located at 2351 Cardinal Lane, Building M., San Diego, CA 92123. Bid Proposals must conform with, and be responsive to, the Bid and Contract terms and conditions, specifications and plans, incorporated herein. Only Bid Proposals submitted through PlanetBids https://www.planetbids.com/portal/portal.cfm?CompanyID=43764 prior to the date and time set forth above for the electronic bid opening shall be considered.

2. BID PROPOSAL, SUBCONTRACTOR LIST, AND OTHER BID DOCUMENTS

All documents required at time of bid are included in the bid set, and shall be attached to the electronic-only bid submission or your bid will not be accepted.

3. BID AND CONTRACT DOCUMENTS

The Bid and Contract Documents are available at the location stated in the Notice to Contractors Calling for Bids in three formats, hard copy, CD, or online from Plan Well. Hard copy bid documents are available for a refundable payment of Two Hundred Dollars ($200) per set; CD's are available for a non-refundable charge of $50, and; online documents are available for download on PlanWell through Crisp Imaging www.crispimg.com, click on Public Planroom (Questions? 858-535-0607). Payments shall be made by check payable to **SAN DIEGO UNIFIED SCHOOL DISTRICT**. If the payment for Bid and Contract Documents is refundable, refunds will be processed by the District only if the Bid and Contract Documents, including all addenda, are returned intact and in good order to Crisp Imaging within ten (10) days of issuance of Final Bid Tabulation.

4. OFFICIAL ADVERTISING AND DISTRIBUTION SITES

The official media sources for advertising San Diego Unified School District bids are www.planetbids.com and The Daily Transcript. The official distribution point for bid documents is Crisp Imaging in Sorrento Valley. If bidders receive bid information or documents from any other source than those listed above, or from District departments other than Strategic Sourcing and Contracts, the District will not be responsible for any erroneous information published or distributed.

5. DOCUMENTS ACCOMPANYING BID PROPOSAL

Each Bid Proposal shall be accompanied by: (a) the required Bid Security; (b) Subcontractors List; (c) Non-Collusion Declaration; and (d) DVBE Bidder Declaration. All information or responses of a Bidder in its Bid Proposal and other documents accompanying the Bid Proposal shall be typewritten or in ink, complete, accurate and true; incomplete, inaccurate or untrue responses or information provided therein by a Bidder shall be grounds for the District to reject such Bidder's Bid Proposal for non-responsiveness.

6. DESIGNATION OF SUBCONTRACTORS

In compliance with the Subletting and Subcontracting Fair Practices Act (California Public Contract Code §§4100, et seq.) and amendments thereof, each Bidder shall at time of bid set forth in the Subcontractors List: (a) the name and location of the place of business of each Subcontractor (as defined in Public Contract Code §4113, California Business & Professions Code §7026, and properly licensed with the California Contractors State License Board) who will perform work or labor or render services to the Bidder in or about the construction of the Work to be performed under the Contract Documents in an amount in excess of one-half of one percent (0.5%) of the Bidder's Bid Proposal; and (b) the portion of the Work which will be performed by each listed Subcontractor, and (c) the California contractor's license number and, (d) DIR Registration Number. The Bidder shall list only one Subcontractor for each portion of the Work as is defined by the Bidder in its Bid Proposal. If a Bidder fails to list a Subcontractor or if the Bidder specifies more than one

Subcontractor for the same portion of Work to be performed under the Contract Documents valued in excess of one-half of one percent (0.5%) of the Bidder's Bid Proposal amount, the Bidder shall be deemed to have agreed that it is fully qualified to perform that portion of the Work itself and that it shall perform that portion of the Work.

Bidders may submit a complete subcontractor's full address and the percentage of work the subcontractor will perform within 24 hours of the bid opening date and time as permitted under Public Contract Code §4104(a)(3)(A).

Subcontractors must be actively and properly licensed by the CSLB for all scopes of work performed by the contractor at all times they are performing work on the District's project.

7. DIR REGISTRATION REQUIREMENTS

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

This project is subject to compliance monitoring and enforcement by the DIR. Prime contractors must include the DIR Registration Number for each of their listed subcontractors to the Subcontractors List AND submit a certificate of registration for their own firm and those of their listed subcontractors upon request by the District.

Failure of the bidding prime contractor to list their subcontractors DIR Registration Number on the Subcontractors List ***at time of bid*** may result in rejection of their bid as non-responsive.

8. PREVAILING WAGE RATES

Pursuant to Labor Code §1773 *et seq*, the Director of the Department of Industrial Relations (DIR) of the State of California has determined the generally prevailing rates of wages in the locality in which the Work is to be performed. The Contractor awarded the Contract for the Work shall post a copy of all applicable prevailing wage rates for the Work at conspicuous locations at the Site of the Work. The Contractor and all Subcontractors performing any portion of the Work shall pay not less than the applicable prevailing wage rate for the classification of labor provided by their respective workers in prosecution and execution of the Work.

Prevailing wage requirements apply to this project and must be followed as stated in Article 17 of the General Conditions of this contract. The applicable wage determination for this contract is 2022-1, and will be 2022-1 for the duration of the contract. This includes amendments, change orders, and warranty work relating to this contract number. The following is a link to the Department of Industrial Relations website to obtain rate information, and any applicable predetermine increases www.dir.ca.gov/oprl/dprewagedetermination.htm.

Furthermore, the Contractor and all subcontractors regardless of tier shall have an active DIR number prior to award and construction, and for the duration of site work. Any subsequent subcontractors/vendors who perform work at the construction site must also have an active DIR registration number. Pursuant to Labor Code § 1773.3(d) an awarding body shall withhold final payment due to the contractor until at least 30 days after all of the required information in paragraph (2) of subdivision (a) has been submitted to DIR, including, but not limited to, providing a complete list of all subcontractors regardless of tier. See Exhibit "D" of General Conditions.

9. CONTRACTORS LICENSE CLASSIFICATION

In accordance with the provisions of California Public Contract Code §3300, the District requires that Bidders possess the following classification(s) of California State Contractors License at the

time that the Contract for the Work is awarded: **B, C-39** or other appropriate license, subject to District approval. Any Bidder not so duly and properly licensed shall be subject to all penalties imposed by law. No payment shall be made for work, labor, materials or services provided under the Contract for the Work unless and until the Registrar of Contractors verifies to the District that the Bidder awarded the Contract is properly and actively licensed to perform the Work.

Under Business and Professions Code §7028.15(g), a bid submitted to the District by a contractor who is not licensed in accordance with this chapter [Business & Professions Code, Division 3. Professions and Vocations Generally, Chapter 9 Contractors] shall be considered nonresponsive and shall be rejected by the District, unless one of the exceptions under § 7028.15 apply. Under Business & Professions Code §7028.15(g), the District shall, before awarding a contract or issuing a purchase order, verify that the contractor was properly licensed when the contractor submitted the bid, unless one of the exceptions under § 7028.15 apply.

Under Business & Professions Code §7028.15(a), it is a misdemeanor for any person to submit a bid to a public agency in order to engage in the business or act in the capacity of a contractor within this state without having a license.

10. MANDATORY PRE-QUALIFICATION FOR PROJECTS ESTIMATED AT $1,000,000 OR OVER

Pursuant to Public Contract Code (PCC) §20111.6, each contractor submitting a bid as a prime to the District for projects estimated at $1,000,000 or over, or any subcontractor performing the license classifications of A, B [if performing the work of] C-4, C-7, C-10, C-16, C-20, C-34, C-36, C-38, C-42, C-43 and C-46 wishing to submit a bid to a bidding prime contractor must be prequalified in order to bid.

A contractor who submits a bid who is not prequalified at time of bid, or who lists a non-prequalified subcontractor performing any of the classifications listed in the paragraph above to perform a portion of work will be rejected as non-responsive. PCC §20111.6(f) states the District may not accept a bid proposal from any person or entity that is required to submit a completed questionnaire and financial statement, or any other person or other entity that uses a subcontractor that is required to submit a completed questionnaire and financial statement for prequalification.

Any prime contractor or subcontractor who is not already prequalified must submit a **complete** District provided Pre-qualification Questionnaire **at least** ten (10) business days prior to the bid opening due date. Any Questionnaire received less than ten (10) business days before the bid opening due date will not be considered. Any Questionnaires submitted incomplete will be put aside to process completed Questionnaires first and may result in an incomplete Questionnaire not being processed within the required timeline of five (5) business days prior to the bid opening due date. Such action will render the prime contractor or subcontractor who submitted the incomplete Questionnaire to be ineligible to bid on the project for which they submitted the Questionnaire.

The District strongly encourages all prime contractors and subcontractors performing any of the classifications listed above to submit a Pre-qualification Questionnaire well in advance of a bid in order to avoid the consequence of not being eligible to bid on a project they are interested in bidding on. Pre-qualification Questionnaires may be found online at https://prequal.sandi.net.

11. CONTRACT TIME

Performance and completion of the Work shall be in accordance with the Supplementary Conditions and Specifications Section 011000. Failure to achieve completion of the Work within the Milestone Dates established therein will subject the Contractor to assessment of Liquidated Damages for delayed Substantial Completion, as set forth in the Contract Documents.

12. BID SECURITY

Each Bid Proposal shall be accompanied by Bid Security in an amount not less than **Ten Percent (10%)** of the maximum amount of the Bid Proposal, inclusive of any Additive or Deductive Alternate bid item(s). District will accept a copy of the Bid Security at time of electronic-only bid, and will require the original Bid Security to be delivered the Strategic Sourcing and Contracts within 24 hours of the bid opening. Failure of any Bid Proposal to be accompanied by Bid Security in the form and in the amount required shall render such Bid Proposal to be non-responsive and rejected by the District.

13. WITHDRAWAL OF BID PROPOSALS

Bid Proposals may not be withdrawn by any Bidder for a period of **Ninety (90)** days after the opening of Bid Proposals. During this time, all Bidders shall guarantee prices quoted in their respected Bid Proposals. A successful bidder shall not be relieved of the bid submitted without the District's consent or bidder's recourse to Public Contract Code §5100 et seq.

14. SUBSTITUTE SECURITY

In accordance with the provisions of California Public Contract Code §22300, substitution of eligible and equivalent securities for any monies withheld by the District to ensure the Contractor's performance under the Contract will be permitted at the request and expense of the Contractor and in conformity with California Public Contract Code §22300.

15. REJECTION OF BIDS AND WAIVER OF IRREGULARITIES

The District reserves the right to reject any or all Bid Proposals, to contract work with whomever and in whatever manner the District decides, to abandon the Work entirely, and to waive any informality or non-substantive irregularity in any Bid Proposal or in the bidding as the interests of the District may require.

16. AWARD OF CONTRACT

Acceptance of a Bid Proposal occurs upon Award of Contract. The Contract for the Work, if awarded, will be by action of the District's Board of Education to the responsible Bidder submitting the lowest responsive Bid Proposal. If Additive or Deductive Bid Items are included in the bidding process, the lowest Bid Proposal will be determined on the basis of the Base Bid Proposal or on the Base Bid Proposal, additional Items and any combination of Additive or Deductive Bid Items selected in accordance with the applicable provisions of the Instructions to Bidders and the Bid Proposal Form.

17. DEFINITION OF AGREEMENT, CONTRACT

Agreement: The Agreement is the executable document (E-xx) that binds District and Contractor to the terms and conditions of the Contract documents.

Contract: The Contract is the entire set of binding documents comprised of the Executable documents, General Conditions, Supplementary Conditions, Specifications, Drawings and all issued Addenda.

18. MANDATORY SITE VISIT

Pursuant to San Diego Unified School District requirements, it is mandatory that all Bidders attend the scheduled Site Visit listed in the Notice to Contractors Calling for Bids. This is a material requirement of the Construction Contract, and should a prospective bidder not attend the Site Visit,

such Bidder's bid will be rejected as non-responsive. For multiple site projects, Bidders must attend all sites scheduled for a visit.

To be eligible to attend a mandatory site walk, a Contractor attendee must preregister with the District at https://sandiegounified.org/sitewalks. Registration for the mandatory site walk will be the official sign-in sheet at the site walk.

19. RECEIPT AND OPENING OF BID PROPOSALS

19.1 Bid Proposal Forms. Bid Proposals shall be submitted on the forms obtained at Crisp Imaging, as mentioned in the Notice to Contractors Calling for Bids. Bid Proposals submitted on forms other than those obtained pursuant to the preceding will be rejected as non-responsive. All information required by the bid forms must be completely and accurately provided, typewritten or in ink. Responses to required information which are incomplete, inaccurate, untrue or which contain omissions of material fact rendering the response false or misleading may result in rejection of a Bid Proposal for non-responsiveness. The Bid Proposal and other documents required to be executed on behalf of the Bidder and submitted with the Bid Proposal must be executed in the name of the Bidder and must bear the original signature(s) in longhand of the person(s) duly authorized to execute the Bid Proposal and other documents on behalf of the Bidder.

19.2 Submission of Bid Proposal. A Bid Proposal and other documents accompanying the Bid Proposal shall be submitted through PlanetBids https://www.planetbids.com/portal/portal.cfm?CompanyID=43764 prior to the date and time set forth above for the electronic bid opening. Only Bid Proposals submitted and received prior to the latest date and time for submission of Bid Proposals will be considered. Bidders are solely responsible for the timely submission of Bid Proposals.

19.3 **Electronic-only bidding. After the latest date/time for submission of Bid Proposals,** the preliminary bid results will be made available through PlanetBids.

19.4 Pricing: The District's computation of offered prices will always be based on the Bidder's unit price multiplied by the quantity for a particular item. In the event that there are unit prices as well as extended prices, the unit price will prevail in the event of a mathematical discrepancy.

19.5 Equal Bids: In accordance with Public Contract Code §20117, in the event that equal Bids are received, the successful Bidder shall be randomly selected through a drawing.

19.6 Erasures. Erasures, interlineations or other corrections to the Bid Proposal or other documents submitted with a Bid Proposal may render the Bid Proposal non-responsive unless the same are suitably authenticated by affixing in the margin immediately next to any erasure, interlineation or other correction the initials of a person(s) authorized to act on behalf of the Bidder.

19.7 Modifications. Upon submission of a Bid Proposal through PlanetBids, Bidder's may modify any portion of the Bid Proposal or other documents submitted with the Bid Proposal until the scheduled date and time of the bid opening has been met. If the latest revised submission of a Bid Proposal is not received in PlanetBids by the closing date and time, the last submission of the Bid Proposal will be received and considered.

19.8 Multiple Sites. Please note that, if this project is for more than one school site you may be required to break your bid down by site. Please see Bid Proposal form to determine these requirements prior to doing your takeoffs.

20. EXAMINATION OF CONTRACT DOCUMENTS

Each Bidder shall become fully acquainted with conditions relating to the Work to fully understand the facilities, difficulties, and restrictions attending the execution of the Work. Bidders shall thoroughly examine and be familiar with the Drawings and Specifications and all other Contract Documents. The failure of any Bidder to receive or examine any of the Contract Documents, form, instrument, addendum, or other document or to visit the Sites and be acquainted with the conditions there existing shall in no way relieve any Bidder from obligations with respect to its Bid Proposal or

to the contract. The submission of a Bid Proposal shall be taken as prima facie evidence of compliance with this section.

21. EXECUTION OF AGREEMENT

The apparent low bidder must sign the Agreement included in this Invitation for Bids, and must submit it within three (3) business days of written notification by District.

22. DELIVERY OF BONDS AND CERTIFICATES

Unless otherwise specified, the successful bidder shall, within five (5) business days after written notification by the District, sign and deliver to the District the Labor and Material Payment Bond and Performance Bond, certificates of insurance, and other required documents. In the event the successful bidder fails or refuses to so deliver such documents by the deadline date, the District may declare the bidder's bid deposit or bond forfeited as damages, and may award the work to the next lowest responsible bidder, or may reject all bids and call for new bids.

The penal sums of the Labor and Materials Payment Bond and the Performance Bond shall each be in an amount equal to 100% of the Contract Price, unless otherwise stated in the Supplementary Conditions. Bonds required by the Contract Documents shall be accepted by the District only if issued and duly executed by a responsible corporate surety, authorized to issue such bonds in the State of California and secured through an authorized agent with an office in California.

23. INTERPRETATION OF CONTRACT DOCUMENTS.

If any person contemplating submission of a Bid Proposal for the proposed Contract is in doubt as to the true meaning of any part of the Drawings, Specifications, or other portions of the Contract Documents, or finds discrepancies in, or omissions from the Drawings, Specifications or other portions of the Contract Documents, a written request for an interpretation or correction thereof shall be submitted to the address as mentioned in the Notice To Contractors Calling For Bids. Any Bidder submitting such a request is solely responsible for its prompt delivery. Any interpretation or correction, or other modification of any portion of the Contract documents will be made only by Addendum duly issued by or on behalf of the District and a copy of such Addendum will be posted on PlanetBids, and made available to each Bidder who has theretofore obtained a set of the Contract Documents from Crisp Imaging or via hard copy from PlanWell online plan room. The District will not be responsible for any other explanations or interpretations of the Contract Documents. No oral interpretation, correction or modification of any portion of the Contract Documents will be made to any bidder and no Bidder may rely upon any such oral interpretation, correction or modification. Addenda issued pursuant to the above shall be made a part of the Contract Documents. All interpretations, corrections or modifications made by the Strategic Sourcing and Contracts Department, San Diego Unified School District, shall be final and binding. Failure of a Bidder to request interpretation, correction or modification of known discrepancies in, or omissions in the Drawings, Specifications or other portions of the Contract Documents shall be deemed an acknowledgment by the Bidder that if awarded the Contract for the Work, the Bidder will remedy said discrepancies and omissions at no additional cost to the Owner.

24. ADDENDA AND AMENDMENTS

The terms and conditions contained in the Notice to Contractors Calling for Bids, Bid Proposal Form, Instructions to Bidders, General Conditions, Supplementary Conditions, Specifications, Agreement, and any other document that comprises this Invitation for Bids herein may be amended or modified only with the proper written approval of the District.

Addenda will be issued either directly from the District via PlanetBids, and through Crisp Imaging via hard copy or through PlanWell online plan room. Bidder is completely responsible for obtaining and verifying all addenda issued for bids advertised by the District. Failure of a bidder to obtain

and acknowledge in the Bid Proposal all addenda may result in their bid being rejected as non-responsive.

Any addenda issued during the time of bidding shall form a part of this Invitation for Bids and shall constitute a part of the contract documents.

25. AWARD OF CONTRACT

25.1 Action by Board of Education. The acceptance of a Bid Proposal occurs upon Award of Contract. The contract, if awarded, will be by action of its Board of Education to the responsible, responsive Bidder submitting the lowest priced Bid Proposal on the basis of the Base Bid Proposal or the Base Bid Proposal and Additive or Deductive Bid Items, if any, selected in accordance with this Instructions to Bidders.

25.2 Selection of Additive or Deductive Bid Items. If Additive or Deductive Bid Items are part of determining the responsive low bidder, as stated in the Bid Proposal Form, the selection of Additive or Deductive Bid Items for inclusion in the scope of the Work of the Contract to be awarded and for determination of the lowest Bid Proposal based upon the Base Bid Proposal and the combination of Additive or Deductive Bid Items selected for inclusion in the Contract to be awarded will be by a "blind-bidder" process. See Public Contract Code §20103.8(d). After the public reading of Bid Proposals, District clerical staff ("Clerical Staff") who will not be engaged in the selection of Additive or Deductive Bid Items for inclusion in the Contract to be awarded will assign each Bidder an alphabetical letter for identification purposes. The Clerical Staff will mask all portions of the Bid Proposal and other documents submitted with Bid Proposals so that the identity of each Bidder is not revealed. The Clerical Staff will maintain a list ("the Bidders List"), which identifies by name and the alphabetical letter assigned by the Clerical Staff to each Bidder. After the public reading of Bid Proposals, the Clerical Staff will provide the District's staff responsible for selection of Additive or Deductive Bid Items for inclusion in the Contract to be awarded ("District Project Staff") copies of Bid Proposals with the identities of Bidders masked; Bid Proposals reviewed by the District Project Staff will identify Bidders only by alphabetical letters. At such time as the District Project Staff has completed review of Bid Proposals and made a determination of which Bidder (by the alphabetical letter assigned by Clerical Staff) has submitted the lowest Bid Proposal on the basis of the Base Bid Proposal and any combination of Additive or Deductive Bid Items as determined by the District Project Staff, the Clerical Staff will make available to the Project Staff the Bidders List so that the identity of the Bidder to be awarded the Contract can be identified. Until such time as the District Project Staff has completed review of Bid Proposals and determined which Bidder has submitted the lowest Bid Proposal, there will be no communication between the Clerical Staff and the District Project Staff regarding the identities of Bidders or disclosure of any portion of the Bidders List.

25.3 Additive or Deductive Bid Items Not Included in Award of Contract. Bidders are referred to the provisions of the Contract Documents permitting the District, during performance of the Work, to add or delete from the scope of the Work Additive or Deductive Bid Items with the cost or credit of the same being the amount(s) set forth by in the Additive or Deductive Bid Items Proposal. See Public Contract Code §20103.8.

25.4 Responsive Bid Proposal. A responsive Bid Proposal shall mean a Bid Proposal, which conforms, in all material respects, to the requirements of Bid and Contract Documents.

25.5 Responsible Bidder. Under Public Contract Code §1103, a responsible Bidder is a Bidder who has the capability in all respects, to perform fully the requirements of the Contract Documents and the quality, fitness, capacity and experience which will assure good faith performance. In determining responsibility, the following criteria will be considered: (i) the ability, capacity and skill of the Bidder to perform the Work of the Contract Documents; (ii) whether the Bidder can perform the Work promptly and within the time specified, without delay or interference; (iii) the character, integrity, reputation, judgment, experience and efficiency of the Bidder; (iv) the quality of performance of the Bidder on previous contracts, by way of example only, the following information will be considered: (a) the administrative,

consultant or other cost overruns incurred by the District on previous contracts with the Bidder; (b) the Bidder's compliance record with contract general conditions on other projects; (c) the submittal by the Bidder of excessive and/or unsubstantiated extra cost proposals and claims on other projects; (d) the Bidder's record for completion of work within the contract time and the Bidder's compliance with the scheduling and coordination requirements on other projects; (e) the Bidder's demonstrated cooperation with the District and other contractors on previous contracts; (f) whether the work performed and materials furnished on previous contracts was in accordance with the Contract Documents; (v) the previous and existing compliance by the Bidder with laws and ordinances relating to contracts; (vi) the sufficiency of the financial resources and ability of the Bidder to perform the work of the Contract Documents; (vii) the quality, availability and adaptability of the goods or services to the particular use required; (viii) the ability of the Bidder to provide future maintenance and service for the warranty period of the Contract; (ix) whether the Bidder is in arrears on debt or contract or is a defaulter on any surety bond; (x) such other information as may be secured by the District having a bearing on the decision to award the Contract, to include without limitation the ability, experience and commitment of the Bidder to properly and reasonably plan, schedule, coordinate and execute the Work of the Contract Documents and whether the Bidder has ever been debarred from bidding or found ineligible for bidding on any other projects. The ability of a Bidder to provide the required bonds will not of itself demonstrate responsibility of the Bidder.

26. BIDDERS INTERESTED IN MORE THAN ONE BID; NON-COLLUSION DECLARATION

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 sub-proposal to a bidder, or who has quoted prices of materials to a bidder is not thereby disqualified from submitting a sub-proposal or quoting prices to other bidders, or from submitting a Bid Proposal itself to the District. The form of Non-Collusion Declaration included in the Contract Documents must be completed and duly executed on behalf of the Bidder; failure of a Bidder to submit a completed and executed Non-Collusion Declaration with its Bid Proposal will render the Bid Proposal non-responsive.

27. SUBSTITUTION OF SPECIFIED ITEMS

Pursuant to Public Contract Code §3400, whenever the Contract Documents refer to any specific article, device, equipment, product, material, fixture, specified patent or proprietary name, patented process, form, method or type of construction, by name, make, trade name, or catalog number (“specified item”), such reference shall be deemed to be followed by the words, “or equal”, unless it is indicated that no substitutions will be considered. Any Bidder who has timely submitted a Bid Proposal may submit data to the District to substantiate a request to substitute a specified item (“Substitution Substantiation Data”) using the form provided in the contract documents. However, a request to substitute a specified item will not be considered for approval until after the District’s Board of Trustees has taken action to award the Contract without any conditions or reservations. Therefore, bidders should not consider, use or include proposed substitutes for specified items when submitting their bid. Substitution Substantiation Data submitted by any Bidder with its Bid Proposal will not be considered by the District nor be deemed a submission of Substitution Substantiation Data. The Bidder awarded the Contract may request the substitution of specified items in the Contract Documents upon strict compliance with the applicable terms of the Contract Documents.

28. DISABLED VETERAN BUSINESS ENTERPRISE PARTICIPATION PROGRAM

Pursuant to Resolution In Support of Service Disabled Veterans Owned Businesses (SDVOB) and Disabled Veteran Business Enterprises (DVBE) approved on May 10, 2011 by the Board of Education, the San Diego Unified School District has replaced the good faith effort with a **mandatory requirement** of 3% for DVBE participation in **all** District construction bids, regardless

of size. In order to be responsive, the successful bidder **must meet or exceed** 3% DVBE participation as evidenced by DVBE/SDVOB Bidder Declaration form submitted at time of bid. The failure of any Bidder to strictly comply with the District's DVBE Participation Program Policy **will** result in rejection of a Bidder's Bid Proposal for non-responsiveness.

The apparent low bidder will be required to submit a **complete** DVBE/SDVOB Bidder Declaration, including the subcontractor/supplier's full address and contact information and work to be performed or supplies to be provided, within 24 hours of the bid opening date and time.

DVBE's need to have a current and valid certification from the State of California Department of General Services. SDVOB's need to have a current and valid verification letter from the Department of Veteran's Affairs Center for Veterans Enterprise; self-representation will not be accepted. DVBE eligibility is a one year period and must be renewed annually. SDVOB eligibility is a two year period. Eligibility must be current at time of bid and contract award. Bidders will need to submit either certification(s) or credential(s) within twenty-four (24) hours after the opening bid proposals.

29. PROJECT STABILIZATION AGREEMENT (PSA)

This project is subject to the Project Stabilization Agreement (PSA) adopted by the Board of Education on July 28, 2009 and as subsequently amended. The complete agreement is available for viewing and downloading at www.sandi.net.

Contractor shall submit the signed PSA Prime Contractor Letter of Assent (LOA) within 24 hours of the bid opening due date. Failure to submit LOA within the specified timeline will result in rejection of their bid as non-responsive.

Unless otherwise specified, the successful bidder shall, within five (5) business days after written notification by the District, provide the completed PSA Subcontractor Contact Information List.

30. PUBLIC RECORDS

Bid Proposals and other documents responding to the Call for Bids become the exclusive property of the District upon submittal to the District. At such time as the District issues the Bid Tabulation pursuant to these Instructions to Bidders, all Bid Proposals and other documents submitted in response to the Call for Bids become a matter of public record and shall thereupon be considered public records. A Bidder that indiscriminately marks all or most of its Bid Proposal as exempt from disclosure as a public record, whether by the notations of "Trade Secret," "Confidential," "Proprietary," or otherwise, may render the Bid Proposal non-responsive and rejected. The District is not liable or responsible for the disclosure of such records, including those exempt from disclosure if disclosure is deemed required by law, by an order of Court, or which occurs through inadvertence, mistake or negligence on the part of the District or its officers, employees or agents. At such time as Bid Proposals are deemed a matter of public record, pursuant to the above, any Bidder or other party shall be afforded access for inspection and/or copying of such Bid Proposals, by request made to the District in conformity with the California Access to Public Records Act, California Government Code §§6250, et. seq. If the District is required to defend or otherwise respond to any action or proceeding wherein request is made for the disclosure of the contents of any portion of a Bid Proposal deemed exempt from disclosure hereunder, the Bidder submitting the materials sought by such action or proceeding agrees to defend, indemnify and hold harmless the District in any action or proceeding from and against any liability, including without limitation attorneys' fees arising therefrom. The party submitting materials sought by any other party shall be solely responsible for the cost and defense in any action or proceeding seeking to compel disclosure of such materials; the District's sole involvement in any such action shall be that of a stakeholder, retaining the requested materials until otherwise ordered by a court of competent jurisdiction.

31. DRUG FREE WORKPLACE CERTIFICATE

In accordance with California Government Code §§8350 et seq., the Drug Free Workplace Act of 1990, the successful Bidder will be required to execute a Drug Free Workplace Certificate concurrently with execution of the Bid Proposal. The successful Bidder will be required to implement and take the affirmative measures outlined in the Drug Free Workplace Certificate and in California Government Code §§8350 et seq. Failure of the successful Bidder to comply with the measures outlined in the Drug Free Workplace Certificate and in California Government Code §§8350 et seq. may result in penalties, including without limitation, the termination of the Agreement, the suspension of any payment of the Contract Price otherwise due under the Contract Documents and/or debarment of the successful Bidder.

32. COMPLIANCE WITH IMMIGRATION REFORM AND CONTROL ACT OF 1986

The Bidder is solely and exclusively responsible for employment of individuals for the Work of the Contract in conformity with the Immigration Reform and Control Act of 1986, 8 USC §§1101 et seq. (the "IRCA"); the successful Bidder shall also require that any person or entity employing labor in connection with any of the Work of the Contract shall so similarly comply with the IRCA.

33. DEBARMENT

Federal Executive Order (E.O.) 12549 "Debarment" requires that all contractors receiving individual awards, using federal funds, and all subcontractors certify that the organization and its principals are not debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded by any Federal department or agency from doing business with the Federal Government. As part of bid responsiveness, District will verify the successful bidders' and his listed subcontractors' status prior to award of contract. Any successful bidder found on the Federal debarment list will be rejected as non-responsive. Information on debarment is available at the following website: www.sam.gov.

34. ALTERNATE BID PROPOSALS; ALTERNATE BID ITEM(S)

If the Bid Proposal forms do not specifically call for the submittal of alternate bid(s) or bid(s) for alternate item(s) and a Bidder submits alternate bid(s) or bid(s) for alternate bid item(s), the District may deem the Bid Proposal to be non-responsive and reject the same. In the event that alternate item(s) are specifically called for in the Bid Proposal forms, any Bid Proposal which does not include bid(s) for the alternate item(s) may result in the Bid Proposal being deemed by the District to be non-responsive and rejected. In the event that bids for alternate item(s) are specifically called for in the Bid Proposal forms, the Bidder is referenced to the provisions of the Contract Documents permitting the District, during performance of the Work of the Contract Documents, to add or delete such alternate item(s) with the cost or credit (inclusive of all direct and indirect costs, supervision, overhead and profit) for such alternate item(s) shall being in the amount(s) set forth in the Bidder's Bid Proposal for such alternate items(s).

35. RECOMMENDATION TO AWARD CONTRACT

The District will issue a Final Bid Tabulation, identifying the Bidder to whom the District recommends award of the Contract and the date/time/place of the District's Board of Education meeting at which time award of the Contract will be considered.

36. BID PROTEST

A bidder must have standing (i.e., sufficient protectable and tangible interest at stake) to submit a bid protest. For example, whereas a second low bidder may file a bid protest as to the first low bidder, a third low bidder may only file a bid protest if it has basis to challenge the second and first low bidders. A bidder whose bid has been rejected as non-responsive by the District has no

standing to protest another's bid, but may protest the rejection of their own bid only. Any Bidder, with the exception of a declared non-responsive bidder, submitting a Bid Proposal to the Districts address as mentioned in the Notice to Contractors Calling for Bids may file a protest of the District's recommendation to award the Contract provided that each and all of the following are complied with:

36.1 The bid protest is in writing on company letterhead and sent via email, fax, US Mail or hand delivered. The bid protest is filed and received by the Contracts Administration Supervisor, at the address as mentioned in the Notice To Contractors Calling For Bids, not more than five (5) calendar days following the date of issuance of the District's Final Bid Tabulation; and the written bid protest sets forth, in detail, all grounds for the bid protest, including without limitation all facts, supporting documentation, legal authorities and argument in support of the grounds for the bid protest; any matters not set forth in the written bid protest shall be deemed waived. All factual contentions must be supported by competent, admissible and creditable evidence.

36.2 Any bid protest not conforming to the foregoing shall be rejected by the District as invalid. Provided that a bid protest is filed in strict conformity with the foregoing, the Contracts Administration Supervisor, or such individual(s) as may be designated by him/her, shall review and evaluate the basis of the bid protest. Either the Contracts Administration Supervisor or other individual designated by him/her shall provide the bidder submitting the bid protest with a written statement concurring with or denying the bid protest.

36.3. Upon receipt of the written statement from the Contracts Administration Supervisor, if the bidder submitting the bid protest would like a further opportunity to be heard, the bidder shall submit in writing (e-mail is not acceptable) a request for a panel review. This request must be received by the Contracts Administration Supervisor, at the address as mentioned in the Notice To Contractors Calling For Bids, not more than five (5) calendar days following the date of the written statement in the preceding paragraph. Either the Contracts Administration Supervisor or other individual designated by him/her will convene a panel to consider oral and written evidence from the bidder submitting the bid protest as well as the apparent low bidder(s). The panel will consider evidence presented at the proceeding as well as previously submitted evidence. Failure to attend or present evidence shall constitute a waiver of that opportunity to be heard. Either the Contracts Administration Supervisor or other individual designated by him/her shall provide the bidder submitting the bid protest with a written statement concurring with or denying the bid protest, which will be the recommendation to the District's Board of Education.

36.4 The District's Board of Education will render a final determination and disposition of a bid protest by taking action to adopt, modify or reject the disposition of the contract award as reflected in the written statement of the Strategic Sourcing and Contracts Officer, or his/her designee. Action by the District's Board of Education relative to a bid award shall be final and not subject to appeal or reconsideration by the District, any employee or officer of the District or the District's Board of Education. The rendition of a written statement by the Strategic Sourcing and Contracts Officer (or his/her designee) and action by the District's Board of Education to adopt, modify or reject the disposition of the bid award reflected in such written statement shall be express conditions precedent to the institution of any legal or equitable proceedings relative to the bidding process, the District's intent to award the Contract, the District's disposition of any bid protest or the District's decision to reject all Bid Proposals.

37. QUESTIONS PERTAINING TO THIS BID

Questions pertaining to this bid should be addressed to:

Mason Moyers, Senior Contracts Specialist, Construction
San Diego Unified School District
Strategic Sourcing and Contracts Department
2351 Cardinal Lane, Bldg. M

San Diego, CA 92123
(858) 522-5853
mmoyers1@sandi.net

PRE-BID SUBMITTAL DOCUMENT CHECKLIST

This checklist is to assist the bidder in submitting a complete and responsive bid offer. The inclusion of all the required documents at time of bid does not in itself render the bidders offer as responsive.

☐ **I am prequalified to bid as prime contractor by San Diego USD.**

☐ **All of my listed subcontractors performing MEP trades are prequalified by San Diego USD.**

☐ Completed and signed Bid Proposal Form

☐ Listed all subcontractors performing more than ½ of 1% of the total bid value on the Subcontractor List and provided the minimum required information at time of bid per Article 6 in the Instructions to Bidders.

☐ **Listed DIR Registration Number for each listed subcontractor.**

☐ Completed and signed Noncollusion Declaration.

☐ Completed and signed Bid Security Bond with Attorney-in-Fact certificate attached, or provided a cashier's check for 10% of your bid's value.

☐ Signed DVBE/SDVOB Bidder Declaration. **NOTE: In addition to meeting the minimum requirement of 3% DVBE/SDVOB participation, this document must <u>contain as a minimum</u> the DVBE firm name, certification number and percentage of work to be performed for your bid to be considered responsive to the District's DVBE/SDVOB requirements (see Article 28 in the Instructions to Bidders). Any deviation from what is instructed in the bid terms and conditions may render your bid non-responsive. If you are uncertain about this requirement please call Linda Hippe, Contracts Administration Supervisor, Construction at 858-522-5831 for assistance.**

BID PROPOSAL

TO: **SAN DIEGO UNIFIED SCHOOL DISTRICT (**"District"), a California Public School District, acting by and through its Board of Education.

FROM: _____
(Name of Bidder)

_____
(Address)

_____
(City, State, Zip Code)

_____
(Telephone)

_____
(Email Address)

_____
(Name(s) of Bidder's Authorized Representative(s))

Bid Proposal

Bid Proposal Amount. Pursuant to and in compliance with the Notice to Contractors Calling for Bids, the Instructions to Bidders and the other documents relating thereto, the undersigned Bidder having reviewed the Instructions to Bidders, General Conditions, Supplementary Conditions, Specifications, Agreement and all other Contract Documents and upon compliance with all requirements therein with reference to the submittal of this Bid Proposal, hereby proposes and agrees to perform the Contract including, without limitation, all of its component parts; to perform everything required to be performed; to provide and furnish any and all of the labor, materials, tools, equipment and services necessary, including all taxes, to perform the Contract and complete in a workmanlike manner all of the Work required for the Project described as:

NO. CC23-0233-39 – HORTON ELEMENTARY SCHOOL RE-ROOFING AND BEAM REPAIR

in accordance with the Contract Documents as set forth above as follows:

ALLOWANCES: The following allowances are to be <u>included</u> in the Base Bids <u>by the Bidder:</u>

No. 1	For unforeseen structural conditions, as directed by District	$30,000.00
No. 2	For unforeseen hazardous materials removal, abatement, disposal, and necessary repairs, as directed by District.	$30,000.00
No. 3	For unforeseen termite and pest removal and damage repair, as directed by District.	$30,000.00
No. 4	For unforeseen electrical and fire alarm work, as directed by District.	$20,000.00
No. 5	For unforeseen mechanical work, as directed by District.	$20,000.00
No. 6	For unforeseen plumbing work, as directed by District.	$20,000.00
No. 7	For unforeseen demolition work, as directed by District.	$30,000.00
No. 8	For unforeseen interior finishes and fixtures, as directed by District.	$20,000.00
No. 9	For unforeseen work related to moving furniture and equipment and placing in temporary storage, as directed by District	$20,000.00
No. 10	For unforeseen work related to disconnecting existing utilities from, providing temporary utilities to, and reconnecting existing utilities as a result of unforeseen utility interruptions, as directed by District.	$20,000.00

No. 11	For unforeseen work related to SWPPP/WPCP, as directed by District	$10,000.00

Refer to Specification Section 01 21 00 Allowances

Acknowledgement by Bidder that all Allowances listed above are included in their Base Bids. _____
Initials

Bidders will be prompted to acknowledge addenda and enter the base bid price(s) when submitting electronic Bids and accompanying documents through PlanetBids.

ITEM 1: HORTON ELEMENTARY SCHOOL RE-ROOFING INCLUDING ALLOWANCES
ITEM 2: HORTON ELEMENTARY SCHOOL BEAM REPAIR INCLUDING ALLOWANCES

Method of Determining Low Bidder: The low bidder will be determined by the lowest sum total of Base Bid Items 1-2.

Additive or Deductive Bid Items: If Bid Proposal prices are required for Additive or Deductive Bid Items, the Bidder's price proposal(s) for Additive or Deductive Bid Items and Unit Price Items shall be entered in PlanetBids or on the Unit Price Sheet. The Bidder acknowledges that the District may, at its sole discretion, elect to include as part of the scope of Work of the Contract any Additive or Deductive Bid Item selected in accordance with the Instructions to Bidders and in such event, the cost or credit to the District shall be as set forth in the Additive or Deductive Bid Item Proposal submitted through PlanetBids. Failure to include Bid Proposal prices, even if "zero", for any Additive or Deductive Bid Item included in the bidding process, will render the Bid Proposal non-responsive and rejected.

Unit Price Items: If unit pricing is required, it shall be entered on the Unit Price Sheet and submitted at time of bid on PlanetBids. Failure to include pricing, even if "zero", for Unit Price Item(s) included in the bidding process, may render the Bid Proposal non-responsive and rejected.

Rejection of Bid; Holding Open of Bid: It is understood that the District reserves the right to reject this Bid Proposal and that this Bid Proposal shall remain open and not be withdrawn for the period of time specified in the Instructions to Bidders.

Documents Accompanying Bid: The undersigned Bidder shall submit with this Bid Proposal the following:

Bid Security
Non-Collusion Declaration
Subcontractors List
DVBE/SDVOB Bidder Declaration

The Bidder acknowledges that if this Bid Proposal and the foregoing documents are not fully in compliance with applicable requirements set forth in the Notice to Contractors Calling for Bids, the Instructions to Bidders and in each of the foregoing documents, the Bid Proposal may be rejected as non-responsive.

Requirements of Low Bidder Recommended for Award of Contract: It is understood and agreed that if written notice of the acceptance of this Bid Proposal demonstrated by Bid Tabulation thereon is e-mailed or delivered by the District to the undersigned after the opening of Bid Proposals, the undersigned will execute and deliver to the District all required documents in accordance with the Bid Proposal as detailed in the Required Executable Documents and Timeline ("Timeline") and the Instructions to Bidders. Pursuant to the Timeline, the apparent low bidder of the Contract shall deliver to the District: (a) Certificates of Insurance evidencing all insurance coverages required under the Contract Documents; (b) the Performance Bond; (c) the Labor and Material Payment Bond; (d) the Certificate of Workers Compensation Insurance; (e) the Prime Contractors Letter of Assent; (f) the Drug-Free Workplace Certificate; (g) Guarantee; (h) Contractor Certification Regarding Background Checks; (i) Attachment A List of Employees; and (j) Certification Public Contract Code Section 3006 (if applicable). All of the foregoing shall be in conformity

with applicable requirements set forth in Notice to Contractors Calling for Bids, the Instructions to Bidders and in each of the foregoing Documents. Failure of the Bidder recommended the Contract to strictly comply with the preceding may result in the District's rescission of its recommendation of the award of the Contract and/or forfeiture of the Bidder's Bid Security. In such event, the District may, in its sole and exclusive discretion elect to award the Contract to the responsible Bidder submitting the next lowest Bid Proposal, or to reject all Bid Proposals. The Work under the Contract Documents shall be commenced by the undersigned Bidder, if awarded the Contract, on the date stated in the District's Notice to Proceed issued pursuant to the Contract Documents and Substantial Completion of the Work shall be achieved within the Contract Time specified in the Contract Documents.

Notices: All notices or other correspondence shall be addressed to the District and the Bidder at their respective addresses set forth herein. Notices shall be effective only if in writing and in conformity with the requirements for service of notices set forth in the Contract Documents.

Contractor's License: The undersigned Bidder is currently and duly licensed in accordance with the California Contractors License Law, California Business & Professions Code §§7000 et seq., under the following classification(s) _____ bearing License Number(s)_____, with expiration date(s) of _____. By executing this Bid Proposal and submitting the same to the District, the Bidder acknowledges the provisions of California Business & Professions Code §7028.15, which provides that it shall be a misdemeanor for any person to submit a bid proposal to a public agency without having a license to perform the work of the bid proposal. By executing this Bid Proposal, the Bidder hereby certifies that: (a) it is duly licensed, in the necessary class(es), for performing the Work of the Contract Documents; (b) that such license shall be in full force and effect throughout the duration of the performance of the Work under the Contract Documents; and (c) that all Subcontractors (as defined in Public Contract Code §4113 and Business & Professions Code §7026) providing or performing any portion of the Work of the Contract Documents shall be so similarly and appropriately licensed to perform or provide such portion of the Work.

Legal Status: The undersigned Bidder's legal status is _____ (i.e., corporation, sole proprietorship, partnership, LLP).

DIR Registration Number:_____

Designation of Subcontractors: In compliance with the Subletting and Subcontracting Fair Practices Act (California Public Contract Code §§4100, et seq.) and amendments thereof, each Bidder shall set forth ***at time of bid*** in the Subcontractors List: (a) the name and location of the place of business of each Subcontractor who will perform work or labor or render services to the Bidder in or about the construction of the Work to be performed under the Contract Documents in an amount in excess of one-half of one percent (0.5%) of the Bidder's Bid Proposal; (b) the Subcontractor's license number; (c) the portion of the Work which will be performed by each listed Subcontractor; and, (d) DIR Registration Number. The Bidder shall list only one Subcontractor for each portion of the Work as is defined by the Bidder in its Bid Proposal. If a Bidder fails to list a Subcontractor or if the Bidder specifies more than one Subcontractor for the same portion of Work to be performed under the Contract Documents valued in excess of one-half of one percent (0.5%) of the Bidder's Bid Proposal amount, the Bidder shall be deemed to have agreed that it is fully qualified to perform that portion of the Work itself and that it shall perform that portion of the Work. Subcontractor is defined in Public Contract Code §4113 and Business & Professions Code §7026.

Confirmation of Figures: By submitting this Bid Proposal, the Bidder confirms that it has checked all of the above figures in the Allowances section, as well as the Bid Item numbers and Additive or Deductive Bid Item numbers entered into PlanetBids, and understands that neither the District nor any of its agents, employees or representatives shall be responsible for any errors or omissions on the part of the undersigned Bidder in preparing and submitting this Bid Proposal.

Acknowledgment and Confirmation: The undersigned Bidder acknowledges its receipt, review and understanding of the Drawings, the Specifications and other Contract Documents pertaining to the proposed Work. The undersigned Bidder certifies that the Contract Documents are, in its opinion, adequate, feasible and complete for providing, performing and constructing the Work in a sound and suitable manner for the use specified and intended by the Contract Documents. The undersigned Bidder certifies that it has,

or has available, all necessary equipment, personnel, materials, facilities and technical and financial resources to complete the Work for the amount bid herein within the Contract Time and in accordance with these Contract Documents.

By: _____ _____

(Signature of Company Officer) (Date)

_____ _____

(Typed or Printed Name) (Title)

SUBCONTRACTOR LIST

NOTE!

The Subcontractor List contains the Architect's listing of expected licensed trades performing work over .5% of the project estimate. You are free to add any trades performing work over .5% over and above that of the Architect's projection. **The listing provided does not relieve you of the Public Contract Code requirement to list ALL subcontractors performing over 1/2 of 1% of the projects scope of work.**

NEW: Effective July 1, 2014, no contractor or subcontractor may be listed on a bid proposal, or awarded a contract for a public works project (***awarded on or after April 1, 2015***) unless registered with the Department of Industrial Relations (DIR) pursuant to Labor Code §1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code §1771.1(a)].

This project is subject to compliance monitoring and enforcement by the DIR. Prime contractors must add the DIR Registration Number for each of their listed subcontractors to the Subcontractors List AND submit a certificate of registration for their own firm and those of their listed subcontractors upon request by the District.

Failure of the bidding prime contractor to list their subcontractors DIR Registration Number on the Subcontractors List ***at time of bid*** may result in rejection of their bid as non-responsive.

NOTE! ALL OF YOUR SUBCONTRACTORS PERFORMING MEP TRADES (as defined by PCC Section 20111.6) MUST BE PREQUALIFIED BY THE DISTRICT.

SUBCONTRACTORS LIST

Bidder: _____

Address: _____

Telephone: _____ **Email:** _____

Bidder(s) Authorized Representative(s): _____

PROJECT: HORTON ELEMENTARY SCHOOL RE-ROOFING AND BEAM REPAIR

TRADE/PORTION OF THE WORK	SUBCONTRACTOR NAME AND LICENSE NUMBER	LICENSE CLASSIFI-CATION	SUBCONTRACTOR BUSINESS LOCATION	% OF CONTRACT VALUE	DVBE/ SBE?	DIR REG. NO.

TRADE/PORTION OF THE WORK	SUBCONTRACTOR NAME AND LICENSE NUMBER	LICENSE CLASSIFI-CATION	SUBCONTRACTOR BUSINESS LOCATION	% OF CONTRACT VALUE	DVBE/ SBE?	DIR REG. NO.

TRADE/PORTION OF THE WORK	SUBCONTRACTOR NAME AND LICENSE NUMBER	LICENSE CLASSIFI-CATION	SUBCONTRACTOR BUSINESS LOCATION	% OF CONTRACT VALUE	DVBE/ SBE?	DIR REG. NO.

NOTE: Under Public Contract Code section 4100 et. seq. known as the Subletting and Subcontracting Fair Practices Act, all subcontractors (defined under Public Contract Code section 4113 and Business & Professions Code section 7026) to the prime contractor performing work in excess of 0.5% of the bid must be listed. Contractor ***at time of bid*** must list the name and location of business, contractor's license number and trade/portion of work, ***and pursuant to SB854, the DIR Registration Number of every listed subcontractor***.

NOTE: LIST ALL DVBE SUBCONTRACTORS IN THE DVBE/SDVOB BIDDER DECLARATION DUE AT TIME OF BID AS WELL AS IN THIS SUBCONTRACTORS LIST.
The Bidder shall designate/identify the listed subcontractors as DVBE's *on* the DVBE/SDVOB Bidder Declaration *form and Subcontractor's List* at **time of bid,** and within twenty-four (24) hours after the opening *of* Bid Proposals, *provide all required information* on the Subcontractor List *per* Public Contract Code section 4104(a)(3)(A). Failure of a Bidder to meet the 3% DVBE participation percentage requirement pursuant to Resolution In Support of Service Disabled Veterans Owned Businesses (SDVOB) and Disabled Veteran Business Enterprises (DVBE) approved on May 10, 2011 by Board of Education shall result in rejection of the Bidder's Bid Proposal for non-responsiveness. DVBE's need to have a current and valid certification from the State of California Department of General Services. SDVOB's need to have a current and valid verification letter from the Department of Veteran's Affairs Center for Veterans Enterprise; self-representation will not be accepted. DVBE and SDVOB eligibility is a one year period and must be renewed annually; eligibility must be current at time of bid and contract award. Failure of a Bidder to submit the designation/identification of subcontractors pursuant to the preceding may result in rejection of the Bidder's Bid Proposal for non-responsiveness. For purposes of the preceding, the following definitions shall apply:

Small Business: A business concern, independently owned and operated, not dominant in the field of operation and whose size determinations and annual receipts are in accordance with the U.S. Department of Commerce *"Standard Industrial Classification Manual"*. Size determination is set by either (1) annual receipts or (2) number of employees. In size determinations where the standard is "annual receipts", size eligibility requires that the concern may not exceed the "annual receipts" in that standard. In size determinations where the standard is "number of employees", size eligibility requires that the concern may not exceed the number of employees in that standard. "Number of employees" means the average employment of the concern for the preceding completed 12 calendar month period. A concern is "not dominate in its field of operation" when it does not exercise a controlling or major influence on a national basis in a kind of business activity in which a number of business concerns are primarily engaged. The designation of small business shall include:
"DVBE" Disabled Veteran Business Enterprise: A business concern that is certified by the State of California Department of General Services Office of Small and Minority Business, 51% owned and operated by a disabled veteran.
"SBE" Small Business Enterprise: A small business concern independently owned and operated by a non-minority, qualifying in one of the above categories.
Percentage of Contract Value: The Bidder shall stipulate what percentage of work a small business; a DVBE or a SBE will perform in relation to the total bid value.

NONCOLLUSION DECLARATION

The undersigned declares:

I am the _____ of

_____, the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

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

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on this ____ day of _____, 20__ at

_____
(City, County and State)

By: _____ _____
(Signature of Company Officer) (Date)

_____ _____
(Typed or Printed Name) (Title)

_____ _____
(Address) (Phone/Fax with area code)

_____ _____
(City/State/Zip) (Email Address)

SAN DIEGO UNIFIED SCHOOL DISTRICT

BID SECURITY BOND

KNOW ALL MEN BY THESE PRESENTS, that we _____

_____ as Principal, and

_____ as a Surety, are held and firmly bound unto SAN DIEGO UNIFIED SCHOOL DISTRICT hereinafter called the Owner, in the penal sum equal to: TEN PERCENT (10%) of the total amount of the Principal's Bid Proposal submitted to the Owner for the Work described below for the payment of which sum in lawful money of the United States, well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the Principal has submitted the accompanying Bid Proposal dated _____, 20_____, for the Work described as: _____
PROJECT NAME

NOW, THEREFORE, if the Principal shall not withdraw said Bid Proposal within the period specified therein after the opening of the same, or, if no period be specified, within ninety (90) days after said opening, and shall within the period specified therefore, or, if no period be specified, within five (5) days after the prescribed forms are presented to him for signature, enter into a written contract with the Owner, in accordance with the bid as accepted, and give bond with good and sufficient surety or sureties, as may be required, for the faithful performance and proper fulfillment of such contract, or in the event of the withdrawal of said bid within the period specified, or the failure to enter into such contract and give such bond within the time specified, if the Principal shall pay the Owner the difference between the amount specified in said Bid Proposal and the amount for which the Owner may procure the required work and/or supplies if the latter amount be in excess of the former, then the above obligation shall be void and of no effect, otherwise to remain in full force and virtue.

Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or the Call for Bids, or to the Work to be performed thereunder, or the specifications accompanying the same, shall in anywise affect its obligations under this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of said Contract or the Call for Bids, or to the work, or to the specifications.

In the event suit is brought upon this bond by the Owner and judgment is recovered, the Surety shall pay all litigation expenses incurred by the Owner in such suit, including reasonable attorneys' fees, court costs, expert witness fees and investigation expenses.

IN WITNESS WHEREOF the above-named parties have executed this instrument under their several seals this ____ day of _____, 20____.

_____
(Principal Name)

By:_____

_____
(Typed or Printed Name)

Title: _____

_____
(Surety Name)

By:_____
(Signature of Attorney-in-Fact for Surety)

_____
(Attach Attorney-in-Fact Certificate) (Typed or Printed Name)

(___)_____Phn (___)_____Fax
(Area Code Telephone and Fax Number of Surety)

ELECTRONIC SIGNATURE ACKNOWLEDGEMENT & AGREEMENT

This Agreement governs the rights, duties, and responsibilities relating to the use of an electronic signature for Contract management with San Diego Unified School District ("District") through an electronic system established and maintained by the District.

1. Under the Uniform Electronic Transactions Act (California Civil Code sections 1633.1-1633.17), I agree to conduct transactions relating to the Contract by use of an electronic signature, which is an electronic mark that is held to the same standard as a legally binding equivalent of my handwritten signature. **I further agree that, for the purposes of authorizing, approving, and authenticating records, information, and transactions relating to the Contract, my electronic signature has the full force and effect of a signature affixed by hand to a paper document. I agree that the transactions I conduct electronically relating to the Contract shall be binding upon me.**

2. I agree that my electronic signature will be valid from date of issuance until it is revoked or terminated under this Agreement. I understand that the District may suspend, terminate, or revoke my electronic signature in its reasonable discretion.

3. I will use my electronic signature to establish my identity and sign electronic documents and forms relating to the Contract. I am solely responsible for protecting my electronic signature. If I suspect or discover that my electronic signature has been stolen, lost, used by an unauthorized party, or otherwise compromised, then I will immediately notify the Construction Manager Director or his/her designee and request that my electronic signature be revoked. I will then immediately cease all use of my electronic signature. I agree to keep my electronic signature secret and secure by taking reasonable security measures to prevent it from being lost, modified, or otherwise compromised, and to prevent unauthorized disclosure of, access to, or use of it or of any media on which information about it is stored.

4. I will immediately request that my electronic signature be revoked if I discover or suspect that it has been or is in danger of being lost, disclosed, compromised or subjected to unauthorized use in any way.

5. If I have requested that my electronic signature be revoked, if I am notified that someone has requested that my electronic signature be suspended, terminated, or revoked, or if I suspect or discover that it has been or may be compromised or subjected to unauthorized use in any way, I will immediately cease using my electronic signature. I will also immediately cease using my electronic signature upon termination of employment or termination of this Agreement.

6. I will not enter into an electronic signature for any person other than myself, unless I am designated in writing, as a proxy for such person relating to the Contract.

_____ _____
Please print or type your first and last name Date

_____
Please provide your email address

☐ I understand that by checking this box constitutes a legal signature confirming that I acknowledge and warrant the truthfulness of the information provided in this document. Please sign within the box below.

PROJECT STABILIZATION AGREEMENT

PRIME CONTRACTOR LETTER OF ASSENT

TO: **SAN DIEGO UNIFIED SCHOOL DISTRICT**, a California Public School District, acting by and through its Board of Education ("the District").

FROM: _____
(Name of Contractor)

_____
(Address)

_____
(City, State, Zip Code)

_____
(Telephone/Fax)

_____
(Email Address)

_____
(Name(s) of Contractor's Authorized Executive(s)

This is to confirm that my Company agrees to be party to and bound by the San Diego Unified School District Project Stabilization Agreement – School Construction Major Rehabilitation Funded by Propositions S and Z, effective July 28, 2009 and as subsequently amended, as such Agreement may from time to time be amended by the negotiating parties or interpreted pursuant to its terms. Such obligation to be a party and bound by this Agreement shall extend to all work covered by the Agreement undertaken by this Company on the Project pursuant to CC23-0233-39 – HORTON ELEMENTARY SCHOOL RE-ROOFING AND BEAM REPAIR, and this Company shall require all of its subcontractors and others covered by the PSA of whatever tier to be similarly bound for all work within the scope of the Agreement by signing and furnishing to the District's Contract Compliance Office an identical Letter of Assent prior to their commencement of work.

Executed By:

_____ _____
(Signature of Company Officer) (Date)

_____ _____
(Typed or Printed Name) (Title)

PROJECT STABILIZATION AGREEMENT

SUBCONTRACTOR CONTACT INFORMATION LIST

_____
(Company Name of Prime Contractor)

_____
(Address)

_____
(City, State, Zip Code)

_____
(Telephone)

_____
(Email Address)

_____
(Name(s) of Contractor's Authorized Executive(s)

This is to inform the San Diego Unified School District's Project Stabilization Agreement Department the contact information for all subcontractors listed for project CC23-0233-39 – HORTON ELEMENTARY SCHOOL RE-ROOFING AND BEAM REPAIR, and will be providing to the District's Contract Compliance Office a Letter of Assent prior to their commencement of work.

SUBCONTRACTOR COMPANY NAME	PSA COMPLIANCE CONTACT PERSON	CONTACT PERSON'S EMAIL ADDRESS	SUBCONTRACTOR BUSINESS ADDRESS	PHONE NUMBER

SUBCONTRACTOR COMPANY NAME	PSA COMPLIANCE CONTACT PERSON	CONTACT PERSON'S EMAIL ADDRESS	SUBCONTRACTOR BUSINESS ADDRESS	PHONE NUMBER

PROJECT STABILIZATION AGREEMENT

SUBCONTRACTOR CONTACT INFORMATION FORM

_____
(Company Name of Prime Contractor)

_____
(Address)

_____
(City, State, Zip Code)

_____
(Telephone)

_____
(Email Address)

_____
(Name(s) of Contractor's Authorized Executive(s)

This is to inform the San Diego Unified School District's Project Stabilization Agreement Department the contact information for all subcontractors listed for project CC23-0233-39 – HORTON ELEMENTARY SCHOOL RE-ROOFING AND BEAM REPAIR, and will be providing to the District's Contract Compliance Office a Letter of Assent prior to their commencement of work.

This document is a tool for obtaining the necessary information from the subcontractor. General Contractors are not required to submit these individual forms to the District. Only the PSA Subcontractor Contact Information List is required, upon request by the District.

It is requested of each subcontractor bidding on the listed project above, to complete the following form and return to the prime contractor within 24 hours of request.

SUBCONTRACTOR COMPANY NAME	PSA COMPLIANCE CONTACT PERSON	CONTACT PERSON'S EMAIL ADDRESS	SUBCONTRACTOR BUSINESS ADDRESS	PHONE NUMBER

AGREEMENT

THIS AGREEMENT is entered into by and between the **SAN DIEGO UNIFIED SCHOOL DISTRICT**, a California Public School District hereinafter "District" and _____, "Contractor".

WITNESSETH, that the District and the Contractor in consideration of the mutual covenants contained herein agree as follows:

1. **The Work.** Within the Contract Time and for the Contract Price, subject to adjustments thereto pursuant to the Contract Documents, the Contractor shall perform and provide all necessary labor, materials, tools, equipment, utilities, services and transportation to complete in a workmanlike manner all of the Work required in connection with the work of improvement commonly referred to as

HORTON ELEMENTARY SCHOOL RE-ROOFING AND BEAM REPAIR

Contractor shall complete all Work covered by the Contract Documents, including without limitation, the Drawings and Specifications prepared by the Architects **SAFDIE RABINES ARCHITECTS** and other Contract Documents enumerated in Article 6 below, along with all modifications and addenda thereto issued in accordance with the Contract Documents.

2. **Contract Term.** The Work shall be commenced on the date stated in the District's Notice to Proceed; the Contractor shall achieve Substantial Completion of the Work within the Contract Time set forth in the Contract Documents.

3. **Compensation.** Contractor shall be compensated for the performance of its obligations under this Agreement as specified in the executed Bid Proposal, for the following items:

Item 1 Base Bid: _____
Item 2: Base Bid: _____

Total Contract Price: _____

The District's payment of the Contract Price shall be in accordance with the Contract Documents.

4. **Liquidated Damages.** In the event of the failure or refusal of the Contractor to achieve Substantial Completion of the Work of the Contract Documents within the Contract Time, as adjusted, the Contractor shall be subject to assessment of Liquidated Damages in accordance with the Contract Documents.

5. **Termination.** This Agreement may be terminated by the District upon seven (7) days written notice to Contractor. The District's right to terminate under this paragraph shall be in addition to any other rights reserved to the District under this Contract.

6. **The Contract Documents.** The documents forming a part of the Contract Documents consist of the following, all of which are component parts of the Contract Documents, and any other documents signed by both parties relating to the subject matter of the Agreement, all of which are incorporated by reference as though set forth in full herein.

Agreement	Performance Bond
Instructions to Bidders	Labor and Material Payment Bond
Bid Proposal	General Conditions
Subcontractors List	Electronic Signature Acknowledgement
PSA Letter of Assent	Supplementary Conditions
PSA Subcontractor Contact Info List	Specifications
Certification of Workers Compensation	Contractor Certification - Background Checks

Non-Collusion Declaration	Roofing Certification
Drug-Free Workplace Certificate	Drawings
Bid Security Bond	DVBE/SDVOB Bidder Declaration
Guarantee	Bidders DVBE Statement
Bid Addenda Nos. _____	Employee List

7. **Electronic Signature**. Contractor/Consultant consents to conducting transactions for this Contract via electronic signature, which will have the same validity and effect as a signature affixed by hand, through an electronic system established and maintained by the District. Contractor/Consultant agrees that designated persons will sign an electronic signature acknowledgment and agreement attached and incorporated by reference on page E-12 _____ (Initials)

8. **Authority to Execute.** The individual(s) executing this Agreement on behalf of the Contractor is/are duly and fully authorized to execute this Agreement on behalf of Contractor and to bind the Contractor to each and every term, condition and covenant of the Contract Documents.

CONTRACTORS ARE REQUIRED BY LAW TO BE LICENSED AND REGULATED BY THE CONTRACTORS' STATE LICENSE BOARD. ANY QUESTIONS CONCERNING A CONTRACTOR MAY BE REFERRED TO THE REGISTRAR, CONTRACTORS' STATE LICENSE BOARD, P.O. BOX 2600, SACRAMENTO, CALIFORNIA 95826

IN WITNESS WHEREOF, this Agreement has been duly executed by the District and the Contractor as of the date set forth above.

CONTRACTOR

By: _____**DO NOT SIGN**_____
(Signature of Company Officer)

_____

Title: _____

Date: _____

SAN DIEGO UNIFIED SCHOOL DISTRICT

By: _____

_____Linda Hippe_____

Title: Director (TOC), Purchasing and Contracts

Date: _____

Contractor Name: _____

Address: _____

City, State, Zip: _____

Telephone: _____ **Email**: _____

APPROVED AS TO FORM AND LEGALITY

_____
Sandra T.M. Chong, Asst. General Counsel II
San Diego Unified School District

Approved in a public meeting of the Board of Education of the San Diego Unified School District on Date_____

_____
Marty Stultz, Director of Board Service
Board of Education

APPROVED AS TO CONTENT

_____
Gary Stanford, Director Project Management
San Diego Unified School District

SAN DIEGO UNIFIED SCHOOL DISTRICT
STRATEGIC SOURCING AND CONTRACTS DEPARTMENT
2351 CARDINAL LANE, BLDG. M
SAN DIEGO, CA 92123

LABOR AND MATERIAL PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS that we, _____ as Principal, and as Surety _____are held and firmly bound unto **SAN DIEGO UNIFIED SCHOOL DISTRICT** hereinafter "the Obligee", in the penal sum of _____ Dollars ($_____) in lawful money of the United States, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT:

WHEREAS**,** the Obligee, by resolution of its Board of Trustees passed on _____, 20___, has awarded to the Principal a Contract for the Work described as:_____

_____

WHEREAS**,** the Principal, on or about _____, 20___, entered into a Contract with the Obligee for performance of the Work, the Agreement and all other Contract Documents set forth therein are incorporated herein and made a part hereof by this reference which contract is by this reference made a part hereof.

WHEREAS**,** by the terms of the Contract Documents, the Principal is required to furnish a bond for the prompt, full and faithful payment to any Claimant, as hereinafter defined, for all labor materials or services used, or reasonably required for use, in the performance of the Work.

NOW THEREFORE**,** if the Principal shall promptly, fully and faithfully make payment to any Claimant for all labor, materials or services used or reasonably required for use in the performance of the Work then this obligation shall be void; otherwise, it shall be, and remain, in full force and effect.

The term "Claimant" shall refer to any person, corporation, partnership, proprietorship or other entity including without limitation, all persons and entities described in California Civil Code §§8004, 9100, (and generally Civil Code §8000 et seq., 9000 et seq.) providing or furnishing labor, materials or services used or reasonably required for use in the performance of the Work under the Contract Documents, without regard for whether such labor, materials or services were sold, leased or rented. This Bond shall inure to the benefit of all Claimants so as to give them, or their assigns and successors, a right of action upon this Bond.

In the event suit is brought on this Bond by any Claimant for amounts due such Claimant for labor, materials or services provided or furnished by such Claimant, the Surety shall pay for the same and reasonable attorneys fees pursuant to California Civil Code §§8150, 9550 (and generally Civil Code §8000 et seq., 9000 et seq.).

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, deletion, addition, or any other modification to the terms of the Contract Documents, the Work to be performed thereunder, the Specifications or the Drawings, or any other portion of the Contract Documents, shall in any way limit, restrict or otherwise affect its obligations under this Bond; the Surety hereby waives notice from the Obligee of any such change, extension of time, alteration, deletion, addition or other modification to the Contract Documents, the Work to be performed under the Contract Documents, the Drawings or the Specifications of any other portion of the Contract Documents.

IN WITNESS WHEREOF**,** the Principal and Surety have executed this instrument this _____ day of _____, 20___ by their duly authorized agent or representative.

_____
(Principal Name)

By: _____

_____
(Typed or Printed Name)

Title: _____

_____
(Surety Name)

By: _____
(Signature of Attorney-in-Fact for Surety)

(Attach Attorney-in-Fact Certificate)

_____
(Typed or Printed Name)

(___)_____Phn (___)_____Fax
(Area Code Telephone and Fax Number of Surety)

_____E-Mail

Address for Notices

_____

_____

_____

SAN DIEGO UNIFIED SCHOOL DISTRICT
STRATEGIC SOURCING AND CONTRACTS DEPARTMENT
2351 CARDINAL LANE, BLDG. M
SAN DIEGO, CA 92123

PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS:

WHEREAS, the San Diego Unified School District ("the District") has awarded to

_____ as Principal, a contract dated the _____day of _____ , 20____, (the "Contract"), which Contract is by this reference made a part hereof, for the work described as follows:

WHEREAS, Principal is required to furnish a bond in connection with the Contract, guaranteeing the faithful performance thereof;
NOW, THEREFORE, we, the undersigned Principal and as Surety are held and firmly bound unto the District in the sum of_____dollars ($_____), to be paid to the District or its successors and assigns; for which payment, 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 Principal, or its heirs, executors, administrators, successors, or assigns approved by the District, shall promptly and faithfully perform the covenants, conditions, and agreements of the Contract during the original term and any extensions thereof as may be granted by the District, with or without notice to Surety, and during the period of any guarantees or warranties required under the Contract, and shall also promptly and faithfully perform all the covenants, conditions, and agreements of any alteration of the Contract made as therein provided, notice of which alterations to Surety being hereby waived, on Principal's part to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify, defend, protect, and hold harmless the District as stipulated in the Contract, then this obligation shall become and be null and void; otherwise it shall be and remain in full force and effect.

No extension of time, change, alteration, modification, or addition to the Contract, or of the work required there under, shall release or exonerate Surety on this bond or in any way affect the obligation of this bond; and Surety does hereby waive notice of any such extension of time, change, alteration, modification, or addition.

Whenever Principal shall be and declared by the District to be in default under the Contract, Surety shall promptly remedy the default, or shall promptly:

1. Undertake through its agents or independent contractors, reasonably acceptable to the District, to complete the Contract in accordance with its terms and conditions and to pay and perform all obligations of Principal under the Contract, including without limitation, all obligations with respect to warranties, guarantees, and the payment of liquidated damages, or, at Surety's election, or, if required by the District, to pay the penal sum.

2. Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and, upon determination by the District of the lowest responsible bidder, arrange for a contract between such bidder and the District and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the Contract Sum, and to pay and perform all obligations of Principal under the Contract, including, without limitation, all obligations with respect to warranties, guarantees, and the payment of liquidated damages; but, in any event, Surety's total obligations hereunder shall

NOTE: Notary Acknowledgment for Surety and Surety's Power of Attorney must be attached.

not exceed the amount set forth in the third paragraph hereof. The term "balance of the Contract Sum," as used in this paragraph, shall mean the total amount payable by the District to the Principal under the Contract and any amendments thereto, less the amount paid by the District to Principal.

Surety's obligations hereunder are independent of the obligations of any other surety for the performance of the Contract, and suit may be brought against Surety and such other sureties, jointly and severally, or against any one or more of them, or against less than all of them without impairing the District' rights against the others.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the District or its successors or assigns.

Surety may join in any arbitration proceedings brought under the Contract and shall be bound by any arbitration award.

In the event suit is brought upon this bond by the District, Surety shall pay reasonable attorney's fees and costs incurred by the District in such suit.

Correspondence or claims relating to this bond shall be sent to Surety at the address set forth below.

IN WITNESS WHEREOF, we have hereunto set our hands this ___day of _____, 20____.

Principal: _____
(Name of Firm)

By: _____
(Signature)

_____
(Printed Name)

Title: _____

Surety: _____
(Name of Firm)

By: _____
(Signature)

_____
(Printed Name)

Title: _____

Address for Notices:

_____

_____

_____

NOTE: Notary Acknowledgment for Surety and Surety's Power of Attorney must be attached.

CERTIFICATE OF WORKERS' COMPENSATION INSURANCE

I, _____ the _____ of
(Name) (Title)
_____, declare, state and certify that:
(Contractor Name)

1. I am aware that California Labor Code §3700(a) and (b) 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 either as an individual employer, or one employer in a group of employers, 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 or her employees."

2. I am aware that the provisions of California Labor Code §3700 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 this Contract.

By: _____ _____
(Signature) (Date)

_____ _____
(Typed or Printed Name) (Title)

DRUG-FREE WORKPLACE CERTIFICATION

I,_____ , am the _____ of
(Print Name) (Title)
_____. I declare, state and certify to all of the following:
(Contractor Name)

1. I am aware of the provisions and requirements of California Government Code §§8350 et seq., the Drug Free Workplace Act of 1990.

2. I am authorized to certify, and do certify, on behalf of Contractor that a drug free workplace will be provided by Contractor 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 Contractor's workplace and specifying actions, which will be taken against employees for violation of the prohibition;

   B. Establishing a drug-free awareness program to inform employees about all of the following:
      (i) The dangers of drug abuse in the workplace;
      (ii) Contractor's policy of maintaining a drug-free workplace;
      (iii) The availability of drug counseling, rehabilitation and employee-assistance programs; and
      (iv) The penalties that may be imposed upon employees for drug abuse violations;

   C. Requiring that each employee engaged in the performance of the Contract be given a copy of the statement required by subdivision (A), above, and that as a condition of employment by Contractor in connection with the Work of the Contract, the employee agrees to abide by the terms of the statement.

3. Contractor agrees to fulfill and discharge all of Contractor's obligations under the terms and requirements of California Government Code §8355 by, inter alia, publishing a statement notifying employees concerning: (a) the prohibition of any controlled substance in the workplace, (b) establishing a drug-free awareness program, and (c) requiring that each employee engaged in the performance of the Work of the Contract be given a copy of the statement required by California Government Code §8355(a) and requiring that the employee agree to abide by the terms of that statement.

4. Contractor and I understand that if the District determines that Contractor has either: (a) made a false certification herein, or (b) violated this certification by failing to carry out and to implement the requirements of California Government Code §8355, the Contract awarded herein is subject to termination, suspension of payments, or both. Contractor and I further understand that, should Contractor violate the terms of the Drug-Free Workplace Act of 1990, Contractor may be subject to debarment in accordance with the provisions of California Government Code §§8350, et seq.

5. Contractor and I acknowledge that Contractor and I are aware of the provisions of California Government Code §§8350, et seq. and hereby certify that Contractor and I will adhere to, fulfill, satisfy and discharge all provisions of and obligations under the Drug-Free Workplace Act of 1990.

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

Executed at San Diego, California

By: _____ _____
(Signature) (Date)

_____ _____
(Typed or Printed Name) (Title)

GUARANTEE

DISTRICT: SAN DIEGO UNIFIED SCHOOL DISTRICT

PROJECT: HORTON ELEMENTARY SCHOOL RE-ROOFING AND BEAM REPAIR

CONTRACTOR NAME: _____

The Contractor hereby warrants and guarantees to the District that all work, materials, equipment and workmanship provided, furnished or installed by or on behalf of Contractor in connection with the above-referenced Project (the "Work") have been provided, furnished and installed in strict conformity with the Contract Documents for the Work, including without limitation, the Drawings and the Specifications. Contractor further warrants and guarantees that all work, materials, equipment and workmanship as provided, furnished and/or installed are fit for use as specified and fulfill all applicable requirements of the Contract Documents including without limitation, the Drawings and the Specifications. Contractor shall, at its sole cost and expense, repair, correct and/or replace any or all of the work, materials, equipment and/or workmanship of the Work, together with any other items which may be affected by any such repairs, corrections or replacement, that may be unfit for use as specified or defective within a period of two (2) years from the date of the District's Final Acceptance of the Work, ordinary wear and tear and unusual abuse or neglect excepted.

In the event of the Contractor's failure and/or refusal to comply with the provisions of this Guarantee, within the period of time set forth in the Contract Documents after the District's issuance of the Notice to the Contractor of any defect(s) in the Work, materials, equipment or workmanship, Contractor authorizes the District, without further notice to Contractor, to repair, correct and/or replace any such defective item at the expense of the Contractor. The Contractor shall reimburse the District for all costs, expenses or fees incurred by the District in providing or performing such repairs, corrections or replacements within ten (10) days of the District's presentation of a demand to the Contractor for the same.

The provisions of this Guarantee and the provisions of the Contract Documents for the Work relating to the Contractor's Guarantee(s) and warranty(ies) relating to the Work shall be binding upon the Contractor's Performance Bond Surety and all successors or assigns of Contractor and/or Contractor's Performance Bond Surety.

The provisions of this Guarantee are in addition to, and not in lieu of, any provisions of the Contract Documents for the Work relating to the Contractor's guarantee(s) and warranty(ies) or any guarantee(s) or warranty(ies) provided by any material supplier or manufacturer of any equipment, materials or other items forming a part of, or incorporated into the Work, or any other guarantee or warranty obligation of the Contractor, prescribed, implied or imposed by law.

The undersigned individual executing this Guarantee on behalf of Contractor warrants and represents that he/she is duly authorized to execute this Guarantee on behalf of Contractor and to bind Contractor to each and every provision hereof.

By: _____

(Signature) (Date)

_____

(Typed or Printed Name) (Title)

CONTRACTOR CERTIFICATION REGARDING BACKGROUND CHECKS

_____ certifies that it has performed one of the following:
Name of Contractor/Consultant

☐ Pursuant to Education Code Section 45125.1, Contractor has conducted criminal background checks, through the California Department of Justice, of all employees providing services to the San Diego Unified School District, pursuant to the contract dated_____, and that none have been convicted of serious or violent felonies, as specified in Penal Code 1192.7(c) and 667.5(c), respectively.

OR

☐ Pursuant to Education Code Section 45125.2, Contractor will ensure the safety of pupils by one or more of the following methods:

☐ 1) The installation of a physical barrier at the worksite to prevent contact with pupils (i.e. 8 foot chain link fencing).

AND

☐ 2) Continual supervision and monitoring of all employees of the entity by an employee of the entity, such as foremen, whom the Department of Justice has ascertained has not been convicted of a violent or serious felony.

OR

☐ 3) Will execute the required Department of Justice application and send either all employees or supervising and monitoring employees for fingerprinting at an authorized processing center. ***Prior to performing work on site Contractor must provide certification that the required employees have been fingerprinted.***

Contact www.oag.ca.gov to obtain an ORI number or more information from the Department of Justice regarding this requirement.

AND

Included as "Attachment A" is a list of the names of the employees of the undersigned who will be working on the project and who, to the best knowledge of the undersigned, are not convicted felons or awaiting trial for a felony charge.

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

Date:_____, 20_____ _____
Signature

_____
Title

LIST OF EMPLOYEES
"ATTACHMENT A"

The following is a list of our employees and our subcontractor's employees and their DOJ fingerprinting status who will be working on the project site(s). I will keep this list current and send the District's Construction Manager any new updates with my monthly payment application.

NAME and TITLE	EMPLOYER	FINGERPRINTED? Yes	No

_____ _____
Contact Name (Officer or Employee) Title

_____
Authorized Signature

_____
Telephone Number

CERTIFICATION
PUBLIC CONTRACT CODE SECTION 3006

I, _____ [name], _____ [name of employer], certify that I have not offered, given, or agreed to give, received, accepted, or agreed to accept, any gift, contribution, or any financial incentive whatsoever to or from any person in connection with the roof project contract. As used in this certification, “person” means any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individuals.

Furthermore, I,_____[name],_____[name of employer], certify that I do not have, and throughout the duration of the contract, I will not have, any financial relationship in connection with the performance of this contract with any architect, engineer, roofing consultant, materials manufacturer, distributor, or vendor that is not disclosed below.

I, _____ [name], _____[name of employer], have the following financial relationships with an architect, engineer, roofing consultant, materials manufacturer, distributor, or vendor, or other person in connection with the following roof project contract:

_____
[Name and Address of Site, Contract Date and Number]
Names and Addresses of Financial Relationships:

_____
_____
_____
_____
_____

I certify that to the best of my knowledge, the contents of this disclosure are true, or are believed to be true.

_____ _____
Signature Date

_____
Print Name

_____
Print Name of Employer

DISABLED VETERAN BUSINESS ENTERPRISE ("DVBE")

PARTICIPATION PROGRAM OVERVIEW AND RESOURCES

1. **DVBE Participation Program Policy.** The District is committed to achieving the administratively established Participation Requirement for Disabled Veteran Business Enterprises ("DVBEs") in accordance with Resolution In Support of Service Disabled Veteran-Owned Businesses (SDVOB) and Disabled Veteran Business Enterprises (DVBE) approved on May 10, 2011 by the Board of Education Resolution. Through the DVBE participation program, the District encourages contractors to ensure maximum opportunities for the participation of DVBE's in the Work of the Contract. The District's commitment to the achievement of DVBE Participation Requirement for the Work of the Contract shall not, however, result in the District's discrimination in the award of the Contract on the basis of ethnic group identification, ancestry, religion, age, sex, race, color, or physical or mental disability.

Your participation is mandatory for all construction jobs with San Diego Unified School District.

Information regarding the DVBE Participation program, including a listing of DVBE certified businesses, is available on the internet at the State of California website at: https://caleprocure.ca.gov/pages/PublicSearch/supplier-search.aspx**.**

2. **Definitions.**

2.1 Broker: A certified DVBE/SDVOB contractor that does not have title, possession, control, and risk of loss of materials, supplies, services or equipment provided, unless one or more of the disabled veteran owners has at least 51-percent (51%) ownership of the quantity and value of the materials, supplies and equipment provided [Military and Veterans Code (MVC) Section 999.2(b)].

2.2 Commercially Useful Function (CUF): A "commercially useful function" (CUF) provides services or goods that contribute to the fulfillment of the contract requirements. It is not a CUF if the DVBE/SDVOB's role is limited to that of an extra participant in a transaction, contract or project through which funds are passed in order to obtain the appearance of DVBE/SDVOB participation. A CUF is a person or entity doing all of the following:

a. is responsible for the execution of a distinct element of the work of the contract;

b. carries out the obligation by actually performing, managing or supervising the work involved;

c. performs work that is normal for its business services and functions; and

d. is not further subcontracting a portion of the work that is greater than that expected to be subcontracted by normal industry standards.

2.3 **Disabled Veteran.** A "Disabled Veteran" means a veteran of the military, naval, or air service of the United States with at least ten percent (10%) service-connected disability who is a resident of the State of California.

2.4 **Disabled Veteran Business Enterprise.** A "Disabled Veteran Business Enterprise" ("DVBE") means a business enterprise certified by the Office of Small Business Certification & Resources, State of California, Department of General Services, pursuant to Military and Veterans Code §999, or an enterprise certifying that it is a DVBE by meeting all of the following requirements: (a) it is a sole proprietorship at least fifty-one percent (51%) owned by one or more Disabled Veterans, or in the case of a publicly owned business, at least fifty-one percent (51%) of its stock is owned by one or more Disabled Veterans; or a subsidiary wholly owned by a parent corporation, but only if at

least fifty-one percent (51%) of the voting stock of the parent corporation is owned by one or more Disabled Veterans; or a joint venture in which at least fifty-one percent (51%) of the joint venture's management and control and earnings are held by one or more Disabled Veteran; (b) the management and control of the daily business operations are by one or more Disabled Veterans; provided that the Disabled Veteran(s) exercising management and control of the business enterprise are not required to be the same Disabled Veteran(s) who is/are the equity Owner(s) of the business enterprise; and (c) it is a sole proprietorship, corporation, or partnership with its home office located in the United States and which is not a branch or subsidiary of a foreign corporation, foreign firm, or other foreign-based business. The terms "foreign corporation" "foreign firm" and "foreign-based business" shall be deemed to mean a business entity that is incorporated or which has its principal headquarters located outside the United States of America.

2.5 **Front.** A subcontractor providing artificial or incidental participation to meet the objective of a contract (e.g., DVBE/SDVOB participation requirement), or a provider who does not own the equipment they are providing, but going to an outside source.

2.6 **Pass-through.** A supplier providing access to materials and supplies for which they are not specifically certified/verified. Also see “Front” above.

3. Participation Requirement.

3.1 **Participation Requirement Defined.** The term "Participation Requirement" is a numerically expressed condition of DVBE participation in performing the Work of the Contract

3.2 **DVBE Participation.** The Bid Proposal of a bidder shall be deemed responsive only if the bidder achieves or exceeds the DVBE Participation Requirement of Three Percent (3%) of total amount of bidder's Bid Proposal. The bidder's achievement of the Participation Requirement will not by itself render the Bid Proposal of such bidder to be responsive; in accordance with the Information for Bidders, the entirety of the Bid Proposal must be responsive.

DVBE’s need to have a current and valid certification from the State of California Department of General Services for the business type and classification as listed on the bid documents. SDVOB’s need to have a current and valid verification letter from the Department of Veteran’s Affairs Center for Veterans Enterprise relevant to the bid (e.g., NAICS Code); self-representation will not be accepted. DVBE eligibility is a one year period and must be renewed annually; SDVOB eligibility is a two year period. Eligibility must be current at time of bid and contract award.

3.3 **Exclusions.** The District expressly prohibits pass-throughs and fronts.

DVBE RESOURCE INFORMATION

The Elite Service Disabled Veteran-Owned Business (SDVOSB) Network, San Diego Chapter at www.elitesdvob.org

Disabled Veteran Business Alliance: www.gousvba.org

Veterans In Business Network: www.vibnetwork.org

Federal SDVOSB database: www.vip.VetBiz.gov

State of California DVBE database: https://caleprocure.ca.gov/pages/PublicSearch/supplier-search.aspx

The District's Outreach Team can also be reached for assistance:

1. Karen Linehan, Outreach Program Manager at 858-627-7232 or klinehan@sandi.net; or

2. Alma D. Bañuelos, Business Outreach Coordinator at 858-573-5852 or abanuelos@sandi.net.

Please review the District's Disabled Veteran Business Participation Tip Sheet at: https://www.sandiegounified.org/sites/default/files_link/district/files/dept/facilities_planning_&_construction/BizOutreach/DVBE%20TipSheet_single%20page%20for%20website%200416.pdf

DVBE PARTICIPATION DOCUMENTATION

BIDDER'S DVBE STATEMENT

1. **General Information.**

Bidder's Name: _____

Bidder's Address: _____

Bidder's Telephone Number: _____

Bidder's Fax Number: _____

Project Name: _____

Total Amount of Bidder's Bid Proposal: _____

Bidder's Representative: _____

2. **DVBE Participation Achieved.**

Minimum Participation Requirement		Participation Achieved	
DVBE's:	3%	DVBE's:	_____%

3. **Submittal of Documentation.**
Concurrently with the submittal of this Bidder's DVBE Statement, the bidder has also submitted duly completed, and executed if required, the Documentation of Disabled Veteran Business Enterprise Program Requirements (DVBEPR). All of the information provided by the bidder in its responses to (DVBEPR) is true, correct and accurate; there are no omissions in the responses of the bidder to the foregoing Attachments, which render any of the bidder's statements or information provided therein to be false or misleading.

4. **Certification of DVBE Status.**
The bidder certifies, warrants and represents to the District that the bidder has exercised due diligence in ascertaining the status of each proposed DVBE identified in (DVBEPR) as a DVBE in compliance with the applicable provisions of the District's DVBE Participation Program Policy and applicable law. By executing and submitting this Bidder's DVBE Statement, the bidder represents to the District that each DVBE identified in (DVBEPR) is duly and properly certified as a DVBE in conformity with the District's DVBE Program Policy and applicable law. The bidder acknowledges that in the event that the District shall reasonably determine that any DVBE identified in the bidder's responses to (DVBEPR) is not duly and properly certified in the appropriate category of DVBE, the Bid Proposal of such bidder may be rejected by the District as being non-responsive. For each DVBE identified in (DVBEPR), the bidder has submitted with its Bid Proposal forms of DVBE Certification (DVBEPR) duly completed and executed by each such DVBE.

5. **Authority to Execute.**
The individual executing this Bidder's DVBE Statement on behalf of the bidder warrants and represents to the District that she/he is duly authorized to execute this Bidder's DVBE Statement on behalf of the Bidder.

Executed this _____ day of _____ 20__, at _____.
(City and State)

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

_____
(Sign)

_____
(Name of Individual Executing Statement)

[Printed or Typed]

Company Name:_____

DVBE/SDVOB BIDDER DECLARATION

1. Prime Bidder Information:

a. Identify current California certification(s) (MB, SB, SB/NVSA, DVBE)_____ Or None_____
b. Will DVBE/SDVOB subcontractors or suppliers be used for this contract? Yes_____ No_____
c. If you answered NO, skip to 4. CERTIFICATION below.

2. Subcontractor/Supplier Information:

a. If you answered YES to 1.b. above, have you verified whether your DVBE/SDVOB subcontractors/suppliers have current and valid CA DVBE certification or SDVOB Center for Veterans Enterprise (CVE) Verification Letters? Yes_____ No_____
b. If you answered YES, list your DVBE/SDVOB firms in 3. DVBE/SDVOB SUBCONTRACTOR/SUPPLIERS below.
c. You must list only qualified DVBE's possessing a current and valid certification or SDVOB possessing a current and valid verification letter from the CVE. Any listed subcontractors/suppliers found to not have either a certification or verification letter will render your bid non-responsive. No exceptions.

3. DVBE/SDVOB Subcontractor/Supplier Listing: (COMPLETE ALL SHADED COLUMNS AT TIME OF BID. Attach additional page if necessary) ***Bidder shall submit within 24 hours of bid opening due date a COMPLETE DVBE/SDVOB BIDDER DECLARATION with ALL columns complete, along with the completed Bidders DVBE Statement.***

Subcontractor/Supplier Name, Contact Person, Phone and Fax number	Subcontractor/Supplier Address and E-mail Address	CA DVBE Certification # or SDVOB Verification Letter Date	Work to be performed or supplies provided for this contract	Corresponding % of bid price

4. CERTIFICATION: By signing this Declaration, I certify under penalty of perjury that the information provided is true and correct.

Printed name: **Signature:** **Date:**

TABLE OF CONTENTS

ARTICLE 1

1. DEFINITIONS – GENERAL

1.1. ARCHITECT

1.1.1. The Architect is the person or entity identified as such in the Agreement; references to the "Architect" in the Contract Documents shall mean the Architect or the Architect's authorized representative. Unless otherwise stated, references in the Contract Documents to “the Architect” are references to the Architect or Architectural Firm retained by the District specifically for the Work and not the District Architect.

1.2 CONSTRUCTION EQUIPMENT

1.2.1. The term "Construction Equipment" shall be deemed to refer to equipment utilized for the performance of any portion of the Work, but which is not incorporated into the Work.

1.3. CONSTRUCTION MANAGER

1.3.1. The Construction Manager is authorized and empowered to represent the District in construction supervisory and coordination activities and as provided for in the Contract Documents, including the authority to issue Field Work Orders on behalf of the District.

1.4. SUPERINTENDENT

1.4.1. The Superintendent is the individual employed by the Contractor whose principal responsibility shall be the supervision and coordination of the Work. The Superintendent shall not perform routine construction labor.

1.5. CONTRACT DOCUMENTS

1.5.1. The Contract Documents consist of the Agreement between the District and Contractor, Conditions of the Contract (whether General, Supplementary or otherwise), Drawings, Specifications, including addenda thereto issued prior to execution of the Agreement, and any other documents listed in the Agreement. The Contract Documents shall also include modifications issued after execution of the Agreement. The Contract Documents form the Contract for Construction.

1.5.2. Organization of the Specifications into divisions, sections or Articles, and the arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade or craft involved.

1.5.3. Unless otherwise stated in the Contract Documents, words or terms, which have well-known technical or construction industry meanings, are used in the Contract Documents in accordance with such recognized meanings.

1.5.4. Conflicts in the Contract Documents shall be resolved by the Architect in accordance with Article 19 herein.

1.6. CONTRACT DOCUMENT TERMS

1.6.1. As used in the Contract Documents, the term "provide" shall mean "provide complete in place" or to "furnish and install" such item. The terms "approved;" "directed;" "satisfactory;" "accepted;" "acceptable;" "proper;" "required;" "necessary" and "equal" shall mean as approved, directed, satisfactory, accepted, acceptable, proper, required, necessary and equal, in the opinion of the Architect in consultation with the District’s Representative. The term "typical" as used in the Drawings shall require the installation or furnishing of such item(s) of the Work designated as "typical" in all other areas similarly marked as "typical”; Work in such other areas shall conform to that shown as "typical" or as reasonably inferable therefrom.

1.7. CONTRACTOR

1.7.1. The Contractor is the person or entity identified as such in the Agreement; references to "Contractor" in the Contract Documents shall mean the Contractor or the Contractor's authorized representative.

1.8. CRITICAL PATH

1.8.1. The term “critical path” as used in the Contract Documents shall mean the construction activity schedule that establishes the minimum overall Project duration.

1.9. DAY

1.9.1. The term "day" as used in the Contract Documents shall mean consecutive calendar day unless otherwise specifically defined.

1.10. DEFECTIVE OR NON-CONFORMING WORK

1.10.1. Defective or non-conforming Work is any Work which is unsatisfactory, faulty or deficient by: (a) not conforming to the requirements of the Contract Documents; (b) not conforming to the standards of Workmanship of the applicable trade or industry; (c) not being in compliance with the requirements of any inspection, reference, standard, test, or approval required by the Contract Documents; or (d) damage occurring prior to Final Completion of all of the Work.

1.11. DELIVERY

1.11.1. The term “delivery” used in conjunction with any equipment, materials or other items to be incorporated into the Work shall mean the unloading and storage in a protected condition pending incorporation into the Work.

1.12. DISTRICT

1.12.1. The term "District" shall refer to the San Diego Unified School District, the District's Board of Education and the District’s officers, employees, agents and representatives.

1.13. DIVISION OF STATE ARCHITECT (“DSA”)

1.13.1. DSA is the California Division of the State Architect including without limitation the DSA's Office of Construction Services, Office of Design Services and the Office of Regulation Services; references to the DSA in the Contract Documents shall mean the DSA, its offices and its authorized employees and agents. The authority of DSA over the Work and the performance thereof shall be as set forth in the Contract Documents and Title 24 of the California Code of Regulations.

1.14. DRAWINGS AND SPECIFICATIONS

1.14.1. The Drawings are the graphic and pictorial portions of the Contract Documents, wherever located and whenever issued, showing generally, the scope, design, extent, location, character and dimensions of the Work and may include without limitation, plans, elevations, sections, details, schedules or diagrams. Shop Drawings are not drawings as so defined herein. The Specifications are the portion of the Contract Documents consisting of the written requirements for materials, equipment, construction systems, standards, criteria and Workmanship for the Work and related services. The Drawings and Specifications are intended to delineate and describe the Work and its component parts so as to permit skilled and competent Contractors to bid upon the Work and prosecute the same to completion.

1.15. FIELD CLARIFICATIONS

1.15.1. Field Clarifications in the form of Field Work Orders are written or graphic documents, consisting of supplementary details, instructions or information issued on behalf of the

District, which clarifies or supplements the Contract Documents and which becomes a part of the Contract Documents upon issuance. Field Clarifications do not constitute an adjustment of the Contract Time or the Contract Price, unless a Change Order relating to a Field Clarification is authorized and issued.

1.16. MATERIAL SUPPLIER

1.16.1. A Material Supplier is any person or entity that only furnishes materials, equipment or supplies for the Work without fabricating, installing or consuming them in the performance of the Work of the Contract.

1.17. NOTICE TO PROCEED ("NTP")

1.17.1. The Notice to Proceed (NTP) is the written notice issued by or on behalf of the District to the Contractor authorizing the Contractor to proceed with commencement of the Work or portions of the Work and which establishes the date for commencement of the Contract Time.

1.18. PARTIAL USE OR OCCUPANCY

1.18.1. Use or occupancy by the District of a partially completed portion, part, space or area of the Work prior to 100% Substantial completion of all the Work.

1.19. PROGRESS REPORTS; VERIFIED REPORTS

1.19.1. Progress Reports, if required, are written reports prepared by the Contractor and periodically submitted to the District in the form and content as required by the Contract Documents. Verified Reports are periodic written reports prepared by the Contractor and submitted to DSA; Verified Reports shall be in such form and content as required by the applicable provisions of Title 24 of the California Code of Regulations. Preparation of complete and accurate Progress Reports, as required in Division 1, and Verified Reports, as well as the timely submission of the same are material obligations of the Contractor.

1.20. THE PROJECT

1.20.1. The Project is the total construction of the Work performed by the Contractor under the Contract Documents, which may be the whole or a part of the Project and which may include construction by the District or by separate Contractors.

1.21. PROJECT MANAGER

1.21.1. The Project Manager is authorized and empowered to act on behalf of the District in administering the Architect's Contract and as set forth in the Contract Documents.

1.22. PROJECT INSPECTOR

1.22.1. The Project Inspector is the individual designated and employed by the District in accordance with the requirements of Title 24 of the California Code of Regulations. The Project Inspector shall be authorized to act on behalf of the District as provided for in the Contract Documents and in Title 24 of the California Code of Regulations, as the same may be amended from time to time.

1.23. RECORD DRAWINGS

1.23.1. The Record Drawings are a full size set of the Drawings marked by the Contractor during the performance of the Work to indicate completely and accurately the actual as-built condition of the Work. The Record Drawings shall be sufficient for a capable and qualified draftsman to modify the Drawings to reflect and indicate the Work actually in place at Final Completion of the Work.

1.24. SHOP DRAWINGS; SAMPLES; PRODUCT DATA (“SUBMITTALS”)

1.24.1. Shop Drawings are original diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-Subcontractor, Manufacturer, Material Supplier, or Distributor to illustrate some portion(s) of the Work. Samples are physical examples of materials, equipment or Workmanship forming a part of, or to be incorporated into the Work. Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work. Shop Drawings, Samples, and Product Data prepared or furnished by the Contractor or any of its Subcontractors or Material Suppliers are collectively referred to as “Submittals”.

1.25. SITE

1.25.1. The Site is the physical area designated in the Contract Documents for Contractor’s performance, construction, and installation of the Work.

1.26. SUPPLEMENTARY CONDITIONS

1.26.1. Supplementary Conditions are supplemental provisions which apply to the Work that are not otherwise provided for in the Agreement or the General Conditions.

1.27. SUBCONTRACTORS; SUB-SUBCONTRACTORS

1.27.1. A Subcontractor is a person or entity that has a direct Contract with the Contractor to perform a portion of the Work at the Site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means any Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate Contractor to the District or Subcontractors of any separate Contractor. A Sub-Subcontractor is a person or entity of any tier, who has a direct or indirect Contract with a Subcontractor to perform a portion of the Work at the Site. The term "Sub-Subcontractor" is referred to throughout the Contract Documents as if singular in number and means any Sub-Subcontractor, of any tier, or an authorized representative of any Sub-Subcontractor.

1.28. SUBSTANTIAL COMPLETION

1.28.1. Substantial Completion is that stage in the progress of the Work when all the Work is 100% complete in accordance with the Contract Documents including receipt of final warranties, commissioning reports, guarantees and record document submittals such that the District can occupy or use all the Work for its intended purpose.

1.29. SURETY

1.29.1. The Surety is the person or entity that executes, as surety, the Contractor's Labor and Material Payment Bond and/or Performance Bond.

1.30. THE WORK

1.30.1. The term "Work" shall be deemed to mean the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment or services provided or to be provided by the Contractor to fulfill the Contractor's obligations under the Contract Documents. The Work may constitute the whole or a part of the Project.

ARTICLE 2

2. DISTRICT

2.1. INFORMATION AND SERVICES REQUIRED OF DISTRICT

2.1.1. The District shall furnish information or services to be provided by the District under the Contract Documents with reasonable promptness to avoid delay in the orderly progress of the Work. Information about existing conditions or present improvements on or about the Site, furnished by the District to the Contractor, is obtained from sources believed to be reliable. The District neither guarantees nor warrants that such information is complete and accurate. The Contractor shall verify all information provided by the District and shall notify the District of any discrepancies pursuant to Article 4.1 herein.

2.1.2. Information, if any, concerning physical characteristics of the Site, including without limitation, surveys and utility locations, to be provided by the District are set forth in the Contract Documents. Information not provided by the District, which is required for Contractor's completion of the Work, shall be obtained by Contractor without adjustment to the Contract Price or the Contract Time. The soils reports (geotechnical reports) are not part of the Contract Documents but are available for the Contractor’s examination.

2.1.3. The District shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities, which are expressly identified as the District’s responsibility in connection with the Work. The Contractor’s responsibilities for obtaining the same are set forth in the Contract Documents.

2.1.4. 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 written request, will execute a certificate of exemption which will certify (i) that the District is a political subdivision of the state for the purposes of such exemption; and (ii) that the sale is for the exclusive use of the District. No excise tax for such materials shall be included in any Contract price.

2.1.5. Except as otherwise provided for in the Contract Documents, the District shall furnish the Contractor, free of charge, the number of copies of the Drawings and the Specifications as set forth in the Supplementary Conditions. All of the Drawings and the Specifications provided by the District to the Contractor remain the property of the District; the Contractor shall not use the same in connection with any other Work of improvement other than the Work of the Project.

2.2. DISTRICT’S RIGHT TO STOP THE WORK

2.2.1. In addition to the District's right to suspend the Work or terminate the Contract pursuant to the Contract Documents, the District, may, by written order, direct the Contractor to stop the Work, or any portion thereof, until the cause for such stop Work order has been eliminated if the Contractor: (i) fails to correct Work which is not in conformity and in accordance with the requirements of the Contract Documents, or (ii) otherwise fails to carry out the Work in conformity and accordance with the Contract Documents. Contractor shall not be entitled to any adjustment of Contract Time or Contract Price as a result of such stoppage of Work.

2.2.2. The right of the District to stop the Work hereunder shall not be deemed a duty on the part of the District to exercise such right for the benefit of the Contractor or any other person or entity, nor shall the District's exercise of such right waive or limit the exercise of any other right or remedy of the District under the Contract Documents or at law.

2.3. PARTIAL OCCUPANCY OR USE

2.3.1. The District may occupy or use any completed or partially completed portion of the Work upon ten (10) days' notice to Contractor, provided that: (i) the District has obtained the consent of, or is otherwise authorized by, public authorities with jurisdiction thereof to so occupy or use such portion of the Work and (ii) the District and the Contractor have accepted, in writing, the responsibilities assigned to each of them for payments, retention (if any), security, maintenance, utilities, damage to the Work, insurance and the period for correction of the Work and commencement of warranties required by the Contract Documents for such portion of the Work partially used or occupied by the District.

2.3.2. In the event the Contractor and the District are unable to agree upon the matters set forth in (2.3.1.) above, the District may nevertheless use or occupy any completed or partially completed portion of the Work, with the responsibility for such matters subject to resolution in accordance with the Contract Documents. Immediately prior to such partial occupancy or use of the Work, or portions thereof, the Project Inspector, Contractor, and the Architect shall jointly inspect the portions of the Work to be occupied or to be used to determine and record the condition of the Work. The District's use or occupancy of portions of the Work pursuant to the preceding shall not be deemed an event of "completion" under Public Contract Code §7107.

2.3.3. Unless otherwise expressly agreed upon by the District and the Contractor, the District's partial occupancy or use of the Work or any portion thereof, shall not constitute the District's acceptance of the Work that fails to comply with the requirements of the Contract Documents or which is otherwise defective

2.4. PROHIBITED INTERESTS

2.4.1. No official of the District who is authorized in such capacity and on behalf of the District to negotiate, make, accept, or approve, or to take part in negotiating, making, accepting or approving any Architectural, engineering, inspection, construction or material supply Contract or any Subcontract in connection with construction of the Project, shall become directly or indirectly interested financially in this Contract or in any part thereof. No officer, employee, Architect, attorney, engineer or Project Inspector of or for the District who is authorized in such capacity and on behalf of the District to exercise any executive, supervisory or other similar functions in connection with construction of the Project shall become directly or indirectly interested financially in this Contract or in any part thereof.

ARTICLE 3

3. ARCHITECT – DUTIES OF

3.1. ARCHITECT'S RESPONSIBILITIES

3.1.1. The purpose of this Article is to provide the Contractor with information on the role and responsibilities of the Architect. This Article does not direct the Work of the Architect. The Architect's Work is directed by the Architects' Contract which is not a part of this Agreement.

3.1.2. The Architect shall assist the District in administration of the Contract as described in the Contract Documents, and shall be one of the District's representatives during construction until the time that Final Payment is due the Contractor under the Contract Documents. The Architect shall advise and consult with the Construction Manager, Project Manager, and the Project Inspector with respect to the administration of the Contract and the Work.

3.1.3. The Architect is authorized to act on behalf of the District to the extent provided for in the Contract Documents; and shall have the responsibilities and powers established by law, including Title 24 of the California Code of Regulations. Nothing contained in the Contract Documents shall create any Contractual relationship between the Architect and the Contractor.

3.1.4. The Architect shall visit the Site weekly or at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of the completed Work and to determine, in general, if the Work is being performed in a manner indicating that the Work, when completed, shall be in accordance with the Contract Documents. The Architect shall not be required to make exhaustive or continuous Site inspections to check quality or quantity of the Work. On the basis of Site observations as an Architect, the Architect shall keep the District informed of the progress of the Work, and shall endeavor to guard the District against defects and deficiencies in the Work. At the District's sole discretion, the District may require more frequent site visits by the Architect to prevent Project delays.

3.1.5. The Architect and the Project Inspector are authorized to reject Work that is defective, unsafe, or does not conform to the requirements of the Contract Documents. Whenever the Architect or Project Inspector consider it necessary or advisable, for implementation of the intent of the Contract Documents, the Architect and the Project Inspector shall each have authority to require additional inspections or testing of the Work, whether such Work is fabricated, installed, or completed.

3.1.6. The Architect shall conduct observations to determine the date or dates of Substantial Completion and the date of Final Completion, shall receive and forward to the District, for the District's review and records, written warranties and related documents required by the Contract Documents and assembled by the Contractor, and shall verify that the Contractor has complied with all requirements of the Contract Documents and is entitled to receipt of Final Payment.

3.1.7. The Architect shall interpret and decide matters concerning the requirements of the Contract Documents on written request of either the District or the Contractor. The Architect's response to such requests shall be made with reasonable promptness and within the time limits agreed upon, if any, and in no event to exceed a five (5) working day period from receipt of the request. Interpretations and decisions of the Architect shall be consistent with the intent of and reasonably inferable from the Contract Documents and shall be in writing or in the form of Drawings. When making such interpretations and decisions, the Architect shall endeavor to secure faithful performance by both the District and the Contractor, shall not show partiality to either and shall not be liable for results of interpretations or decisions so rendered in good faith.

3.2. TERMINATION OF ARCHITECT; SUBSTITUTE ARCHITECT

3.2.1. In case of termination of employment of the Architect, the District shall appoint a substitute Architect whose status under the Contract Documents shall be that of the Architect.

ARTICLE 4

4. CONTRACTOR – DUTIES OF

4.1. CONTRACTOR REVIEW OF CONTRACT DOCUMENTS

4.1.1. The Contractor shall carefully study and compare the Contract Documents with information furnished by the District pursuant to the Contract Documents and shall at once report to the Architect any errors, inconsistencies or omissions discovered by issuing a Request for Information (RFI) to the Architect. If the Contractor performs any Work that the Contractor knows, or with reasonable diligence should know, involves an error, inconsistency or omission in the Contract Documents without prior notice to the Architect, the Contractor shall assume full responsibility for such performance and bear all attributable costs for correction of the same.

4.1.2. If at any time the Contractor encounters any condition which the Contractor believes, in good faith and with reasonable basis, is the result of an ambiguity, conflict, error or omission in the Contract Documents (collectively "the Conditions"), it shall be the affirmative obligation of the Contractor to timely notify the Architect, in writing via an RFI, of the Conditions encountered and to request information from the Architect necessary to address and resolve any such Conditions. The Contractor shall act with promptness in submitting any such written RFI so as to allow the Architect a reasonable period of time to review, evaluate and respond to any such request. If the Contractor submits an RFI on a schedule activity within five (5) days or less of float on the most current Project CPM schedule, the Contractor shall not be entitled to any time extension provided that the Architect responds to the RFI within the five (5) working days set forth in Article 3.1.7.

4.1.3. If the Contractor fails to timely notify the Architect in writing of any Conditions encountered and the Contractor proceeds to perform any portion of the Work containing or affected by such Conditions, the Contractor shall bear all costs associated with or required to correct, remove, or otherwise remedy any portion of the Work affected thereby without adjustment of the Contract Time or the Contract Price.

4.1.4. The Architect's responses to any such Contractor RFI shall conform to the standards and time frame set forth in Article 3.1.7 of these General Conditions. A response to an RFI is not an authorization to proceed with any Work that the Contractor considers to be an impact to the time or cost of the Work. Changes to the Contract Time or the Contract Price shall be governed by the provisions of Article 10.1 hereof.

4.1.5. The foregoing provisions notwithstanding, in the event that the Architect reasonably determines that any of Contractor's RFI's (i) do(es) not reflect adequate or competent supervision or coordination by the Contractor or any Subcontractor; or (ii) do(es) not reflect the Contractor's adequate or competent knowledge of the requirements of the Work or the Contract Documents; or (iii) is/are not justified for any other reason, Contractor shall be liable to the District for all costs incurred by the District associated with responding to any such request for information, including without limitation, fees of the Architect and any other design consultant to the Architect or the District which shall be deducted from the Contract Price.

4.1.6. Prior to commencement of the Work, or portions thereof, the Contractor shall take field measurements and verify field conditions at the Site and shall carefully compare such field measurements and conditions and other information known to the Contractor with information provided in the Contract Documents. Errors, inconsistencies or omissions discovered shall be reported in writing to the Architect at once.

4.1.7. The Contractor shall be solely responsible for measuring dimensions and coordinating the Work of the Contract Documents. Scaling of the Contract Documents is not permitted. All field engineering required for laying out the Work and establishing grades for earthwork operations shall be by the Contractor at its expense. Any field engineering or other

engineering to be provided or performed by the Contractor under the Contract Documents and required or necessary for the proper execution or installation of the Work shall be provided and performed by an engineer duly registered under the laws of the State of California in the engineering discipline for such portion of the Work.

4.2. SITE INVESTIGATION; SUBSURFACE CONDITIONS

4.2.1. The Contractor shall be responsible for, and by executing the Agreement acknowledges, that it has carefully examined the Site and has taken all steps it deems reasonably necessary to ascertain all conditions which may affect the Work, or the cost thereof, including, without limitation, conditions bearing upon transportation, disposal, handling or storage of materials; availability of labor or utilities; access to the Site; and the physical conditions and the character of equipment, materials, labor and services necessary to perform the Work. If the Contractor reasonably determines there is an existing condition which is materially different than depicted in the Contract Documents or at the time of bid, Contractor shall immediately notify the District and the Architect in writing of the same in accordance with Article 4.1.2 herein.

4.2.2. By executing the Agreement, the Contractor acknowledges that it has examined the boring data and other subsurface data available and satisfied itself as to the character, quality and quantity of surface and subsurface materials, including without limitation, obstacles which may be encountered in performance of the Work, insofar as this information is reasonably ascertainable from an inspection of the Site, review of available subsurface data and analysis of information furnished by the District under the Contract Documents. The Contractor shall examine all boring and other subsurface data to make its own independent interpretation of the subsurface conditions and acknowledges that its bid is based upon its own opinion of the conditions that may be encountered. The District assumes no responsibility for any conclusions or interpretations made by Contractor on the basis of available subsurface data or other information furnished by District under the Contract Documents.

4.2.3 When digging trenches or other excavations that extend deeper than four feet below the surface (per Public Contract Code §7104):

4.2.3.1 Contractor shall promptly, and before the following conditions are disturbed, notify District, in writing, of any material that the Contractor believes may be material that is hazardous waste, as defined in §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. Contractor shall notify District in writing of subsurface or latent physical conditions at the site differing from those indicated by information about the site made available to bidders prior to the deadline for submitting bids. Contractor shall notify District in writing of 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.

4.2.3.2 District shall promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or the time required for, performance of any part of the work shall issue a change order under the procedures described in the contract.

4.2.3.3 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 the contract, but shall proceed with all work to be performed under the contract. The contractor shall retain any and all rights provided either by

contract or by law which pertain to the resolution of disputes and protests between the contracting parties.

4.2.3.4 Time or cost adjustments will not be allowed unless the Contractor has given notice as indicated above.

4.3. SUPERVISION AND CONSTRUCTION PROCEDURES

4.3.1. The Contractor shall supervise and direct performance of the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences and procedures, and for safety precautions and programs, and for coordinating all portions of the Work under the Contract Documents. The Contractor shall be responsible for inspection of portions of Work already performed under the Contract Documents to determine that such portions are in proper condition to receive subsequent Work.

4.3.2. The Contractor shall be responsible to the District for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and all other persons performing any portion of the Work under a Contract with the Contractor. The Contractor shall not be relieved of the obligation to perform the Work in accordance with the Contract Documents either by activities or duties of the Construction Manager, Project Manager, Project Inspector, or the Architect in the administration of the Contract, or by tests, inspections or approvals required or performed by persons other than the Contractor. The Contractor must maintain on the job site contemporaneous daily construction reports that record, at a minimum, weather conditions, weather effects, visitors to the Site, meetings/conversations, inspections made and results, problems encountered, materials delivered, equipment delivered, material procurement problems, safety meetings/issues, accidents, description of actions initiated to correct reported deficiencies, and detailed descriptions of all Work activities, including Work location, Subcontractor name, crew size, equipment utilized, identification of change order Work and identification of the beginning and ending of significant activities.

4.3.3. The Contractor shall prepare, or cause to be prepared, all detailed surveys necessary for performance of the Work, including without limitation, slope stakes, points, lines and elevations. The Contractor shall be responsible for the establishment, location, maintenance and preservation of benchmarks, reference points and stakes for the Work. The cost of any surveys and the establishment, location, maintenance and preservation of benchmarks, reference points and stakes shall be included within the Contract Price. The Contractor shall be solely responsible for all loss or costs resulting from the loss, destruction, disturbance or damage of benchmarks, reference points or stakes.

4.3.4. Unless otherwise provided elsewhere in the Contract Documents, the Contractor shall arrange for the furnishing of and shall pay the costs of all utility services, including, without limitation, electricity, water, gas, voice, data, fire and intrusion alarm necessary for performance of the Work and the Contractor's obligations under the Contract Documents. The Contractor shall furnish and install necessary or appropriate temporary distributions of utilities, including meters, to the Site. The Contractor, upon completion of the Work, shall remove any such temporary distributions. The costs of all such utility services, including the installation and removal of temporary distributions thereof, shall be borne by the Contractor and included in the Contract Price.

4.3.5. In accordance with California Government Code §4215, the District shall assume the responsibility for the timely removal, relocation, or protection of existing main or trunkline utility facilities located on the Site which are not identified in the Drawings, Specifications or other Contract Documents. Contractor shall be compensated for the costs of locating or repairing damage not due to the Contractor's failure to exercise reasonable care, and removing or relocating such utility facilities not indicated in the Contract Documents with reasonable accuracy, and for equipment on the Site necessarily idled during such Work.

Contractor shall not be assessed Liquidated Damages for delay in completion of the Work when such delay is caused by the failure of the District or the owner of the utility to provide for removal or relocation of such utility facilities.

4.3.6. The District is not required to indicate the presence of existing service laterals or appurtenances whenever the presence of such utilities on the Site can be inferred from the presence of other visible facilities, such as buildings, meters and junction boxes, on or adjacent to the Site. In the event that Contractor, in performing the Work, shall encounter utility facilities not identified by the District in the Contract Documents, the Contractor shall immediately notify, in writing, the District, the Architect, and the utility owner. In the event that such utility facilities are owned by a public utility, the public utility 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

4.3.7. Within ten (10) days of the date of the District's Board of Education action awarding the Contract, the Contractor shall submit to the District a list of the individuals authorized to execute documents and instruments relating to the Work and the Contract Documents on behalf of the Contractor and to bind the Contractor to its obligations under such documents or instruments. If the Contractor is a corporation, in addition to the list of authorized representatives, the Contractor shall concurrently submit a duly certified resolution of the Contractor's Board of Directors reflecting authorization or ratification of the authority conferred upon each of the individuals on the list submitted in accordance with the provisions hereof.

4.3.8. The Contractor shall enforce strict discipline and good order among the Contractor's employees, the employees of any Subcontractor or Sub-Subcontractor and all other persons performing any part of the Work at the Site. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them. The Contractor shall dismiss from its employ, and direct any Subcontractor or Sub-Subcontractor to dismiss from their employment; any person deemed by the District to be unfit or incompetent to perform Work and shall not reemploy such person without the prior written consent of the District. The District reserves the right to interview and accept or reject proposed personnel, including but not limited to the Project Manager, Project Engineer, Superintendent, Assistant Superintendents, Scheduler and Safety Representative. Personnel assigned and accepted by the District shall be maintained throughout the Project, unless otherwise accepted by the District.

4.3.9. The Contractor shall employ a competent full time English speaking Superintendent and all necessary assistants who shall be in attendance at the Site at all times during performance of the Work. The Contractor's communications relating to the Work or the Contract Documents shall be through the Contractor's Superintendent. The Superintendent shall represent the Contractor and communications given to the Superintendent shall be binding as if given to the Contractor. The Contractor shall dismiss the Superintendent or any of his/her assistants if they are deemed, in the sole reasonable judgment of the District, to be unfit, incompetent or incapable of performing the functions assigned to them. In such event, the District shall have the right to approval of the replacement of Superintendent or assistant. The Contractor shall designate a separate Superintendent for each construction site included within the Work.

4.4. LABOR AND MATERIALS

4.4.1. Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, Construction Equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

4.5. TAXES

4.5.1. The Contractor shall pay, without adjustment of the Contract Price, all sales, consumer, use and other taxes for the Work or portions thereof provided by the Contractor under the Contract Documents.

4.6. PERMITS, FEES AND NOTICES; COMPLIANCE WITH LAWS

4.6.1. Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permits, other permits, governmental fees, licenses and inspections necessary or required for the proper execution and completion of the Work.

4.6.2. The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations and other orders of public authorities bearing on performance of the Work.

4.6.3. If the Contractor knows, or has reason to believe, that any portion of the Contract Documents are at variance with applicable laws, statutes, ordinances, building codes, regulations or rules, the Contractor shall promptly notify the Architect and the Project Inspector, in writing, of the same. If the Contractor performs Work knowing, or with reasonable diligence should have known, it to be contrary to such laws, applicable to the Work without prior notice, the Contractor shall assume full responsibility for such Work and shall bear the attributable costs arising or associated therefrom, including without limitation, the removal, replacement or correction of the same.

4.6.4. The Contractor shall comply with all conditions of the State Water Resources Control Board ("State Water Board") National Pollutant Discharge Elimination System General Permit (NPDES) for Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activities Order No. 2009-009-DWQ ("Storm Water Construction General Permit") for all construction activity which results in the disturbance in excess of one (1) acre of total land area or which is part of a larger common area of development for sale. For projects with land disturbance less than a total acre of land or for projects with an Erosivity Waiver, the Contractor is not required to comply with the Stormwater Construction General Permit, but shall comply with similar standards for sediment erosion control and material and waste best management practices as detailed in the District's Water Pollution Control Program (WPCP).

4.6.5. The District is responsible for preparing a Stormwater Pollution Prevention Plan (SWPPP) and filing the Notice of Intent and fee to obtain coverage under the State Water Board Storm Water Construction General Permit for any project that disturbs one (1) acre or more which is not eligible for an Erosivity Waiver. A copy of the project SWPPP is provided by the District. A copy of the Storm Water Construction General Permit is provided by the District. Both the SWPPP and Storm Water Construction General Permit shall be kept on file at the construction site by the Contractor. The Contractor shall comply with both the project SWPPP and the Storm Water Construction General Permit without adjustment to the Contract Price or the Contract Time. The Contactor shall provide a designated individual meeting the specified qualifications and shall implement the SWPPP with regards to contract work items and shall timely and completely submit required reports and monitoring information required by the conditions of the Storm Water Construction General Permit and SWPPP for the Work. In addition to the compliance with the Storm Water Construction General Permit and SWPPP, the Contractor shall comply with all other applicable state, municipal or regional laws, ordinances, rules or regulations governing discharge of storm water, including applicable municipal storm water management programs. Contractor's Qualified SWPPP Practitioners (QSP) operating under the Construction General Permit shall meet the training requirements of the Construction General Permit and shall provide evidence of training to the District prior to start of construction.

4.6.6. The District is responsible for developing a Water Pollution Control Program (WPCP) for projects designated as disturbing less than 1 acre and for projects with Erosivity Waivers. The Contractor shall provide a designated individual with evidence of adequate training to implement the WPCP.

4.7. USE OF SITE AND CLEAN-UP

4.7.1. The Contractor shall confine operations at the Site to areas permitted by law, ordinances or permits, subject to any restrictions or limitations set forth in the Contract Documents. The Contractor shall not unreasonably encumber the Site or adjoining areas with materials or equipment. The Contractor shall be solely responsible for providing security at the Site with all such costs included in the Contract Price.

4.7.2. The District shall be providing CM and PI site supervision Monday through Friday from 7:00 AM to 3:30 PM. Working hours shall conform to local laws, which includes no street parking, deliveries, hoisting, welding, etc. or equipment startup. Scheduled and limited exceptions such as utility shutdowns and tie-ins to existing work shall be performed during “off-hours”. All Work performed during off-hours must be coordinated and approved by the District, with a minimum of 48 hour notice. The Contractor is responsible for the costs of all overtime, shift time differentials, and other premium time costs required to achieve the schedule commitments. This includes, but is not limited to, work in excess of eight (8) hours per day, forty (40) hours per week, and/or work on Saturdays, Sundays and Holidays. If Contractor is behind schedule or not working full shifts in accordance with the hours indicated above, they shall be considered behind schedule and responsible for delay impacts.

4.7.3. The Contractor shall at all times keep the Site and all adjoining areas free from the accumulation of any waste material or rubbish caused or generated by performance of the Work. Contractor shall be aware of and take appropriate measure to avoid nuisances. Should the Project Inspector determine that any waste materials, rubbish, or other stored materials have become a nuisance; the Contractor will remedy the condition immediately upon oral and/or written notice. Contractor shall separately contain hazardous and unsanitary waste materials from other waste and mark each container appropriately and dispose of legally. Contractor shall maintain the Site in a "broom-clean" standard on a daily basis. Prior to completion of the Work, Contractor shall remove from the Site all rubbish, waste material, excess excavated material, tools, Construction Equipment, machinery, surplus material and any other items which are not the property of the District under the Contract Documents. If the Contractor fails to clean up as provided for in the Contract Documents, the District may do so, and all costs incurred in connection therewith shall be charged to the Contractor; the District may deduct such costs from any portion of the Contract Price then or thereafter due the Contractor.

4.8. ACCESS TO THE WORK

4.8.1. The Contractor shall provide DSA, the Project Inspector, Construction Manager, Project Manager, and the Architect with access to the Work at all times, whether in place, in preparation or in progress and wherever located. The Contractor shall also furnish the Project Inspector and the Architect access to the Work for obtaining such information as may be necessary to keep the Project Inspector and Architect fully informed respecting the progress, quality and character of the Work and materials, equipment or other items incorporated therein.

4.9. PATENTS AND ROYALTIES

4.9.1. The Contractor and the Surety shall defend, indemnify and hold harmless the District and its agents, employees and officers from any Claim, demand or legal proceeding arising out of or pertaining, in any manner, to any actual or Claimed infringement of patent rights or royalties therefrom in connection with performance of the Work under the Contract Documents.

4.10. CUTTING AND PATCHING

4.10.1. The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make the component parts thereof fit together properly in accordance with the Contract Documents.

4.11. EMPLOYEE FINGERPRINTING; STUDENT BARRIER/EMPLOYEE MONITORING

4.11.1. Pursuant to Education Code §§45125.1 and 45125.2, the Contractor shall implement the measures set forth in the Supplementary Conditions. The Contractor's implementation and maintenance of such measures is a material obligation of the Contract.

4.12. COMMUNICATIONS

4.12.1. All communications regarding the Work or the Contract Documents shall be in writing; verbal communications shall be reduced to writing and signed by both parties. Communications between the Contractor and the District shall be through the Architect. Communications between separate Contractors, if any, shall be through the Architect. All communications from the Contractor to the Architect will be copied to the Construction Manager. All written communications between the Contractor and any Subcontractor, Material Supplier or others directly or indirectly engaged by the Contractor to perform or provide any portion of the Work shall be available on the job site or online to the Architect and the Construction Manager for review, inspection and reproduction as may be requested from time to time. Failure or refusal of the Contractor to permit such review may be deemed a default of a material obligation of the Contractor.

4.13. ASSIGNMENT OF ANTITRUST CLAIMS

4.13.1. Pursuant to California Government Code §§4550, *et seq*., the Contractor and its Subcontractor(s), of any tier, hereby offers and agrees to assign to the District all rights, title and interest in and to all causes of action they may have under Section 4 of the Clayton Act, (15 U.S.C. §15) or under the Cartwright Act (California Business and Professions Code §§16700 *et seq*.), arising from purchases of goods, services or materials hereunder or any Subcontract. This assignment shall be made and become effective at the time the District tenders Final Payment to the Contractor, without further acknowledgment by the parties.

4.13.2. If the District receives, either through judgment or settlement, a monetary recovery in connection with a cause of action assigned under California Government Code §§4550, *et seq*., the assignor thereof shall be entitled to receive reimbursement for actual legal costs incurred and may, upon demand, recover from the District any portion of the recovery, including treble damages, attributable to overcharges that were paid by the assignor but were not paid by the District as part of the Contract Price, less the expenses incurred by the District in obtaining that portion of the recovery. Upon demand in writing by the assignor, the District shall, within one year from such demand, reassign the cause of action assigned pursuant to this Article if the assignor has been or may have been injured by the violation of law for which the cause of action arose: and (i) the District has not been injured thereby; or (ii) the District declines to file a court action for the cause of action.

ARTICLE 5

5. SUBCONTRACTORS

5.1. SUBCONTRACTS

5.1.1. Any portion of the Work performed for the Contractor by a Subcontractor shall be pursuant to a written Agreement between the Contractor and such Subcontractor which specifically incorporates by reference the Contract Documents and which specifically binds the Subcontractor to the applicable terms and conditions of the Contract Documents, including without limitation, the policies of insurance required in the Supplementary Conditions and obligates the Subcontractor to assume toward the Contractor all the obligations and responsibilities of the Contractor which by the Contract Documents the Contractor assumes toward the District and the Architect. Specialty Subcontractors shall be utilized for the performance of such parts of the Work, which, under normal Contract practices, are performed by such Subcontractors unless the Contractor has customarily performed such Work, is equipped to do so, and the District in its reasonable discretion has agreed to same. The foregoing notwithstanding, no Contractual relationship shall exist, or be deemed to exist, between any Subcontractor and the District, unless the Contract is terminated and the District, in writing, elects to assume the Subcontractor.

5.1.2. Each Subcontract for a portion of the Work shall provide that such Subcontract may be assigned to the District if the Contract is terminated by the District pursuant to Article 16.3 or 16.4 hereof, subject to the prior rights of the Surety obligated under a bond relating to the Contract.

5.1.3. The Contractor shall, upon the District's request, and within ten (10) days of the request, provide to the District copies of all executed Subcontracts and Purchase Orders to which Contractor is a party. The Contractor's failure or refusal, for any reason, to provide copies of such Subcontracts or Purchase Orders shall be deemed Contractor's default in the performance of a material term of the Contract Documents.

5.2. SUBSTITUTION OF LISTED SUBCONTRACTOR

5.2.1. Any request of the Contractor to substitute a listed Subcontractor shall be considered only if such request is in strict conformity with this Article 5.2 and California Public Contract Code §4100 *et seq*. All costs incurred by the District, including without limitation, costs of the Construction Manager or Architect, in the review and evaluation of a request to substitute a listed Subcontractor shall be borne by the Contractor; such costs may be deducted by the District from the Contract Price then or thereafter due the Contractor.

5.2.2 Any request of the Contractor to substitute a listed DVBE or SDVOB Subcontractor or supplier shall be considered only if such request is in strict conformity with this Article 5.2 and the substituted subcontractor is replaced with another DVBE /SDVOB subcontractor or supplier. The District's Outreach Program, the Elite SDVOB Network and the DVBE Alliance are available to assist Contractor in locating a qualified DVBE/SDVOB of the same license classification if needed. In the event there is not another qualified DVBE/SDVOB subcontractor or supplier to replace the DVBE/SDVOB being substituted, or Contractor is unable to obtain bids from existing DVBE/SDVOB subcontractors or suppliers, Contractor shall submit proof of contact and refusal to bid from the solicited DVBE/SDVOB subcontractors or suppliers, as well as proof of contact and assistance request/receipt from the three referenced resources above. If District accepts the proof of contact and refusal then Contractor may substitute a non-DVBE/SDVOB subcontractor or supplier to perform the work, subject District's approval. All costs incurred by the District, including without limitation, costs of the Construction Manager or Architect, in the review and evaluation of a request to substitute a listed Subcontractor shall be borne by the Contractor; such costs may be deducted by the District from the Contract Price then or thereafter due the Contractor.

5.2.3. The District's consent to Contractor's substitution of a listed Subcontractor shall not relieve Contractor from its obligation to complete the Work within the Contract Time and for the Contract Price. The substitution of a listed Subcontractor shall not, under any circumstance, result in, or give rise to any increase of the Contract Price or the Contract Time on account of such substitution.

5.2.4. In the event of the District's consent to the substitution of a listed Subcontractor, the Architect shall determine the extent to which, if any, revised or additional Submittals shall be required of the newly substituted Subcontractor. In the event that the Architect determines that revised or additional Submittals are required of the newly substituted Subcontractor, the Architect shall promptly notify the Contractor, in writing, of such requirement. In such event, revised or additional Submittals shall be submitted to Architect not later than thirty (30) days following the date of the Architect's written notice to the Contractor; provided that if in the reasonable and good faith judgment of the Architect, the progress of the Work or completion of the Work requires submission of additional or revised Submittals by the newly substituted Subcontractor in less than thirty (30) days, the Architect shall so state in its written notice to the Contractor.

5.2.5. In the event that the revised or additional Submittals are not submitted by Contractor within thirty (30) days, or such earlier time as determined by the Architect pursuant to the preceding sentence, following the Architect's written notice of the requirement for revised or additional Submittals, Contractor shall be subject to the per diem assessments reflected in Article 8.1.2 herein. Contractor shall reimburse the District for all fees and costs, including without limitation fees of the Architect or any design consultant to the Architect or the District and DSA fees, incurred or associated with the processing, review and evaluation of any revised or additional Submittals required pursuant to Article 5.2.4. *et seq*.; the District may deduct such fees and costs from any portion of the Contract Price then or thereafter due the Contractor.

ARTICLE 6

6. CONTRACT TIME

6.1. SUBSTANTIAL COMPLETION

6.1.1. The Contract Time is the period of time, including authorized adjustments thereto, allotted in the Contract Documents for Substantial Completion of the Work. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing and achieving Substantial Completion of the Work for each phase, if any. The date for commencement of the Work is the date established by the Notice to Proceed issued by the District pursuant to the Agreement, which shall not be postponed by the failure to act of the Contractor or of persons or entities for whom the Contractor is responsible. The date of Substantial Completion is the date certified by the Architect and the Project Inspector as such in accordance with the Contract Documents. Substantial Completion shall be determined by the Architect and the Project Inspector upon request by the Contractor in accordance with the Contract Documents. The good faith and reasonable determination of Substantial Completion by the Project Inspector and the Architect shall be controlling and final.

6.2. NO EARLY COMPLETION

6.2.1 By executing this Agreement, Contractor agrees that the Contract price includes all direct and indirect overhead costs (both home office and field office) throughout the Contract performance period, which ends on the Contract completion date specified in this Contract. By executing the Agreement, the Contractor acknowledges that it does not intend to complete the Contract earlier than said Contract completion date. Any intent by Contractor to complete the Contract earlier than said Contract completion date shall be void and of no force or effect, and Contractor shall not be entitled to claim additional compensation on the basis that it intended to, but was prevented from completing the project prior to the Contract completion date.

6.2.2 District shall not additionally compensate Contractor for early completion of the Work, unless agreed to in writing by the District and approved as an amendment to this Contract by the District's Board of Education. If the District accepts the Contractor's early completion schedule, the District reserves the right to execute a unilateral change order that amends the Contractual date of Substantial Completion and associated savings of overhead costs and General Conditions to coincide with the Contractor's anticipated Substantial completion date as depicted in such early completion schedule. The Contractor shall be subject to assessment of Liquidated Damages, as set forth in the Supplementary Conditions of the Contract and Article 6.7 of these General Conditions, if the Contractor fails to complete the Work and portions thereof within the Contract Time as adjusted by said unilateral change order.

6.3. CORRECTION OF DEFICIENCIES

6.3.1. Prior to the Contractor's request for determination of Substantial Completion by the Architect and the Project Inspector, the Contractor is required to issue its own comprehensive list of items of the Work to be corrected or completed by the Contractor ("Punchlist"). The Contractor must perform the corrective work and submit a signed-off copy of its own Punchlist to the Architect and the Project Inspector acknowledging Contractor's completion prior to requesting a determination of Substantial Completion. In the event the Contractor shall request determination of Substantial Completion or Final Completion by the Project Inspector and the Architect and it is determined by the Project Inspector and the Architect that the Work does not then justify certification of Substantial Completion or Final Completion and re-inspection is required at a subsequent time to make such determination, the Contractor shall be responsible for all costs of such reinspection,

including without limitation, the fees of the Architect and the salary of the Project Inspector. The District may deduct all such costs from the balance of the Contract Price then due or thereafter due to the Contractor.

6.3.2. Upon achieving Substantial Completion of all the Work or for each phase if any, the Project Inspector, the Architect, and the Contractor shall jointly inspect the Work and prepare a comprehensive Punchlist of the Work to be corrected or completed by the Contractor. The exclusion of, or failure to include, any item on such list shall not alter or limit the obligation of the Contractor to complete or correct any portion of the Work in accordance with the Contract Documents. Notwithstanding any other provisions of the Contract Documents to the contrary, inspection of the mechanical and electrical portions of the Work shall be conducted jointly by the Contractor's authorized representative(s), the Architect and the Project Inspector for the mechanical and electrical portions of the Work.

6.3.3. The Contractor shall promptly and diligently proceed to complete or correct all items noted on the Punchlist within thirty (30) days from the date the Contractor is in receipt of the Punchlist. In the event that the Contractor shall fail or refuse, for any reason, to complete items requiring completion or correction within the time so established, Contractor shall be subject to assessment of Liquidated Damages in accordance with Article 6.7 thereof. The foregoing notwithstanding, in the event of Contractor's failure or refusal to complete all items of the Work requiring correction or completion within the time so established, the District may, in its sole and exclusive discretion, elect to cause the completion of such items of the Work; provided, however, that such election by the District shall be in addition to, and not in lieu of, any other right or remedy of the District under the Contract Documents or the law. In the event that the District shall elect to complete items of the Work requiring correction or completion pursuant to the foregoing, Contractor shall be responsible for all costs incurred by the District in connection therewith.

6.4. FINAL COMPLETION

6.4.1 Final Completion is that stage of the Work when all Work has been completed in accordance with the Contract Documents, including without limitation, the performance of all correction or completion items noted upon Substantial Completion, and the Contract has been otherwise fully performed by the Contractor. Final Completion shall be determined by the Architect and the Project Inspector. The good faith and reasonable determination of Final Completion by the Project Inspector and the Architect shall be controlling and final. Final Completion of the Work shall not be deemed to have been achieved until: (a) all inspections have been completed; (b) Submittals, Guarantees, Record Drawings, Maintenance and Operations Manuals have been submitted and accepted; (c) all equipment shall be fully commissioned and operational as specified; and (d) the Work and adjoining areas of the Site are clean and ready for occupancy as an educational facility.

6.4.2 Final Acceptance of the Work shall occur upon approval of the Work by the District's Board of Education; such approval shall be submitted for adoption at the next regularly scheduled meeting of the District's Board of Education after the determination of Final Completion.

6.5. CONTRACT SCHEDULES

6.5.1. Execution

6.5.1.1. This section describes the scheduling of Work requirements to be performed by the Contractor. The term "Contract Schedules" refers to all schedules that are required herein and in the Specifications. The Contractor's planning, scheduling and execution of the Contract Work shall be presented to the Construction Manager by submission of the Contract Schedule information and data as described herein and in the Specifications. The Contractor shall plan, schedule, execute and report the Work under the Contract using a Critical Path Method

(CPM) schedule. The Contractor shall prepare the Contract Schedules to reflect the Contractor's proposed means and methods for accomplishing the entire scope of Work as awarded and included in the Contract Documents. The Contractor shall employ and supply a sufficient force of Workers, material and equipment, and shall prosecute the Work with such diligence so as to maintain progress, to prevent Work stoppage and to achieve Substantial Completion of all of the Work within the Contract Time. The Contractor shall not be entitled to, nor shall the District be required to make payment for any Contract Work until all Schedules comply with all Contract Requirements.

6.5.2. Baseline Schedule

6.5.2.1. The Baseline Schedule is defined as the Contractor's initial plan to conduct the Work, reviewed for acceptance by the Construction Manager in accordance with the Specifications. The Baseline Schedule shall show the breakdown of work into activities to the extent required to effectively plan the project, report work progress and analyze time impacts, and shall show all logical interrelationships (ties) between activities. The Baseline Schedule shall be the basis for monitoring the Contractor's progress, and the evaluation and reconciliation of Contract Time extensions. The Contractor shall prepare the Baseline Schedule based on the Contract as awarded, providing materials and equipment described in the Contract Documents, and without considering possible substitute or "or equal" items, even if the Contractor pursues a substitution in accordance with provisions of the Contract. The Construction Manager's final determination on proposed substitutions may not be made until after the Baseline Schedule or a Revised Schedule is submitted and accepted by the Construction Manager, or conditionally accepted with note exceptions.

6.5.3. Monthly Schedule Update

6.5.3.1. At monthly intervals, the Contractor shall update the schedule to reflect actual progress and submit the schedule update to the Construction Manager for review and acceptance in accordance with the Specification. The Monthly Schedule Update shall record progress for the period from the last Monthly Schedule Update through the current cutoff date set forth by the Construction Manager. The Monthly Schedule Update shall also forecast the remainder of the Work. The Monthly Schedule Update must not deviate significantly from the Baseline Schedule and shall not be used to delete or add activities, make title changes, and to make duration or logic changes. The Construction Manager may refuse to recommend the whole or part of any payment if, in the Construction Manager's opinion, the Contractor's failure, refusal or neglect to provide the required schedule information precludes a proper evaluation of whether or not the Contractor is prosecuting the work with the diligence that will ensure completion of the work within the Contract Time.

6.5.4. Schedule Corrections

6.5.4.1. Each month, in accordance with the Specification, the Contractor shall address corrections to the schedule that were identified by the Construction Manager during the review of the last Monthly Schedule Update. If the submittal is rejected, the Contractor must individually respond to every correction and review comment received from both the Construction Manager and/or Architect via the schedule narrative of the resubmittal. If the submittal is conditionally accepted with noted exceptions, the Contractor must individually respond to every correction and review comment via the schedule narrative of the next monthly update. Failure of the Contractor to specifically respond to each of the Construction Manager's previous review comments may result in rejection of the following submittal and a monthly payment portion withheld.

6.5.5. Look-Ahead Schedules

6.5.5.1. In accordance with the Specification, the Contractor shall submit a look ahead schedule that shows, at a level of detail satisfactory to the Construction Manager, the work planned and accomplished during the previous week and the upcoming work planned. The Contractor shall list the activity number from the Contract Schedule to which the activity on the look ahead schedule corresponds.

6.5.6. Schedule Revisions

6.5.6.1. 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. The Contractor shall revise the Baseline Schedule when the Construction Manager determines that it is no longer useful as a status and control mechanism, when a change or delay impacts the Contractor's timing and sequence of the work, or when the Contractor has submitted logic changes that affect critical or near critical activities as determined by the Construction Manager. Schedule Revisions must be submitted in accordance with the Specification for the Construction Manager's review and acceptance. After the Construction Managers accepts the schedule revision, the Contractor shall incorporate the accepted revision into the next Monthly Schedule Update. Schedule Revisions are not to be used to change milestones dates of Contract Time.

6.5.7. Recovery Schedules

6.5.7.1. The Contractor's refusal, failure or neglect to take appropriate recovery action or to submit a Recovery Schedule shall constitute reasonable evidence that the Contractor is not prosecuting the Work with the diligence that will ensure its completion within the applicable Contract Time. Such lack of action shall constitute sufficient basis for the Construction Manager to withhold payments to the Contractor.

6.5.8 Contractor Responsibility Not Affected By Acceptance of Schedules

6.5.8.1. The Construction Manager's review or acceptance of the Contract Schedules shall not relieve the Contractor of its responsibility for scheduling, sequencing, and pursuing the Work to comply with the requirements of the Contract Documents, including adverse effects such as delays resulting from ill-timed Work or Work omitted from the schedule. Neither the submission nor the updating of any Contract Schedule Submittal shall have the effect of modifying the Contract Time, Contract Completion Date, Contract milestone dates, or the Contractor's obligations under this Contract. The Contractor shall be responsible for the coordination of Work activities performed by each Subcontractor and supplier, and to obtain information pertinent to the planning and updating of Subcontractor and supplier activities in preparing all Contract Schedules. The District reserves the right to review and comment on the Contract Schedules for conformance with the Contract Time and those sequences of Work indicated in or required by the Contract Documents, to record dates for milestones, for conformance with the scheduling requirements and other information provided in the Contract Documents that may have a bearing on the schedule, for reasonableness of durations and logic, and for consistency in the cost loading of the schedule activities. The Construction Manager's review shall not extend to the Contractor's means, methods, or techniques, the correctness of which shall remain the sole responsibility of the Contractor.

6.5.9. Cost of Schedule Preparation and Maintenance

6.5.9.1. The Contractor's responsibility for the preparation, Submittal and maintenance of the Contract Schedules is a material obligation under the Contract Documents. Any and all costs or expenses required or incurred to prepare, submit, maintain, and update the Contract Schedules shall be solely that of the Contractor and no such cost or expense shall be charged to the District. The Contract Price shall not be subject to adjustment on account of costs, fees or expenses incurred or associated with the Contractor's preparation, Submittal, and maintenance or updating of the Contract Schedules including adjustments required by change orders.

6.6. ADJUSTMENT OF CONTRACT TIME

6.6.1. Excusable, Noncompensable Delays

6.6.1.1. If Substantial Completion of the Work is delayed by Excusable Delays, the Contract Time shall be subject to adjustment for such reasonable period of time as determined by the Construction Manager and the District; Excusable Delays shall not result in any increase in the Contract Price. Excusable Delays refer to unforeseeable and unavoidable casualties or other unforeseen causes beyond the control, and without fault or neglect, of the Contractor, any Subcontractor, Material Supplier or other person directly or indirectly engaged by the Contractor in performance of any portion of the Work. Excusable Delays include, but are not limited to, unanticipated and unavoidable labor disputes, unusual and unanticipated delays in transportation of equipment, materials or Construction Equipment reasonably necessary for completion and proper execution of the Work, and unanticipated unusually severe weather conditions. Neither the financial resources of the Contractor or any person or entity directly or indirectly engaged by the Contractor in performance of any portion of the Work shall be deemed conditions beyond the control of the Contractor.

6.6.1.2. If an event of Excusable Delay occurs, the Contract Time shall be subject to adjustment hereunder only if the Contractor establishes: (i) full compliance with all applicable provisions of the Contract Documents relative to the method, manner and time for Contractor's notice and request for adjustment of the Contract Time; (ii) that the event(s) forming the basis for Contractor's request to adjust the Contract Time are outside the reasonable control and without any fault or neglect of the Contractor or any person or entity directly or indirectly engaged by Contractor in performance of any portion of the Work; and (iii) that the event(s) forming the basis for Contractor's request to adjust the Contract Time directly and adversely impacted Work activities on the Critical Path Time Impact Analysis requirements.

6.6.2. Compensable Delays

6.6.2.1. If Substantial Completion of the Work is delayed and such delay is caused by the acts or omissions of the District, the Architect, or separate Contractor employed by the District (collectively "Compensable Delays"), upon Contractor's request and notice, in strict conformity with Articles 6 and 10 of these General Conditions, the Contract Time shall be adjusted by Change Order for such reasonable period of time as determined by the Construction Manager and the District. In accordance with California Public Contract Code §7102, if the Contractor's progress is delayed by any of the events described in the preceding sentence, Contractor shall be entitled to the recovery of damages directly and proximately resulting therefrom, provided that the District is liable for the delay, the delay is unreasonable under the circumstances and was not within the reasonable contemplation of the District or the Contractor at the time of

execution of the Agreement. In such event, Contractor's damages, if any, shall be limited to direct, actual and unavoidable additional costs of labor, materials or Construction Equipment directly resulting from such delay, and shall exclude indirect Field office, indirect additional Home office, unabsorbed overhead, or other consequential damages. No adjustment of the Contract Time shall be made on account of any Compensable Delays unless such delay(s) actually and directly impact Work activities on the Critical Path Time Impact Analysis requirements.

6.6.3. Inexcusable Delays

6.6.3.1. Inexcusable Delays refer to any delay to the progress of the Work caused by events or factors other than those specifically identified in Articles 6.6.1 and 6.6.2 above. Neither the Contract Price nor the Contract Time shall be adjusted on account of Inexcusable Delays.

6.6.4. Notice of Delay

6.6.4.1. Failure of Contractor to request adjustment(s) of the Contract Time in strict conformity with applicable provisions of the Contract Documents shall be deemed Contractor's waiver of the same. Any delay, which will result in a request for an adjustment to the Contract Time, shall be documented by the Contractor in a letter to the Construction Manager within five (5) days of the occurrence. The Contractor shall identify the Contract Schedule activity number(s) and activity description(s) affected, as well as the event and documentation causing delay.

6.6.5. Concurrent Delays

6.6.5.1. If an Inexcusable Delay occurs concurrently with either an Excusable Delay or a Compensable Delay, the Contractor may not recover damages for the period of the concurrency under the provisions of Article 6.6.2, and the maximum extension of the Contract Time shall be equal to the Excusable Delay or the Compensable Delay.

6.6.5.2. Notwithstanding the foregoing, the District's failure to require compliance of any past delays shall not constitute a waiver or preclude it from enforcing such provisions in connection with any present or future delays.

6.6.6 Time Impact Analyses

6.6.6.1 If the Contractor experiences what they consider to be an excusable delay, the Contractor shall submit a written Time Impact Analysis (TIA) to the Construction Manager in accordance with the Specifications with each request for adjustment of Contract Time. Any accompanying cost proposal pursuant to Article 10 shall include all anticipated direct costs due to the delay, including direct actual extended General Conditions field overhead where applicable. If the Contractor does not submit a TIA for a specific change order or delay within the specified time as determined by the Construction Manager, the Contractor shall be deemed to have voluntarily irrevocably waived any rights to additional time and cost. In accordance with the Specifications the Contractor shall allow time for the Construction Manager to approve or reject the submitted TIA. The Contractor shall not incorporate any part of the Time Impact Analysis into the Monthly Schedule Update until authorized in writing by the Construction Manager.

6.7. LIQUIDATED DAMAGES

6.7.1. Should the Contractor neglect, fail or refuse to achieve Substantial Completion of the Work or phase thereof, within the Contract Time, as adjusted, the Contractor agrees to pay to

the District the amount of per diem Liquidated Damages set forth in the Supplementary Conditions, not as a penalty but as Liquidated Damages, for every day beyond the Contract Time, as adjusted, until Substantial Completion of the Work or phase thereof is achieved, subject to force majeure, as defined at Article 16.5 of the General Conditions. Contractor and District acknowledge and agree that if the Contractor fails to achieve Substantial Completion in accordance with the Contract Schedule, the District will incur costs and expenses not contemplated by the Contract Documents, the actual amount of which will be impracticable to ascertain. Contractor and District further acknowledge and agree that the per diem assessment set forth in the Supplementary Conditions represents a reasonable joint effort by the parties to establish an amount of Liquidated Damages that corresponds to actual loss and which is reasonable under the circumstances existing at the time the parties entered into the Contract. Liquidated Damages may be deducted from the Contract Price then or thereafter due the Contractor. The Contractor and the Surety shall be liable to the District for any Liquidated Damages exceeding any amount of the Contract Price then held or retained by the District. If the Contractor fails or refuses, for any reason, to promptly correct or complete all Punchlist items upon Substantial Completion for each phase within thirty (30) days as determined pursuant to Article 6.3 hereof, the Contractor shall be liable to the District for the per diem Liquidated Damages set forth in the Supplementary Conditions from the date that such items should have been corrected or completed until the date that all such items are actually corrected or completed. In the event the Contractor fails or refuses to correct or complete items of the Work noted upon Substantial Completion and the District elects to exercise its right to cause completion or correction of such items, the Contractor will be charged with the cost of completing or correcting the same.

ARTICLE 7

7. CONTRACT PRICE

7.1. SCHEDULE OF VALUES AND COST BREAKDOWN

7.1.1. The Contractor shall prepare, on electronic spreadsheet forms provided by the District, a detailed Schedule of Values comprising an estimate and complete Cost Breakdown of the Contract Price.

7.1.1.1. If the Contact requires a cost-loaded schedule per Specifications, the Schedule of Values shall be directly resulting from the cost-loaded schedule and the Contractor shall adhere to the requirements contained within Specifications. The Schedule of Values shall be submitted with the Baseline Critical Path Method (CPM) Schedule Submittal, and shall follow the same review and approval timeline as the Baseline CPM Schedule.

7.1.1.2. If the Contract does not require a cost-loaded schedule per Specifications, the Schedule of Values shall be sufficiently detailed and organized in a manner acceptable to the Construction Manager. The Schedule of Values shall be submitted to the Construction Manager, in both printed and electronic form, for review and approval within fifteen (15) days of the (NTP) date. Payment for uninstalled materials is limited to major pieces of equipment with a cost value in excess of $10,000. The Construction Manager has ten (10) days to review the Schedule of Values Submittal. If the Construction Manager rejects the Schedule of Values, the Contractor has five (5) days after the date of the rejection to submit a revised Schedule of Values to the Construction Manager for review and approval. The foregoing procedure for the approval of the Schedule of Values shall continue until the District has accepted the entirety of the Schedule of Values.

7.1.1.3. If the Contract has multiple sites, Contractor is required to submit separate Schedule of Values per site.

7.1.1.4. The Schedule of Values shall be divided into costs in order to comply with the District's cost coding system.

7.1.2. Once the District accepts the Schedule of Values, the Schedule of Values shall not be thereafter modified or amended by the Contractor without the prior consent and approval of the District, except that the Contractor shall amend the Schedule of Values to separately list each change order upon District approval of said Change Order in accordance with the provisions of Article 10.5.

7.1.3. If the Contract requires a cost-loaded schedule per Specifications, upon District approval of a Change Order in accordance with the provisions of Article 10.5, the Contractor shall add separate cost-loaded activities to the Contract Schedule for each Change Order individually.

7.1.4. If the Contract does not require a cost-loaded schedule per Specifications, upon District approval of a Change Order in accordance with the provisions of Article 10.5, the Contractor shall amend the Cost Breakdown to separately list each approved change order.

7.1.5. If the Construction Manager so determines, the Contractor must further divide each Change Order as necessary to comply with the District's cost coding system.

7.2. PROGRESS PAYMENTS

7.2.1. During the Contractor's performance of the Work, the Contractor shall submit to the Construction Manager a CPM schedule update each month in accordance with the provisions of General Requirements. The CPM schedule update Submittal that is to be submitted to the Construction Manager after the Monthly Schedule Review Meeting shall include Applications for Progress Payments, on forms provided by the Construction Manager, setting forth an itemized estimate of Work completed in the preceding month for the purpose of the District's making of Progress Payments thereon. Values utilized in the Applications for Progress Payments shall be based upon the District accepted Cost Breakdown pursuant to Article 7.1 above and shall not be considered as fixing a basis for adjustments to the Contract Price.

7.2.1.1. Where the Contract requires a cost-loaded schedule per Specifications, the estimate of Work completed in the preceding month shall be directly determined by the cost-loaded Monthly Schedule Update. Refer to Specifications regarding Monthly Schedule Updates.

7.2.1.2. Where the Contract does not require a cost-loaded CPM schedule per Specification, the Contractor shall estimate the amount of the Application for Progress Payment by updating the status of each Schedule of Value item that is complete or in progress with a physical percent complete as of the last day of the preceding month or other cutoff date as approved or directed by the Construction Manager.

7.2.1.3. The Contractor shall submit the updated Schedule of Values, in both printed and electronic form, to the Construction Manager for review and approval. Monthly Schedule Review meetings shall be conducted in accordance with Specifications for the purpose of finalizing the percent to be paid for Work completed or in progress. After the meeting, the Contractor shall make revisions to the status of Schedule of Value line items, as directed by the Construction Manager, and submit the Application for Progress Payment and electronic Schedule of Values on the due date set forth herein. The Contractor must submit the Monthly Schedule Update package to the Construction Manager before the District will process an Application for Progress Payment for a given month.

7.2.2. In accordance with Public Contract Code §20104.50, upon receipt of an Application for Progress Payment, the District shall review the same for approval. Such Application shall be deemed "proper" for payment only if it is submitted on the appropriate District form fully completed and accompanied by: (i) Certified Payrolls of the Contractor and all Subcontractors, of any tier, for laborers performing any portion of the Work for which a Progress Payment is requested; (ii) if applicable, duly completed and executed forms of Conditional and Unconditional Waiver(s) and Release(s) of Rights Upon Progress Payment in accordance with California Civil Code §8132 covering the Progress Payment requested; (iii) if applicable, a current union statement reflecting that the Contractor and any Subcontractor of any tier, are current in the payment of any supplemental fringe benefits required pursuant to any collective bargaining Agreement to which the Contractor or any such Subcontractor is a party to or is otherwise bound by; (iv) a certification by the Contractor that it has continuously maintained, or caused to maintained, the Record Drawings reflecting the actual as-built conditions of the Work performed for which the Progress Payment is requested, it being understood that such certification is subject to verification by the District; (v) the Construction Progress Schedule, (vi) daily construction reports, (vii) when appropriate, (a) completed and signed-off punch lists; (b) health and safety reports; and (c) test/adjust/balance records; (viii) signatures of the Project Inspector, Construction Manager, and the Architect; (ix) Updated List of Employees for both Contractor and all of his Subcontractors (Exhibit "C") with their DOJ fingerprinting status. In accordance with Public Contract Code §20104.50, an Application for Progress Payment

determined by the District not to be proper shall be returned by the District to the Contractor not more than seven (7) days after the District's receipt thereof setting forth, in writing, the reason(s) for the return.

7.2.3. Upon receipt of an Application for Progress Payment, the Architect and the Project Inspector shall inspect and verify the Work to determine whether it has been performed in accordance with the terms of the Contract Documents and to determine the portion of the Application for Progress Payment which is properly due to the Contractor under the terms of the Contract Documents.

7.2.4. In accordance with Public Contract Code §20104.50, within thirty (30) days after the District's receipt of a proper Application for Progress Payment, the District shall pay Contractor undisputed amounts. The District shall pay to Contractor a sum equal to ninety-five percent (95%) of the value of the Work indicated in the Application for Progress Payment, which is actually in place as of the date of the Application for Progress Payment. The remaining five percent (5%) shall be retained by the District until Final Completion. If an Application for Progress Payment is determined not to be proper due to the failure or refusal of the Contractor to submit documents or the submitted documents are incomplete or inaccurate, or if it is reasonably determined that the Record Drawings have not been continuously maintained to reflect the actual as-built conditions of the Work completed in the period for which the Progress Payment is requested, the 30-day period hereunder shall be deemed to commence on the date that the District is actually in receipt of all corrected documents or the date upon which the Contractor accurately and fully completes preparation of the Record Drawings relating to the Work for which the Progress Payment is requested.

7.2.5. Subject to the limitations of California Public Contract Code §9203, the District may, in its sole and exclusive discretion, disburse any remaining Progress Payments in full for Work actually in place at any time after fifty percent (50%) of the Work is concluded on Projects exceeding the amount of $5,000, if the District determines that acceptable progress is being made.

7.2.6. In accordance with Public Contract Code §20104.50, in the event that the District fails to make any Progress Payment within thirty (30) days after receipt of a properly submitted Application for Progress Payment, the District shall pay the Contractor interest on the undisputed amount equal to the legal rate of interest set forth in California Code of Civil Procedure §685.010(a). The foregoing notwithstanding, if the District does not return an improper Application for Progress Payment within the allowed seven (7) day period provided in Article 7.2.2, the period of time for the District's disbursement of the Progress Payment without incurring the interest liability shall be reduced by the number of days exceeding the seven (7) day return period.

7.2.7. The approval of any Application for Progress Payment or the disbursement of any Progress Payment to the Contractor shall not be deemed nor constitute acceptance of defective Work or Work not in conformity with the Contract Documents.

7.2.8. The Contractor's Applications for Progress Payment may include requests for payment on account of Changes in the Work which have been properly authorized and approved by the District’s Project Inspector, the Architect and all other governmental agencies with jurisdiction over such Change in accordance with the terms of the Contract Documents and for which a Change Order has been issued. Change Orders must be clearly identified and referenced on the itemization sheet submitted with the Contractor’s Application for Progress Payment. Change Orders must be itemized in conformance with the Contractor’s accepted Cost Breakdown. Except as provided for herein, the District shall make no other payment for Changes in the Work.

7.2.9. Except as expressly provided for herein, no payments shall be made by the District on account of any item of the Work, including without limitation, materials or equipment which,

at the time of the Contractor's Submittal of an Application for Progress Payment, have not been incorporated into and made a part of the Work.

7.2.10. The District may, in its sole and exclusive discretion, approve a request for payment not to exceed eighty percent (80%) submitted with an Application for Progress Payment for materials or equipment not yet incorporated into the Work if all of the following are complied with: (a) the materials or equipment have been delivered to the Site; (b) arrangements satisfactory to the District have been made by the Contractor to store and protect such materials or equipment at the Site including without limitation, insurance satisfactory to the District, covering and protecting against the risk of loss, destruction, theft or other damage to such materials or equipment while in storage; and (c) the establishment of procedures satisfactory to the District by which title to such materials or equipment shall be vested in the District upon the District's payment therefore. In the event that the District shall elect to make payment for materials or equipment delivered and stored at the Site, the costs and expenses incurred to comply with the requirements of (b) and (c) of this Article 7.2.11 shall be borne solely and exclusively by the Contractor.

7.2.11. The foregoing notwithstanding, the District may, in its sole and exclusive discretion, elect to make payment not to exceed eighty percent (80%) for materials or equipment not incorporated into the Work and which are not delivered or stored at the Site at or prior to the time of the Contractor's Submittal of an Application for Progress Payment. Contractor shall incorporate with the Application a request for payment of such materials or equipment and comply with all of the following requirements: (a) arrangements satisfactory to the District have been made by the Contractor to store and protect such materials or equipment at a secure warehouse/storage that is insured for up to 100% of the value of the materials or equipment not yet incorporated into the Work, which is agreed to in writing by the District, and which arrangements shall include without limitation, insurance satisfactory to the District, covering and protecting against the risk of loss, destruction, theft or other damage to such materials or equipment while in storage; and (b) the establishment of procedures satisfactory to the District by which title to such materials or equipment shall be vested in the District upon the District's payment therefore. The Contractor acknowledges that the discretion to make, or not to make, payment for such materials or equipment delivered or stored at a secure warehouse/storage that is insured for up to 100% of the value of the materials or equipment not yet incorporated into the Work pursuant to the preceding sentence shall be exercised exclusively by the District; the District's exercise of discretion not to make payment for such materials or equipment shall not be deemed the District's default hereunder. In the event that the District shall elect to make payment for materials or equipment delivered and stored at a secure warehouse/storage that is insured for up to 100% of the value of the materials or equipment not yet incorporated into the Work the costs and expenses incurred to comply with the requirements of (a) and (b) of this Article 7.2.12 shall be borne solely and exclusively by the Contractor and no payment shall be made by the District on account of such costs and expenses. All stored items shall be stored, inventoried and if applicable, specified by identification numbers; otherwise, all risk of loss remains with the Contactor.

7.2.12. The provisions of this Article 7.2 notwithstanding, the District shall not make any payment on account of any materials or equipment which is in the process of being fabricated or which are in transit to the Site or other storage location.

7.2.13. Neither the Contractor's Application for Progress Payment shall include, nor shall the District be obligated to disburse, any portion of the Contract Price for amounts which the Contractor does not intend to pay any Subcontractor, of any tier, or Material Supplier because of a dispute or any other reason.

7.3. TITLE TO WORK

7.3.1. The Contractor warrants that title to all Work covered by an Application for Progress Payment shall pass to the District no later than the time of payment. The Contractor further

warrants that upon Submittal of an Application for Progress Payment, all Work for which a Progress Payment has been previously issued and the Contractor has received payment from the District therefore shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, Claims, stop payment notices, security interests or encumbrances in favor of the Contractor, Subcontractors, Material Suppliers or other persons or entities making a Claim by reason of having provided labor, materials and equipment relating to the Work.

7.4. FINAL PAYMENT

7.4.1. When the Contractor has achieved Final Completion of the Work and has otherwise fully performed its obligations under the Contract Documents, the Contractor shall submit an application for final payment. Thereupon, the Architect and the Project Inspector shall promptly make a final inspection of the Work and when the Architect and the Project Inspector find the Work acceptable under the Contract Documents and that the Contract has been fully performed by the Contractor, the Architect and the Project Inspector shall thereupon promptly approve the Application for Payment, stating that to the best of their knowledge, information and belief, the Work has been completed in accordance with the terms of the Contract Documents. The final payment shall include the remaining balance of the Contract Price and any retention from Progress Payments previously withheld by the District for occupied, utilized, partially completed and accepted portions of the Work.

7.4.2. Neither the Final Payment nor any remaining Contract Price shall become due until the Contractor submits to the District each and all of the following (i) a certificate evidencing that insurance required by the Contract Documents to remain in force after the Contractor's receipt of Final Payment is currently in effect and shall be held for two (2) years from the final approval date set by the District; (ii) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover any period following Final Payment as required by the Contract Documents; (iii) duly completed and executed forms of Conditional or Unconditional Waivers and Releases of rights upon Final Payment of the Contractor in accordance with California Civil Code §8132, with each of the same stating that there are, or shall be, no Claims for additional compensation after disbursement of the Final Payment; (iv) Operations and Maintenance manuals and separate warranties provided by any Manufacturer or Distributor of any materials or equipment incorporated into the Work; (v) the Record Drawings; (vi) the form of Guarantee included in the Contract Documents duly executed by an authorized representative of the Contractor; (vii) Training and Orientation videos required by the Contract Documents; (viii) all equipment, fully commissioned and operating as specified; (ix) any and all other items or documents required by the Contract Document including **Exhibit C** of the General Conditions Final Project Completion Subcontractor’s List as required by Labor Code §1773.3 (d) to be delivered to the District upon completion of the Work; and (x) if required by the District, such other data establishing payment or satisfaction of obligations such as receipts, releases and waivers of liens, stop payment notices, Claims, security interest or encumbrances arising out of the Contract to the extent and in such form as may be required by the District.

7.4.3. Not later than sixty (60) days following Final Acceptance, the District shall disburse the Final Payment to the Contractor. Pursuant to California Public Contract Code §7107, if there is any dispute between the District and the Contractor at the time that disbursement of the Final Payment is due, the District may withhold from disbursement of the Final Payment an amount not to exceed one hundred fifty percent (150%) of the amount in dispute. Any dispute regarding the District’s alleged failure to comply with this section or with Public Contract Code §7107 shall be subject to the claims resolution procedures set forth in Article 18 of this Agreement.

7.4.4. The Contractor's acceptance of the Final Payment shall be deemed a waiver and release by the Contractor of any and all Claims against the District for compensation or otherwise in connection with the Contractor's performance of the Contract.

7.4.5. Any lien, stop payment notice or other Claim filed or asserted after the Contractor's acceptance of the Final Payment by any Subcontractor, of any tier, laborer, Material Supplier or others in connection with or for Work performed under the Contract Documents shall be the sole and exclusive responsibility of the Contractor who further agrees to indemnify, defend and hold harmless the District and its officers, agents, representatives and employees from and against any Claims, demands or judgments arising or associated therewith. In the event any lien, stop payment notice or other Claim of any Subcontractor, Laborer, Material Supplier or others performing Work under the Contract Documents remain unsatisfied after Final Payment is made, Contractor shall refund to District all monies that the District may pay or be compelled to pay in discharging any lien, stop payment notice or other Claim, including, without limitation, all costs incurred by District in connection therewith.

7.5. WITHHOLDING OF PAYMENTS

7.5.1. The District may withhold any Progress Payment or the Final Payment, in whole or in part, or backcharge the Contractor to the extent it may deem advisable to protect the District on account of: (i) defective Work or Work not in conformity with the requirements of the Contract Documents which is not remedied; (ii) failure of the Contractor to make payments when due to Subcontractors or Material Suppliers for materials or labor; (iii) Claims filed or reasonable evidence of the probable filing of Claims by Subcontractors, laborers, Material Suppliers, or others performing any portion of the Work under the Contract Documents for which the District may be liable or responsible including, without limitation, Stop payment notice Claims filed with the District pursuant to California Civil Code §9000, *et seq*.; (iv) a reasonable doubt that the Contract can be completed for the then unpaid balance of the Contract Price; (v) tax demands filed in accordance with California Government Code §12419.4; (vi) other Claims, penalties and/or forfeitures for which the District is required or authorized to retain funds otherwise due the Contractor; (vii) any amounts due from the Contractor to the District under the terms of the Contract Documents; or (viii) the Contractor's failure to perform any of its obligations under the Contract Documents, including performance of any lawful or proper direction given by the District or public authority having jurisdiction over the Work or its default under the Contract Documents or its failure to maintain adequate progress of the Work. When the District is reasonably satisfied that the Contractor has remedied any such deficiency, payment shall be made of the amount withheld.

7.6. SUBSTITUTE SECURITY FOR RETENTION

7.6.1. Eligible and equivalent securities may be substituted for any monies withheld by the District to ensure the Contractor's performance under the Contract Documents at the request and expense of the Contractor and in conformity with the provisions of California Public Contract Code §10263. The foregoing and the provisions of California Public Contract Code §10263 notwithstanding, failure of the Contractor to request the substitution of eligible and equivalent securities for monies to be withheld by the District within ten (10) days following award of the Contract to Contractor shall be deemed a waiver of such right.

7.7. PAYMENTS TO SUBCONTRACTORS

7.7.1. The Contractor shall pay all Subcontractors for and on account of Work of the Contract performed by such Subcontractors in accordance with the terms of their respective Subcontracts and as provided for pursuant to California Public Contract Code §§10262 and 10253, the provisions of which are deemed incorporated herein by this reference.

ARTICLE 8

8. SUBMITTALS

8.1. SUBMITTALS

8.1.1. Shop Drawings, Product Data, Samples and similar Submittals (collectively "Submittals") are not Contract Documents. The purpose for submission of Submittals is to demonstrate, for those portions of the Work for which Submittals are required, the manner in which the Contractor proposes to provide or incorporate such item of the Work in conformity with the information given and the design concept expressed in the Contract Documents.

8.1.2. The Contractor shall review, approve and submit to the Architect or such other person or entity designated by the District, the number of copies of Submittals required by the Contract Documents. Contractor's submission of Submittals in conformity with the Submittal Schedule is a material obligation of the Contractor under the Contract Documents. In the event of Contractor's failure or refusal to deliver Submittals to the Architect in accordance with the Submittal Schedule, the Contractor shall be subject to per diem assessments in the amount set forth in the Supplementary Conditions for each day of delayed submission for any Submittal beyond the date set forth in the Submittal Schedule, not as a penalty but as Liquidated Damages.

8.1.3. Contractor and District acknowledge and agree that if the Contractor fails to deliver Submittals in accordance with the Submittal Schedule, the District will incur costs and expenses not contemplated by the Contract Documents, the actual amount of which will be impracticable to ascertain. Contractor and District further acknowledge and agree that the per diem assessment set forth in the Supplementary Conditions represents a reasonable joint effort by the parties to establish an amount of Liquidated Damages that corresponds to actual loss and which is reasonable under the circumstances existing at the time the parties entered into the Contract.

8.1.4. In the event that the District or the Architect reasonably determines that all or any portion of such Submittals require re-submission, Contractor shall bear all costs associated with the review and approval of resubmitted Submittals, including without limitation Architect's fees incurred in connection therewith; such costs are in addition to, and not in lieu of, any per diem assessments. Submittals not required by the Contract Documents or which do not otherwise conform to the requirements of the Contract Documents may be returned without action. No adjustment to the Contract Time or the Contract Price shall be granted to the Contractor on account of its failure to timely submit any Submittal.

8.1.5. All Submittals prepared by Subcontractors, of any tier, Material Suppliers, Manufacturers or Distributors shall bear the written approval of the Contractor thereto prior to submission to the Architect for review. Any Submittal not bearing the Contractor's written approval shall be subject to return to the Contractor for Re-Submittal in conformity herewith, with the same being deemed to not have been submitted. Any delay, impact or cost associated therewith shall be the sole and exclusive responsibility of the Contractor without adjustment to the Contract Time or the Contract Price.

8.1.6. By approving and submission of Submittals, the Contractor represents to the District and Architect that the Contractor has determined and verified materials, field measurements, field construction criteria, catalog numbers and similar data related thereto and has checked and coordinated the information contained within such Submittals with the requirements of the Work and of the Contract Documents.

8.1.7. All Submittals shall be accompanied by a written transmittal or other writing by the Contractor providing an identification of the portion of the Drawings or the Specifications pertaining to the Submittal, with each Submittal numbered consecutively for ease of reference along with the following information: (i) date of submission; (ii) Project name; (iii) name of submitting Subcontractor; and (iv) if applicable, the revision number. The

foregoing information is in addition to, and not in lieu of, any other information required for the Architect's review, evaluation and approval of the Contractor's Submittals.

8.1.8. The Contractor shall not be relieved of responsibility for correcting deviations from the requirements of the Contract Documents by the Architect's review and acceptance of Submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submission of the Submittal and the Architect has given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Submittals by the Architect's acceptance thereof.

8.1.9. The Contractor shall perform no portion of the Work requiring the Architect's review and acceptance of Submittals until the Architect has completed its review and indicated acceptance of such Submittal. The Contractor shall not perform any portion of the Work forming a part of a Submittal or which is affected by a related Submittal until the entirety of the Submittal or other related Submittal has been fully accepted. Such Work shall be in accordance with accepted Submittals and other applicable portions of the Contract Documents.

8.1.10. The Architect shall review the Contractor's Submittals in compliance with the Contract Documents for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's approval of a specific item in a Submittal shall not indicate approval of an assembly of which the item is a component. The Architect's review of Submittals shall be conducted promptly so as not to delay or hinder the progress of the Work or the activities of the Contractor, the District or the District's separate Contractors while allowing sufficient time, in the Architect's reasonable professional judgment to permit adequate review of Submittals. If the Architect returns a Submittal as rejected or requiring correction(s) and re-submission, the Contractor, so as not to delay the progress of the Work, shall promptly thereafter resubmit a Submittal conforming with the requirements of the Contract Documents; the resubmitted Submittal shall indicate the portions thereof modified in order to obtain the Architect's acceptance. When professional certification of performance criteria of materials, systems or equipment is required by the Contract Documents, the Architect shall be entitled to rely upon the accuracy and completeness of such calculations and certifications accompanying Submittals.

8.1.11. If any portion of the Work is designated in the Contract Documents as a "Deferred Approval" item, Contractor shall be solely and exclusively responsible for the preparation of Submittals for such item(s) in a timely manner so as not to delay or hinder the completion of the Work within the Contract Time.

ARTICLE 9

9. MATERIALS AND EQUIPMENT

9.1. SPECIFIED MATERIALS, EQUIPMENT

9.1.1. References in the Contract Documents to any specific Article, device, equipment, product, material, fixture, patented process, form, method or type of construction, by name, make, trade name, or catalog number, with or without the words "or equal" shall be deemed to establish a minimum standard of quality or performance and in conformance with the public interest.

9.1.2 References in the Contract Documents to any specific article, device, equipment, product, material, fixture, patented process, form, method or type of construction, by name, make, trade name or catalog number, with the wording “No Substitutions”, shall be limited to the referenced item only.

9.2. APPROVAL OF SUBSTITUTIONS OR ALTERNATIVES

9.2.1. After issuance of Notice to proceed (NTP), the Contractor may propose to furnish equals, alternatives or substitutes for a particular item specified in the Contract Documents. Contractor’s bid must be based on the specific article, device, equipment, product, material, fixture, patented process, form, method or type of construction identified in the specifications. “Or equals”, alternatives or substitutions will be considered, after issuance of NTP, provided that the Contractor provides advance written notice to the Architect of such proposed substitution or alternative and certifies to the Architect and the District that the quality, performance capability and functionality (including visual and/or aesthetic effect) of the proposed alternative or substitute shall meet or exceed the quality, performance capability and functionality of the item or process specified and that the use of the substitution or alternative is appropriate and shall not delay completion of the Work or result in an increase to the Contract Price. The Contractor shall submit engineering, construction, dimension, visual, and aesthetic and performance data to the Architect to permit its proper evaluation of the proposed substitution or alternative on the District furnished Substitution Request Form.

9.2.2. If requested by the Architect, Contractor shall promptly furnish any additional information or data regarding a proposed substitution or alternative, which the Architect deems reasonably necessary for the evaluation of the proposed substitution or alternative. The Contractor shall not provide, furnish or install any substitution or alternative without the Architect's prior written approval of the same; any alternative or substitution installed or incorporated into the Work without first obtaining the District’s approval of the same shall be subject to removal pursuant to Article 14 hereof. The District’s decision shall be final regarding the approval or disapproval of the Contractor's proposed substitutions or alternatives. Neither the Contract Time nor the Contract Price shall be increased on account of any substitution or alternative proposed by the Contractor and which is approved by the District; provided, however, that in the event a substitution or alternative is approved by the Architect and purchase, fabrication and/or installation or such approved substitution or alternative shall be less expensive than the originally specified item, the Contract Price shall be reduced by the actual cost savings realized by the Contractor's furnishing and/or installation of such approved substitution or alternative.

9.2.3. The Contractor shall be solely responsible for all costs and fees of the Architect, of the Architect's consultant(s) and/or governmental agencies to review and/or approve any proposed substitution or alternative. The Contractor shall be solely responsible for any increase in the cost of any approved substitution or alternative or any Work affected by such alternative or substitution. All requests for the Architect’s review and approval of any proposed substitution or alternative and all engineering, construction, dimension and performance data substantiating the equivalency of the proposed substitution or alternative

shall be submitted by Contractor on the District Substitution Request Form. Submission of substitution requests is allowed during the period indicated in the Specifications.

9.2.4. The Architect may reject, without review, any request for approval of proposed alternatives or substitutions not submitted within the time limitations indicated in the Specifications. The foregoing process and time limits shall apply to any proposed substitution or alternative regardless of whether the substitute or alternate item is to be provided, furnished or installed by Contractor, any Subcontractor, any Sub-Subcontractor, Material Supplier or Manufacturer. Any request for substitution of specified materials or equipment will be considered only if submitted on the District Substitution Request Form.

9.3. PLACEMENT OF MATERIALS AND EQUIPMENT ORDERS

9.3.1. Contractor shall, after award of the Contract, promptly and timely place all orders for materials and/or equipment necessary for completion of the Work so that delivery of the same shall be made without delay or interruption to the timely completion of the Work. Contractor shall require that any Subcontractor or Sub-Subcontractor performing any portion of the Work similarly place orders for all materials and/or equipment to be furnished by any such Subcontractor or Sub-Subcontractor in a prompt and timely manner so that delivery of the same shall be made without delay or interruption to the timely completion of the Work. Upon request of the Architect or the District, the Contractor shall furnish written evidence of the placement of orders for materials and/or equipment necessary for completion of the Work, including without limitation, orders for materials and/or equipment to be provided, furnished or installed by any Subcontractor or Sub-Subcontractor.

9.3.2. In the event the Contractor fails or refuses to comply with the requirements set forth in Article 9.3.1, above, the District shall have the right, but not the obligation, to place such orders on behalf of the Contractor. The election of the District to exercise, or not to exercise, such right shall not relieve the Contractor from any of Contractor's obligations under the Contract Documents, including without limitation, completion of the Work within the Contract Time and for the Contract Price. If the District exercises the right hereunder to place orders for materials and/or equipment on behalf of Contractor pursuant to the foregoing, Contractor shall reimburse the District for all costs and fees incurred by the District in placing such orders; such costs and fees may be deducted by the District from any portion of the Contract Price then or thereafter due the Contractor.

9.4. DELIVERIES OF MATERIALS AND EQUIPMENT TO THE SITE

9.4.1. All materials or equipment to be incorporated into the Work shall be designated on the Drawings and delivered to the designated staging or storage area at the Site utilizing delivery route(s) designated in the Drawings and/or as directed from time-to-time by the Project Inspector or Construction Manager. Promptly upon delivery of materials/equipment for incorporation into the Work, the Contractor shall provide the District's Project Inspector with copies of delivery slips, invoices, bills of lading and similar instruments that indicate the type, nature and quantity of the materials/equipment delivered. The Contractor is solely responsible for adequately protecting the designated delivery route(s) and improvements in, on or about the designated delivery route(s) without adjustment of the Contract Time or the Contract Price; the Contractor shall repair or replace all damage on or about the delivery route resulting from deliveries.

9.5. SALVAGE AND DISPOSAL OF EXISTING MATERIALS AND EQUIPMENT

9.5.1. All existing materials/equipment to be removed or disconnected and which have not been specifically designated in the Contract Documents for re-use in the Work, or for salvage by the District, shall become the property of the Contractor. All items designated for removal and deemed the property of the Contractor upon removal shall be disposed by the Contractor in conformity with applicable law, rule or regulation. The District shall have no liability for any materials or equipment once they are removed from the Site. The

Contractor shall not dispose of any such items at the Site by gift, sale or otherwise. If any existing materials/equipment or other existing improvements at the Site are to be removed, disconnected or relocated for re-use in connection with the Work, the removal, disconnection or relocation shall be completed in a manner to avoid damage or destruction of the Work or other existing improvements or facilities. Damage or destruction of the Work, any existing improvements, facilities or other items designated for re-use in connection with the Work shall be repaired or replaced by the Contractor without adjustment of the Contract Price or the Contract Time. Any damage or destruction of existing improvements, facilities, or other items caused by construction activities, or any activity by the Contractor shall be repaired, replaced, or corrected to return said item in kind with preconstruction status.

9.6. DISTRICT PROVIDED, CONTRACTOR INSTALLED PRODUCTS

9.6.1. The Provisions of this Article 9.6 apply only to materials, supplies, equipment, furnishings, or other things or property of any kind of type that will be paid for and provided by the District but incorporated into the Project or installed by the Contractor. The foregoing notwithstanding, the Contractor's responsibility related to materials, supplies, equipment, furnishings, or other things or property of any kind or type paid for and provided by the District and incorporated into the Project or installed by the District's own forces or by separate Contractors shall be as set forth in Article 11 hereof.

9.6.2. If the District provides any materials, supplies, equipment, furnishings, or other things or property of any kind or type for incorporation into the Project or installation by the Contractor, the Construction Manager will coordinate delivery dates of such items with the Contractor. The Contractor shall thereupon coordinate the delivery, incorporation, and installation of such items with the remainder of the Work and the Contract Schedule. District will arrange and pay for delivery of such items to the Project site. After delivery of such items to the Project site, the Construction Manager, Project Manager, Project Inspector, and Contractor will jointly inspect delivered items for damage. If such District provided items are damaged, defective, or missing, the District will arrange for their replacement.

9.6.3. For District provided and Contractor incorporated or installed products, the Contractor shall notify the Construction Manager of the required schedule for any Manufacturer's field services, and the Construction Manager will thereupon arrange for such Manufacturer's field services; the Contractor shall request the Construction Manager arrange for delivery of Manufacturer's warranties to the Contractor; and the Contractor shall request the Construction Manager arrange for and deliver to the Contractor appropriate shop Drawings, product data and samples. When and as received from the Construction Manager, the Contractor shall review such shop Drawings, product data, and samples and notify the Construction Manager, in writing, of any discrepancies or anticipated problems in incorporating or installing said products.

9.6.4. The Contractor is responsible for receiving, unloading, and handling at the Project site District provided and Contractor incorporated or installed items. The Contractor is responsible for protecting such District provided items from damage during storage and handling, including damage from exposure to the elements. If such District provided items are damaged as a result of the Contractor's operations, the Contractor shall promptly repair or replace them.

9.6.5. If the Contractor Claims that delay or additional cost is involved because the materials, supplies, equipment, furnishings, or other things or property of any kind or type provided by the District and to be incorporated or installed by the Contractor are not delivered to the Project site in accordance with the Contract Schedule and in an undamaged condition, the Contractor may seek an adjustment to the Contract Price or the Contract Time as provided for in the Contract Documents. Failure of the Contractor to request such an adjustment of

the Contract Time or the Contract Price in strict conformity with the provisions of the Contract Documents applicable thereto shall be deemed a waiver of the same.

ARTICLE 10

10. CHANGES

10.1. CHANGES IN THE WORK

10.1.1. The District, at any time, by written order, may make Changes within the general scope of the Work under the Contract Documents or issue additional instructions; require additional Work or direct deletion of Work. The Contractor shall not proceed with any Change involving an increase or decrease in the Contract Price or the Contract Time without prior written authorization from the District via a Field Work Order or an approved Change Order.

10.1.2. The District's right to make Changes shall not invalidate the Contract nor relieve the Contractor of any liability or other obligations under the Contract Documents. Any requirement of notice of Changes in the scope of Work to the Surety shall be the responsibility of the Contractor, including any additional surety costs that may result from the adjustment of the Contract value. The Contractor can allow for these added costs through the Change Order provisions only. Changes to the Work depicted or described in the Drawings or the Specifications shall be subject to approval by DSA. The District may make Changes to bring the Work or the Project into compliance with environmental requirements or standards established by state or federal statutes and regulations enacted after award of the Contract.

10.2. ORAL ORDER OF CHANGE IN THE WORK

10.2.1. If the Contractor should Claim that any oral order, instruction, interpretation, determination, request, the Drawings, the Specifications, action, condition, omission, default, or other situation (collectively "Instructions") causes any change to the scope of the Work, or otherwise obligates the District to increase the Contract Price or to extend the Contract Time, the Contractor shall notify the Construction Manager and the Architect, in writing, of such Claim within five (5) days from the date of its actual or constructive notice of the factual basis supporting the same. The District shall consider any such Claim of the Contractor only if sufficient supporting documentation is submitted with the Contractor's notice to the Construction Manager and the Architect. The District, upon receipt from the Contractor, shall countersign such document.

10.2.2. Contractor acknowledges that its failure, for any reason, to give written notice (with sufficient supporting documentation to permit the District's review and evaluation) within five (5) days of its actual or constructive knowledge of any proposed adjustment of the Contract Time or the Contract Price shall be deemed Contractor's waiver, release, discharge and relinquishment of any right to assert or Claim any entitlement to an adjustment of the Contract Time or the Contract Price on account of any such Instructions. In the event that the District determines that the Contract Price or the Contract Time are subject to adjustment based upon the events, circumstances and supporting documentation submitted with the Contractor's written notice, any such adjustment shall be determined in accordance with this Article 10.

10.3. WRITTEN ORDER OF CHANGE IN THE WORK

10.3.1. Within fifteen (15) days after receipt of a written request for cost estimate or written Field Work Order from the District directing a Change in the Work, or furnishing the written notice regarding any oral order directing a Change in the Work pursuant to paragraph 10.2 above, the Contractor shall submit to the Architect and the Construction Manager a detailed written statement setting forth the general nature of the Change, the amount claimed for any adjustment to the Contract Price on account thereof and the extent of adjustment of the Contract Time, if any, required by such Change. Said statement shall be properly itemized and supported by sufficient substantiating data to permit evaluation of the same, such documentation shall be submitted in conformance with the District form entitled "Payment – Extra, Additional, Allowances, Contingencies or Deleted Work" which is attached hereto

as Exhibit “A” and incorporated herein by reference. The Contractor may not reserve a right to assess impact costs, extended job site costs, extended general conditions overhead and any/or constructive acceleration costs at some later date as related to any and all changes of the Work. These Costs must be supported with full Schedule and Cost documentation with each proposed change within the Contract prescribed submission times. No Claim or adjustment to the Contract Price or the Contract Time shall be allowed if not asserted by the Contractor in strict conformity with this paragraph.

10.4. ADJUSTMENT TO CONTRACT PRICE AND CONTRACT TIME ON ACCOUNT OF CHANGES TO THE WORK

10.4.1. Adjustments to the Contract Price due to Changes in the Work shall be determined by application of one of the following methods, in the following order of priority:

10.4.1.1. By negotiation and mutual Agreement, on a lump sum basis, between the District and the Contractor on the basis of the estimate of the actual costs and direct increase or decrease in costs on account of the Change. Upon request of the Construction Manager or the Architect, the Contractor shall provide a detailed estimate of increase or decrease in costs directly associated with performance of the Change along with Cost Breakdowns of the components of the Change and supporting data and documentation. The Contractor's estimate, if requested, shall be in sufficient detail and in such form as to allow the Construction Manager and the Architect to review and assess the completeness and accuracy thereof. The Contractor shall be solely responsible for any additional costs or additional time arising out of, or related in any manner to, its failure to provide the estimate of costs within the time specified in the request.

10.4.1.2. By the District based upon actual and necessary costs incurred by the Contractor as determined by the District on the basis of the Contractor's records. If the procedure set forth herein is utilized to determine the extent of adjustment to the Contract Price on account of Changes to the Work, promptly upon determining the extent of adjustment to the Contract Price the District shall notify the Contractor in writing of the same. The Contractor shall be deemed to have accepted the District's determination of the amount of adjustment to the Contract Price on account of a Change to the Work unless Contractor shall notify the District’s Representative and the Architect, in writing, not more than fifteen (15) days from the date of the District's written notice, of any objection to the District's determination. Failure of the Contractor to timely notify the District’s Representative and the Architect of Contractor's objections to the District's determination of the extent of adjustment to the Contract Price shall be deemed Contractor's acceptance of the District's determination and a waiver of any right or basis of the Contractor to thereafter protest or otherwise object to the District's determination. The District reserves the right to unilaterally execute changes to the contract if impasse is reached after a Good Faith Attempt to Resolve has failed to reach consensus. If the District makes a change unilaterally, the Contractor is referred to the Dispute Resolution clause herein.

10.4.1.3. If the Contractor was required to submit Bid Proposal prices for Unit Price Items identified in the Bid Proposal and a Change to the Work involves a Unit Price Item, the adjustment of the Contract Price for the portion of a Change involving a Unit Price Item shall be based upon the Unit Price proposed by the Contractor in its Bid Proposal for the applicable Unit Price Item. The foregoing notwithstanding, if at the time of a Change involving a Unit Price Item, the District reasonably determines that the price proposed for a Unit Price Item materially varies from the then existing marketplace costs for such item, the District shall not be bound by the price proposed for such Unit Price Item. In such event, the

adjustment of the Contract Price for a Change involving a Unit Price Item shall be the then existing marketplace costs for such item.

10.4.2. In the event of Changes in the Work resulting in an adjustment of the Contract Price and the adjustment of the Contract Price is based upon the methods set forth in Articles 10.4.1.2 and 10.4.1.3 above, the basis for adjustment of the Contract Price shall be as follows:

10.4.2.1. Contractor shall be compensated for the costs of labor actually and directly utilized in the performance of the Change. Such labor costs shall be limited to field labor for which there is a prevailing wage rate classification. Wage rates for labor shall not exceed the prevailing wage rates in the locality of the Site and shall be in the labor classification(s) necessary for the performance of the Change. Use of a labor classification, which would increase labor costs associated with any Change, shall not be permitted. Labor costs shall exclude costs incurred by the Contractor in preparing estimate(s) of the costs of the Change, in the maintenance of records relating to the costs of the Change or the supervision and other overhead and general conditions costs associated with the Change or performance thereof.

10.4.2.2. Contractor shall be compensated for the costs of materials and equipment necessarily and actually used or consumed in connection with the performance of Changes. Costs of materials and equipment shall include reasonable costs of transportation from a source closest to the site of the Work and delivery to the Site. If discounts by Material Suppliers are available for materials necessarily used in the performance of Changes, they shall be credited to the District. If materials and/or equipment necessarily used in the performance of Changes are obtained from a supplier or source owned in whole or in part by the Contractor, compensation therefore shall not exceed the current wholesale price for such materials or equipment. If, in the reasonable opinion of the District, the costs asserted by the Contractor for materials and/or equipment in connection with any Change is excessive, or if the Contractor fails to provide satisfactory evidence of the actual costs of such materials and/or equipment from its supplier or vendor of the same, the costs of such materials and/or equipment and the District's obligation for payment of the same shall be limited to the then lowest wholesale price at which similar materials and/or equipment are available in the quantities required to perform the Change. The District reserves the right to furnish materials and/or equipment required for the performance of Changes to the Work, in which event the Contractor shall not be compensated for the costs of furnishing such materials and/or equipment or any mark-up thereon.

10.4.2.3. Contractor shall be compensated for the actual cost of the necessary and direct use of Construction Equipment in the performance of Changes to the Work. Use of such Construction Equipment in the performance of Changes to the Work shall be compensated in increments of fifteen (15) minutes. Rental time for Construction Equipment moved by its own power shall include time required to move such Construction Equipment to the site of the Work from the nearest available rental source of the same. If Construction Equipment is not moved to the Site by its own power, Contractor will be compensated for the loading and transportation costs in lieu of rental time. The foregoing notwithstanding, neither moving time or loading and transportation time shall be allowed if the Construction Equipment is used for performance of any portion of the Work other than Changes to the Work. Unless prior approval in writing is obtained by the Contractor from the Architect or the Construction Manager no costs or compensation shall be allowed for time while Construction Equipment is inoperative, idle or on standby, for any reason. The Contractor shall not be entitled to an allowance or any other compensation for Construction Equipment or tools under this paragraph where such Construction Equipment or tools have

a replacement value of Five Hundred Dollars ($500) or less. Construction Equipment costs Claimed by the Contractor in connection with the performance of any Change to the Work shall not exceed rental rates established by Distributors or construction equipment rental agencies in the locality of the Site. Unless otherwise specifically approved in writing by the Architect or the Construction Manager, the allowable rate for the use of Construction Equipment in connection with Changes to the Work shall constitute full compensation to the Contractor for the cost of rental, fuel, power, oil, lubrication, supplies, necessary attachments, repairs or maintenance of any kind, depreciation, storage, insurance, labor (exclusive of labor costs of the Construction Equipment operator), and any or all other costs incurred by the Contractor incidental to the use of such Construction Equipment.

10.4.3. In determining the cost to the District and the extent of increase to the Contract Price resulting from a Change adding to the Work, the allowance for mark-ups on the costs of the Change for all overhead (including home office and field overhead for any period of delay caused by the Change in the Work) direct, indirect and consequential costs, general conditions costs and profit associated with the Change shall not exceed the percentage set forth in Exhibit “A," regardless of the number of Subcontractors, of any tier, performing any portion of any Change to the Work. The allowance for mark-ups includes all insurance costs, bonds, all field and home office staff and assistants, all on-site project administration, labor compliance, PSA, administration costs, site clean-up costs, security costs, warranty costs, as-built costs, scheduling costs, the cost of small tools and consumables, incidental job burdens and all general home office expenses. The risk of unanticipated price or cost fluctuations by a supplier of material or labor needed by a contractor is assumed by the Contractor. Any request for material cost adjustment relief caused by force majeure, as defined at Article 16.5 of the General Conditions, are at District’s sole discretion.

10.4.4. The foregoing notwithstanding, in the event that the Means Construction Cost Data, or a mutually agreed to estimating manual in the event that Means Construction Cost Data shall cease publication, is utilized to determine the costs of only materials contained in a Change and the cost computation therein includes an allowance for overhead, general conditions costs and/or profit, the Contractor and any Subcontractor, of any tier, performing any portion of such Change, shall not be entitled to an allowance for overhead general conditions costs and/or profit beyond that reflected for such item of Change in the Means Construction Cost Data or other mutually agreed upon estimating manual.

10.4.5. In the event of a Change to the Work resulting in a reduction of the Contract Price, the District shall pay no profit or general conditions costs to the Contractor for the reduced or deleted Work. Costs for overhead related expenses related to the reduction of the Contract Price shall be addressed on a per-change basis. In such event, the adjustment to the Contract Price shall be the actual cost reduction realized by the reduced or deleted Work, plus profit and/or General Condition’s costs. The profit and/or General Conditions costs that are added to the cost reduction shall not exceed the percentage set forth in Exhibit “A” for mark-ups on the cost of a Change adding to the scope of the Work.

10.4.6. In the event that Contractor shall be directed to perform any Changes to the Work pursuant to Article 10.1 or 10.2, or should the Contractor encounter conditions, which the Contractor, pursuant to Article 10.6, believes would obligate the District to adjust the Contract Price and/or the Contract Time; Contractor shall maintain detailed records on a daily basis. Such records shall include without limitation hourly records for labor and Construction Equipment and itemized records of materials and equipment used that day in connection with the performance of any Change to the Work. In the event that the Contractor performs more than one Change to the Work in a calendar day, Contractor shall maintain separate records for each such Change.

10.4.7. Contractor shall maintain detailed records on a time and material basis of Work required by Field Work Orders. Project Inspector review and signature is required for each daily time and material document.

10.4.8. In the event that any Subcontractor, of any tier, provides or performs any portion of any Change to the Work, Contractor shall require that each such Subcontractor maintain records in accordance with the requirements set forth herein. Each daily record maintained hereunder shall be signed by Contractor or Contractor's authorized representative; such signature shall be deemed Contractor's representation and warranty that all information contained therein is true, accurate, and complete and relate only to the Change referenced therein. All records maintained by a Subcontractor, of any tier, relating to the costs of a Change to the Work shall be signed by such Subcontractor's authorized representative.

10.4.9. All records maintained hereunder shall be subject to on-site inspection, review and/or reproduction by the Architect, Construction Manager, or the Project Inspector upon request. If the Contractor fails or refuses, for any reason, to maintain or make available for inspection, review and/or reproduction such records and the adjustment to the Contract Price on account of any Change to the Work is determined by the District, the District's reasonable good faith determination of the extent of adjustment to the Contract Price on account of such Change shall be final, conclusive, dispositive, and binding upon Contractor.

10.4.10. In the event of any Change(s) to the Work pursuant to this Article 10, the Contract Time shall be extended or reduced by Change Order pursuant to Article 6.4. In the event that any Change shall require an extension of the Contract Time, the Contractor shall not be subject to Liquidated Damages for such period of time. In the event that completion of the Work is delayed by causes for which the District is responsible, the Contractor shall be entitled to an adjustment pursuant to this Article 10.4 in the District’s sole discretion.

10.4.11. Addition or deletion of an Alternate Bid Item(s) shall be in compliance with the procedures indicated in the Information to Bidders.

10.5. CHANGE ORDERS

10.5.1. If the District approves of a Change, a written Change Order by the District and prepared by the Construction Manager shall be forwarded to the Contractor describing the Change and setting forth the adjustment to the Contract Time and the Contract Price, if any, on account of such Change. All Change Orders shall be in full payment and final settlement of all Claims for direct, indirect and consequential costs, including without limitation, costs of delays or impacts related to, or arising out of, items covered and affected by the Change Order, including any and all overhead costs (both field and office) during any period of delay caused by the Change, as well as any adjustments to the Contract Time.

10.5.2. Any Claim or item relating to any Change incorporated into a Change Order not presented by the Contractor for inclusion in the Change Order shall be deemed waived. The Contractor waives and releases any and all claims, rights or interest, including but not limited to, those of cost, profit, acceleration, delay costs, interference, impact, disruption, loss of efficiency, ripple, or other extraordinary or consequential causes arising directly or indirectly out of the Work described in the Change Order except as specifically included within. The Contractor shall execute the Change Order prepared pursuant to the foregoing; once the Change Order has been prepared and forwarded to the Contractor for execution, without the prior approval of the District which may be granted or withheld in the sole and exclusive discretion of the District, the Contractor shall not modify or amend the form or content of such Change Order, or any portion thereof.

10.5.3. The Contractor's attempted or purported modification or amendment of any such Change Order, without the prior approval of the District, shall not be binding upon the District; any such unapproved modification or amendment to such Change Order shall be null, void and

unenforceable. Unless otherwise expressly provided for in the Contract Documents or in the Change Order, any Change Order issued hereunder shall be binding upon the District only upon action of the District's Board of Education approving and ratifying such Change Order.

10.5.4. In the event of any amendment or modification made by the Contractor to a Change Order for which there is no prior approval by the District, in accordance with the provisions of this Article 10.5, unless otherwise expressly stated in its approval and ratification of such Change Order, any action of the Board of Education to approve and ratify such Change Order shall be deemed to be limited to the Change Order as written by the Architect and prepared by the Construction Manager; approval and ratification of such Change Order shall not be deemed the District's approval and ratification of any unapproved amendment or modification by the Contractor to such Change Order.

10.6. DISPUTED CHANGES

10.6.1. Regardless of any dispute or disagreement between the Contractor and the District or the Architect regarding the characterization of any item as a Change to the Work or as to the appropriate adjustment of the Contract Price or the Contract Time on account thereof, the Contractor shall promptly commence and proceed diligently with the Change upon receipt of written authorization from District, in which case the dispute shall be subject to resolution in accordance with the claims procedures set forth in the Contract Documents.

10.6.2. In no event shall Contractor be entitled to stop the Work, or refuse to perform any Work required due to Changes in the Work, based upon a dispute between Contractor and the District regarding the amount to be paid to Contractor for any Change in the Work or the Adjustment of Time to be provided to account for such change.

10.7. EMERGENCIES

10.7.1. In an emergency affecting the safety of life, Work, or property, the Contractor, without special instruction or prior authorization from the District or the Architect, is permitted to act at its discretion to prevent such threatened loss or injury. Any compensation Claimed by the Contractor on account of such emergency Work shall be submitted and determined in accordance with this Article 10.

10.8. MINOR CHANGES IN THE WORK

10.8.1. The Architect may order minor Changes in the Work not involving an adjustment in the Contract Price or the Contract Time and not inconsistent with the intent of the Contract Documents. Such Changes shall be effected by written order via an Architect’s Supplemental Instructions (ASI) and shall be binding on the District and the Contractor. The Contractor shall carry out such orders promptly.

10.9. UNAUTHORIZED CHANGES

10.9.1. Any Work beyond the lines and grades shown on the Contract Documents, or any extra Work performed or provided by the Contractor without notice to the Architect and the Construction Manager in the manner and within the time set forth in Article 10.2 shall be considered unauthorized and at the sole expense of the Contractor. Work so done shall not be measured or paid for, no extension to the Contract Time shall be granted on account thereof and any such Work may be ordered removed at the Contractor's sole cost and expense.

10.10. PRESERVATION OF RECORDS

10.10.1. The District shall have the right to examine and audit all daily job reports of Contractor’s Project Manager(s), Project Superintendent(s) and/or Project foreperson(s), all books, estimates, records, contracts, documents, bid documents, bid cost data, subcontract job cost reports, and other data of the Contractor, any Subcontractor, and/or supplier,

including computations and Projections related to bidding, negotiating, pricing, or performing the Work or Contract modification, in order to evaluate the accuracy, completeness and currency of the cost, manpower, coordination, supervision or pricing data at no additional cost to the District. These documents are in addition to any Bid Documents held in escrow by the District. The Contractor shall make available at its office at all reasonable times the materials described in this paragraph for the examination, audit or reproduction until three (3) years after final payment under this Contract. Notwithstanding the provisions above, Contractor shall provide any records requested by any governmental agency, available, after the time set forth above.

ARTICLE 11

11. SEPARATE CONTRACTS

11.1. DISTRICT'S RIGHT TO AWARD SEPARATE CONTRACTS

11.1.1. The District reserves the right to perform construction or operations related to the Project with the District's own forces or to award separate contracts in connection with other portions of the Project or other construction or operations at or about the Site. If the Contractor Claims that delay or additional cost is involved because of such action by the District, the Contractor shall request an adjustment to the Contract Price or the Contract Time in accordance with the Contract Documents. Failure of the Contractor to request such an adjustment of the Contract Time or the Contract Price in strict conformity with the provisions of the Contract Documents applicable thereto shall be deemed a waiver of the same.

11.2. DISTRICT'S COORDINATION OF SEPARATE CONTRACTORS

11.2.1. The District shall provide for coordination of the activities of the District's own forces and of each separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate Contractors and the District in reviewing their respective Construction Schedules when directed to do so. The Contractor shall make any revisions to the Accepted Construction Schedule for the Work hereunder deemed necessary after a joint review and mutual Agreement. The Construction Schedules shall then constitute the Construction Schedules to be used by the Contractor, separate Contractors and the District until subsequently revised.

11.3. MUTUAL RESPONSIBILITY

11.3.1. The Contractor shall afford the District and separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities at the Site of the Work and shall connect and coordinate the Contractor's Work, construction and operations with theirs as required by the Contract Documents.

11.4. DISCREPANCIES OR DEFECTS

11.4.1. If part of the Contractor's Work depends for proper execution or results upon construction or operations by the District or a separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Architect and the District's Project Inspector any apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor to so report shall constitute an acknowledgment that the District's or separate Contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then discoverable by the Contractor's reasonable diligence.

ARTICLE 12

12. PROTECTION OF PERSONS AND PROPERTY

12.1. GENERAL SAFETY

12.1.1. The Contractor shall be solely responsible for initiating, maintaining, and supervising all safety programs required by applicable law, ordinance, regulation or governmental orders in connection with the performance of the Contract, or otherwise required by the type or nature of the Work. The Contractor's safety program shall include all actions and programs necessary for compliance with California or federal statutorily mandated Workplace safety programs, including without limitation, compliance with the California Drug Free Workplace Act of 1990 (California Government Code §§8350, *et seq.*) and the Cal/OSHA Construction Safety Standards. Without limiting or relieving the Contractor of its obligations hereunder, the Contractor shall require that its Subcontractors similarly initiate and maintain all appropriate or required safety programs.

12.1.2. The Contractor shall be solely responsible for initiating and maintaining reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to: (i) employees on the Work and other persons who may be affected thereby; (ii) the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-Subcontractors; and (iii) other property or items at the site of the Work, or adjacent thereto, such as classroom equipment, supplies, furnishings, trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction. The Contractor shall, at all times, maintain emergency first aid treatment materials at the Site that conform to applicable law, rule or regulation.

12.1.3. The Contractor shall have a written Safety Program acceptable to the District, which is formally communicated to, and fully understood by, all levels of the Contractor organization. The program must promote all of the following:

- Complete Management support of the program.
- The immediate identification and elimination of unsafe Work practices and conditions in the Work place.
- A heightened awareness of individual responsibility and increased supervisory attention to detail.
- Building a team safety mentality where each Worker contributes to the effort and each supervisor is fully aware of the capabilities and limitations of their team.
- A culture in which everyone accepts responsibility and accountability for their own, and each co-Worker’s safety and health.

12.1.4. The Contractor shall erect and maintain, as required by existing conditions and conditions resulting from performance of the Contract, reasonable safeguards for safety and protection of property and persons, including, without limitation, posting danger signs and other warnings against hazards, promulgating safety regulations and notifying District and users of adjacent sites and utilities. Each separate physical area where Work activities occur shall be enclosed or barricaded with a 9 ga. chain link fence of at least 8'-0" height with gates and knurled fabric at the top and bottom of the fencing with flat feet, or imbedded posts in asphalt or concrete. Barricades may need to be moved from time to time to accommodate Site needs; such moves shall be completed without adjustment of the Contract Time or the Contract Price. Solid board fencing shall be used in lieu of chain-link if shown on the plans. The Project Inspector shall determine final locations and types of fencing. If the Project Inspector requires fencing types and/or quantities not indicated in the Contract Documents, an appropriate change document will be negotiated. All Work shall be arranged as to minimize inconvenience or disruption of school activities and to minimize danger to students, faculty, staff and others at or about

the Site. Work, which may interfere with school activities, shall be done before or after school hours. All such enclosures or barricades shall provide adequate exiting from occupied structures at all times.

12.1.5. The Contractor shall give or post all notices required by applicable law and comply with applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss. No more than twenty-four (24) hours following: (i) any accident occurring at the Site involving any person performing Work and/or construction equipment; or (ii) any injury to any person at or about the Site, the Contractor shall submit a written Accident/Injury Report to the Construction Manager. The form of the Accident/Injury Report shall be as required by the District. An Accident/Injury Report shall be submitted for all accidents and injuries regardless of severity or whether an accident or injury constitutes a loss time accident. The timely submission of an Accident/ Injury Report with all required information accurately and completely provided is a material obligation of the Contractor.

12.1.6. The Contractor shall designate a responsible member of the Contractor's organization at the Site whose duty shall be the prevention of accidents and the implementation and maintenance of safety precautions and programs. The Contractor shall advise the Project Inspector and Construction Manager of the name of the designated safety coordinator in writing. The safety coordinator shall conduct safety meetings at least once a week with Contractor’s employees, Subcontractors, and any tiers thereof. In addition, the Contractor shall provide the Construction Manager with a copy of a safety plan and copies of safety plans from each of Contractor’s Subcontractors at the commencement of the Project.

12.1.7. In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss.

12.1.8. In the event that the District identifies a loss of property, the Contractor shall assist the District in the investigation of said loss and shall fill out the District’s Property Damage and Loss Report as requested.

12.2. RESPONSIBILITIES

12.2.1. Unless otherwise notified, the Contractor shall submit to the District a written Environmental Safety and Health (ES&H) Execution Plan, specific to the Work under this contract, for review and acceptance within thirty (30) calendar days after contract award and in any event prior to commencing Work at the Jobsite. This plan shall be amended when operations or conditions require and such amendments shall be submitted to the District for review and acceptance.

12.2.2. The Contractor shall flow all Project safety and health requirements to lower tier suppliers, Subcontractors, and visitors and acknowledges it is responsible for the performance of its visitors and suppliers and Subcontractors of every tier.

12.2.3. The Contractor’s ES&H Execution Plan shall delineate the roles and responsibilities of Managers and supervisors and require that their actions clearly demonstrate an understanding of their roles and responsibilities in regard to the safety and environmental protection processes. The plan shall describe the system by which Managers and supervisors will be held accountable for ES&H implementation.

12.2.4. The Contractor’s ES&H Representative(s) and their staff shall have sufficient authority and control to ensure effectiveness of the ES&H process and the Contractor shall hold them accountable for facilitating its implementation.

12.2.5. The Contractor's Managers and supervisors shall be familiar with, and shall enforce ES&H rules, regulations, and laws, and shall document all actions taken to ensure compliance with Contractor’s ES&H Execution Plan.

12.2.6. The Contractor's Managers and supervisors shall take part in scheduled Work area audits, and shall implement and document required corrective actions.

12.2.7. The Contractor's Site Management shall attend and clearly communicate ES&H expectations at all employee ES&H Orientations.

12.2.8. Unless otherwise directed by the District, the Contractor's Site Management, Managers, and supervisors shall participate in any scheduled, documented ES&H assessments to be conducted by Contractor or the District.

12.2.9. The Contractor's Managers and supervisors shall attend, actively participate in, and consistently demonstrate strong leadership at weekly "Tailgate" Safety Meetings.

12.2.10. The Contractor's Managers and supervisors shall actively participate in documented pre-job planning activities.

12.2.11. The Contractor's ES&H Representative shall actively participate in, and/or provide any needed, Specialized ES&H training, such as confined space, fire watch, Work from elevated platforms, etc. and keep the appropriate documentation.

12.2.12. The Contractor shall inform all its Project personnel of potential hazardous conditions and/or near miss incidents and shall document such communications.

12.2.13. Unless otherwise directed by the District, and before beginning any Work, the Contractor shall require all lower tier suppliers and Subcontractors to submit a written ES&H Plan specific to their scope of Work. The Contractor shall review and accept all such plans for compliance with District, and regulatory requirements.

12.2.14. The Contractor shall participate in any Work area audits performed by the District, and root cause investigations.

12.2.15. The Contractor's foremen shall complete, file on-site and make available to the District, weekly Tailgate Safety Meeting minutes.

12.2.16. The Contractor shall stop Work if unknown or unanticipated hazards or Work conditions evolve which place employees at risk or necessitate greater precautions than currently exist or are required in the Project ES&H Execution Plan. The Contractor shall immediately report all such incidents to the District.

12.3. ORIENTATION AND TRAINING

12.3.1. Contractor Management shall provide the support and resources necessary to ensure adequate and effective training is provided and documented. Supervisors shall ensure adequate time is provided for such training.

12.3.2. Before Contractor employees are placed on any Worksite, training shall be provided which satisfies regulatory requirements. A verification process (i.e., comprehension testing) may be required at the District's discretion.

12.3.3. The Contractor shall update training materials to reflect changes in applicable local state and federal laws, regulations or Project requirements.

12.3.4. The Contractor shall provide and require employees to attend sufficient specialized training applicable to their Work (e.g., confined space, Work at height, fire watch, etc).

12.3.5. All Contractor employees shall attend their company specific New Employee Orientation. Documentation of all training and comprehension testing shall be kept on file on-site and made available to the District.

12.3.6. The Contractor shall ensure that all Project visitors/vendors/delivery personnel are escorted at all times by an authorized and responsible Contractor employee who is

knowledgeable of all ES&H practices and procedures and instructs and supervises the visitor/vendor/delivery person accordingly.

12.4. MEDICAL SERVICES & MEDICAL TREATMENT

12.4.1. Contractor site personnel who provide first aid or other medical care shall be properly trained and qualified with a copy of their current certifications/licenses maintained on site.

12.4.2. The Contractor shall ensure its employees understand and comply with its medical management procedures.

12.4.3. The Contractor's ES&H Representative shall review all return-to-Work orders.

12.4.4. The Contractor emergency equipment shall be inspected daily to ensure effective operation. All such inspections shall be documented, kept on file on-site, and made available to the District.

12.4.5. Where applicable, the Contractor shall maintain clean and orderly first-aid facilities and locations where first aid treatment is provided.

12.4.6. The Contractor shall ensure injured employees are promptly referred to qualified industrial/occupational medical providers if offsite treatment is needed. The injured employee's employer shall provide transportation for such offsite medical treatment.

12.4.7. The Contractor employees injured on the Project and returned for modified duty shall have this status documented by the treating medical practitioner and reported to the District's Site Safety Supervisor or Site Manager.

12.5. MEDICAL REPORTING AND RECORDS

12.5.1. Contractor medical records shall be maintained up-to-date. Any recordable injuries are to be promptly reported to the District's Site Safety Supervisor or Site Manager. All other matters pertaining to medical records and reports shall be kept strictly confidential. The Contractor shall maintain and file its own Workers' compensation or insurance Claims forms as necessary.

12.5.2. The Contractor shall develop a method for tracking the status of injuries and shall be able to produce and provide to the District a Safety Performance Report with that information.

12.6. JOB HAZARD ANALYSIS

12.6.1. Unless otherwise directed by the District, the Contractor shall perform a Job Hazard Analysis (JHA) common to the construction industry for any Work of a hazardous nature. The JHA is generally in table form and simply describes tasks to be performed, potential hazards and mitigating measures. The JHA is used to identify, analyze, understand and mitigate potential hazards associated with repetitive or potentially hazardous Work operations.

12.6.2. Supervisors shall ensure that their employees understand the purpose of, and participate in the JHA and Tailgate meetings and shall use them as primary planning and lessons learned tools.

12.7. PERSONAL PROTECTIVE EQUIPMENT

12.7.1. Contractor shall require employees to wear eye protection at all times while working in the field. Safety glasses shall be equipped with hard side shields and should be manufactured to ANSI standard Z87.1. This applies to prescription eyewear as well. Contractor shall monitor the eye protection worn by its employees and take immediate corrective actions when non-compliance is noted. Employees performing grinding and buffing operations shall wear face shields and safety glasses or mono goggles.

12.7.2. Hardhats shall be worn with the brim forward at all times when in the field and shall be worn at all times when in direct proximity to construction operations.

12.7.3. Welders shall wear hardhat/welding hood combinations and safety glasses while welding. Welding screens shall be used to protect other employees from the hazards associated with direct welding arc rays.

12.7.4. Contractor employees with field responsibilities shall wear sturdy Work shoes or boots acceptable to the District.

12.7.5. Contractor employees shall receive information regarding personal protective equipment requirements during Contractor's New Employee Orientation.

12.7.6. Contractor employees who handle chemicals or harmful substances shall be trained in accordance with local, state and federal regulations, and shall wear appropriate personal protective equipment per the chemical Manufacturer's recommendations.

12.7.7. Contractor shall require all employees to wear long pants and a suitable shirt, with no less than 4" or 10 cm length sleeves, as the minimum Work clothing to be worn on the Project.

12.7.8. Contractor shall provide and require the use of appropriate hearing protection whenever a hearing hazard exists in accordance with local, state and federal regulations and or at the direction of the District.

12.8. RESPIRATORY PROTECTION

12.8.1. Contractor shall provide and require the use of appropriate respiratory protective equipment in accordance with 29 CFR 1910.134 and acceptable to the District, whenever a respiratory hazard exists.

12.8.2. A competent person knowledgeable of inhalation hazards and respiratory protective equipment shall be designated by the Contractor to conduct a step-by-step evaluation to insure that only respiratory protection appropriate for the conditions of exposure is selected and utilized.

12.8.3. Where respiratory protection is required or expected to be required, the Contractor shall have a written Respiratory Protection Program, which describes the selection, use, care and sanitation of respiratory equipment. This procedure shall include the name of the procedure administrator for the site, cartridge change out data, method to be used for sanitizing respirators, medical qualifications of those required to wear respirators, methods for fit testing and employee training.

12.8.4. Contractor supervisors shall notify the District's Site Safety Representative or Construction Manager before starting any Work that requires employees wear respiratory protection.

12.9. HEARING CONSERVATION PROGRAM

12.9.1. Contractor shall have a written Hearing Conservation Procedure. The procedure shall include information on noise surveys, engineering controls, the procurement and use of low noise equipment when possible, posting of signs and warnings for areas found to require hearing protection, and training on hearing protection devices used on the Project.

12.10. HAZARDOUS MATERIALS AND HAZARD COMMUNICATION

12.10.1. In the event that the Contractor, any Subcontractor or anyone employed directly or indirectly by them shall use, at the Site, or incorporate into the Work, any material or substance deemed to be hazardous or toxic under any law, rule, ordinance, regulation

or interpretation thereof (collectively "Hazardous Materials"), the Contractor shall comply with all laws, rules, ordinances or regulations applicable thereto and shall exercise all necessary safety precautions relating to the use, storage or disposal thereof.

12.10.2. Contractor shall develop a written Hazard Communication Plan and, as required, implementing procedures describing the method it will use to communicate the hazards associated with chemical handling, use, storage and disposal. The plan shall be consistent with the project SWPPP and submitted and acceptable to the District prior to start of Work.

12.10.3. Contractor shall make available to the District, Material Safety Data Sheets (MSDS) for each chemical substance purchased and/or carried onto a Worksite. Materials that arrive without an MSDS shall be quarantined and not released until the MSDS is received on site and the material is approved for use by the District. The Contractor shall maintain a list of hazardous materials on site and the quantities of each.

12.10.4. Contractor shall ensure that employees are trained (in accordance with local, state and federal regulations) in the recognition, proper handling and use of hazardous substances. Contractor's New Employee Orientation shall include introductory training on the topic of hazardous substances however; specific hazardous material training shall be provided by the Contractor for its Project employees whose Work involves the use of any hazardous material under its control. Such training shall be properly documented, filed and made available to the District. Contractor personnel shall be prohibited from participating in, or in the on-site supervision of, hazardous, toxic or radiological materials activities unless they have been certified as having successfully completed the training to a level required by their position, function and responsibilities.

12.10.5. Contractor shall properly label all hazardous substances and/or chemicals that have been transferred from the Manufacturer's container into another container. Inspections shall be made and documented by the Contractor to ensure that adequate labeling occurs.

12.10.6. Transportation, use, storage, and disposal of hazardous substances shall be under the supervision of a qualified person. Transportation, use and storage of hazardous substances shall be planned and controlled to prevent contamination of people, animals, food, water, equipment, materials and environment in accordance with local, state and federal regulations.

12.10.7. Disposal of surplus or excess materials and containers shall occur in a manner that will not contaminate or pollute any water supply, ground water, or streams, and will comply with the project SWPPP, federal, state and local regulations and guidelines.

12.10.8. In the event the Contractor encounters Hazardous Materials at the Site which have not been rendered harmless or for which there is no provision in the Contract Documents for containment, removal, abatement or handling of such Hazardous Materials, the Contractor shall immediately stop the Work in the affected area, but shall diligently proceed with the Work in all other unaffected areas. Upon encountering such Hazardous Materials, the Contractor shall immediately notify the Project Inspector and the Architect, in writing, of such condition. The Contractor shall proceed with the Work in such affected area only after such Hazardous Materials have been rendered harmless, contained, removed or abated. In the event such Hazardous Materials are encountered, the Contractor shall be entitled to an adjustment of the Contract Time to the extent that the Work is stopped and Substantial Completion of the Work is affected thereby. The District reserves the right to request the Contractor to de-mobilize and re-mobilize in the event unexpected Hazardous materials are encountered and alternate Work areas are not available. Upon the District's remediation of the Hazardous materials, the District will contact the Contractor and a re-mobilization date agreed to. If the District selects this scenario the Contractor shall be reimbursed only for the costs associated directly with

de-mobilization and re-mobilization and the Contract time extended accordingly. In no event shall there be an adjustment to the Contract Price solely on account of the Contractor encountering such Hazardous Materials.

12.10.9. Notwithstanding any provision of the Drawings or the Specifications to the contrary, it is the intent of the District that Asbestos Construction Building Materials ("ACBMs") not be used or incorporated into any portion of the Work. In the event that any portion of the Work depicted in the Drawings or the Specifications shall require materials or products which the Contractor knows, or should have known with reasonably diligent investigation, to contain ACBMs, Contractor shall promptly notify the Architect and the Project Inspector of the same so that an appropriate alternative can be selected in a timely manner so as not to delay the progress of the Work. Contractor warrants to the District that there are no materials or products used or incorporated into the Work, which contain ACBMs. Whether before or after completion of the Work, if it is discovered that any product or material forming a part of the Work or incorporated into the Work contains ACBMs, the Contractor shall at its sole cost and expense remove such product or material in accordance with any laws, rules, procedures and regulations applicable to the handling, removal and disposal of ACBMs and to replace such product or material with non-ACBM products or materials and to return the affected portion(s) of the Work to the finish condition depicted in the Drawings and Specifications relating to such portion(s) of the Work. Contractor's obligations under the preceding sentence shall survive the termination of the Contract, the warranty period provided under the Contract Documents, the Contractor's completion of the Work or the District's acceptance of the Work. In the event that the Contractor shall fail or refuse, for any reason, to commence the removal and replacement of any material or product containing ACBMs forming a part of, or incorporated into the Work, within ten (10) days of the date of the District's written notice to the Contractor of the existence of ACBM materials or products in the Work, the District may thereafter proceed to cause the removal and replacement of such materials or products in any manner which the District determines to be reasonably necessary and appropriate; all costs, expenses and fees, including without limitation fees and costs of consultants and attorneys, incurred by the District in connection with such removal and replacement shall be the responsibility of the Contractor and the Contractor's Performance Bond Surety.

12.10.10. Contractor, Subcontractor, or any tiers thereof, are prohibited from using any material or substance containing lead.

12.10.11. Contractor shall be solely and exclusively responsible for the disposal of any Hazardous Materials on or about the Contractor's Site. Contractor's obligations hereunder shall include without limitation, the transportation and disposal of any Hazardous Materials in strict conformity with any and all applicable laws, regulations, orders, procedures or ordinances.

12.11. TOOLS AND EQUIPMENT

12.11.1. Contractor shall provide and ensure that all tools are used in accordance with the Manufacturers' recommendations, have required guards in place, and are maintained in good Working order.

12.11.2. Contractor will ensure that excess flow valves are installed on air manifolds and compressors supplying air to >1/2 inch (or equivalent metric) ID hoses.

12.11.3. Contractor will not use job-made tools of any kind on the Project. All tools and equipment shall be used and maintained in accordance with Manufacturer recommendations. If exceptions to this rule are needed, they must be brought to the District's attention for review and acceptance prior to use.

12.11.4. Contractor shall only permit properly trained and certified employees to use powder-actuated tools. Documentation of the employees training shall be made available to the District and each employee using such tools shall carry qualification cards. Control shall be kept of the powder-actuated charges. Each cartridge shall be accounted for and properly stored. No live or spent cartridges shall be left on the ground or disposed of in Project trashcans or other unauthorized on or off-site container.

12.11.5. Contractor shall ensure that Work is performed only in areas and at times where adequate illumination exists. Contractor shall provide all lighting required to safely perform Work. Artificial lighting equipment shall be manufactured to a recognized standard acceptable to the District.

12.12. PEST CONTROL

12.12.1. The Contractor shall be solely responsible for initiating, maintaining and supervising all requirements of the State of California Healthy Schools Act of 2000, (Article 4, commencing with §17608, to Chapter 5 of Part 10.5 of the Education Code) and the Food and Agricultural Code relating to school safety (Article 17, commencing with §13180, to Chapter 2 of Division 7 of the Food and Agricultural Code), including without limitation:

12.12.2. The Contractor shall obtain from the District Integrated Pest Management Office the approved Pesticide list. The Contractor must use only the Pesticides on the list. If the Contractor wants to request a Pesticide that is not on the list, the Contractor is required to submit to the District the MSDS and the Label of Pesticide for consideration.

12.12.3. The Contractor shall obtain from the District Integrated Pest Management Office a list of those individuals who have requested notification of pesticide application. The Contractor shall notify 72 hours prior to a pesticide application, all staff and parents or guardians of students enrolled at a school, and those who have requested notification, of any pending pesticide application. This notice shall include the product name, the active ingredient or ingredients in the product, and the intended area and date of application.

12.12.4. The Contractor shall post each area of the site where pesticides will be applied with a warning sign. The warning sign shall prominently display the term “Warning - Pesticide Treated Area” and shall include the product name, Manufacturer’s name, the United States Environmental Protection Agency’s product registration number, intended date of application, areas of application, and reason for the pesticide application. The warning sign shall be visible to all persons entering the treated area and shall be posted twenty-four (24) hours prior to the application and remain posted until seventy-two (72) hours after the application. The Contractor shall be responsible for removing the posted signs in a timely manner after the seventy-two (72) hour posting period.

12.12.5. The Contractor shall prepare a report to the Department of Pesticide Regulation of pesticide applications for each site at which a pesticide application occurred. The report shall include the name and address of the site, date and location of application, pesticide product name, and the quantity of pesticide used.

12.12.6. The Contractor shall be solely responsible for complying with the requirements of the District Integrated Pest Management Policy G-3200. This policy is available online at https://sandiegounified.org/departments/integrated_pest_management.

12.12.7. The Contractor shall ensure that proposed pest control operators are educated and trained in the use of current pesticides approved for use by the District Integrated Pest Management Office, and that applicators follow label directions, precautions, and application regulations.

12.12.8. The Contractor shall provide the District Integrated Pest Management Office with copies of all reports the Contractor is required to prepare and submit to the Department of Pesticide Regulation.

12.12.9. The Contractor shall obtain, ten (10) Working days prior to any pesticide application at a site, written approval from the District Integrated Pest Management Office, that the material Specifications proposed for application are for District approved pesticides, and that the area of intended use of the proposed pesticide is consistent with the pesticide label Specifications. The Contractor shall ensure pesticide application is included in the SWPPP or initiate an amendment to the SWPPP to incorporate the application of pesticides to ensure stormwater best management practices are in place to prevent contamination of stormwater or non-stormwater runoff.

12.12.10. The Contractor shall provide the District Integrated Pest Management Office certification that any company engaged in pest control Work possess a valid Pest Control Business License and that landscape maintenance Subcontractors who perform pest control Work possess a valid Qualified Applicator's Certificate in the category of Landscape Maintenance (Category B). For Work of a structural nature, the pest control operator must possess either a valid Qualified Applicator's Certificate in the category of Residential, Industrial and Institutional (Category A), or a structural Pest Control License Branch 2 (Field Representative), or Branch 3 (Wood Destroying Organisms).

12.13. REPORTING/INVESTIGATING INCIDENTS AND ACCIDENTS

12.13.1. The Contractor's New Employee Orientation shall include information about employee responsibility for reporting all injuries, illnesses, property damage and near miss incidents. Contractor shall promptly report all such occurrences to the District and unless directed otherwise, take the lead in the investigation, documentation and initiation of corrective action. Contractor shall keep records of all incident/accident investigations in a format acceptable to the District and shall provide the District with a copy within 24 hours of the occurrence.

12.13.2. Contractor shall develop a written notification and investigation procedure acceptable to the District. The Contractor's Safety Representative shall oversee the investigation of all incident and accident cases and reports. Information derived from such reports shall be issued as "lessons learned" to all employees on the Project.

12.14. ASSESSMENTS AND INSPECTIONS

12.14.1. The Contractor shall establish a documented assessment process acceptable to the District which measures compliance with the Project ES&H Execution Plan and Contractor's own ES&H processes.

12.14.2. The District may perform periodic safety assessments of the Project. The Contractor shall provide the District with timely, complete and open access to its safety process, files, records, etc., and shall participate in this assessment as required.

12.14.3. The Contractor will ensure its personnel are aware of and comply with the procedures to be taken in the event of an inspection by any regulatory agency.

12.14.4. The Contractor shall immediately notify the District Construction Manager and Safety Supervisor when a regulatory agency inspector of any type requests entry onto the Jobsite.

12.14.5. Following any regulatory agency inspection, the Contractor shall submit a written report to the District Construction Manager or Safety Supervisor which details all aspects of the inspection.

12.15. EMERGENCIES AND EVACUATIONS

12.15.1. The Contractor shall develop an Emergency Response Plan and shall provide all emergency equipment and supplies needed to support the Work and each Work location. The plan will address emergency evacuation, medical emergencies, natural disasters, etc. The plan shall be submitted and acceptable to the District. The plan shall include

emergency alarm systems, assembly and evacuation points, an employee head count process, and provisions for employee training before entering the Jobsite. Periodic tests and drills shall be conducted as required.

12.15.2. The Contractor shall ensure that Emergency Response Plan requirements are clearly communicated to its Project personnel. Such communication and employee comprehension and participation shall be documented.

12.16. BLOOD BORNE PATHOGENS

12.16.1. Contractor employees who are designated as responsible for rendering first aid or medical assistance shall be included in their employer's blood-borne pathogen program in accordance with 29 CFR 1910.1030 and, shall be properly trained regarding their responsibilities, required control measures, and personal safety. Proper personal protective equipment shall be used when exposure hazards exist. Each Contractor employee whose job duties puts them at risk of exposure (i.e. medic, nurse, first aid person, etc.) shall be offered vaccinations and documentation of the vaccination or declination shall be maintained and made available to the District upon request.

12.16.2. Contractor shall provide all its employees with a general overview on the hazards associated with blood borne pathogens, possible means of exposure, and proper control methods.

12.17. AIR SURVEILLANCE PROGRAM

12.17.1. As required, the Contractor shall develop a written Air Surveillance Procedure. All operations, materials, and equipment shall be evaluated to determine the presence of hazardous environments or if hazardous or toxic agents could be released into the Work environment. All logs and records shall be maintained on-site for sampling, monitoring, and identifying the source of contaminants. These records shall be made available to the District. A competent person, whose resume and qualifications shall be submitted and determined acceptable by the District, shall conduct all evaluations, air monitoring and/or sampling.

12.17.2. The Contractor shall perform inspections to identify and mitigate Project and/or public risks and exposures to potential toxic, hazardous or explosive atmospheres.

12.17.3. The Contractor shall provide equipment adequate for the environmental sampling and monitoring of atmospheres and shall ensure that the equipment is calibrated per the Manufacturer recommendations.

12.18. HEAT STRESS PREVENTION

12.18.1. As required, Contractor shall have operating and emergency procedures for heat stress.

12.18.2. Contractor shall ensure that all field employees, especially front line supervisors, are trained on the warning signs/symptoms of early heat related disorders, and instructed on the clothing and Work methods best suited to avoid heat stress. Stay times or monitoring methods shall be developed to reduce the possibility of heat related disorders, if necessary.

12.18.3. Contractor shall provide an immediately accessible, adequate, and sanitary potable water supply during all periods of the day and have available electrolyte replacement drinks or tablets during seasons of the year when heat stress may occur.

12.19. HOUSEKEEPING, FIRE PREVENTION & PROTECTION

12.19.1. All eating and sanitary facilities shall be maintained in a clean and sanitary condition at all times. Contractor must provide the necessary resources to accomplish this, including

adequate washing facilities with soap and disposable towels and whatever labor is required to clean and maintain a high level of sanitation.

12.19.2. Unless specified elsewhere in the contract, Contractor shall provide clean, potable drinking water for its employees in a safe, hygienic manner at all Worksites. Single use cups shall be provided in a sanitary dispenser. These cups shall be replenished as needed during the day and trashcans provided for their disposal. "Community" or common use cups shall not be used.

12.19.3. Unless specified elsewhere in the contract, Contractor shall provide and maintain its own sanitary toilet facilities for its employees. The daily facilities cleaning, and maintenance, and method and location of waste disposal shall be to a high standard acceptable to the District.

12.19.4. Contractor shall provide all fire protection and prevention equipment necessary for its operations, including, but not limited to fire hoses, nozzles, extinguishers, etc. Contractor shall provide an adequate number of fire extinguishers of the correct size and type for its Work activities. Extinguishers shall be maintained per Manufacturer's recommendations, inspected monthly, and tested annually. Contractor shall train employees in the proper use of fire extinguishers.

12.19.5. Contractor shall monitor its Work and office areas to ensure that all doors, stairwells, aisles and means of egress are kept clear and unobstructed at all times.

12.19.6. Contractor shall ensure all exits are clearly marked and adequately lighted, and that all emergency lights remain functional.

12.19.7. Contractor shall ensure that the handling, storage, and use of flammable and combustible liquids is performed properly, that these liquids are dispensed in safety cans manufactured to a recognized standard acceptable to the District, and areas designated for these activities are maintained in an orderly fashion. All hazardous areas shall be posted with appropriate signs and access shall be controlled.

12.19.8. Where temporary welding enclosures are required, Contractor shall ensure that these enclosures are constructed with flame resistant materials (such as fire blanket).

12.19.9. Contractor shall instruct its employees in regards to the facility/Project smoking policy and monitor to ensure that posted "no-smoking" zones are observed.

12.19.10. Contractor office areas shall be monitored to reduce and control storage and loading of combustible materials. Material shall be well arranged, and aisles shall be maintained open and clear of obstructions. Stored material shall be kept away from heaters, lamps, hot pipes, equipment, and machinery and the use of extension cords minimized.

12.19.11. Contractor personnel whose Work tasks are in the vicinity of fire cabinets and equipment, fire hydrants, and fire lanes shall keep them clear and unobstructed.

12.19.12. Contractor shall maintain a minimum of 18 inches or 1/2 meter of free space around sprinkler heads when working in facilities having sprinkler systems.

12.19.13. Contractor shall ensure that combustible waste containers are emptied regularly; equipment, tables, and floors are free from oil or oily rags; and oily rag containers are kept covered and emptied regularly. Janitor/storage closets shall be maintained in an orderly condition and shall not be used to store quantities of hazardous or toxic chemicals. Electrical, mechanical, and MDF rooms shall be kept in order and free of combustible storage materials.

12.19.14. Contractor shall protect its employees against welding and cutting hazards. Contractor's ES&H Plan shall address fire concerns including fire watches where necessary, welding fumes, preservative coatings, respiratory protection, eye/head/body protection, etc.

Welding and cutting apparatus shall be inspected before each use. Cutting torch assemblies shall be equipped with pressure relief valves, back flow prevention devices, and flash arrestors.

12.19.15. Contractor shall ensure that employees are trained in and comply with the requirements for proper fire prevention and equipment use when welding or cutting.

12.19.16. Contractor shall effectively ground the frame of Arc-welding and cutting machines that incorporate a power outlet.

12.19.17. Contractor shall develop a written Cutting, Welding and Grinding Procedure for the maintenance and inspection of welding, grinding, or cutting equipment and ensure that the procedure is implemented and maintained.

12.19.18. Unless otherwise specified by the District, Contractor shall not permit open fires on the Jobsite.

12.20. FALL PREVENTION/PROTECTION

12.20.1. The Contractor ES&H Plan shall include a written Fall Prevention/Protection Procedure acceptable to the District, which makes maximum use of primary fall protection systems, such as scaffolds, aerial lifts, nets, personnel hoists, etc.

12.20.2. Contractor shall require the inspection of fall protection equipment prior to each use.

12.20.3. Contractor shall adopt a 100% fall protection policy that makes provision for secondary fall protection (full-body harness) for all employees who are working or traveling more than 6 feet or 2 meters above ground.

12.20.4. Contractor shall review its scope of Work to identify the methods to achieve 100% fall protection prior to commencement of such Work. Selection of personal fall protective equipment shall be based on the type of Work; the Work environment, the weight, size, and shape of the user; the type and position of anchorage; and the length of the lanyard. Where lifeline systems are used, anchor points shall be capable of supporting at least 5,000 pounds or 2275 kg. Lifelines shall be installed and maintained by qualified persons who are competent and possess the rigging knowledge necessary to ensure the integrity and safety factors necessary for lifeline system installation. Lanyards shall be secured to vertical lifelines by rope grabs only. Knots, painters-hitches, or loops are not acceptable. Horizontal lifelines shall have tie-off points at least waist high.

12.20.5. Contractors using retractable lifeline devices shall secure them by means acceptable to the District and in all cases by a means capable of supporting at least 5000 pounds or 2275 kg.

12.20.6. Contractor shall require employees to wear an approved safety harness/lanyard system if they Work from ladders where the fall exposure is more than 6 feet or 2 meters, and they are unable to maintain 3-point contact.

12.21. SCAFFOLDING

12.21.1. Contractor shall have a written Scaffolding Procedure and use scaffold material acceptable to the District.

12.21.2. Scaffold platforms shall be fully planked or decked out, capable of supporting 4 times the maximum intended load to be imposed upon them, and all sides protected by standard guardrail systems. The top rail shall be approximately 42 inches or 110 cm from the platform. A mid-rail and 4 inch or 10 cm toe-board shall be installed.

12.21.3. Contractor erected scaffolds where employees are Working/passing below shall have planking or netting installed from the platform to the top rail.

12.21.4. Contractor shall develop a scaffold tagging system which identifies the status of each scaffold. Suggested system uses a red tag to indicate scaffolds under construction or demolition, yellow to indicate scaffolds that are complete but have hazards associated with them, and green to indicate scaffolds erected to a complete, safe standard.

12.21.5. Contractor shall erect or modify scaffolds under the direction of a trained, competent scaffold builder whose qualifications must be made available at the District's request. The competent person shall sign all scaffold tags and perform and document inspections before initial use, including initial use following alteration, and daily thereafter.

12.21.6. Contractor shall provide safe access/egress to all levels of scaffolds. Scaffold platform accesses shall be protected to prevent the possibility of accidental fall through utilizing secured access gates.

12.21.7. Special scaffolds (hanging scaffolds, 2 point suspension scaffolds, etc.) shall be designed by a competent engineer and erected with all necessary personnel safety equipment installed, such as rope grabs and lifelines.

12.21.8. Contractor must have a qualified, professional engineer design all scaffolds over 125 feet or 38 meters in height.

12.21.9. All scaffolds erected by the Contractor shall have casters, jackscrews, or base plates installed. Mudsills shall be used where required. Scaffolds shall be level and plumb, capable of supporting at least four times the anticipated load, and secured to a solid structure whenever possible.

12.21.10. Contractor shall provide scaffold user training to all employees, shall verify employee comprehension by testing and shall maintain training and testing records which will be made available to the District upon request.

12.22. BARRICADES

12.22.1. Contractor is responsible for properly erecting and maintaining barricades and barriers in such a manner that they provide adequate protection and do not impede the Work of other Contractors unless the District approves such placement. All floor and roof openings into which persons can accidentally walk or fall through shall be guarded by a physical barrier or covered.

12.22.2. Contractor shall barricade all floor openings, or install properly labeled and substantial covers (3/4 inch, or equivalent metric, exterior grade plywood able to withstand at least twice the anticipated load). All floor-opening covers shall be stenciled or painted with this statement: "OPEN HOLE - DANGER, DO NOT REMOVE."

12.22.3. Barricades and barriers erected by the Contractor shall have appropriate signs and tags indicating the nature of the hazard and the responsible supervisor. Barricades left after dark on or in close proximity to roadways shall be properly equipped with flashing amber lights.

12.22.4. Contractor shall provide and use appropriate barrier devices to identify the nature of the job hazard involved (i.e., yellow and black for "CAUTION" or red and black for "DANGER"). Barrier devices, including barrier tape, shall not be used as a substitute for a barricade as they do not offer adequate protection from falls. Barrier devices shall be used only in those applications where temporary identification of a hazard is needed; but not as a primary means of protecting employees from exposure.

12.22.5. Contractor shall ensure that employees understand and comply with barricade and barrier procedures (i.e. prohibited entry into red barrier taped areas).

12.23. FLOOR & WALL OPENINGS

12.23.1. Contractor shall review the fall hazards involved in its scope of Work and construct standard handrail systems where required. Handrails shall be constructed with the top rail 42 inches or 110 cm from the floor or platform level and shall have a mid-rail and toe-board. Toe-boards shall extend 4 inches or 10 cm above the floor or platform level.

12.23.2. Contractor shall install vertical support posts for handrails at intervals of not more than 8 feet or 2.5 meters.

12.23.3. All floor and roof holes through which equipment, materials, or debris can fall shall be covered.

12.24. EXCAVATIONS & TRENCHING

12.24.1. Contractor shall not commence any excavation or trenching Work, until they have obtained permission and complied with the conditions of all required approval and permit authorities. Permits shall be kept on file on-site and made available to the District upon request.

12.24.2. Contractor shall provide at the Jobsite a competent person whose resume and qualifications have been submitted to and accepted by the District, who will classify all soils and perform daily inspections of all excavations/trenches. These inspections shall be documented, kept on file on-site, and made available to the District upon request.

12.24.3. Contractor shall have an engineered drawing for reference showing the location of all underground services and/or utilities, and will make all required notifications prior to commencing any excavation.

12.24.4. Contractor shall ensure that spoil material is kept at least 3 feet or 1 meter away from the excavation edge.

12.24.5. Where trenches or excavations will exceed 4 feet or 1.5 meters in depth, the Contractor shall use protective systems acceptable to the District. No more than 25 feet or 7 meters of lateral travel shall be required in any trench to reach a ladder. Warning signs and barricades shall be installed in a manner that prevents accidental entry into the trenched or excavated area.

12.25. VESSELS AND CONFINED SPACES

12.25.1. Where confined space Work is anticipated, Contractor shall have a written Confined Space Procedure that is acceptable to the District and which requires that all such Work be performed only on the basis of a Contractor issued logged and numbered permit. Contractor is responsible for air evaluation and monitoring in confined spaces. At a minimum, in newly constructed confined spaces with little hazard of airborne contamination, monitoring for oxygen and explosive gasses shall be conducted. Monitoring equipment shall be provided by the Contractor, calibrated to Manufacturer recommendations and all calibration shall be documented. All employees conducting air monitoring shall have proper, documented training. All calibration and training records shall be made available to the District upon request.

12.25.2. The Contractor shall ensure that all employees have awareness training regarding the hazards of confined spaces and the procedures to be followed. Special training shall be provided to all entry supervisors, entrants, and attendants. The Contractor shall ensure that entry supervisors know, understand and execute their full responsibilities.

12.25.3. Contractor shall review its Work areas and ensure confined spaces have been identified and marked accordingly. Contractor shall examine each confined space before initial entry to evaluate the specific hazards and safety precautions.

12.25.4. Prior to each entry into a confined space Contractor shall ensure:

- Proper ventilation equipment is used to purge or supply air to the confined space,
- All electrical service is low voltage or GFCI protected,
- Adequate access/egress from the confined space is provided,
- A task specific rescue plan has been developed and reviewed with all involved employees, and
- All external sources of atmospheric contamination are isolated.

12.25.5. Contractor shall evaluate all confined spaces for possible heat stress.

12.25.6. Contractor shall ensure that all personnel responsible for safety watches (confined space attendants) are easily identified, properly trained and aware of the duties associated with each emergency situation that may occur within the confined space.

12.25.7. Contractor shall ensure that an emergency rescue team is available for all permit-required confined space entries and that all employees know how to summon assistance.

12.25.8. Contractor shall not permit entry into any permit-required confined space until the permit system has been properly executed. The permit shall be conspicuously posted at the confined space and all entrants must sign a log upon entering and exiting the confined space.

12.26. LOCK OUT/TAG OUT PROCEDURE

12.26.1. Where applicable, Contractor shall develop an effective and compliant written lock-out/tag-out procedure.

12.26.2. Contractor shall ensure that all employees have instruction on the specific lockout/ tagout procedure and comprehension testing shall be conducted to verify knowledge and understanding of the procedure. Records of training and testing shall be kept, filed on-site, and made available to the District upon request.

12.27. PORTABLE LADDERS - CONTROL & INSPECTION

12.27.1. Contractor shall monitor ladders to ensure all ladders used on the Project are constructed of wood or fiberglass (not metal) have non-slip feet, and that wooden ladders have been treated with preservative.

12.27.2. Contractor will erect ladders so that access/egress areas are unobstructed.

12.27.3. Contractor shall have a Ladder Inspection Procedure. A documented quarterly inspection of ladders is recommended.

12.27.4. Contractor will use ladders for egress and/or to conduct low level Work of short duration and will not use ladders in lieu of scaffolds as a primary means of conducting Work of longer duration.

12.28. CRANES AND MATERIAL HANDLING

12.28.1. Contractor shall provide the resources necessary for inspection and maintenance of rigging and lifting equipment and shall monitor all lifts to ensure that acceptable lifting practices are followed.

12.28.2. Tag lines shall be used on all lifts.

12.28.3. Contractors who are performing lifts in excess of 10 tons shall submit a lifting plan to the District for review and acceptance prior to performing the lift. If the lift is over 50 tons or classified as critical (exceeding 90% of the crane capacity chart, any two-crane lift or any lift over operating or occupied facilities, process pipe racks or near power lines) the

Contractor shall submit a detailed rigging plan with all applicable supporting calculations to the District for review and acceptance prior to the lift.

12.28.4. Contractor shall designate a qualified supervisor to determine the methods and develop plans for rigging operations to ensure safe lifts.

12.28.5. Contractor shall ensure that the equipment operators they provide are adequately trained and informed of their responsibility to operate their equipment within design limits.

12.28.6. All cranes supplied by Contractor shall have current, annual, documented inspections of sufficient detail to be acceptable to the District. Documentation of such inspections shall be made available to the District prior to initial Jobsite use.

12.28.7. Contractor shall provide and ensure that operators keep daily inspection logs for all equipment. No equipment shall be operated if hazardous conditions are identified.

12.28.8. Contractor shall ensure that chain-falls, inertia reels, etc. have a documented inspection annually (including load tests). All rigging equipment shall undergo a visual inspection prior to each use and a documented inspection quarterly (a color code system shall be used to achieve this). All capacities shall be clearly indicated on lifting devices.

12.28.9. All rigging shall be stored properly (i.e. on racks or in protected areas).

12.28.10. Contractor shall ensure all crane operations maintain minimum safe distances from all high voltage lines. Up to 50KV the distance shall be 10 feet or 3 meters.

12.28.11. Contractor shall ensure that the counter weight and housing swing radius of all cranes is properly barricaded whenever it is possible personnel may come into contact with or be struck by them.

12.29. SUSPENDED PERSONNEL PLATFORMS

12.29.1. Contractor shall notify the District prior to using any suspended personnel platform and develop a Lift Procedure to be reviewed and accepted by the District prior to their use. The procedure shall include, but not be limited to, employee training, pre-lift meetings, trial lifts, and platform inspection.

12.29.2. Personnel platforms (baskets) provided by Contractor shall be designed by a qualified engineer and Manufactured by competent personnel. They shall have permanent markings indicating maximum weight.

12.29.3. If the District approves the use of crane suspended personnel platforms, Contractor shall thoroughly inspect the crane/derrick and ensure it has an operational anti two block device and locking devices on the hook. Free fall capacity, if present, shall be positively locked out or disabled. The area under the lift shall be isolated by barrier tape and signs.

12.29.4. Contractor shall provide a positive means of communication between the crane operator and employees in a crane suspended personnel platform. Employees in the platform shall wear full body harnesses attached to a designated anchor point.

12.30. ARTICULATING BOOM PLATFORMS

12.30.1. Machines Manufactured and used for elevated personnel platform Work (JLG, Hi-lift, etc.) shall be operated and maintained in accordance with Manufacturer recommendations and only by trained and qualified individuals. Training and comprehension test records shall be maintained on file at the Jobsite and made available to the District upon request.

12.30.2. All persons inside Work platforms shall wear a full body harness attached to the Manufacturer's designated anchor point. A fire extinguisher shall be provided on all such

equipment. Equipment used to hoist personnel shall not be used for material, if this constitutes a hazard.

12.31. COMPRESSED GAS CYLINDERS

12.31.1. Contractor shall provide cradles and/or cages for lifting compressed gas cylinders and ensure that cylinders being transported are secured and in the upright position.

12.31.2. Unless otherwise directed by the District, and where applicable, the Contractor shall create a Gas Cylinder Use and Storage Procedure that allows for proper use and storage of compressed gas cylinders. The procedure shall include segregation by type, proper signage, protective isolation of fuel gasses from oxygen, provisions to keep cylinder caps in place when provided by the supplier, positive upright securing of bottles, and maintenance of safe distances from ignition sources.

12.31.3. Contractor shall ensure that each individual cylinder turned off by a key wrench is provided with a key wrench whenever in use.

12.32. ELECTRICAL EQUIPMENT INSPECTION / ASSURED GROUNDING / GFCI

12.32.1. Contractor shall implement use of ground fault circuit interrupters (GFCI) on all temporary electrical applications.

12.32.2. Contractor shall train employees regarding electrical inspection and electrical safety.

12.32.3. Contractor shall ensure all tools are checked for electrical continuity after repairs are made.

12.33. VEHICLE OPERATIONS

12.33.1. Contractor shall ensure all vehicles are registered/licensed, maintained in a roadworthy condition, and operated in a safe manner.

12.33.2. Contractor shall ensure all persons operating vehicles are healthy and unimpaired, have appropriate and required operator's licenses, and observe established road regulations and/or Jobsite regulations.

12.33.3. Contractor shall provide a seat belt for each vehicle passenger and enforce the wearing of seat belts any time a vehicle is in motion.

ARTICLE 13

13. TESTS AND INSPECTIONS

13.1. TESTS; INSPECTIONS; OBSERVATIONS

13.1.1. If the Contract Documents, laws, ordinances or any public authority with jurisdiction over the Work requires the Work, or any portion thereof, to be specially tested, inspected or approved (collectively "Testing"), the Contractor shall give the Architect and the Project Inspector written notice of the readiness of such Work for Testing at least two (2) Working days prior to the time for the conducting of such Testing. If testing is by an authority other than the District, the Contractor shall inform the Architect and Project Inspector not less than two (2) Working days prior to the date fixed for such Testing. Contractor shall indicate on the Contract Schedule the dates of special tests or inspections.

13.1.2. The Contractor shall not cover up any portion of the Work subject to testing and inspection prior to the completion, inspection, punch list correction, and sign-off by the Project Inspector of same. In the event that any portion of the Work subject to Testing shall be covered up by Contractor prior to completion, Contractor shall be responsible for the uncovering of such portion of the Work as is necessary without adjustment of the Contract Price or the Contract Time on account thereof. Work such as, but not limited to drywall, insulation, ceiling tile installation, roofing, and concrete shall not be commenced without the approval of the Project Inspector.

13.1.3. Costs for special tests and inspection of materials shall be paid by the District as provided for herein. The Contractor shall provide all materials to be tested at no additional cost to the District. The Contractor shall provide safe access to all locations where materials are to be tested. Within twenty (20) days after the establishment of the Accepted Contract Schedule pursuant to Article 6.5 hereof, the District shall submit to the Contractor a written list of the portions of the Work subject to special tests or inspections to be paid for by the District along with the number of hours or costs of testing or inspection allocated for each such portion of the Work. Should any act, omission or other conduct of the Contractor, any of its Subcontractors, of any tier, or Material Suppliers cause the number of hours or the costs of such tests or inspections to exceed that set forth in the District's list submitted pursuant to the foregoing, the Contractor shall be solely responsible for all such excess costs and the District may deduct such amount from any portion of the Contract Price then or thereafter due the Contractor.

13.1.4. The District shall select duly qualified person(s) or testing laboratory(ies) to conduct the special tests and inspections to be paid for by the District and required by the Contract Documents. All such tests and inspections shall be in conformity with Title 24 of the California Code of Regulations. Where inspection or testing is to be conducted by an independent laboratory or testing agency, materials or samples thereof shall be selected by the laboratory, testing agency, the Project Inspector or the Architect and not by the Contractor, Subcontractor or any tier thereof.

13.1.5. If the Architect, the Project Inspector, or public or quasi-public authority having jurisdiction over the Work determine that portions of the Work require additional testing, inspection or approval, ("Additional Tests") the Architect and the Project Inspector shall, upon written authorization from the District, instruct the Contractor to make arrangements for such Additional Tests by an entity acceptable to the District, and the Contractor shall give timely notice to the Architect and the Project Inspector of when and where the Additional Tests are to be made so the District's representative(s) and the Architect may observe such procedures. The District shall bear the costs of such Additional Tests, except to the extent that such Additional Tests reveal any failure of the Work to comply with the requirements of the Contract Documents, in which case the Contractor shall bear all costs made necessary by such failures, including without limitation, the costs of corrections, repeat

tests, inspections or approvals and the costs of the Architect's services or its consultants in connection therewith.

13.1.6. It is the Contractor’s responsibility when calling for testing or inspections to verify and confirm that the Work is complete, according to Contract Documents and ready for inspection. Any re-inspections due to incomplete Work are subject to re-inspection fees at a minimum rate of $100 per hour.

13.2. DELIVERY OF CERTIFICATES

13.2.1. Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

13.3. TIMELINESS OF TESTS, INSPECTIONS AND APPROVALS

13.3.1. Tests or inspections required and conducted pursuant to the Contract Documents shall be made or arranged by Contractor to avoid delay in the progress of the Work.

ARTICLE 14

14. UNCOVERING AND CORRECTION OF WORK

14.1. INSPECTION OF THE WORK

14.1.1. All Work done and all materials and equipment forming a part of the Work or incorporated into the Work are subject to inspection by the Architect and the Project Inspector in conformity with the Contract Documents. The Contractor shall, at its cost and without adjustment to the Contract Price or the Contract Time, furnish any facilities necessary for sufficient and safe access to the Work for purposes of inspection at any and all times requested by the Architect, the District's representative(s), DSA or any other public or quasi-public authority with jurisdiction over the Work or any portion thereof.

14.1.2. Inspections, tests, measurements, or other acts of the Architect and the Project Inspector hereunder are for the sole purpose of assisting them in determining that the Work, materials, equipment, progress of the Work, and quantities generally comply and conform with the requirements of the Contract Documents. No inspection by the Architect or District Project Inspector shall constitute or imply acceptance of Work inspected.

14.2. UNCOVERING OF WORK

14.2.1. If any portion of the Work is covered contrary to the request of the Architect, the Project Inspector or the requirements of the Contract Documents, it must, if required by the Architect or the Project Inspector, be uncovered for observation by the Architect and the District's Representative and be replaced at the Contractor's expense without adjustment of the Contract Time or the Contract Price.

14.3. REJECTION OF WORK

14.3.1. Prior to the District's Final Acceptance of the Work, any Work or materials or equipment forming a part of the Work or incorporated into the Work which is defective or not in conformity with the Contract Documents may be rejected by the Architect or the Project Inspector and the Contractor shall correct such rejected Work without any adjustment to the Contract Price or the Contract Time, even if the Work, materials or equipment have been previously inspected by the Architect or the Project Inspector or even if they failed to observe the defective or non-conforming Work, materials or equipment.

14.4. CORRECTION OF WORK

14.4.1. The Contractor shall promptly correct any portion of the Work rejected by the Architect or the Project Inspector for failing to conform to the requirements of the Contract Documents, or which is determined by them to be defective, whether observed before or after Substantial Completion, and whether or not fabricated, installed or completed. The Contractor shall bear all costs of correcting such rejected Work, including additional testing and inspections and compensation for the Architect's services and expenses made necessary thereby. The Contractor shall bear all costs of correcting and/or replacing destroyed or damaged construction, and components which do not operate properly, whether completed or partially completed, of the District or separate contractors, caused by the Contractor's correction or removal of Work which is not in accordance with the requirements of the Contract Documents, or which is defective. Contractor is also responsible for restoring permanent facilities used during the Work to their original or specified condition.

14.4.2. The Contractor shall, at its sole cost and expense, remove from the Site all portions of the Work, which are defective or are not in accordance with the requirements of the Contract Documents, which are neither corrected by the Contractor nor accepted by the District.

14.4.3. If the Contractor fails to commence to correct defective or non-conforming Work within three (3) days of notice of such condition and promptly thereafter complete the same within a reasonable time, the District may correct it in accordance with the Contract Documents. If the Contractor does not proceed with correction of such defective or non-conforming Work within the time fixed herein, the District may remove it and store the salvable materials or equipment at the Contractor's expense. If the Contractor does not pay costs of such removal and storage after written notice, the District may sell such materials or equipment at auction or at private sale and shall account for the proceeds thereof, after deducting costs and damages that should have been borne by the Contractor, including without limitation compensation for the Architect's services and other expenses made necessary thereby. If such proceeds of sale do not cover costs, which the Contractor should have borne, the Contract Price shall be reduced by the deficiency. If payments of the Contract Price then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor and the Surety shall promptly pay the difference to the District.

14.5. ACCEPTANCE OF DEFECTIVE OR NON-CONFORMING WORK

14.5.1. The District may, in its sole and exclusive discretion, elect to accept Work which is defective or which is not in accordance with the requirements of the Contract Documents, instead of requiring its removal and correction, in which case the Contract Price shall be reduced as appropriate and equitable.

ARTICLE 15

15. WARRANTIES

15.1. CONTRACTOR'S WARRANTY

15.1.1. The Contractor warrants to the District that all materials and equipment furnished under the Contract Documents shall be new, of good quality and of the most suitable grade and quality for the purpose intended, unless otherwise specified in the Contract Documents. All Work shall be performed in accordance with accepted industry practices and shall be of good quality, free from faults and defects and in conformity with the requirements of the Contract Documents. If required by the Architect or the District, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment incorporated into the Work. Any Work or portion thereof not conforming to these requirements may be deemed defective. Where there is an approved substitution of, or alternative to, material or equipment specified in the Contract Documents, the Contractor warrants to the District that such installation, construction, material, or equipment shall equally perform the function and have the quality of the originally specified material or equipment. The Contractor expressly warrants the merchantability, the fitness for use, and quality of all substitute or alternative items in addition to any warranty given by the Manufacturer or supplier of such item.

15.2. DISTRICT'S FINAL ACCEPTANCE; WARRANTY PERIOD

15.2.1. For Projects that are completed in their entirety and not performed in phases, the warranty or guarantee period under the Contract Documents shall be for a period of two (2) years and shall commence on the date of Final Acceptance of the Work, unless specified.

15.2.2. For Projects that are completed in phases during performance of the Work, the warranty or guarantee period under the Contract Documents is for a period of two (2) years and shall commence on the date of Substantial Completion for the District's partial use or occupancy of portions of the Work, as certified by the Architect and the District, unless otherwise specified.

15.2.3 Nothing in this section shall be deemed to shorten the otherwise applicable statute of limitations period for claims by the District against Contractor for defects (latent or patent) in the Work.

15.3. WARRANTY WORK

15.3.1. If within two (2) years after the date of Final Acceptance, or Substantial Completion as provided in Article 15.2.2 above, any of the Work is found to be defective or not in accordance with the requirements of the Contract Documents, or otherwise contrary to the warranties contained in the Contract Documents, the Contractor shall commence all necessary corrective action not more than seven (7) days after receipt of a written notice from the District to do so, and to thereafter diligently complete the same. In the event that Contractor shall fail or refuse to commence correction of any such item within said seven (7) day period or to diligently prosecute such corrective actions to completion, the District may then without further notice cause such corrective Work to be performed and completed. In such event, Contractor and Contractor's Performance Bond Surety shall be responsible for all costs in connection with such corrective Work, including without limitation, general administrative overhead costs of the District in securing and overseeing such corrective Work.

15.3.2. Nothing contained herein shall be construed to establish a period of limitation with respect to any obligation of the Contractor under the Contract Documents. The obligations of the Contractor hereunder shall be in addition to, and not in lieu of, any other obligations imposed by any special guarantee or warranty required by the Contract Documents, guarantees or warranties provided by any Manufacturer of any item or equipment forming

a part of, or incorporated into the Work, or otherwise recognized, prescribed or imposed by law. Neither the District's Final Acceptance, the making of Final Payment, any provision in Contract Documents, nor the use or occupancy of the Work, in whole or in part, by District shall constitute acceptance of Work not in accordance with the Contract Documents nor relieve the Contractor or the Contractor's Performance Bond Surety from liability with respect to any warranties or responsibility for faulty or defective Work or materials, equipment and Workmanship incorporated therein.

15.4. GUARANTEE

15.4.1. Upon completion of the Work, Contractor shall execute and deliver to the District the form of Guarantee included within the Contract Documents. Pursuant to Article 7.4.2 herein, Contractor's execution and delivery of the form of Guarantee is an express condition precedent to any obligation of the District to disburse the Final Payment to the Contractor.

15.5. SURVIVAL OF WARRANTIES

15.5.1. The provisions of this Article 15 shall survive the Contractor's completion of Work under the Contract Documents, the District's Final Acceptance or the termination of the Contract.

ARTICLE 16

16. SUSPENSION OR TERMINATION OF WORK AND FORCE MAJEURE

16.1. DISTRICT'S RIGHT TO SUSPEND WORK

16.1.1. The District may, without cause, and without invalidating or terminating the Contract, order the Contractor, in writing, to suspend, delay or interrupt the Work in whole or in part for such period of time as the District may determine. The Contractor shall resume and complete the Work suspended by the District in accordance with the District's directive, whether issued at the time of the directive suspending the Work or subsequent thereto.

16.2. ADJUSTMENTS TO CONTRACT PRICE AND CONTRACT TIME

16.2.1. In the event the District shall order suspension of the Work, an adjustment shall be made to the Contract Price for increases in the direct cost of performance of the Work of the Contract Documents, actually caused by suspension, delay or interruption ordered by the District; provided, however, that no adjustment of the Contract Price shall be made to the extent: (i) that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible under the Contract Documents; or (ii) that an equitable adjustment is made or denied under another provision of the Contract Documents. The foregoing notwithstanding, any such adjustment of the Contract Price shall not include any adjustment to increase the Contractor's overhead, general administrative costs or profit, all of which shall remain as reflected in the Cost Breakdown submitted by the Contractor pursuant to the Contract Documents. In the event of the District's suspension of the Work, the Contract Time shall be equitably adjusted.

16.3. TERMINATION FOR CAUSE

16.3.1. The District may terminate the Contract upon the occurrence of any one or more of the following events of the Contractor's default: (i) if the Contractor refuses or fails to prosecute the Work with diligence as shall insure Substantial Completion of the Work within the Contract Time, or if the Contractor fails to substantially Complete the Work within the Contract Time; (ii) if the Contractor becomes bankrupt or insolvent, or makes a general assignment for the benefit of creditors, or if the Contractor or a third party files a petition to reorganize or for protection under any bankruptcy or similar laws, or if a trustee or receiver is appointed for the Contractor or for any of the Contractor's property on account of the Contractor's insolvency, and the Contractor or its successor in interest does not provide adequate assurance of future performance in accordance with the Contract Documents within ten (10) days of receipt of a request for such assurance from the District; (iii) if the Contractor repeatedly fails to supply sufficient skilled Workmen or suitable materials or equipment; (iv) if the Contractor repeatedly fails to make prompt payments to any Subcontractor, of any tier, or Material Suppliers or others for labor, materials or equipment; (v) if the Contractor disregards laws, ordinances, rules, codes, regulations, orders applicable to the Work or similar requirements of any public entity having jurisdiction over the Work; (vi) if the Contractor disregards proper directives of the Architect or the Construction Manager under the Contract Documents; (vii) if the Contractor performs Work which deviates from the Contract Documents and neglects or refuses to correct such Work; or (viii) if the Contractor otherwise violates in any material way any provisions or requirements of the Contract Documents. Once the District determines that sufficient cause exists to justify the action, the District may terminate the Contract without prejudice to any other right or remedy the District may have, after giving the Contractor and the Surety at least seven (7) days advance written notice of the effective date of termination. The District shall have the sole discretion to permit the Contractor to remedy the cause for the termination without waiving the District's right to terminate the Contract, or otherwise waiving, restricting or limiting any other right or remedy of the District under the Contract Documents or at law.

16.3.2. In the event that the Contract is terminated pursuant to this Article 16.3, the District may take over the Work and prosecute it to completion, by contract or otherwise, and may exclude the Contractor from the site. The District may take possession of the Work and of all of the Contractor's tools, appliances, construction equipment, machinery, materials, and plant which may be on the site of the Work, and use the same to the full extent they could be used by the Contractor without liability to the Contractor. In exercising the District's right to prosecute the completion of the Work, the District may also take possession of all materials and equipment stored at the site of the Work or for which the District has paid the Contractor but which are stored elsewhere, and finish the Work as the District deems expedient. In exercising the District's right to prosecute the completion of the Work, the District shall have the right to exercise its sole discretion as to the manner, methods, and reasonableness of the costs of completing the Work and the District shall not be required to obtain the lowest figure for completion of the Work. In the event that the District takes bids for remedial Work or completion of the Work, the Contractor shall not be eligible for the award of such contract(s).

16.3.3. In the event that the Contract is terminated pursuant to this Article 16.3, the District may demand that the Surety take over and complete the Work. The District may require that in so doing, the Surety not utilize the Contractor in performing and completing the Work. Upon the failure or refusal of the Surety to take over and begin completion of the Work within twenty (20) days after demand therefore, the District may take over the Work and prosecute it to completion as provided for above.

16.3.4. The District shall, in its sole and exclusive discretion, have the option of requiring any Subcontractor or Material Supplier to perform in accordance with its Subcontract or Purchase Order with the Contractor and assign the Subcontract or Purchase Order to the District or such other person or entity selected by the District to complete the Work.

16.3.5. In the event of termination under this Article 16.3, the Contractor shall not be entitled to receive any further payment of the Contract Price until the Work is completed. If the unpaid balance of the Contract Price as of the date of termination exceeds the District's direct and indirect costs and expenses for completing the Work, including without limitation, compensation for additional professional and consultant services, such excess shall be used to pay the Contractor for the cost of the Work performed prior to the effective date of termination with a reasonable allowance for overhead and profit. If the District's costs and expenses to complete the Work exceed the unpaid Contract Price, the Contractor and/or the Surety shall pay the difference to the District.

16.3.6. The Contractor and the Surety shall be liable for all damages sustained by the District resulting from, in any manner, the termination of this Contract under this Article 16.3, and for all costs necessary for repair and completion of the Work over and beyond the Contract Price.

16.3.7. In the event the Contract is terminated under this Article 16.3, and it is determined, for any reason, that the Contractor was not in default under the provisions hereof, the termination shall be deemed a Termination for Convenience of the District and thereupon, the rights and obligations of the District and the Contractor shall be determined in accordance with Article 16.4 hereof.

16.3.8. In the event the Contract is terminated pursuant to this Article 16.3, the termination shall not affect or limit any rights or remedies of the District against the Contractor or the Surety. The rights and remedies of the District under this Article 16.3 are in addition to, and not in lieu of, any other rights and remedies provided by law or otherwise under the Contract Documents. Any retention or payment of monies to the Contractor by the District shall not be deemed to release the Contractor or the Surety from any liability hereunder.

16.4. TERMINATION FOR CONVENIENCE OF THE DISTRICT

16.4.1. The District may at any time, in its sole and exclusive discretion, by written notice to the Contractor, terminate the Contract in whole or in part when it is in the interest of, or for the convenience of, the District. Notice is deemed given when sent. In such case, the Contractor shall be entitled to payment for: (i) Work actually performed and in place as of the effective date of such termination for convenience of the District, with a reasonable allowance for profit and overhead on such Work, (ii) reasonable termination expenses for reasonable protection of Work in place and suitable storage and protection of materials and equipment delivered to the site of the Work but not yet incorporated into the Work; and (iii) retainage on Work completed, provided that such payments exclusive of termination expenses shall not exceed the total Contract Price as reduced by payments previously made to the Contractor. The Contractor shall not be entitled to profit and overhead on Work, which was not performed as of the effective date of the termination for convenience of the District. The District's right to terminate under this paragraph shall be in addition to any other rights reserved to the District under this Agreement. Said termination shall not be deemed to be a breach of this Agreement and/or tortuous conduct. Termination shall have no effect upon any of the rights and obligations of the parties arising out of any transaction occurring prior to the effective date of such termination.

16.5 FORCE MAJEURE

16.5.1 A force majeure refers to an unforeseeable extraordinary event or circumstance that occurs after the parties entered into a contract that is beyond their control and prevents, hinders, or delays one or both parties from performing and fulfilling their obligations, in whole or in part, under the contract as a result of war; terrorism; third party strike; riot; epidemic/pandemic, government directives/orders such as mandatory quarantine, travel restrictions, and decree to shutdown; violent forces of nature such as hurricane, flood, earthquake; and other acts of God.

16.5.2 The affected party(ies) shall be excused from the performance of any obligation imposed in the Contract Documents and the exhibits hereto for the duration of the force majeure event provided that the invoking party informs the other party in writing and demonstrates a causal link between the force majeure event and the affected party's failure to perform, without fault or negligence of the affected party, with no alternative means for performing its obligations or that it has taken all reasonable steps to avoid the operation of the force majeure clause ("duty to mitigate"). If Contractor satisfies the requirements herein, Contractor shall be entitled to a non-compensable equitable time extension,

16.5.3 Any non-performance, hindrance of performance, or delay of performance from the affected party(ies) will not be a default hereunder or a grounds for termination of this Contract.

ARTICLE 17

17. STATUTORY REQUIREMENTS

17.1. PROHIBITION ON HARASSMENT

17.1.1. The District is committed to providing a campus and Workplace free of sexual harassment and harassment. It is the policy of the District that in connection with all Work performed under the Contract Documents, there will be no discrimination against any prospective or active employee engaged in the Work because of race, color, religion, national origin, ancestry, age, medical condition, marital status, sexual orientation, disability or veteran status. Harassment includes without limitation, verbal, physical or visual conduct which creates an intimidating, offensive or hostile environment such as racial slurs; ethnic jokes; posting of offensive statements, posters or cartoons or similar conduct. Sexual harassment includes without limitation the solicitation of sexual favors, unwelcome sexual advances, or other verbal, visual or physical conduct of a sexual nature.

17.1.2. Contractor shall adopt and implement all appropriate and necessary policies prohibiting any form of discrimination in the Workplace, including without limitation harassment on the basis of any classification protected under local, state or federal law, regulation or policy. The Contractor agrees to comply with applicable federal and California laws, including, but not limited to, Labor Code §1735. Contractor shall take all reasonable steps to prevent harassment from occurring, including without limitation affirmatively raising the subject of harassment among its employees, expressing strong disapproval of any form of harassment, developing appropriate sanctions, informing employees of their right to raise and how to raise the issue of harassment and informing complainants of the outcome of an investigation into a harassment Claim. Contractor shall require that any Subcontractor or Sub-Subcontractor performing any portion of the Work adopt and implement policies in conformity with this Article 17.1.

17.1.3. Contractor shall not permit any person, whether employed by Contractor, a Subcontractor, of any tier, or any other person or entity, performing any portion of the Work at or about the Site to engage in any prohibited form of harassment. Any such person engaging in a prohibited form of harassment directed to any individual performing or providing any portion of the Work at or about the Site shall be subject to appropriate sanctions in accordance with the anti-harassment policy adopted and implemented pursuant to Article 17.1.2 above. Any such person engaging in a prohibited form of harassment directed to any student, faculty member or staff of the District, or directed to any other person on or about the Site shall be subject to immediate removal and shall be prohibited thereafter from providing or performing any portion of the Work. Upon the District's receipt of any notice or complaint that any person employed directly or indirectly by Contractor in performing or providing the Work has engaged in a prohibited form of harassment, the District shall promptly undertake an investigation of such notice or complaint. In the event that the District, after such investigation, reasonably determines that a prohibited form of harassment has occurred, the District shall promptly notify the Contractor of the same and direct that the person engaging in such conduct be immediately removed from the Site. Unless the District's determination that a prohibited form of harassment has occurred is grossly negligent or without reasonable cause, District shall have no liability for directing the removal of any person determined to have engaged in a prohibited form of harassment nor shall the Contract Price or the Contract Time be adjusted on account thereof.

17.1.4. Contractor and the Surety shall defend, indemnify and hold harmless the District and its employees, officers, Board of Education, agents, and representatives from any and all Claims, liabilities, judgments, awards, actions or causes of actions, including without limitation, attorneys' fees, which arise out of, or pertain in any manner to: (i) the assertion by any person dismissed from performing or providing Work at the direction of the District pursuant to Article 17.1.3 above; or (ii) the assertion by any person that any person directly or indirectly under the employment or direction of the Contractor has engaged in a

prohibited form of harassment directed to or affecting such person. The obligations of the Contractor and the Surety under the preceding sentence shall be in addition to, and not in lieu of, any other obligation of defense, indemnity and hold harmless whether arising under the Contract Documents, at law or otherwise; these obligations shall survive the completion of the Work or the termination of the Contract.

17.2. WAGE RATES; EMPLOYMENT OF LABOR

17.2.1. Attention is called to the fact that State of California prevailing wage requirements apply to this project.

17.2.2. Pursuant to the provisions of Articles 1 and 2 of Chapter 1, Part 7, Division II, of the Labor Code of the State of California (Labor Code §§1720 *et seq*. and implementing regulations of the Department of Industrial Relations), Title 8, California Code of Regulations, Chapter 8, Subchapter 3, commencing with §16000, for any "public works" (as that term is defined in the statutes), there shall be paid to each Worker of the Contractor, or any Subcontractor, of any tier, engaged in the Work, not less than the general prevailing wage rate, and not less than the general prevailing rate of per diem wages for holidays and overtime work, for each craft, classification or type of worker needed to execute the work contemplated under this Contract regardless of any contractual relationship which may be alleged to exist between the Contractor or any Subcontractor, of any tier, and such Worker. For purpose of compliance with prevailing wage law, the Contractor shall comply with provisions applicable to an awarding body. Compliance with state prevailing wage law includes without limitation: payment of at least prevailing wage as applicable; overtime and working hour requirements; apprenticeship obligations; payroll recordkeeping requirements; and other obligations as required by law.

17.2.3 Copies of the prevailing rate of per diem wages applicable to this Project are on file at the District's office, and shall be made available to any interested party on request; or may be found on the Internet at: http://www.dir.ca.gov/DLSR/PWD. The Contractor shall post at appropriate conspicuous weatherproof points on the site of the Project a schedule showing the Prevailing Wage Determinations published by the Director of the California Department of Industrial Relations, which are applicable to the Project.

17.2.4 Contractor is responsible for ascertaining and complying with all current general prevailing wage rates for crafts and any rate changes that occur during the life of the contract; and shall ensure that the above requirements are included in all its contracts and any layer of subcontracts for activities for the Project.

17.2.5 Contractor shall certify to the District on each Payment Request Form, that prevailing wages were paid to eligible workers who provided labor for work covered by the payment request and that the Contractor and all subcontractors complied with prevailing wage laws. Prior to the release of any retained funds under this Agreement, the Contractor shall submit to the District a certificate signed by the Contractor and all subcontractors performing public works activities stating that prevailing wages were paid as required by law.

17.2.6 Failure to comply with prevailing wage laws and/or failure to employ apprentices as required by law shall subject Contractor and/or its Subcontractors to penalties, including forfeitures and debarment under Labor Code §§1775; 1776; 1777.1; 1777.7 and 1813.

17.2.7 Nothing contained herein shall be deemed to supersede any applicable laws, orders or regulations issued by competent authority governing wages, hours of Work of the employment of labor, nor to condone any violation of such laws, orders or regulations.

17.3. PAYROLL RECORDS

17.3.1. As required by Labor Code §§1700 *et seq,* (including but not limited to Labor Code §§1776 and 1812), and Title 8 of California Code of Regulations, the Contractor and every

Subcontractor, of any tier, shall keep accurate payroll records, 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 them in connection with the Work. Each payroll record shall contain or be verified by a written declaration that it is made under penalty of perjury, stating that the information contained in the payroll record is true and correct and that the Contractor or Subcontractor has complied with the requirements of §§1771, 1811, and 1815 for any work performed by its employees on the public works project.

17.3.2 The payroll records enumerated under Paragraph 17.3.1 shall be certified and shall be available for inspection at all reasonable hours at the principal office of the Contractor. A certified copy of employee's payroll record shall be made available for inspection or furnished to the employee or his or her authorized representative upon request.

17.3.3 Upon request by the District, the Division of Labor Standards Enforcement (DLSE), or the Division of Apprenticeship Standards of the Department of Industrial Relations, the payroll records of the Contractor, and every Subcontractor, of any tier, shall be available for inspection at all reasonable hours at the principal office of the Contractor or furnished to DIR, within 10 days of receipt of a written request. Failure to comply shall result in applicable penalties.

17.4. COOPERATION AND WITHHOLDING OF CONTRACT PAYMENTS

17.4.1. The Contractor, and every Subcontractor, of any tier, shall cooperate with the DIR, the Labor Commissioner, or DLSE in any investigation of suspected prevailing wage violations. The District shall likewise cooperate and shall withhold contract payments in accordance with any lawful order by DLSE.

17.5. HOURS OF WORK

17.5.1. As required by Labor Code §§1700 *et seq*, (including but not limited to Labor Code §1810), and Title 8 of California Code of Regulations, eight (8) hours of labor shall constitute a legal day's Work. Under Labor Code §1811, the time of service of any Worker employed at any time by the Contractor or by a Subcontractor, of any tier, upon the Work or upon any part of the Work, is limited and restricted to eight (8) hours during any one calendar day and forty (40) hours during any one calendar week, except as hereafter provided. Notwithstanding the foregoing provisions, under Labor Code §1815, Work performed by employees of Contractor or any Subcontractor, of any tier, in excess of 8 hours per day and 40 hours during any one week, shall be permitted upon compensation for all hours Worked in excess of 8 hours per day or 40 hours per week at not less than one and one-half (1½) times the basic rate of pay. Failure to comply with any of the foregoing shall result in applicable penalties.

17.5.2. Any Work performed by Workers necessary to be performed after regular Working hours or on Sundays or other holidays shall be performed without adjustment to the Contract Price or any other additional expense to the District.

17.6. APPRENTICES

17.6.1. It is the duty of the contractor and subcontractors to employ registered apprentices on the public works project and to comply with all aspects of Labor Code §1777.5, relating to Apprentices on Public Works. (1) Notify approved apprenticeship programs of contract award; (2) employ apprentices; (3) pay training fund contributions.

17.6.2 Under Labor Code §1777.5(e) the Contractor and all Subcontractors, of any tier, shall notify an approved training program that can supply apprentices to the area of the Public Works Project. All apprentices employed by the Contractor to perform any of the Work shall be paid the prevailing wages identified by the DIR. Only apprentices, as defined in Labor Code §3077 who are in training under apprenticeship standards and written apprenticeship

Agreements under Labor Code §§3070, *et seq.* are eligible to be employed for the Work. The employment and training of each apprentice shall be in accordance with the provisions of the apprenticeship standards and apprentice Agreements under which such apprentice is training or the Standards established by the Division of Apprenticeship Standards.

17.6.3. As required by Labor Code §§1700 *et seq,* (including but not limited to Labor Code §1777.5), and Title 8 of California Code of Regulations, the Contractor and any Subcontractor, of any tier, in performing any of the Work employs workers in any Apprenticeable Craft or Trade the Contractor and such Subcontractor shall apply to the Joint Apprenticeship Committee administering the apprenticeship standards of the craft or trade in the area of the site of the Work for a certificate approving the Contractor or such Subcontractor under the apprenticeship standards for the employment and training of apprentices in the area or industry affected; provided, however, that the approval as established by the Joint Apprenticeship Committee or Committees shall be subject to the approval of the Administrator of the Division of Apprenticeship Standards. The Joint Apprenticeship Committee or Committees, subsequent to approving the Contractor or Subcontractor, shall arrange for the dispatch of apprentices to the Contractor or such Subcontractor in order to comply with Labor Code §1777.5. The Contractor and Subcontractors shall submit contract award information to the applicable Joint Apprenticeship Committee, which shall include an estimate of journeyman hours to be performed under the Contract, the number of apprentices to be employed, and the approximate dates the apprentices will be employed.

17.6.4 The ratio of work performed by apprentices to journeymen, who shall be employed in the Work, may be the ratio stipulated in the apprenticeship standards under which the Joint Apprenticeship Committee operates, but in no case shall the ratio be less than one hour (1) of apprentice Work for each five (5) hours of labor performed by a journeyman, except as otherwise provided in §1777.5. Any ratio shall apply during any day or portion of a day when any journeyman or the higher standard stipulated by the Joint Apprenticeship Committee, is employed at the site of the Work and shall be computed on the basis of the hours worked during the day by journeymen so employed, except for the land surveyor classification. The Contractor shall employ apprentices for the number of hours computed as above before the completion of the Work. The Contractor shall, however, endeavor, to the greatest extent possible, to employ apprentices during the same time period that the journeymen in the same craft or trade are employed at the site of the Work. Where an hourly apprenticeship ratio is not feasible for a particular craft or trade, the Division of Apprenticeship Standards, upon application of a Joint Apprenticeship Committee, may order a minimum ratio of not less than one apprentice for each five journeymen in a craft or trade classification. This Article shall not apply to Contracts of general Contractors, or to Contracts of Specialty Contractors not bidding for Work through a general or prime Contractor, involving less than Thirty Thousand Dollars ($30,000).

17.6.5 The Contractor or any Subcontractor, of any tier, who performs any of the Work by employment of journeymen or apprentices in any Apprenticeable Craft or Trade and who is not contributing to a fund or funds to administer and conduct the apprenticeship program in any such craft or trade in the area of the site of the Work, to which fund or funds other Contractors in the area of the site of the Work are contributing, shall contribute to the fund or funds in each craft or trade in which it employs journeymen or apprentices in the same amount or upon the same basis and in the same manner as the other Contractors do, but where the trust fund administrators are unable to accept such funds, Contractors not signatory to the trust Agreement shall pay a like amount to the California Apprenticeship Council. The Contractors shall provide proof of such contributions when requested, including checks, check stubs, receipts, or other records required to prove that all required payments were made.

17.6.6. Failure to knowingly comply with any of the foregoing shall result in applicable penalties and in addition, upon determination by the Chief of Division of Apprenticeship Standards

under Labor Code §1777.7, the Contractor may be denied the right to bid on any public Works Contract for a period of one (1) year from the date the determination of non-compliance for the first violation and for a period of up to three years for a second or subsequent violation.

17.7. EMPLOYMENT OF INDEPENDENT CONTRACTORS

Pursuant to Labor Code §1021.5, Contractor shall not willingly and knowingly enter into any Agreement with any person, as an independent Contractor, to provide any services in connection with the Work where the services provided or to be provided requires that such person hold a valid Contractor's license issued pursuant to Business and Professions Code §§7000, *et seq*. and such person does not meet the burden of proof of his/her independent Contractor status pursuant to Labor Code §2750.5. In the event that Contractor shall employ any person in violation of the foregoing, Contractor shall be subject to the civil penalties under Labor Code §1021.5 and any other penalty provided by law. In addition to the penalties provided under Labor Code §1021.5, Contractor's violation of this Article 17.7 or the provisions of Labor Code §1021.5 shall be deemed an event of Contractor's default under Article 16.3 of these General Conditions. The Contractor shall require any Subcontractor, of any tier, performing or providing any portion of the Work to adhere to and comply with the provisions of this Article 17.7.

ARTICLE 18

18. MISCELLANEOUS

18.1. GOVERNING LAW

18.1.1. This Contract shall be governed by and interpreted in accordance with the laws of the State of California.

18.2. MARGINAL HEADINGS; INTERPRETATION

18.2.1. The titles of the various Articles of these General Conditions and elsewhere in the Contract Documents are used for convenience of reference only and are not intended to, and shall in no way, enlarge or diminish the rights or obligations of the District or the Contractor and shall have no effect upon the construction or interpretation of the Contract Documents. The Contract Documents shall be construed as a whole in accordance with their fair meaning and not strictly for or against the District or the Contractor.

18.3. SUCCESSORS AND ASSIGNS

18.3.1. Except as otherwise expressly provided in the Contract Documents, all terms, conditions and covenants of the Contract Documents shall be binding upon, and shall inure to the benefit of the District and the Contractor and their respective heirs, representatives, successors-in-interest and assigns.

18.4. CUMULATIVE RIGHTS AND REMEDIES; NO WAIVER

18.4.1. Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not in lieu of or otherwise a limitation or restriction of duties, obligations, rights and remedies otherwise imposed or available by law. No action or failure to act by the District shall constitute a waiver of a right or remedy afforded it under the Contract Documents or at law nor shall such an action or failure to act constitute approval of or acquiescence in a breach hereunder, except as may be specifically agreed in writing.

18.5. SEVERABILITY

18.5.1. In the event a court or any other governmental agency of competent jurisdiction shall deem any provision of the Contract Documents illegal, invalid, unenforceable and/or void, such provision shall be deemed to be severed and deleted from the Contract Documents, but all remaining provisions hereof, shall in all other respects, continue in full force and effect.

18.6. NO ASSIGNMENT BY CONTRACTOR

18.6.1. The Contractor shall not sublet or assign the Contract, or any portion thereof, or any monies due thereunder, without the express prior written consent and approval of the District, which approval may be withheld in the sole and exclusive discretion of the District. The District's approval to such assignment shall be upon such terms and conditions as determined by the District in its sole and exclusive discretion.

18.7. GENDER AND NUMBER

18.7.1. Whenever the context of the Contract Documents so require, the neuter gender shall include the feminine and masculine, the masculine gender shall include the feminine and neuter, the singular number shall include the plural and the plural number shall include the singular.

18.8. INDEPENDENT CONTRACTOR STATUS

18.8.1. In performing its obligations under the Contract Documents, the Contractor shall be deemed an independent Contractor to the District and not an agent or employee of the District

18.9. NOTICES

18.9.1. Except as otherwise expressly provided for in the Contract Documents, all notices which the District or the Contractor may be required, or may desire, to serve on the other, shall be effective only if delivered by personal delivery or by postage prepaid, First Class Certified Return Receipt Requested, United States Mail, addressed to the District or the Contractor at their respective address set forth in the Contract Documents, or such other address (es) as either the District or the Contractor may designate from time to time by written notice to the other in conformity with the provisions hereof. Such notice shall be dated and signed by the party giving such notice or by a duly authorized representative of such party. In the event of personal delivery, such notices shall be deemed effective upon delivery, provided that such personal delivery requires a signed receipt by the recipient acknowledging delivery of the same. In the event of mailed notices, such notice shall be deemed effective on the third Working day after deposit in the mail. Unless otherwise directed by the District, the Contractor’s notices to the District shall be addressed as specified in the Supplementary Conditions.

18.9.2. If the notice is given to the surety or other person, by personal delivery to such surety or other person, or by depositing the same in the United States Mail, First Class Certified Return Receipt Requested, enclosed in a sealed envelope, addressed to such surety or person, at the address of such surety or person last communicated by him/her to the party giving the notice, postage prepaid and registered.

18.10. DISPUTES; CONTINUATION OF WORK

18.10.1. Notwithstanding any Claim, dispute or other disagreement between the District and the Contractor regarding performance under the Contract Documents, the scope of Work thereunder, or any other matter arising out of or related to, in any manner, to the Contract Documents, the Contractor shall proceed diligently with performance of the Work in accordance with the District's written direction, pending any final determination or decision regarding any such Claim, dispute or disagreement.

18.11. DISPUTE RESOLUTION.

18.11.1. [Reserved]

18.11.2. Definition of Claim. "Claim," as used herein, means a separate written demand or a separate written assertion by Contractor seeking (a) an extension of time, (b) the payment of money in a sum certain arising from Work done by, or on behalf of, the Contractor pursuant to the Contract and payment of which is not otherwise expressly provided for or the Claimant is not otherwise entitled to, or (c) an amount the payment of which is disputed by the District. A voucher, invoice, or other routine request for payment that is not in dispute when submitted is not a Claim or dispute under the Contract. The voucher, invoice, or other request for payment may be converted to a Claim under the Contract, by complying with the submission requirements herein, if it is disputed either as to liability or amount. A written demand or assertion by a Contractor does not become a Claim under this Article until Contractor has received a written determination from Construction Manager under Article 10. If the Contractor fails to submit sufficient substantiating data in strict conformity with Article 10 and/or fails to provide notice in strict conformity with Articles 10.2 and 10.4.1.2, the Contractor shall waive any and all right to pursue any relief as to that Claim. However, the term “Claim” shall not include the following:

18.11.2.1. Claims regarding penalties for forfeitures prescribed by statute, or regulation, which a government agency is specifically authorized to administer, settle, or determine;

18.11.2.2. Claims regarding personal injury, death, reimbursement, or other compensation arising out of or resulting from liability for personal injury or death;

18.11.2.3. Claims regarding a latent defect, patent defect, breach of warranty, or guarantee to repair; or

18.11.2.4. Claims regarding stop payment notices.

18.11.3. Written Notice of Claim and Request for Meet and Confer Required. If the Contractor disagrees with the Construction Manager's written determination pursuant to Article 10 and intends to further pursue the subject Claim, the Contractor must request in writing the following two items: 1) an executive negotiation session ("Meet and Confer") and pursuant to Public Contract §20104 *et seq*. with the office of the Construction Management Director; and 2) a respective written decision ("Written Decision").

18.11.4. Good Faith Attempt to Resolve. The Contractor and District shall make good faith attempts to resolve any and all Claims that may from time to time arise during the performance of the Work covered by this Contract. Notwithstanding the provisions of Public Contract Code §20104, etc. seq., the procedures for dispute resolution set forth therein shall not be commenced until after a dispute subject to resolution under the §20104 procedures has been submitted to Meet and Confer. Pursuant to the Contractor's written request for a Meet and Confer, the District's Construction Management Director or his or her designee will schedule the meeting within a reasonable time, consult with the Supervising Project Manager and the Construction Manager, and issue a Written Decision within ten (10) days of the Meet and Confer, unless action or response by the Contractor to provide additional supporting documentation is required.

18.11.5. Written Formal Claim Required. If the Contractor disagrees with the Written Decision from the District, and the Contractor intends to submit a Claim as provided for in Article 18.11.2, the Contractor shall submit its Claim in writing to the Construction Manager in strict conformity with the Claim format set forth below within thirty (30) days of date of Written Decision. Contractor's failure to provide all justifying documentation within thirty (30) days of date of Written Decision shall waive any and all right to pursue any relief as to that Claim.

18.11.6. Claim Format. The Contractor (and Subcontractor(s), if the Contractor is submitting the Claim on its/their behalf) shall submit the Claim justification in the following format:

a. Cover letter containing a statement that it is a Claim, and a summary description of the Claim, amount of the Claim, and clause or section under the Contract under which the Claim is made.

b. Copies of documents relating to the Claim as attachments:

1) Specifications

2) Drawings

3) Clarifications (RFI's)

4) Correspondence

5) Other relevant information

c. Chronology of events

d. Detailed analysis of Claim merit

e. Time Impact Analysis pursuant to Article 6

f. Detailed analysis of Claim cost

g. Certification

18.11.7. Certification: The Contractor (and Subcontractor(s), if the Contractor is submitting the Claim on its/their behalf) shall submit with the Claim a certification that:

a. The Claim is made in good faith;

b. Supporting data are accurate and complete to the best of the Contractor's knowledge and belief; and

c. The amount requested accurately reflects the Contract adjustment for which the Contractor believes the District is liable.

18.11.8. The certification shall contain the following statement: "I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct." Said declaration shall be dated and signed by an authorized person. If the Contractor is not an individual, the certification shall be executed by an officer or general partner of the Contractor having overall responsibility for the Contractor's business affairs.

18.11.9. Failure to provide the certification in accordance with the above requirements will result in the Contractor's waiver of any and all right to pursue the subject Claim.

18.11.10. If a false, claim is submitted (as defined under the False Claims Act found in California Government Code §§12650 *et seq*.) it will be considered fraudulent and the Contractor may be subject to criminal prosecution under California Penal Code §72 and/or civil liability under False Claims Act. In such case, the District shall be entitled to recover all costs incurred to investigate any False Claim, including but not limited to attorneys' fees and expert fees incurred in connection with said investigation.

18.11.11. Formal Claim Review and Determination: Upon receipt of a Claim, the District shall review the Claim and, within a period not to exceed forty-five (45) days, shall provide Contractor a written statement identifying what portion of the Claim is disputed and what portion is undisputed. Upon receipt of a Claim, the District and the Contractor may, by mutual written agreement, extend the forty-five (45) day time period. The District shall process and make payment of any undisputed portion of a Claim within sixty (60) days after the District issues its written statement. Failure by the District to provide a written statement in response to a Claim from the Contractor within the forty-five (45) day time period, or within an agreed upon extended time period, shall result in the Claim being deemed rejected in its entirety. A Claim that is rejected by reason of the District's failure to respond, or failure to timely respond, to the Claim shall not constitute an adverse finding regarding the merits of the Claim or the claimant's responsibility or qualifications. Contractor agrees that strict compliance with Articles 6, 10, and 18 is an express condition precedent to Contractor's right to litigate a Claim. Contractor specifically agrees to assert no Claims in litigation unless there has been strict compliance with Articles 6, 10, and 18.

18.11.12. Meet and Confer Meeting. If the Contractor disputes the District's written response, or if the District fails to respond within the time frame prescribed above, the Contractor, within fifteen (15) days of the District's written response or, if the District fails to respond, within fifteen (15) days after the District's response was due, may demand, in a writing sent to the District's Construction Manager by registered mail or certified mail, return receipt requested, with a copy to the Project Manager, an informal conference to meet and

confer for settlement of the issues in dispute. The District shall schedule a meet and confer conference within thirty (30) days of its receipt of the Contractor's written demand.

18.11.13. Mediation. Within ten (10) business days following the conclusion of the meet and confer conference, if the Claim or any portion of the Claim remains in dispute, the District shall provide the Contractor a written statement identifying the portion of the Claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the Claim shall be processed and made within sixty (60) days after the District issues its written statement. Any disputed portion of the Claim, as identified by the Contractor in writing, shall be submitted to nonbinding mediation. The expenses and fees of the mediator and the administrative fees shall be divided among the parties equally. Each party shall pay its own legal fees, witness fees, and other expenses. The District and the Contractor shall mutually agree to a mediator within ten (10) business days after the disputed portion of the Claim has been identified in writing. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the Claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator.

At the District's sole discretion, this mediation may be a multiple-party mediation with the Architect, the Construction Manager, the Inspector, and/or other District consultants.

18.11.14. Post Mediation.

Claims of $375,000 or Less: Claims between the District and the Contractor of $375,000 or less shall be resolved in accordance with the procedures established in California Public Contract Code §§20104, *et seq*.; provided, however that California Public Contract Code §20104.2(a) shall not supersede the requirements of the Contract Documents with respect to the Contractor's notification to the District of such Claim or extend the time for the giving of such notice as provided in the Contract Documents.

Litigation of Claims in Excess of $375,000: If, after a mediation as indicated above, the Parties have not resolved the Claim, either Party may commence an action in a court of competent jurisdiction to contest that decision within ninety (90) days following the conclusion of that mediation or one (1) year following the accrual of the cause of action, whichever is later. By mutual agreement, the Parties can agree to instead resolve the Claim through arbitration.

18.11.15. Contractor's Obligation to File a Government Code Claim. Nothing in this Contract, including this Claims Resolution Process, waives, modifies, or tolls the Contractor's obligation to present a timely claim under Government Code section 910, et seq. Therefore, in addition to complying with this Claims Resolution Process, the Contractor is required to present Government Code claims to the District pursuant to Government Code section 910, et seq. If after the requirements of this Claims Resolution Process are satisfied, and all or a portion of the Claim remains unresolved, and if the Government Code claim is rejected by the District, the Contractor may proceed under the post-mediation provisions of this Claims Resolution Process.

18.11.16. Subcontractors.

Public Contract Code section 9204(d)(5) states that the Contractor may present to the District a Claim on behalf of a Subcontractor or lower tier Subcontractor. A Subcontractor may request in writing, either on his or her own behalf or on behalf of a lower tier Subcontractor, that the Contractor present a claim for Work which was performed by the Subcontractor or by a lower tier Subcontractor on behalf of the Subcontractor. The Subcontractor requesting that the Claim be presented to the District shall furnish reasonable documentation to support the Claim. Within 45 days of receipt of this written request, the Contractor shall notify the Subcontractor in writing as to whether the

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

Contractor is responsible for providing this Dispute Resolution Process to its Subcontractors and for ensuring that all Subcontractors or others who may assert Claims by and through Subcontractors and/or the Contractor are informed of this Dispute Resolution Process. No Claim submitted by any party that fails to follow the provisions of this Dispute Resolution Process will be considered. Contractor shall bind all its Subcontractors to this Dispute Resolution Process and indemnify, keep and hold harmless the District and its consultants, against all suits, claims, damages, losses, and expenses, including but not limited to attorney's fees, caused by, arising out of, resulting from, or incidental to, the failure to provide this Dispute Resolution Process to its Subcontractors or others who may assert Claims by and through Subcontractors and/or the Contractor.

ARTICLE 19

19. CONFLICTS IN CONTRACT DOCUMENTS

19.1. ARCHITECT'S RESOLUTION

19.1.1. Conflicts, inconsistencies or ambiguities in the Contract Documents shall be resolved by the Architect, in consultation with the District, in accordance with Article 3.1.7. of the General Conditions.

19.2. INTERPRETATION OF CONTRACT DOCUMENTS

19.2.1. The Contract Documents are complementary and what is required by one part shall be as binding as if required by all unless one or more parts are in conflict with each other. When there are conflicts, Article 19.2.2. of the General Conditions applies. Where any portion of the Contract Documents is silent and information appears elsewhere in the Contract Documents, such other portions of the Contract Documents shall control.

19.2.2. Where conflicts or inconsistencies arise in the Contract Documents, the conflict shall first be resolved by giving precedence to the most recently amended version of the document and in the following order, and if that does not resolve the conflict, by complying with the most stringent requirement:

- Change Orders in reverse order of issuance, issued by the District after receipt of approval of the plans and Specifications from the State of California, Division of State Architect.
- Plans and Specifications approved by the Division of State Architect, limited, however, to the extent that approval relates to the safety of design and construction.
- Executed Agreement.
- Supplementary Conditions.
- General Conditions.
- Construction Documents - Technical Specifications Division 01.
- Construction Documents - Technical Specifications Divisions 02 - 34.
- Construction Documents - Drawings and Exhibits, with figured dimensions controlling over scaled measurements.

END OF GENERAL CONDITIONS - EXHIBITS FOLLOW

Exhibit "A"

Payment – Extra, Additional, Allowances, Contingencies or Deleted Work

PAYMENT	*EXTRA/ADDITIONAL/ DELETED WORK*	*ALLOWANCES/ CONTINGENCIES*
1. General Contractor Material and Equipment ***a. Attach itemized quantity and unit cost plus sales tax.*** ***b. Include information where derived, i.e., "Means Building Construction Cost Data" or other source mutually agreed to by all parties.***		
2. General Contractor Labor ***Attach itemized hours and rates per certified payrolls, prevailing wage chart and PSA agreements. Rates shall only include a maximum of 15% for payroll burden plus actual costs for Workers' Compensation Insurance. Payment for extra supervision will be paid when extra Work is done in a time period other than normal Working hours.***		
3. Subtotal: Item #1 plus Item #2		
4. General Contractor's Overhead, Profit, Supervision, Bond Fees ***(A maximum aggregate total of 16% of Item #3.)*** ***This item is not allowed on Extended Overhead.***		***INCLUDED IN CONTRACT SUM***
5. Total General Contractor: Item #3 plus Item #4		
6. Subcontractor Material and Equipment ***c. Attach itemized quantity and unit cost plus sales tax.*** ***d. Include information where derived, i.e., "RS Means Building Construction Cost Data" or other source mutually agreed to by all parties.***		
7. Subcontractor Labor ***Attach itemized hours and rates per certified payrolls, prevailing wage chart, and PSA agreements. Rates shall only include a maximum of 15% for payroll burden plus actual costs for Workers' Compensation Insurance. Payment for extra supervision will be paid when extra Work is done in a time period other than normal Working hours.***		
8. Subtotal: Item #6 plus Item #7		
9.General Contractors' Overhead, Supervision, Bond Fees and Profit for Subcontractor Work ***(A maximum aggregate total of 11% of Item #8.)*** ***This item is not allowed on Extended Overhead.***		***INCLUDED IN CONTRACT SUM***
10. Subcontractor's Overhead and Profit ***Maximum aggregate total of 15% of Item #8. Not to be included for Work provided by Contractor. No sub-tier markups allowed. Attach signed Subcontractor documentation on Subcontractor letterhead.*** ***This item is not allowed on Extended Overhead.***		
11. Subtotal: Item #9 plus Item #10.		

TOTAL: Item #5 plus Item #8 plus Item #11.		
ESTIMATED TIME: (Zero, unless indicated; "TBD" not allowed)	_____***CALENDAR DAYS***	

EXTRA OR CREDIT CHANGE ORDERS WILL NOT BE CONSIDERED UNLESS THIS EXHIBIT IS COMPLETELY FILLED IN WITH ALL ADDS AND DEDUCTS ACCOUNTED FOR ALONG WITH APPROPRIATE BACKUP DOCUMENTATION. ANY SPACES LEFT BLANK WILL BE DEEMED NO CHANGE TO COST OR TIME.

Cost summaries, breakdowns, back-up or requests shall not be based, in whole or in part, upon any methodology (such as "total cost", "modified total cost" or "Eichleay" formalitic methodologies) that purports to calculate or estimate additional costs of performance of the extra, additional or disputed Work (including, without limitation, the additional costs of delay, disruption, interference, hindrance, unabsorbed overhead, or other impacts) and the cumulative impact of each extra, additional, or deleted Work on other parts of the Work.

For Allowances and Contingencies specified in Section 01 21 00, the Contractor's costs for supervision, overhead, profit, and bonds have been included in the Contract Sum.

ATTACHMENT 1 A

This form MUST be utilized in conjunction with ATTACHMENT 1 / EXHIBIT A for ALL change orders, allowances and contractor contingencies.

SAN DIEGO UNIFIED SCHOOL DISTRICT
Facilities Planning Construction
4850 Ruffner Street
San Diego, California 92111-1522

CONTRACT NAME: _____ SDUSD CONTRACT NO. _____
CONTRACTOR/SUBCONTRACTOR: _____ UNIFIER P.O. NO. _____
GENERAL WAGE DETERMINATION: _____ DATE _____

HOURLY LABOR RATE WORKSHEET

Contractor MUST enter information in all fields *(Excel spreadsheet may be requested)*. The District's Excel spreadsheet automatically populates the shaded areas below).

CRAFT/TRADE: _____ GROUP NO.: _____ CLASSIFICATION: Apprentice Period Level ____ or Journeyman
(circle applicable)

Item	Paid to Worker	Paid to Plan/Union	Prevailing Wage Rate: Regular Time	Overtime	Double Time	Notes
(1) Base Labor Rate			$ -	$ -	$ -	
Fringe Benefits: [1]	(enter rate in appropriate box)					
Health & Welfare [2]	$ -	$ -	$ -	$ -	$ -	
Pension [2]	$ -	$ -	$ -	$ -	$ -	
Vacation [2 & 3]	$ -	$ -	$ -	$ -	$ -	
Training [2]	$ -	$ -	$ -	$ -	$ -	
Other [2] (provide description in "Notes")	$ -	$ -	$ -	$ -	$ -	
Supplemental Dues [2] (does not apply to all crafts/trades, please refer to the DIR General Wage Determination for applicability or not)	$ -	$ -	$ -	$ -	$ -	
	(2a) Total Paid to Worker	(2b) Total Paid to Plan/Union				
Fringe Benefits Totals	$ -	$ -				
(2) Fringe Benefits Subtotal *(includes both paid to worker & paid to plan/union)*			$ -	$ -	$ -	
Travel & Subsistence:			*(Fringe Benefit Subtotal that exceeds DIR's total maximum fringes, will not receive credit for the difference)*			
Travel (refer to DIR General Wage Determination for applicability or not)			$ -			
Subsistence (refer to DIR General Wage Determination for applicability or not)			$ -			
(3) Travel & Subsistence Subtotal			$ -			
Total Paid Hourly Rate to Worker [4] *(includes line items #1, #2a & #3)*			$ -	$ -	$ -	= Hourly Rate Paid to Worker on his/her check
Burden: Taxes & Insurance	% Rates		BURDEN BASED ON ABOVE RATES			
Social Security (FICA)			$ -	$ -	$ -	
Medicare (FICA)			$ -	$ -	$ -	
Federal Unemployment Insurance (FUTA)			$ -	$ -	$ -	
California Unemployment Insurance (UI)			$ -	$ -	$ -	
Employment Training Tax (ETT)			$ -	$ -	$ -	
Payroll Burden (can not exceed 15%)						
Workers' Compensation Code:			$ -	$ -	$ -	
(4) Burden Subtotal			$ -	$ -	$ -	
Contractor Liability Insurance			n/a	n/a	n/a	*Included in OH&P per CGC*
Small Tools			n/a	n/a	n/a	*Included in OH&P per CGC*
Other (warranty, record drawings, payment & performance bonds, etc.)			n/a	n/a	n/a	*Included in OH&P per CGC*
Union Dues			n/a	n/a	n/a	*Included in OH&P per CGC*
TOTAL HOURLY RATE *(includes line item #1, #2, #3 & #4)*			$ -	$ -	$ -	= $ Contractor/Subcontractor paid to worker. ALL fringes, plus burden

[1] Hourly rate for each fringe paid to a bona fide plan/program/union or if paid to the worker must be indicated. Any fringes paid to worker become cash fringes.

[2] Fringe rates for overtime and double time are the same as regular rate of pay.

[3] If paid vacation is added to gross wages, for tax purposes, and then deducted for payment at a later time. Rate must be entered under "Paid to Worker."

[4] Taxes & Insurance apply to the Total Paid Hourly Rate which includes Base Labor Rate plus ANY fringe benefits paid to worker. PSA projects ALL fringes paid to a plan.

By signing below, the submitter certifies and declares under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Name & Title: _____ Company Name: _____
(print name)

Signature: _____ Rev 03.11.2022

Exhibit "B"
CONTRACTOR AND SUBCONTRACTOR MONTHLY UPDATE OF EMPLOYEE D.O.J. FINGERPRINTING STATUS

The following is a list of our employees and our subcontractor's employees and their DOJ fingerprinting status who are working on the project site(s). I will keep this list current and send the District's Construction Manager any new updates with my monthly payment application.

NAME	EMPLOYER	FINGERPRINTED? Yes	No

_____ _____
Contact Name (Officer or Employee) Title

_____
Authorized Signature

_____
Telephone Number

Exhibit "C"

Final Subcontractors List as required by Labor Code Section 1773.3(d)

General Contractor:	SDUSD Agreement / PO No:
Project Name:	
Project Address:	

Subcontractor Name	Email Address	DIR Registration No.	CSLB No.	Work Classification(s) Used for Project

1. INDEMNITY

A. Unless arising solely out of the active negligence, gross negligence or willful misconduct of the Indemnified Parties, the Contractor shall indemnify, defend and hold harmless (i) the District, its Board of Education members, officers, employees, agents and representatives (including the District's Project Inspector, Construction Manager and Project Manager); (hereinafter collectively referred to as the "Indemnified Parties") from and against any and all damages, losses, claims, demands or liabilities of any kind or nature whatsoever, which arise from, or are alleged to arise from, or are in any way connected to, in whole or in part, the Work, the Contract Documents or the acts, omissions or other conduct of the Contractor or any Subcontractor or any person or entity engaged by them in connection with the Work. The Contractor's obligations under the foregoing include without limitation: (i) injuries to or death of persons; (ii) damage to property; or (iii) theft or loss of property; (iv) stop payment notice Claims asserted by any person or entity in connection with the Work; and (v) other losses, liabilities, damages or costs resulting from, in whole or part, any acts, omissions or other conduct of the Contractor, any Subcontractor, of any tier, or any other person or entity employed directly or indirectly by Contractor in connection with the Work and their respective agents, officers or employees, and (vi) other losses, liabilities, damages or costs resulting from, in whole or part, any acts, omissions or other conduct of the Contractor, any Subcontractor, of any tier, or any other person or entity employed directly or indirectly by Contractor in connection with the Work and their respective agents, officers or employees. Contractor's obligations hereunder shall include the obligation to defend, indemnify and hold harmless the Indemnified Parties from and against any and all claims asserted, or liability established, for damages or injuries to any person or property which may arise from, or are connected with, or are caused, or claimed to be caused, by the contractor's failure to comply with all of the requirements contained in Education Code, section 45125.1, including, but not limited to, the requirement prohibiting the contractor from using employees who may have contact with pupils who have been convicted of, or have charges pending for, a felony as defined in Education Code 45125.1.

B. If any action or proceeding, whether judicial, administrative, arbitration or otherwise, shall be commenced on account of any claim, demand or liability covered by this, and such action or proceeding names any of the Indemnified Parties as a party thereto, the Contractor shall, at its sole cost and expense, defend the Indemnified Parties in such action or proceeding with counsel reasonably satisfactory to the Indemnified Parties named in such action or proceeding.

C. In the event that there shall be any judgment, award, ruling, settlement, or other relief arising out of any such action or proceeding to which any of the Indemnified Parties are bound by, Contractor shall pay, satisfy or otherwise discharge any such judgment, award, ruling, settlement or relief; Contractor shall indemnify and hold harmless the Indemnified Parties from any and all liability or responsibility arising out of any such judgment, award, ruling, settlement or relief. The Contractor's obligations hereunder are binding upon Contractor's Performance Bond Surety and these obligations shall survive notwithstanding Contractor's completion of the Work or the termination of the Contract.

2. INSURANCE

A. Contractor's Insurance

Contractor shall procure and maintain for the duration of the contract and warranty period insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by Contractor, his agents, representatives, employees or subcontractors.

B. Minimum Scope of Insurance

1. Coverage shall be at least as broad as:

   a. Insurance Services Office (ISO) Commercial General Liability coverage (occurrence Form CG 00 01) or Insurance Services Office Form (CG 00 09 11 88 Owners and Contractors Protective Liability Coverage Form – Coverage for Operations of Designated Contractor.
   b. Insurance Services Office Form Number CA 0001 covering Automobile Liability, Code 1 (any auto).
   c. Workers' Compensation insurance as required by the State of California and Employers' Liability insurance.
   d. Builder's Risk (Course of Construction) insurance (or Installation Floater if project does not involve new or major reconstruction) covering "all risks" of loss (ISO Special Form) through final acceptance of the work.
   e. Surety bonds as described below.
   f. Professional Liability (if Design/Build)
   g. Contractors' Pollution Legal Liability and/or Asbestos Legal Liability (if project involves potential pollution issues)

C. Minimum Limits of Insurance

1. General Liability: (Including operations, products and completed operations)
   a. **$2,000,000** per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this project/location or the **general aggregate limit shall be twice the required occurrence limit**.

2. Automobile Liability:
   a. **$1,000,000** per accident for bodily injury and property damage.

3. Workers Compensation Insurance
   a. As required by the State of California.

4. Employers Liability Insurance
   a. **$1,000,000** each accident, **$1,000,000** policy limit bodily injury by disease, **$1,000,000** each employee bodily injury by disease.

~~5. Builder's Risk:~~
   ~~a. Completed value of the project with no coinsurance penalty provisions.~~

5. Property Installation Floater in lieu of Builder's Risk.
   a. **100% of project value.**

~~7. Professional Liability:~~
   ~~a. **$1,000,000**~~

6. Pollution Legal Liability:
   a. **$1,000,000**

D. Deductibles and Self-Insured Retentions

1. Any deductibles or self-insured retentions must be declared to and approved by the District. At the option of the District, either: the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the District, its officers,

officials, employees and volunteers; or the Contractor shall provide a financial guarantee in the form of a bond satisfactory to the District guaranteeing payment of losses and related investigations, claim administration and defense expenses. Contractor shall be solely and exclusively responsible for the payment of any deductibles, under the required policies of insurance, without adjustment to the Contract Price on account thereof.

E. Other Insurance Provisions

1. The General Liability and Automobile Liability policies are to contain, or be endorsed to contain, the following provisions:

   a. The District, its officers, officials, employees, and volunteers are to be covered as insureds ("additional insureds") with respect to liability arising out of automobiles owned, leased, hired or borrowed by or on behalf of the Contractor; and with respect to liability arising out of work or operations performed by on behalf of the Contractor including materials, parts or equipment furnished in connection with such work or operations. General liability coverage can be provided in the form of an endorsement to the Contractor's insurance, or as a separate owner's policy.
   b. For any claims related to this project, the Contractor's insurance coverage shall be primary insurance as respects the District, its officers, officials, employees, and volunteers, Any insurance or self-insurance maintained by the District, its officers, officials, employees, or volunteers shall be excess of the Contractor's insurance and shall not contribute with it.
   c. Each insurance policy required by this clause shall be endorsed to state that coverage shall not be cancelled by either party, except after thirty (30) days prior written notice has been provided to the District.

F. Builder's Risk (Course of Construction) Insurance

1. Contractor may submit evidence of Builder's Risk insurance in the form of "Course of Construction" coverage. In either case, the District shall be listed as an insured under the policy.

2. If the scope of work does not involve new, or major reconstruction, (as defined by the District), at the option of the District, an "Installation Floater" will be acceptable to meet this requirement. For such projects, a property installation floater shall be obtained that provide for the improvement, remodel, modification, alteration, conversion or adjustment to existing buildings, structures, processes, machinery and equipment. The Property Installation Floater shall provide property damage coverage for any building, structure, machinery or equipment damaged, impaired, broken or destroyed during the performance of the Work, including during transit, installation and testing at the District's site.

3. Builder's Risk insurance shall be maintained on all insurable Work included under the Contract Documents and Work in Progress, and shall include false-work (which includes but is not limited to temporary structures such as scaffolding, bridge centering, metal work, in which a temporary construction work of which a main work is wholly or partly built until the main work is self-supporting) temporary buildings, transit, debris removal, including demolition, increased cost of construction, architect fees and expenses and flood, including water damage, windstorm, earthquake (if required) and, if applicable, all below and above ground structures, piping, foundations, including underground water and sewer mains, piling, including the ground on which the structure rests, and excavation, backfilling, filling and grading. Insured property shall include portions of the Work

located away from the site but intended for use at the site and shall also cover portions of the Work in transit.

4. Such insurance shall include the interests of the District, any other person with an insurable interest designated by the District, the Contractor and sub-contractors as insureds on the policy.

5. The Builder's Risk insurance shall include a Beneficial Occupancy Clause. The policy shall specifically permit occupancy of the building during construction. The Contractor shall take reasonable steps to obtain consent of its insurance company and delete any provisions with regard to restrictions within any occupancy clauses within the Builders Risk policy.

6. The deductible shall not exceed $25,000 (except for flood, windstorm, and earthquake (if required), which may have a higher deductible subject to District approval but in no event more than $100,000) and shall be the responsibility of the Contractor.

7. The Contractor shall submit to the District for its approval all items deemed to be uninsurable. The risk of damage to the Work due to the perils covered by the Builder's Risk "All Risk" Insurance, as well as any other hazard which might result in damage to the Work, is that of the Contractor and the Surety, and no Claims for such loss or damage shall be recognized by the District, nor shall such loss or damage excuse the complete and satisfactory performance of the Contract by the Contractor.

G. Claims Made/Pollution Legal Liability

1. If General Liability, Contractor's Pollution Liability and/or Asbestos Pollution Liability and/or Errors & Omissions coverages are written on a claims-made form.

   a. The retroactive date must be shown, and must be before the date of the contract or the beginning of contract work.
   b. Insurance must be maintained and evidence of insurance must be provided for at least five (5) years after completion of contract work.
   c. If coverage is cancelled or non-renewed, and not replaced with another claims-made policy form with a retroactive date prior to the contract effective date, the Contractor must purchase extended reporting period coverage for a minimum for five (5) years after completion of contract work.
   d. A copy of the claims reporting requirements must be submitted to the District for review.
   e. If the services involve lead-based paint or asbestos identification/remediation, the Contractor's Pollution Liability policy shall not contain lead-based paint or asbestos exclusions. If the services involve mold identification/remediation, the Contractors Pollution Liability policy shall not contain a mold exclusion, and the definition of Pollution shall include microbial matter, including mold.

H. Acceptability of Insurers

1. Insurance is to be placed with insurers with a current A.M. Best rating of no less than A-:VII, unless otherwise acceptable to the District, and authorized to do business in the State of California. Exception may be made for the State Compensation Insurance Fund when not specifically rated. Coverage provided by non-admitted surplus lines carriers may be accepted provided the insurers are

included in the current California LASLI list and otherwise meet rating requirements.

I. Verification of Coverage

1. Contractor shall furnish the District with endorsements effecting coverage required by this clause. The endorsements are to be signed by a person authorized by the Insurer to bind coverage on its behalf. All endorsements are to be received and approved by the District before work commences. However, failure to do so shall not operate as a waiver of these insurance requirements. The Contractor's insurer shall provide complete copies of all required insurance policies, including endorsements affecting the coverage required by these specifications.

J. Waiver of Subrogation

1. Contractor hereby agrees to waive subrogation rights which any insurer of Contractor may acquire from Contractor by virtue of the payment of any loss. Contractor agrees to obtain any endorsement that may be necessary to affect this waiver of subrogation. The Workers' Compensation policy shall be endorsed with a waiver of subrogation in favor of the District for all work performed by the Contractor, its employees, agents and subcontractors.

K. Subcontractors

1. Contractor shall require and verify that all listed subcontractors maintain insurance meeting all the requirements stated herein.

L. Maintenance of Insurance

1. Any insurance, including Claims made policies bearing on the adequacy of performance of Work, shall be maintained after the District's Final Acceptance of all the Work, or from the date of Substantial Completion as provided in Article 15.2.2 of the General Conditions, for the full two years correction of Work period and any longer specific guarantee or warranty periods set forth in the Contract Documents. Should such insurance be canceled before the end of such periods and the Contractor fails to immediately procure replacement insurance as specified, the District reserves the right to procure such insurance and to charge the cost thereof to the Contractor. Nothing contained in these insurance requirements is to be construed as limiting the extent of the Contractor's defense and indemnity obligations or responsibility for payment of damages from its operations or performance of the Work under the Contract Documents, including without limitation the Contractor's obligation to pay liquidated damages. In no instance shall the District's exercise of its option to occupy and use completed portions of the Work relieve the Contractor of its obligation to maintain insurance required under this Article until the date of Final Acceptance of the Work by the District, or such time thereafter as required by the Contract Documents. The insurer providing any insurance coverage required hereunder shall be to the reasonable satisfaction of the District.

M. Surety Bonds

1. All surety bonds shall be duly executed by a responsible corporate surety, authorized to issue such bonds in the State of California and secured through an authorized agent with an office in California.

a. A Bid Bond, certified or cashier's check for ten percent (10%) of the Bidder's offer, to be included with submitted bid documents at time of bid.

b. A Performance Bond for one hundred percent (100%) of the Contract Price. Said Performance Bond shall be on the form provided in the bid documents herein.

c. A Labor and Material Payment Bond for one hundred percent (100%) of the Contract Price. Said Payment Bond shall be on the form provided in the bid documents herein.

2. The failure or refusal of the Contractor to furnish either the Performance or the Labor and Material Payment Bond in strict conformity with this Article may be deemed by the District as a default by the Contractor of a material obligation hereunder.

3. DISTRICT REPRESENTATIVE

The District Representative's for all work shall be:

Natalie DaCosta
Construction Manager
4860 Ruffner Street
San Diego, CA 92111-1522
213-335-1579

4. HAZARDOUS MATERIALS TRAINING

Prior to commencing work, the Contractor shall provide training for all applicable Contractor employees regarding all Hazardous Substances with which the Contractor's employees may encounter during the course of the contract. The District's Safety Coordinator shall provide the substance inventory, if any, to the Contractor, for the work area involved, prior to the Contractor's employees beginning work on District premises. Contractor shall provide the District's Representative with appropriate documentation evidencing that Contractor's employees have received the appropriate hazardous materials training and information.

5. EMPLOYEE FINGERPRINT VERIFICATION; BARRIERS; EMPLOYEE SURVEILLANCE

A. At all times when a Site is used or occupied for academic purposes or for other school related functions, no employee or independent contractor to the Contractor or any Subcontractor shall be permitted access to the Site or to perform any Work at the Site unless: (a) such person has submitted her/his fingerprints to the California Department of Justice ("DOJ") pursuant to Education Code §45125.1; (b) the DOJ has ascertained, based upon the submitted fingerprints, that the individual has not been convicted of a felony defined in Education Code §45122.1 and has no criminal felony proceedings (as defined in Education Code §45122.1) pending against her/him; (c) the Contractor or Subcontractor engaging the individual for the Work has received written or electronic verification from the DOJ of the absence of felony convictions and pending felony criminal proceedings; and (d) the Contractor or Subcontractor engaging such individual as an employee or independent contractor has submitted a Fingerprint Certification to the District specifically identifying such individual as having been verified by the DOJ as not having been convicted of a felony and not having pending criminal felony proceeding pending against her/him. The provisions of Education Code §45125.2(a) notwithstanding, erection and maintenance of physical barriers and/or continuous supervision and monitoring are insufficient measures to comply with the requirements of this paragraph when a Site is being used or occupied for academic

purposes or other school related functions. At all other times during the Work, as appropriate, or as directed by the District, to limit contact between workers performing the Work and students and for the safety of students, the Contractor shall: (i) erect a physical barrier around the Work to limit contact between students and the individuals performing Work; or (ii) designate an employee of the Contractor and require each Subcontractor to designate an employee who shall be responsible for the continuous monitoring and supervision of the other employees of the Contractor and Subcontractors, provided that the employees designated for such monitoring and supervision has submitted her/his fingerprints to the Department of Justice under Education Code §45125.1 for verification that she/he has not been convicted of a felony and does not have any criminal proceeding pending against her/him and the Contractor/Subcontractor employee has submitted a Fingerprint Certification attesting to such Department of Justice fingerprint verification and the absence of criminal convictions or pending criminal proceedings. The responsibility for complying with the requirements of Education Code §45125.2 rests solely with the Contractor; the District will not designate any District personnel for surveillance of the Contractor's employees under Education Code §45125.2(a)(3).

B. In accordance with General Conditions section 7.2 PROGRESS PAYMENTS, Contractor must submit an updated list (see Exhibit C of the General Conditions) of all Contractor's and his Subcontractor's employees with their DOJ fingerprinting status with their monthly payment application. Failure to include the list with their monthly payment application will be reason to reject the application and delay of payment until the payment application has been submitted as required and accepted by the District.

C. At time of bid, if Contractor checks box 3) on the "Contractor Certification Regarding Background Checks" form stating he will execute the required Department of Justice application and send the required employees to be fingerprinted, Contractor must provide certification with his first payment application that the required employees were indeed fingerprinted. Failure to provide certification will result in delay of payment until such certification is provided to the project's Construction Manager.

D. Contact www.oag.ca.gov to obtain an ORI number or more information from the Department of Justice regarding this requirement.

6. PROJECT STARTING AND COMPLETION DATES – CONTRACT TIME

Construction for **HORTON ELEMENTARY SCHOOL RE-ROOFING AND BEAM REPAIR** shall start per Notice to Proceed (NTP), which is incorporated by reference into the contract, shall progress continuously, and be substantially completed no later than August 18, 2023.

7. STANDARD AND MODIFIED WORK WEEK

A standard work week is defined as Monday through Friday. A standard work day is defined as eight (8) hours worked between the hours of 7:00 a.m. and 7:00 p.m. during a standard work week, as defined in California Labor Code sections 1810 through 1815.

In order to minimize disruption to the teaching environment, the Contractor may be required, at the District's discretion, to have his employees work a modified work week. A modified work week is defined as any forty (40) hour week *other than a standard work week*.

If the Contractor is required to work a modified work week, the work will be performed at *straight time*. No overtime compensation will be authorized, or paid, by the District for a modified work week schedule. See section 17.5.2 of the General Conditions.

8. LOCATOR SERVICES

The Contractor is responsible for locating all existing utility lines on the work site prior to beginning work, and shall not rely on District provided drawings for their location. In addition, the Contractor is responsible for the procurement and payment of any and all locator services necessary to locate existing utility lines.

9. INVOICING AND PAYMENTS

Original invoices shall be submitted to:

San Diego Unified School District
Physical Plant Operations Center
Attn: Catherine Bendixen
4860 Ruffner Street
San Diego, CA 92111-1522

Each invoice/progress payment request must reference the assigned bid/contract number, school name, project description, and name of District representative.

In the event that adjustments are made to the progress payment request, due to stop notices, Labor Compliance issues or backcharges, the Contractor must re-invoice for the amounts deducted.

Contractor must invoice for his retention at the end of the project in order for the release of retention funds to occur.

Pursuant to Labor Code §1773.3, District shall withhold final payment due to the Contractor until at least 30 days after all of the required information in paragraph (2) of subdivision (a) has been submitted, including, but not limited to, providing a complete list of all subcontractors.

10. POST AWARD CONTRACT ADMINISTRATION

All post award correspondence, including requests for subcontractor substitutions, preliminary notices and insurance renewals and updates shall be sent to:

San Diego Unified School District
Contracts Compliance Office
Attn: Linda Weekly, Contract Specialist
4860 Ruffner Street
San Diego, CA 92111
PH: 858-637-6229
FAX: 858-496-1953

11. LIQUIDATED DAMAGES

Pursuant to Article 6.7 of the General Conditions, the amount of liquidated damages to be paid by the Contractor to the District for failure to complete the work specified will be according to the following scale for each calendar day by which completion is delayed beyond the Completion Date:

Total Contract Amount	Liquidated Damages Per Day of Noncompletion
$10,000 to $199,999	$500
$200,000 to 499,999	$625
$500,000 to 1,499,999	$750
$1,500,000 to 2,999,999	$1,250
$3,000,000 to 4,999,999	$1,500

$5,000,000 to 7,000,000	$2,500
Over $7,000,000	For each $1,000,000 over add $250

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, the District shall have the right to recover the balance from the Contractor or his sureties, who will pay said balance forthwith for each calendar day of delay until the work is completed and accepted, and the Contractor and his surety shall be liable for the amount thereof. Contractor shall not be charged liquidated damages because of any delays in completion of work due to force majeure, as defined at Article 16.5 of the General Conditions. The Contractor shall within 10 days from the beginning of any such delay (unless the District shall grant a further period of time prior to the date of final settlement of the contract) notify the District in writing of the causes of delay; thereupon the District shall ascertain the facts and the extent of the delay and extend the time for completing the work when in its judgment the findings of fact justify such an extension, and its findings of fact thereon shall be final and conclusive on the parties hereto. The additional time granted by the District for completing of the work shall specify the portion of the total thereof, which shall be applied to each segment of the construction schedule yet to be performed according to the terms and conditions of this contract, if any.

12. LIQUIDATED DAMAGES FOR DELAYED SUBMITTALS

The per diem assessment of Liquidated Damages for Contractor's delayed submission of Submittals pursuant to Article 8.1 of the General Conditions is **$200** per day.

13. ENVIRONMENTAL SAFETY AND HEALTH REQUIREMENTS

Very specific requirements related to environmental, safety and health is outlined in General Conditions Article 12. These requirements include mandatory written programs and daily safety meetings, performance and job hazard analysis, minimum training requirements and minimum personal protection equipment required on the job. All bidders are advised to read Article 12 as compliance is mandatory.

14. NOTICES PURSUANT TO ARTICLE 18.9

Notices pursuant to Article 18.9 of the General Conditions should be addressed to:

Director of Construction
San Diego Unified School District
4860 Ruffner Street
San Diego, CA 92111

15. RISK OF LOSS ON CONTRACTOR

The Contractor shall assume the risk of any and all types of loss and damage to the work or any part thereof, to adjoining property, or to materials or things employed in doing the work, or stored on site, until the District has accepted completion of the project. The District, however, will not assume the risk of any loss or damage to materials and things employed by the Contractor in doing the work. The Contractor with due diligence and dispatch, shall replace or repair, at his own expense the work lost or damaged.

16. CONTRACT DOCUMENTS

Pursuant to Article 2.1.5 in the General Conditions, the District shall furnish the Contractor, free of charge, 10 copies of the Drawings and Contract Documents upon award of the contract.

17. ADJUSTMENT TO CONTRACT PRICE

Pursuant to Article 10.4.3 of the General Conditions, the percentage limits allowed for cost mark-ups on overhead, general conditions costs, and profits associated with the change are listed on "Exhibit A" of the General Conditions which is an example of the form to be used for payment for any extra, additional, or allowances, contingencies or deleted work.

18. CONTRACTOR SITE CHECK-IN

Contractor's superintendent is required to check-in at the main office every day that a work crew is on site and classes are in session. A special sign-in sheet will be provided for this purpose.

19. EMPLOYEE IDENTIFICATION BADGES

All Contractor's and their subcontractor's employees who will be working on-site must wear an identification badge at all times. The badge must have a photo of the employee, their name, and the name of the company they work for on the front face, clearly and legibly displayed.

20. KEYS ISSUED FOR CONSTRUCTION

The Contractor may be issued school site master keys, including gate keys, only upon written authorization from the District. Specific terms of site access shall be requested in writing. The request shall be evaluated as to the need for access and the methods available to provide access without issuing keys. Keys shall be authorized only when no other reasonable means of access is available. The Contractor shall be required to sign the District's Master Key Responsibility Agreement form. This form authorizes the District to deduct funds, up to $60,000, from available contract amounts, if keys are lost or misused. The cost of restoring security to the area(s) compromised by the theft, loss or misuse of keys may require re-keying for one or more buildings and costs could be extensive. The holder of the keys to any school site assumes responsibility for the safekeeping of the keys and their use. Keys must not be modified, duplicated, loaned or made available to others. All lost or stolen keys must be reported immediately through the appropriate District representative. All keys must be returned to the District Authorized Lock Shop Representative on or before the end of the defined 30-day punch list period following the achievement of Substantial Completion. Written confirmation from the District Authorized lock Shop Representative is required before Final payment is made by the District. The return of District issued keys are part of the Final Payment Article 7.4.2.(ix) General Conditions of the Contract obligations. The Contractor may be requested to post a bond or deposit as collateral until the keys are returned. Any Contract Time delay or additional Contract Price expense caused by or due to the theft, loss or misuse of District issued keys shall be to the account of the Contractor.

21. PROJECT STABILIZATION AGREEMENT (PSA)

On July 28, 2009, and as subsequently amended, the San Diego Unified School District's Board of Education approved a Project Stabilization Agreement (PSA), under which the work of this contract falls. The PSA includes, among other provisions: prohibitions on work stoppages or disruptive activity, a dispute resolution procedure, and goals for local hiring. The successful bidder, subcontractors and all others covered by the PSA, regardless of tier, are required to follow the terms and conditions of the PSA. Failure to follow the terms of the PSA shall be considered a breach of contract.

A copy of the Project Stabilization Agreement may be viewed and downloaded at www.sandi.net.

A. Prime Contractor Assent

A representative of the prime contractor with the authority to bind the prime contractor is required to sign the included Letter of Assent which evidences the prime contractor's

agreement to be bound by the terms and conditions of the Project Stabilization Agreement for the duration of the work contained in this contract, and submit it to the District at time of bid opening. Should the prime contractor fail to include the signed Letter of Assent with his bid, his bid shall be rejected as non-responsive to the terms and conditions of the bid.

B. Subcontractor Assent and Initiation of Work

No covered subcontractor will be authorized to access the job site for the work contained in this contract until a representative with authority to bind the subcontractor has signed a Letter of Assent which evidences the subcontractor's agreement to be bound by the terms and conditions of the Project Stabilization Agreement (PSA) for the duration of the work contained in this contract. A copy of the PSA may be found at www.sandi.net. A Letter of Assent ready for signature by a subcontractor shall be delivered to the successful bidder under separate cover letter. Copies of the subcontractors Letter of Assent are also available at www.sandi.net and must be delivered to the District's Contract Compliance Office.

A Subcontractor shall submit its signed Letter of Assent at the earliest of the following: 1) at the mandatory Pre-Job Conference described in sections 8.5 and 16.1 of the Project Stabilization Agreement, 2) within 48 hours after the award of the work contained in this contract to the successful bidder, or 3) no later than 48 hours prior to the time the subcontractor desires to gain site access and commence work at the site. This access to the site includes initial mobilization of equipment and materials.

C. Jurisdiction Coordination Meeting

A Jurisdiction Coordination meeting shall be scheduled by the District to permit the awarded contractor, listed subcontractors, and applicable unions to determine all workforce coordination and jurisdictional issues prior to the start of work contained in this contract. The awarded contractor may cancel this meeting by providing written consent to cancellation by the San Diego Building and Construction Trades Council and the Southwestern Regional Council of Carpenters.

D. PSA Contractor Administration Costs

All costs associated with the administration of PSA requirements are included in the Contract Cost and are included in "Exhibit A" limits allowed for cost markups on Change Orders.

22. PUBLIC CONTRACT CODE SECTION 3006 CERTIFICATION

It is a requirement for Contractor to certify, by signing the Certification under Public Contract Code Section 3006(b) herein. Contractor shall be responsible for securing a signed certification from the roofing materials manufacturer, if any, supplying vendor, if any, as well as the subcontractor performing the work, if any, in the event that Contractor has any materials manufacturer, vendor, or subcontractor involved in its bid or proposal for an applicable roof project. Failure to disclose and submit certifications in the timeline given by the District may result in the contract being rescinded and awarded to the next lowest responsive and responsible bidder. Any person who knowingly provides false information or fails to disclose a financial relationship in the disclosure set forth in Public Contract Code section 3006(b) shall be subject to a civil penalty up to one-thousand dollars ($1,000) in addition to other available remedies.

PROJECT MANUAL
FOR CONSTRUCTION OF

HORTON ELEMENTARY SCHOOL RE-ROOFING AND BEAM REPAIR

PREPARED FOR:

SAN DIEGO UNIFIED SCHOOL DISTRICT
FACILITIES PLANNING AND CONSTRUCTION
PROPOSITIONS S/Z, MEAS. YY
4860 RUFFNER STREET
SAN DIEGO, CA 92111

ARCHITECT:

SAFDIE RABINES ARCHITECTS
925 FORT STOCKTON DR.
SAN DIEGO, CA 92103

DATE OF ISSUE:

JULY 2022

CONTRACTOR'S MASTER KEY RESPONSIBILITY AGREEMENT

SAN DIEGO UNIFIED SCHOOL DISTRICT Physical Plant Operations - Central City Zone
4860 Ruffner St. San Diego, CA 92111-1522 (858) 637-6227

The undersigned superintendent for the contract's general contractor agrees to accept responsibility for the safekeeping and proper use of the school site's master keys. On behalf of the general contractor, the superintendent also agrees that the district will be reimbursed for all costs associated with the re-keying of the school site if the contractor's set of master keys are lost or stolen. This form must be completed in order to receive keys.

School: _____ Site Location #: _____

Project Name: _____ Date: _____

General Contractor: _____ Phone #: _____

DO NOT DUPLICATE OR RE-TAG ANY KEYS WITH SITE NAME. I UNDERSTAND THAT IF IT IS DETERMINED THAT KEYS HAVE BEEN DUPLICATED, OR REMOVED FROM THE CABLE, OR RE-TAGGED THE CONTRACTOR WILL BE CHARGED FOR RE-KEYING THE SITE.

ATTACH COPY OF DRIVER'S LICENSE AND KEYS ISSUED

Keys:

Signature: _____ Print Name: _____

Key Issued By: _____( ) _____
Authorized Lock Shop Rep. # of Keys *Authorized CM Dept. Rep.*

To receive keys, contact Sofia Martinez at smartinez@sandi.net or Mark Stapledon at mstapledon@sandi.net to arrange a time to pick up keys at the SDUSD Physical Plant Operations Center, 4860 Ruffner Street, San Diego, CA, 92111.

All keys must be returned to Sofia Martinez, or other authorized personnel at project completion. Any keys not returned will result in the withholding of up to $60,000 from available funds for re-keying the site.

NOTICE: ALL SCHOOL SITES ARE ALARMED! When entering a school site after regular school hours, the superintendent is required to notify School Police at 619-291-7678 upon entry. Provide the dispatcher with the name of the general contractor, and the names of the workers entering the area. School Police are to be notified when leaving the site, and the superintendent has verified the work area has been secured.

Date Key Returned: _____ Print Name: _____
Authorized CM Dept. Rep.

Received By: _____ Print Name: _____
Authorized Lock Shop Representative

RETURN COPY OF DRIVER'S LICENSE
KEYS ARE TO REMAIN CABLED FOR SECURITY PURPOSES

Estimated Date of Key Return: _____

HORTON ELEMENTARY SCHOOL RE-ROOFING & BEAM REPAIR
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SECTION 01 10 00
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. Phased construction.
4. Work by District.
5. Work under separate contracts.
6. Access to site.
7. Coordination with occupants.
8. Work restrictions.
9. Specification and drawing conventions.

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: Horton Elementary School Roofing Project.

B. Project Description:

1. Buildings 01, 02 and 03:

a. Remove abandoned rooftop mechanical equipment, infill openings.
b. Demo existing gravel built-up roofing and replace with single ply (PVC) roofing.
c. Remove and replace existing edge metal and select flashing in preparation of new roofing installation.
d. Remove mechanical plumbing and electrical items required for new roofing installation, and replace in kind as instructed.
e. Remove protect and reinstall (E) PV panels in kind.

C. Project Location: 5050 Guymon Street, San Diego, CA 92102.

D. District: San Diego Unified School District.
4860 Ruffner Street.
San Diego, CA 92111-1552

E. Architect Identification: The Contract Documents, dated January 28, 2022 were prepared for Project by: Safdie Rabines Architects.

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 a Preconstruction Meeting, submittal deliverables, Schedule of Values, and Baseline Schedule.

1.6 PHASED CONSTRUCTION

A. The Work shall be conducted in two phases, with each phase substantially complete as indicated:

1. Phase 1: Procurement.
2. Phase 2: Demo and structural beam repair and re-roofing roofing.

1.7 WORK BY DISTRICT

A. General: Cooperate fully with District so work may be carried out smoothly, without interfering with or delaying work under this Contract or work by District. Coordinate the Work of this Contract with work performed by District.

1.8 WORK UNDER SEPARATE CONTRACTS

A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts.

1.9 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. 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.

1.10 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.

B. District Limited Occupancy of Completed Areas of Construction: District reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.

1. Architect will prepare a Certificate of Partial Completion for each specific portion of the Work to be occupied prior to District acceptance of the completed Work.
2. Before limited District occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, District will operate and maintain mechanical and electrical systems serving occupied portions of Work.
3. On occupancy, District will assume responsibility for maintenance and custodial service for occupied portions of Work.

1.11 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. Summer break will occur as indicated in the District’s Calendar in the Appendix herein. Work may be performed at any time during this period.

G. All work shall be performed after regular school hours, generally after all students and staff have left the premises. No work shall be performed during regular class hours.

1.12 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Specification requirements 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 01 10 00

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SECTION 01 21 00
ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements governing allowances.

B. Related Requirements:

1. Section 01 39 00 “Project Forms” for Allowance Payment Record form.

1.3 DEFINITIONS

A. Allowance is a quantity of work or dollar amount established in lieu of additional requirements, used to perform services or defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order (CO).

1.4 ACTION SUBMITTALS

A. Submit proposals for purchase of products, systems, or services included in allowances, in the form specified.

1.5 INFORMATIONAL SUBMITTALS

A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.

1.6 COORDINATION

A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.7 ALLOWANCES

A. Use allowance only as directed by District for District's purposes and only by APRs that indicate amounts to be charged to the allowance.

B. Allowance includes cost of materials, equipment, delivery, receiving, handling, labor, installation, warranty, and insurance. Contractor's supervision, overhead, profit and bond costs to be determined at time of use.

C. At Project closeout, credit unused amounts remaining in the allowance including supervision, overhead, profit and Bond costs to District by Change Order.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALLOWANCES

A. Allowance No. 1: For unforeseen structural conditions, as directed by District. Include a lump sum contingency allowance of $30,000**.**

B. Allowance No. 2: For unforeseen hazardous materials removal, abatement, disposal, and necessary repairs, as directed by District. Include a lump sum contingency allowance of $30,000**.**

C. Allowance No. 3: For unforeseen termite and pest removal and damage repair, as directed by District. Include a lump sum contingency allowance of $30,000**.**

D. Allowance No. 4: For unforeseen electrical and fire alarm work, as directed by District. Include a lump sum contingency allowance of $20,000**.**

E. Allowance No. 5: For unforeseen mechanical work, as directed by District. Include a lump sum contingency allowance of $20,000**.**

F. Allowance No. 6: For unforeseen plumbing work, as directed by District. Include a lump sum contingency allowance of $20,000**.**

G. Allowance No. 7: For unforeseen demolition work, as directed by District. Include a lump sum contingency allowance of $30,000**.**

H. Allowance No. 8: For unforeseen interior finishes and fixtures, as directed by District. Include a lump sum contingency allowance of $20,000**.**

I. Allowance No. 9: For unforeseen work related to moving furniture and equipment and placing in temporary storage, as directed by District. Include a lump sum contingency allowance of $20,000**.**

J. Allowance No. 10: For unforeseen work related to disconnecting existing utilities from, providing temporary utilities to, and reconnecting existing utilities as a result of unforeseen utility interruptions, as directed by District. Include a lump sum contingency allowance of $20,000**.**

K. Allowance No. 11: For unforeseen work related to SWPPP/WPCP, as directed by District. Include a lump sum contingency allowance of $10,000.

END OF SECTION 01 21 00

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SECTION 01 25 00
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. Section 01 21 00 "Allowances" for products selected under an allowance.
2. 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: Use form provided at the end of this Section.
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified product or fabrication or installation 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 01 25 00

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REQUEST FOR SUBSTITUTION

Re: _____ _____
Section # Project Name

_____ _____
Date Item

To: _____
Architect

From: _____
General Contractor

We hereby submit for your consideration the following product comparisons of the specified item and the proposed substitution:

A.	**Comparison**	Specified Item	Substitution
1.	Product Name/Model	_____	_____
2.	Manufacturer	_____	_____
	Address	_____	_____
		_____	_____
	Phone Number	_____	_____
3.	Product Cost	_____	_____
	Installation/Labor Cost	_____	_____
4.	Delivery Time	_____	_____
	Installation Time	_____	_____
5.	Product Characteristics	_____	_____
		_____	_____
		_____	_____
		_____	_____
		_____	_____
6.	Dimensions	_____	_____
	Effects	_____	_____
7.	Guarantee/Warranty	_____	_____
8.	CBC-ES No.	_____	_____
9.	UL Rating	_____	_____

B. Substantiating Data: Attach manufacturer's literature for both specified item and substitution.

C. Samples: Provide samples for both specified item and substitution.

D. Similar Projects

1. _____ _____
Name Date

_____
Address

2. _____ _____
Name Date

_____
Address

E. Maintenance Service/Parts:

Name: _____

Address: _____

What effect does this substitution have on applicable code requirements?

_____

_____

G. Changes to Drawings and Specifications:

Attach information completely describing changes to be made to drawings and specifications.

- Contractor hereby certifies equal performance and assumes of liability for equal performance.
- Contractor hereby agrees to pay for all costs involved with changing the building design, including engineering, drafting, specifications editing, coordination, and preparation of detailed cost estimates, caused by the proposed substitution.

Submitted by:

_____ _____
Signature Printed Name

_____
Title

_____ _____
Company Date

_____
Address

_____
Address

_____ _____
Telephone Email

Signature must be by person having authority to legally bind Contractor to the above terms. Failure to provide legally binding signature will result in retraction of approval.

For Use by District's Representative:

District's Design Consultant Date:_____	**School District** Date:_____
☐ Accepted ☐ Not Accepted	☐ Accepted ☐ Not Accepted
By (print): _____	By (print): _____
Title: _____	Title: _____
Signature: _____	Signature: _____

SECTION 01 31 00
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 02 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
2. Section 01 39 00 “Project Forms” for applicable project forms.
3. Section 01 73 00 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
4. Section 01 74 19 “Construction Waste Management and Disposal” for procedures for managing construction waste materials.
5. 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: The District has implemented a computerized web-accessed document management and control system for the Project referred to herein as Document Control Software. Use this system for all Project Submittals and RFI's.

The District will provide Contractor personnel with access, support, and training in the use of the Document Control Software at no cost to the Contractor.

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 prominent location in 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 COORDINATION DRAWINGS

A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.

1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:

a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
b. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
c. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
d. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
e. Indicate required installation sequences.
f. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Drawing Organization: Organize coordination drawings as follows:

1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within plenums to accommodate layout of light fixtures and other components indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
6. Mechanical and Plumbing Work: Show the following:

    a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
    b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
    c. Fire-rated enclosures around ductwork.

7. Electrical Work: Show the following:

    a. Runs of vertical and horizontal conduit 1-1/4 inches in diameter and larger.
    b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.

c. Panel board, switch board, switchgear, transformer, busway, generator, and motor control center locations.
d. Location of pull boxes and junction boxes, dimensioned from column center lines.

8. Fire-Protection System: Show the following:

a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.

9. Review: Architect will review coordination drawings to confirm that in general the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make suitable modifications and resubmit.
10. Coordination Drawing Prints: Prepare coordination drawing prints according to requirements in Section 01 33 00 "Submittal Procedures."

1.7 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. 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. 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.

1.8 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) calendar 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, 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. Phasing.
    c. Critical work sequencing and long-lead items.
    d. Designation of key personnel and their duties.
    e. Lines of communications.
    f. Procedures for processing field decisions and Change Orders.
    g. Procedures for RFIs.
    h. Procedures for testing and inspecting.
    i. Procedures for processing Applications for Payment.
    j. Distribution of the Contract Documents.
    k. Submittal procedures.
    l. Commissioning requirements and procedures.
    m. Indoor environmental air quality management during construction.
    n. Preparation of record documents.
    o. Use of the premises and existing building.
    p. Work restrictions.
    q. Working hours.
    r. District's occupancy requirements.
    s. Responsibility for temporary facilities and controls.
    t. Procedures for moisture and mold control.
    u. Procedures for disruptions and shutdowns.
    v. Construction waste management and recycling.
    w. Parking availability.
    x. Office, work, and storage areas.
    y. Equipment deliveries and priorities.
    z. First aid.
    aa. Security.
    bb. Progress cleaning.
    cc. Request for Information procedures.
    dd. Request for Substitution procedures.
    ee. Use of District's 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: 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 Project Inspector 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. Commissioning requirements and procedures.
    aa. 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, 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. Indoor environmental air quality requirements prior to occupancy.
    h. Preparation of Contractor's punch list.
    i. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
    j. Submittal procedures.
    k. The District's partial occupancy requirements.
    l. Installation of the District's furniture, fixtures, and equipment.
    m. 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 02 “Construction Progress Documentation.”

PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 31 00

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Document Version: August 2021

SECTION 01 31 10
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 02 “Construction Progress Documentation” for scheduler requirements.

1.3 KEY CONTRACTOR PERSONNEL

A. Contractor shall assign the following minimum personnel to the project:

1. Contractor Project Manager: Part time on-site (50%).
2. Contractor Project Superintendent: Full Time on-site.
3. Contractor Project Engineer: Part time on-site (50%).

1.4 REQUIREMENTS FOR KEY PERSONNEL

A. Contractor Project Manager shall have a minimum of ten years experience as Project Manager or Superintendent on projects of similar size and scope.

B. Contractor Project Superintendent shall have a minimum of ten years experience as Project Superintendent on projects of similar size and scope.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 31 10

San Diego Unified School District Guide Specifications
Document Version: August 2021

SECTION 01 32 02
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 District’s Document Control Software.
3. Section 01 33 00 "Submittal Procedures" for submitting schedules and reports.

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. Critical (Longest) Path: The network of schedule activities that establishes the minimum overall Project duration.

H. 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.

I. Delay: An interruption of work.

J. 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.

K. 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.

L. Lag: An adjustment of time between tied CPM schedule activities.

M. Near-Critical Activity: A non-critical activity with a Total Float value within 10 workdays of the Critical (Longest) Path.

N. P6: Primavera Professional Project Management, an industry standard CPM scheduling application.

O. 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.

P. Relationships: Ties between activities within the CPM schedule.

Q. Target Schedule: A different version of the CPM schedule that can be used as a basis for comparison against another CPM schedule.

R. 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, 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. Cash Flow Report: For the Baseline schedule submittals only, generate a report from the CPM software application that clearly shows the incremental (histogram) and cumulative (curve) projected costs by month for both the early and late dates.
4. 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.

5. 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.

6. For each Monthly Schedule Update submittal: A copy of the Monthly Schedule Update markup documentation.
7. 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.
8. 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.

D. Qualification Data: For Scheduler, in the form of a résumé.

1.5 QUALITY ASSURANCE

A. Scheduler Qualifications: Retain or employ an experienced specialist in CPM scheduling and reporting, with a minimum of three (3) years' experience in scheduling work of similar nature, scope and value, and capable of satisfying the requirements described herein. The Scheduler is to provide planning, evaluation, reporting and delay analysis using CPM scheduling. Neither the Contractor's Project Manager nor Superintendent may also be the Scheduler.

1. Within the first three (3) days of Contract Time, submit for review and acceptance by the District Construction Manager the résumé of scheduling personnel retained or employed by the Contractor. The résumé shall include projects of similar nature, scope and value, and the Scheduler's role/job title on each listed project; a phone or in-person interview of the proposed Scheduler may be required. The District Construction Manager has the right to reject a Scheduler based upon a lack of experience as required by this Section, or based on a lack of performance and timeliness of schedule submittals on past projects. If the District Construction Manager does not accept the submitted Scheduler, submit another résumé within seven (7) days of notice from the District Construction Manager. The District Construction Manager, at any time during performance of the work, may request that the Scheduler be replaced if the District Construction Manager determines that the Scheduler's work is unsatisfactory. In this instance, submit another résumé within seven (7) days of notice from the District Construction Manager. If the Contractor wants to replace the Scheduler, the new Scheduler's résumé shall be submitted to the District Construction Manager for acceptance or rejection. The Scheduler must be accepted by the District Construction Manager prior to starting any site related work. Any delays due to the lack of an accepted Scheduler shall be deemed inexcusable.
2. Meetings: Scheduler shall attend all meetings related to alleged delays and time impact.

B. 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.

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, 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.
      Note: Include the Specification Section number either within the activity's identification number or activity's name/description.

f. Submittal Review Time: Include review times indicated in Section 01 33 00 "Submittal Procedures" 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 their schedule activities per the following table:

Weather Table												
	Month											
Anticipated 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 $50,000, 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) Contractor may be directed to provide copies of all executed Subcontracts and Purchase Orders.
12) 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.
13) 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.

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.

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)	30	30
District Construction Manager provides review comments (and possible acceptance) to Contractor (Meeting may be required, at District Construction Manager's discretion)	10	40

1. The deduction for Contractor's delayed submission of the complete Baseline Schedule submittal is $200 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 shall 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. As the schedule is a requirement for a proper progress payment, it is incumbent on the Contractor to submit a satisfactory Baseline Schedule submittal within the timeline depicted herein; Look-Ahead Schedules do not satisfy the requirement regarding "Construction Progress Schedule".

c. If the Baseline is not accepted after the first sixty (60) days, the District Construction Manager may stop the Work; 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, 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 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 seven (7) 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 two 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 estimated 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 $750.00.

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 $750.00 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. Any CPM Schedule submittal item submitted after 3:00PM will be considered received on the following workday.

ACTIVITY CODES DICTIONARY

Code	Description
BID	BID LINE ITEM NUMBER Note: Align with Bid Proposal Line Items
PHAS	PROJECT PHASE Key Milestones and Summaries General Conditions Allowances Preconstruction Mobilization Construction 1 Construction 2 Testing Completion and Closeout Note: Include any Work Phases, Sequences, etc. called out in Contract Documents
PCKG	WORK PACKAGE Major Milestones and Summaries Submittal / Procure / Fabricate / Deliver On-Site Work Off-Site Work Building Work Other Allowances
AREA	BUILDING / SITE AREA

Key Milestones and Summaries
Submittal Prepare & Submit
Submittal Review & Approval
Procurement & Fabrication
Delivery
Administration Building 1
Library
Classroom Building 1
Classroom Building 2
Lunch Court
Cafeteria
Kitchen
Multipurpose Room
Gymnasium
Driveway
Parking Lot
Play Area
Field
Retaining Wall
Fence / Gate
Other Site Work
Note: Include actual building numbers

LOC1 LOCATION LEVEL 1
Underground Utilities
Under-slab Utilities
Foundation
Structure
1st Floor
2nd Floor
3rd Floor
Roof
Elevator
Exterior
Stairs
Hardscaping
Landscape
Note: Create additional codes as needed or determined by the District Construction Manager.

LOC2 LOCATION LEVEL 2
Administration Room No. 1
Library Room No. 1
Classroom No. 1
MDF Room
Staff Restroom
Boys Restroom
Girls Restroom
Elevator

Note: Create additional codes as needed or determined by the District Construction Manager in order to identify rooms with room number.

RESP RESPONSIBILITY
San Diego Unified School District
General Contractor
Architect
Survey
Demolition
Abatement
Relocation
Concrete
Masonry
Structural Steel
Metals
Carpentry
Roofing
Openings
Finishes
Specialties
Furniture & Equipment
Special Construction
Conveying Equipment
Fire Suppression
Plumbing
Heating Ventilating & Air Conditioning
Automation
Electrical
Communications
Electronic Safety & Security
Earthwork
Exterior Improvement
Utilities
City of San Diego
San Diego Gas & Electric

Note: May substitute generic trade with subcontractor name; Add other Responsibility code values as needed or determined by the District Construction Manager. If there is a subcontractor substitution, new subcontractor must be incorporated into this Activity Code.

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 01 32 02

San Diego Unified School District Guide Specifications
Document Version: August 2021

SECTION 01 32 33
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. 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.

C. Video Recording: At the Contractor's option, provide video recording in lieu of photographs specified in paragraph, "Preconstruction Photographs." Submit one copy in digital video disc format acceptable to District.

1. Identification: On each copy, provide an applied label with the following information:

a. Name of Project.
b. Name of Contractor.
c. Date videotape was recorded.

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.

B. Digital Video Recordings: Provide high-resolution, digital video disc in format acceptable to District.

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 demolition/starting construction, 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.

1.7 VIDEO RECORDINGS

A. Narration: Describe scenes on video recording by audio narration by microphone while video recording is recorded. Include description of items being viewed. At each change in location, describe vantage point, location, direction (by compass point), and elevation or story of construction.

1. Confirm date and time at beginning and end of recording.
2. Begin each video recording with name of Project, Contractor's name, and Project location.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 32 33

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SECTION 01 33 00
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 District’s Document Control Software.
2. Section 01 32 02 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
3. Section 01 77 00 "Closeout Procedures" for submitting closeout submittals and maintenance material submittals.
4. Section 01 78 23 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
5. Section 01 78 39 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
6. 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 District has implemented a computerized web-accessed document management and control system for the Project referred to herein

as “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 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: Electronic digital data files of the Contract Drawings will not be provided by Architect for Contractor's use in preparing submittals.

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. DSA review: Where submittal must be reviewed by DSA, allow 35 days for review of submittal.

D. Options: Identify options requiring selection by Architect. Retain "Electronic Submittals" Paragraph below for all Projects. 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 District’s 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. Paper Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.
3. Submit Shop Drawings in 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 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

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

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 01 33 00

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SECTION 01 39 00
PROJECT FORMS

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 standardized forms to be used for this project. Examples of forms used in District's document control software are provided at the end of this Section.

B. Listing of project forms:

1. Application for Payment, Periodic Payment and Continuation Sheet.
2. Change Order (CO).
3. Allowance Payment Record (APR).
4. Field Work Order (FWO).
5. Schedule of Values (SOV); used only when cost-loaded Critical Path Method Schedule is not required.
6. Architect's Supplemental Instructions (ASI).
7. Request for Information (RFI).
8. Submittal Register.
9. Contractor's Master Key Responsibility Agreement.
10. Inspection Request.
11. Notice of Deviations (DSA Form 154; for DSA Projects only).
12. Notice of Non Compliance (SD Unified School District Form; for non-DSA Projects only).
13. Request for Proposal (RFP).

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 39 00

San Diego Unified School District Guide Specifications
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Certificate of the Contractor or His Duly Authorized Representative

SAN DIEGO UNIFIED SCHOOL DISTRICT Facilities Planning & Construction / Physical Plant Operations
4860 Ruffner St San Diego, CA 92111-1522

I certify that all items, units, quantities and prices of work and material shown on Sheet No.(s) _____ of this Periodic Estimate are correct; that all work has been performed and materials supplied in accordance with the terms and conditions of Contract No. **CONTRACT_NUMBER**, between the San Diego Unified School District and **GEN_VENDORNAME_TB** dated **Dec 31, 1999** and all authorized changes thereto, that all of the terms and conditions of said contract required to have been met as of the date hereof have been fully complied with; that the following is a true and correct statement of the contract account up to and including the last day of the period covered by this estimate, and that no part of the Amount Due: has been received.

Project: -

Application No.:

Period To:

Contract Title:

PeopleSoft PO #:

1. ORIGINAL CONTRACT SUM	$999,999.00
2. Net Change by Change Orders	$999,999.00
2a. NTP Revisions	$999,999.00
3. CONTRACT SUM TO DATE (Line 1 + 2)	$999,999.00
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703)	$999,999.00
5. RETAINAGE: Retainage is held at a rate of 5% until final payment Total Retainage	$999,999.00
6. TOTAL EARNED LESS RETAINAGE (Line 4 less Line 5 Total)	$999,999.00
7. LESS PREVIOUS PAID ON CERTIFICATES FOR PAYMENT (Line 7 + Line 10 from prior month certificate)	$999,999.00
8. TOTAL ADD/DEDUCTIVE AMOUNTS (Stop Notices, Non-Compliance, Insurance Certs)	($0.00)
9. ADJUSTED PAYMENT DUE THIS PERIOD	**$999,999.00**
10. BALANCE TO FINISH, INCLUDING RETAINAGE (Line 3 less Line 6)	$999,999.00

Labor Compliance:	($999,999.00)
Stop Notices:	($999,999.00)
Back Charges:	($999,999.00)
Liquidated Damages:	($999,999.00)
Insurance Certs:	($999,999.00)
Total Adjustments:	($999,999.00)

Contractor: _____ By: _____

Date: _____ Title: _____

CERTIFICATE OF OWNER'S SUPERVISING REPRESENTATIVE OR ARCHITECT/ENGINEER OF RECORD

I certify that I have verified this Periodic Estimate, that to the best of my knowledge and belief this is a true and correct statement of work performed and material supplied by the Contractor; that the Contractor's certified statement of his account and the amount due him is correct and just; and that all contractual obligations including in this Periodic Estimate have been performed in full accordance with the terms and conditions of the contractual documents and authorized changes thereto.

Name: _____ By: _____

Date: _____ Title: _____

CERTIFICATE OF OWNER'S INSPECTOR

I certify that all work and material included in the Periodic Estimate have been inspected by me and have been found to comply with the terms and conditions of the contractual documents and authorized changes thereto.

Name: _____ Date: _____

Project Inspector

APPROVED FOR PAYMENT

By: _____ Date: _____ By: _____ Date: _____

Director Manager

uuu_56:DV_PayApp

Change Order

SAN DIEGO UNIFIED SCHOOL DISTRICT Facilities Planning & Construction / Physical Plant Operations
4860 Ruffner St. San Diego, CA 92111-1522

Project:		**Change Order #:**	
Architect:		**Date:**	
Contractor:		**DSA #:**	
Title:		**Contract:**	
PeopleSoft PO #:			

Directions to Contractor: You are not to proceed with modifications to the contract documents described herein until authorized by SDUSD. The price for this Change Order is full and complete compensation for any and all; (1) overhead incurred as a result of performing said changes; (2) delays in the completion of the project incurred as a result of performing said changes; (3) all equipment, materials, labor, field and home office overhead, indirect and direct consequential costs, mark-ups and profit necessary to complete the work. By executing this contract change order, the contractor agrees to proceed with this work as a change order per the general and supplemental conditions of the contract and waives any rights to additional compensation arising out of the work listed in this change order, including without limitation, any claims relating to any cumulative effects of change orders, delays, productivity impact or interruption.

Description

Justification **Reason Code:**

Original Contract Value:	$		
The Contract Sum Prior to this Change Order was:	$		
The Contract Sum Will Be Increased/Decreased By:	$	Extra:	$
The New Contract Sum Including This Change Order Is:	**$**	Credit:	$
The Contract Time Is Changed By:	Days		**$**

☐ **THIS IS A UNILATERAL CHANGE ORDER. THE CONTRACTOR IS NOT REQUIRED TO SIGN THIS DOCUMENT.**

Contractor Review _____ **Date** _____

Architect Review _____ **Date** _____

Construction Manager Review _____ **Date** _____

Project Manager Review _____ **Date** _____

Inspector Review _____ **Date** _____

WITH ACCEPTANCE SIGNATURE, THIS CHANGE ORDER MODIFIES THE CONTRACT BY THE AMOUNT AND TIME INDICATED AND THE CONTRACTOR IS AUTHORIZED TO PROCEED AS DIRECTED BY THE DISTRICT

Director, Construction Management Department Review _____ **Date** _____

Chief, Facilities Planning & Construction Acceptance _____ **Date** _____

Board of Education approval required for individual Change Orders exceeding (1) 10% of the Contract value; or (2) $450,000

Order by Board of Education, San Diego Unified School District _____ **Date** _____

Board Action Officer

This change order is _ of the contract. Cumulative CO Percentage _

Allowance Payment Record

SAN DIEGO UNIFIED SCHOOL DISTRICT Facilities Planning & Construction / Physical Plant Operations
4860 Ruffner St. San Diego, CA 92111-1522

Project:
Title:
To:

APR No.:
Date:
Contract No.:

Directions to Contractor
Please submit an itemized quotation for the allowable charges to be paid from the project allowance. If payment is for reimbursement of fees paid, attach copies of all invoices and cancelled checks.

Description of Fees Paid or Work Performed

Justification

Allowance Title:	
Scheduled Value	$0.00
Pending APRs	$0.00
Prev. Paid Applications	$0.00
This APR	$0.00
Balance	$0.00

Actions

Contractor Signature _____ Date: _____

Architect Review _____ Date: _____

Const. Mgr. Review _____ Date: _____

Inspector Review _____ Date: _____

Project Manager Review _____ Date: _____

Issued by

Director, Const. Mgmt. Dept. _____ Date: _____

uuu_35:DV_APR

FIELD WORK ORDER

SAN DIEGO UNIFIED SCHOOL DISTRICT Facilities Planning & Construction / Physical Plant Operations
4860 Ruffner St San Diego, CA 92111-1522

Project:
Title:

Field Work Order #:
Date:

To:

Contract #:
Inspector:
Req'd Start Date:

Directions to Contractor

This work is to be done on a documented time and material basis. Document all time, materials and equipment to the Project Inspector on a daily basis. Maintain a complete record of inspector signed daily documents for all costs for doing the work. The inspector signed documentation is required to be included in the CO that will follow. Notify the construction manager when you have reached 80% to 85% of the not to exceed figure below. Within fifteen (15) days the contractor is to furnish to the DISTRICT a detailed Price and/or time proposal in accordance with the contract documents. Upon receipt of this Field Work Order, the contractor shall promptly commence and proceed diligently with this work.

Description of Work to be Performed

Not to Exceed: $0.00

Justification

Construction Manager: _____ Date:

Director, Construction Management: _____ Date:

Copy To: Architect, Project Manager, Project Inspector and Construction Office

SCHEDULE OF VALUES (SOV)

SAN DIEGO UNIFIED SCHOOL DISTRICT Facilities Planning & Construction / Physical Plant Operations
4860 Ruffner St., San Diego, CA 92111-1522

PROJECT:

CONTRACTOR:
ADDRESS:

PHONE:

APPLICATION NO.:
APPLICATION DATE:
PERIOD TO:
CONTRACT NO:

A	B	C	D	E		F	G		H	I
ITEM NO	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED			MATERIALS PRESENTLY STORED (NOT in D or E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)	% COMP BY GC	BALANCE TO FINISH	RETAINAGE 5%
			$ FROM PREVIOUS APPLICATION	THIS PERIOD COMPLETED %	THIS PERIOD COMPLETED $					
	GRAND TOTALS	**$0.00**			**$0.00**		**$0.00**	**0.00%**	$0.00	**$0.00**

ARCHITECT'S SUPPLEMENTAL INSTRUCTIONS

SAN DIEGO UNIFIED SCHOOL DISTRICT Facilities Planning & Construction / Physical Plant Operations

4860 Ruffner St San Diego, CA 92111-1522

Title:
Project:
From: San Diego Unified School District
To:
Attn:

ASI No.:
Date:
Contract No.:

DIRECTIONS TO CONTRACTOR

REMARKS

Signed:
Architect: _____ Date: _____

Signed:
Contractor: _____ Date: _____

Copy To: Construction Manager, Project Inspector, Project Manager

Request for Information

SAN DIEGO UNIFIED SCHOOL DISTRICT Facilities Planning & Construction / Physical Plant Operations

4860 Ruffner St San Diego, CA 92111-1522

Project:
itle:
Contract No.
From:
To:
Plan Ref:

Document:
Sub Ref. No.:
Date:
Required Date:
Response Date:

Question:

Proposed Solution:

Answer:

SUBMITTAL REGISTER

SAN DIEGO UNIFIED SCHOOL DISTRICT Facilities Planning & Construction / Physical Plant Operations
4860 Ruffner St. San Diego, CA 92111-1522

SPECIFICATION SECTION NUMBER	SPECIFICATION SECTION NAME	SUB-SECTION/PARAGRAPH	DESCRIPTION/TYPE	PRE OR POST CONSTRUCTION ITEM	ADDITIONAL INFORMATION
15055	MOTORS	1.4A	Product Data		LINE ITEM ONLY AN EXAMPLE

CONTRACTOR'S MASTER KEY RESPONSIBILITY AGREEMENT

SAN DIEGO UNIFIED SCHOOL DISTRICT Physical Plant Operations - Central City Zone
4860 Ruffner St. San Diego, CA 92111-1522 (858) 637-6227

The undersigned superintendent for the contract's general contractor agrees to accept responsibility for the safekeeping and proper use of the school site's master keys. On behalf of the general contractor, the superintendent also agrees that the district will be reimbursed for all costs associated with the re-keying of the school site if the contractor's set of master keys are lost or stolen. This form must be completed in order to receive keys.

School: _____ Site Location #: _____

Project Name: _____ Date: _____

General Contractor: _____ Phone #: _____

DO NOT DUPLICATE OR RE-TAG ANY KEYS WITH SITE NAME. I UNDERSTAND THAT IF IT IS DETERMINED THAT KEYS HAVE BEEN DUPLICATED, OR REMOVED FROM THE CABLE, OR RE-TAGGED THE CONTRACTOR WILL BE CHARGED FOR RE-KEYING THE SITE.

ATTACH COPY OF DRIVER'S LICENSE AND KEYS ISSUED

Keys:

Signature: _____ Print Name: _____

Key Issued By: _____( ) _____
Authorized Lock Shop Rep. # of Keys *Authorized CM Dept. Rep.*

To receive keys, contact Sofia Martinez at smartinez@sandi.net or Mark Stapledon at mstapledon@sandi.net to arrange a time to pick up keys at the SDUSD Physical Plant Operations Center, 4860 Ruffner Street, San Diego, CA, 92111.

All keys must be returned to Sofia Martinez, or other authorized personnel at project completion. Any keys not returned will result in the withholding of up to $60,000 from available funds for re-keying the site.

NOTICE: ALL SCHOOL SITES ARE ALARMED! When entering a school site after regular school hours, the superintendent is required to notify School Police at 619-291-7678 upon entry. Provide the dispatcher with the name of the general contractor, and the names of the workers entering the area. School Police are to be notified when leaving the site, and the superintendent has verified the work area has been secured.

Date Key Returned: _____ Print Name: _____
Authorized CM Dept. Rep.

Received By: _____ Print Name: _____
Authorized Lock Shop Representative

RETURN COPY OF DRIVER'S LICENSE
KEYS ARE TO REMAIN CABLED FOR SECURITY PURPOSES

Estimated Date of Key Return: _____

INSPECTION REQUEST

REQUEST NO.:

SAN DIEGO UNIFIED SCHOOL DISTRICT 4860 Ruffner St. San Diego, CA 92111-1522

DATE: 6/2/2017

PROJECT: -
INSPECTOR:
INSPECTION BY:

TITLE:
CONTRACT #:
VENDOR:
REFERENCE DSA #:
INSPECTION NEEDED BY:
REFERENCE SPEC SECTION #:

OTHER DOCUMENTS AFFECTING THIS PORTION OF WORK (ASI, RFI, CCD, etc)

INSPECTION TYPE REQUESTED:

INSPECTOR NOTES:

RESULTS

PASSED?

RE-INSPECTION REQUIRED?

Certified By: <?INSPECTOR?>

Date: <?COMPLETION_DATE?>

DSA 154

NOTICE OF DEVIATIONS / RESOLUTION OF DEVIATIONS

This form shall be completed by the Project Inspector, in accordance with California Code of Regulations, Title 24, Part 1, Section 4-342(b)(6). The Project Inspector shall provide a copy to the contractor, the architect/engineer and DSA.

School District/Owner:		DSA File #: -
Project Name/School:		DSA App. #: -
From: *(Name of Project Inspector)*	DSA Certification #:	DSA 152 Card Number(s):
To: *(Name of Contractor)*		
Notice #:	Date of Notice:	*(List all inspection card numbers for which this notice applies.)*

Note that *DSA-approved* construction documents, referred to below, are those portions of the construction documents, duly approved by the DSA, that contain information related to and affecting the Structural Safety, Fire/Life Safety and Accessibility portions of the project.

1. REASON FOR NOTICE *(Check applicable box.)*

☐ **Deviations** from *DSA-approved* construction documents. *(Complete Section 2.)*

☐ **Resolution** of previously notified deviations. *(Complete Sections 2 and 3.)*

2. NOTIFICATION OF DEVIATIONS

The following deviations have been brought to the contractor's attention and have not been corrected. Written notice is now being given and the deviations must be corrected prior to Project Inspector acceptance of the affected work. When all deviations have been corrected, the affected work must be re-inspected and Section 3 of this form completed by the Project Inspector.

Description of Deviations	**Plan Reference / Specification Section**

The project inspector shall contact DSA by email at least 48 hours prior to scheduled work covering up uncorrected deviations.

3. PROJECT INSPECTOR VERIFICATION OF RESOLUTION OF DEVIATIONS

All deviations noted above have been corrected and the affected work is in compliance with the *DSA approved* construction documents.

NAME OF PROJECT INSPECTOR:	SIGNATURE:	DATE:

Submit completed form electronically to the DSA Regional Office with construction oversight authority for the project (see DSA Procedure PR 13-01).

NOTICE OF NON-COMPLIANCE (NON-DSA PROJECT)

SAN DIEGO UNIFIED SCHOOL DISTRICT Facilities Planning & Construction / Physical Plant Operations
4860 Ruffner St. San Diego, CA 92111-1522

PROJECT: DATE:

INSPECTOR NAME:

INSPECTOR CONTACT INFORMATION (PHONE #, E-MAIL ADDRESS):

NON-COMPLIANCE NUMBER: NCXX

GENERAL CONTRACTOR: SUPERINTENDENT:

NATURE OF NON-COMPLIANCE:

PLAN REF.:

SPEC. REF.:

CODE REF.:

REMARKS:

INSPECTOR'S SIGNATURE: _____

==========

CONTRACTOR'S RESPONSE: _____

_____

_____

DATE CORRECTIVE ACTION COMPLETED: _____

ARCHITECT'S APPROVAL OF CORRECTION: _____ (if necessary)

INSPECTOR'S APPROVAL OF CORRECTION: _____ (required)

ADDITIONAL COMMENTS: _____

_____

_____

_____

_____

_____

C: Architect, Construction Manager, Document Control

Request for Proposal

SAN DIEGO UNIFIED SCHOOL DISTRICT Facilities Planning & Construction / Physical Plant Operations
4860 Ruffner St San Diego, CA 92111-1522

Title: **Date:**

Project: **Job:**

To: **Contract No:**

Directions to Contractor

Please submit and attach an itemized quotation within 15 calendar days for changes in the contract sum and/or time incidental to proceed with modifications to the contract documents described herein. You are not to proceed with the work until authorized by SDUSD. The submitted price for this Change Order is to be full and complete compensation to the contractor for performance of the change described below, and includes, but is not limited to compensation for any and all; (1) overhead incurred as a result of performing said changes; and (2) delays in the completion of the project incurred as a result of performing said changes.

Description of Change

By:_____ **Date:**_____

SECTION 01 42 00
REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the 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. “Includes”, “Including”, and variations thereof: “Includes, but not limited to,…”

1.3 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and

effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

D. For complete titles of individual Industry Standards, see United Master Reference List (UMRL) at https://www.wbdg.org/ccb/DOD/UMRL/UMRL.pdf.

1. For titles of standards not included in the UMRL, see supplemental listing immediately following this section.

1.4 ABBREVIATIONS AND ACRONYMS

A. The lists in this article are provided for the reader's convenience. This information is believed to be accurate as of the District Guide Specifications Section Version date at the end of this section, however, it is subject to change without notice.

B. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Where duplicates occur, use according to appropriate context and subject matter. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. AABC - Associated Air Balance Council; www.aabc.com.
2. AAMA - American Architectural Manufacturers Association; www.aamanet.org.
3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
7. ABMA - American Boiler Manufacturers Association; www.abma.com.
8. ACI - American Concrete Institute; (Formerly: ACI International); www.concrete.org.
9. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.
10. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
11. AF&PA - American Forest & Paper Association; www.afandpa.org.
12. AGA - American Gas Association; www.aga.org.
13. AHAM - Association of Home Appliance Manufacturers; www.aham.org.

14. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
15. AI - Asphalt Institute; www.asphaltinstitute.org.
16. AIA - American Institute of Architects (The); www.aia.org.
17. AISC - American Institute of Steel Construction; www.aisc.org.
18. AISI - American Iron and Steel Institute; www.steel.org.
19. AITC - American Institute of Timber Construction; www.aitc-glulam.org.
20. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
21. ANSI - American National Standards Institute; www.ansi.org.
22. AOSA - Association of Official Seed Analysts, Inc.; www.aosaseed.com.
23. APA - APA - The Engineered Wood Association; www.apawood.org.
24. APA - Architectural Precast Association; www.archprecast.org.
25. API - American Petroleum Institute; www.api.org.
26. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
27. ARI - American Refrigeration Institute; (See AHRI).
28. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
29. ASCE - American Society of Civil Engineers; www.asce.org.
30. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
31. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
32. ASME - ASME International; (American Society of Mechanical Engineers); www.asme.org.
33. ASSE - American Society of Safety Engineers (The); www.asse.org.
34. ASSE - American Society of Sanitary Engineering; www.asse-plumbing.org.
35. ASTM - ASTM International (formerly American Society for Testing and Materials); www.astm.org.
36. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
37. AWEA - American Wind Energy Association; www.awea.org.
38. AWI - Architectural Woodwork Institute; www.awinet.org.
39. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
40. AWPA - American Wood Protection Association; www.awpa.com.
41. AWS - American Welding Society; www.aws.org.
42. AWWA - American Water Works Association; www.awwa.org.
43. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
44. BIA - Brick Industry Association (The); www.gobrick.com.
45. BICSI – Building Industry Consulting Services International; www.bicsi.org.
46. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); www.bifma.org.
47. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
48. BS - British Standard
49. BWF - Badminton World Federation; (Formerly: International Badminton Federation); www.bissc.org.
50. CDA - Copper Development Association; www.copper.org.
51. CE - Conformite Europeenne; http://ec.europa.eu/growth/single-market/ce-marking/
52. CEA - Canadian Electricity Association; www.electricity.ca.

53. CEA - Consumer Electronics Association; www.ce.org.
54. CFFA - Chemical Fabrics and Film Association, Inc.; www.chemicalfabricsandfilm.com.
55. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
56. CGA - Compressed Gas Association; www.cganet.com.
57. CIF – California Interscholastic Federation
58. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
59. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
60. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
61. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
62. CPA - Composite Panel Association; www.pbmdf.com.
63. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
64. CRRC - Cool Roof Rating Council; www.coolroofs.org.
65. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
66. CSA - Canadian Standards Association; www.csa.ca.
67. CSA - CSA International; (Formerly: IAS - International Approval Services); www.csa-international.org.
68. CSI - Construction Specifications Institute (The); www.csinet.org.
69. CSSA – Certified Steel Stud Association; www.certifiedsteelstud.com
70. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
71. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.cti.org.
72. CWC - Composite Wood Council; (See CPA).
73. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
74. DHI - Door and Hardware Institute; www.dhi.org.
75. ECA - Electronic Components Association; (See ECIA).
76. ECAMA - Electronic Components Assemblies & Materials Association; (See ECIA).
77. ECIA - Electronic Components Industry Association; www.eciaonline.org.
78. EIA - Electronic Industries Alliance; (See TIA).
79. EIMA - EIFS Industry Members Association; www.eima.com.
80. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
81. EN - European Standard
82. ESD - ESD Association; (Electrostatic Discharge Association); www.esda.org.
83. ESTA - Entertainment Services and Technology Association; (See PLASA).
84. ETL - Intertek (See Intertek); www.intertek.com.
85. EVO - Efficiency Valuation Organization; www.evo-world.org.
86. FCI - Fluid Controls Institute; www.fluidcontrolsinstitute.org.
87. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
88. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
89. FM Approvals - FM Approvals LLC; www.fmglobal.com.
90. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.
91. FRSA - Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.; www.floridaroof.com.
92. FSA - Fluid Sealing Association; www.fluidsealing.com.
93. FSC - Forest Stewardship Council U.S.; www.fscus.org.
94. GA - Gypsum Association; www.gypsum.org.

95. GANA - Glass Association of North America; www.glasswebsite.com.
96. GRI – Geosynthetic Institute
97. GS - Green Seal; www.greenseal.org.
98. HI - Hydraulic Institute; www.pumps.org.
99. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
100. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
101. HPVA - Hardwood Plywood & Veneer Association; www.hpva.org.
102. HPW - H. P. White Laboratory, Inc.; www.hpwhite.com.
103. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
104. IAS - International Accreditation Service; www.iasonline.org.
105. IAS - International Approval Services; (See CSA).
106. ICBO - International Conference of Building Officials; (See ICC).
107. ICC - International Code Council; www.iccsafe.org.
108. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
109. ICPA - International Cast Polymer Alliance; www.icpa-hq.org.
110. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
111. IEC - International Electrotechnical Commission; www.iec.ch.
112. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
113. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
114. IESNA - Illuminating Engineering Society of North America; (See IES).
115. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
116. IGMA - Insulating Glass Manufacturers Alliance; www.igmaonline.org.
117. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.okstate.edu.
118. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
119. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.
120. IPEMA - International Playground Equipment Manufacturers Association
121. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
122. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).
123. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.
124. ISO - International Organization for Standardization; www.iso.org.
125. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
126. ITU - International Telecommunication Union; www.itu.int/home.
127. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
128. LMA - Laminating Materials Association; (See CPA).
129. LPI - Lightning Protection Institute; www.lightning.org.
130. MBMA - Metal Building Manufacturers Association; www.mbma.com.
131. MCA - Metal Construction Association; www.metalconstruction.org.
132. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
133. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
134. MHIA - Material Handling Industry of America; www.mhia.org.
135. MIA - Marble Institute of America; www.marble-institute.com.
136. MMPA - Moulding & Millwork Producers Association; www.wmmpa.com.

137. MPEG - Moving Picture Experts Group
138. MPI - Master Painters Institute; www.paintinfo.com.
139. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.
140. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
141. NACE - NACE International; (National Association of Corrosion Engineers International); www.nace.org.
142. NADCA - National Air Duct Cleaners Association; www.nadca.com.
143. NAIMA - North American Insulation Manufacturers Association; www.naima.org.
144. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
145. NBI - New Buildings Institute; www.newbuildings.org.
146. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
147. NCMA - National Concrete Masonry Association; www.ncma.org.
148. NEBB - National Environmental Balancing Bureau; www.nebb.org.
149. NECA - National Electrical Contractors Association; www.necanet.org.
150. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
151. NEMA - National Electrical Manufacturers Association; www.nema.org.
152. NETA - InterNational Electrical Testing Association; www.netaworld.org.
153. NFHS - National Federation of State High School Associations; www.nfhs.org.
154. NFPA - National Fire Protection Association; www.nfpa.org.
155. NFPA - NFPA International; (See NFPA).
156. NFRC - National Fenestration Rating Council; www.nfrc.org.
157. NHLA - National Hardwood Lumber Association; www.nhla.com.
158. NICET - National Institute for Certification in Engineering Technologies
159. NLGA - National Lumber Grades Authority; www.nlga.org.
160. NOFMA - National Oak Flooring Manufacturers Association; (See NWFA).
161. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
162. NRPA: National Recreation and Park Association; www.nrpa.org
163. NRCA - National Roofing Contractors Association; www.nrca.net.
164. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
165. NRTL - Nationally Recognized Testing Laboratory
166. NSF - NSF International (formerly National Sanitation Foundation); www.nsf.org.
167. NSPE - National Society of Professional Engineers; www.nspe.org.
168. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
169. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
170. NWFA - National Wood Flooring Association; www.nwfa.org.
171. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
172. PDI - Plumbing & Drainage Institute; www.pdionline.org.
173. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); www.plasa.org.
174. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
175. RFCI - Resilient Floor Covering Institute; www.rfci.com.
176. RIS - Redwood Inspection Service; www.redwoodinspection.com.
177. SAE - SAE International; www.sae.org.
178. SATA-IO - Serial ATA International Organization
179. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
180. SDI - Steel Deck Institute; www.sdi.org.
181. SDI - Steel Door Institute; www.steeldoor.org.

182. SEFA - Scientific Equipment and Furniture Association (The); www.sefalabs.com.
183. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
184. SFIA - Steel Framing Industry Association; https://sfia.memberclicks.net
185. SHRP – Strategic Highway Research Program
186. SIA - Security Industry Association; www.siaonline.org.
187. SJI - Steel Joist Institute; www.steeljoist.org.
188. SMA - Screen Manufacturers Association; www.smainfo.org.
189. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
190. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
191. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
192. SPIB - Southern Pine Inspection Bureau; www.spib.org.
193. SPRI - Single Ply Roofing Industry; www.spri.org.
194. SRCC - Solar Rating & Certification Corporation; www.solar-rating.org.
195. SSINA - Specialty Steel Industry of North America; www.ssina.com.
196. SSMA – Steel Stud Manufacturers Association; www.ssma.com
197. SSPC - The Society for Protective Coatings; www.sspc.org.
198. SSSA - Soil Science Society of America; https://www.soils.org.
199. STI - Steel Tank Institute; www.steeltank.com.
200. SWI - Steel Window Institute; www.steelwindows.com.
201. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
202. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
203. TCNA - Tile Council of North America, Inc.; www.tileusa.com.
204. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.tema.org.
205. TIA - Telecommunications Industry Association (The); (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.
206. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
207. TMS - The Masonry Society; www.masonrysociety.org.
208. TPI - Truss Plate Institute; www.tpinst.org.
209. TPI - Turfgrass Producers International; www.turfgrasssod.org.
210. TRI - Tile Roofing Institute; www.tileroofing.org.
211. UBPPA - Uni-Bell PVC Pipe Association; www.uni-bell.org
212. UL - Underwriters Laboratories Inc.; www.ul.com.
213. UNI - Uni-Bell PVC Pipe Association; www.uni-bell.org.
214. USAV - USA Volleyball; www.usavolleyball.org.
215. USCC - U.S. Composting Council; https://compostingcouncil.org.
216. USGBC - U.S. Green Building Council; www.usgbc.org.
217. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
218. WASTEC - Waste Equipment Technology Association; www.wastec.org.
219. WCLIB - West Coast Lumber Inspection Bureau; www.wclib.org.
220. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
221. WDMA - Window & Door Manufacturers Association; www.wdma.com.
222. WI - Woodwork Institute; www.wicnet.org.
223. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.
224. WWPA - Western Wood Products Association; www.wwpa.org.

C. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.

1. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
2. ICC - International Code Council; www.iccsafe.org.
3. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

D. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Information is subject to change and is up to date as of the date of the Contract Documents.

1. COE - Army Corps of Engineers; www.usace.army.mil.
2. CPSC - Consumer Product Safety Commission; www.cpsc.gov.
3. DOC - Department of Commerce; National Institute of Standards and Technology; www.nist.gov.
4. DOD - Department of Defense; www.quicksearch.dla.mil.
5. DOE - Department of Energy; www.energy.gov.
6. EPA - Environmental Protection Agency; www.epa.gov.
7. FAA - Federal Aviation Administration; www.faa.gov.
8. FG - Federal Government Publications; www.gpo.gov.
9. GSA - General Services Administration; www.gsa.gov.
10. HUD - Department of Housing and Urban Development; www.hud.gov.
11. LBL - Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; www.eetd.lbl.gov.
12. OSHA - Occupational Safety & Health Administration; www.osha.gov.
13. SD - Department of State; www.state.gov.
14. TRB - Transportation Research Board; National Cooperative Highway Research Program; The National Academies; www.trb.org.
15. USDA - Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.
16. USDA - Department of Agriculture; Rural Utilities Service; www.usda.gov.
17. USDOJ - Department of Justice; Office of Justice Programs; National Institute of Justice; www.ojp.usdoj.gov.
18. USP - U.S. Pharmacopeial Convention; www.usp.org.
19. USPS - United States Postal Service; www.usps.com.

E. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. ADA & ABA AG – Americans with Disabilities Act and Architectural Barriers Act Accessibility Guidelines; https://www.access-board.gov/attachments/article/412/ada-aba.pdf.
2. CBC - California Building Code; www.bsc.ca.gov/Home/Current2013Codes.aspx.

3. CFR - Code of Federal Regulations; Available from Government Printing Office; www.gpo.gov/fdsys.
4. DOD - Department of Defense; Military Specifications and Standards; Available from DLA Document Services; www.quicksearch.dla.mil.
5. DSCC - Defense Supply Center Columbus; (See FS).
6. FED-STD - Federal Standard; (See FS).
7. FS - Federal Specification; Available from DLA Document Services; www.quicksearch.dla.mil.

    a. Available from Defense Standardization Program; www.dsp.dla.mil.
    b. Available from General Services Administration; www.gsa.gov.
    c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org/ccb.

8. MILSPEC - Military Specification and Standards; (See DOD).
9. USAB - United States Access Board; www.access-board.gov.
10. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (See USAB).

F. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. CalTrans; State of California; Department of Transportation; www.dot.ca.gov
2. CBHF; State of California; Department of Consumer Affairs; Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation; www.bearhfti.ca.gov.
3. CCR; California Code of Regulations; Office of Administrative Law; California Title 24 Energy Code; www.calregs.com.
4. CDHS; California Department of Health Services; (See CDPH).
5. CDPH; California Department of Public Health; Indoor Air Quality Program; www.cal-iaq.org.
6. CPUC; California Public Utilities Commission; www.cpuc.ca.gov.
7. DSA; Division of the State Architect; www.dgs.ca.gov.
8. DTSC: Department of Toxic Substances Control; www.dtsc.ca.gov.
9. SDAPCD; San Diego Air Pollution Control district; www.sdapcd.org.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SUPPLEMENTAL LISTING OF INDUSTRY STANDARDS

A. The list immediately following this section is provided for the reader's convenience. It is intended to be reasonably thorough, however, it does not purport to be comprehensive.

END OF SECTION 01 42 00

San Diego Unified School District Guide Specifications
Document Version: February 14, 2022 Bulletin

SUPPLEMENT to **01 42 00 REFERENCES**

San Diego Unified School District Guide Specifications May 2016 Edition

ACI	
216.1	Determining Fire Resistance of Concrete and Masonry Construction Assemblies
318	318-14: Building Code Requirements for Structural Concrete and Commentary
350/350R	Code Req'ts for Environmental Engineering Concrete Structures and Commentary
530-11	Building Code Requirements and Specification for Masonry Structures and Related Commentaries (see also TMS 402 & ASCE 5-11)
503.3	Producing a Skid-Resistant Surface on Concrete by the Use of Epoxy and Aggregate
AAPFCO	
SUIP #25	Statements for Uniform Interpretation and Policy "The Heavy Metal Rule" Calculator
AASHTO	
LTS-6-M	Structural Supports for Highway Signs, Luminaires, and Traffic Signals
M 251	Plain and Laminated Elastomeric Bridge Bearings
C78.42	High Pressure Sodium Lamps
C78.43	Single Ended Metal Halide Lamps
C 79.1	Nomenclature for Glass Bulbs Intended for Use with Electric Lamps
C 80.1	Galvanized Rigid Conduit
C 80.3	Steel Electric Metallic Tubing
C 80.5	Electrical Rigid Aluminum Conduit
C 80.6	Electrical Intermediate Metal Conduit
C 81.61	Bases (Caps) for Electric Lamps
C 82.4	Ballasts for High-Intensity-Discharge & Low Pressure Sodium Lamps
C 82.11	High Frequency Fluorescent Lamp Ballasts
C136.31	Roadway and Area Lighting Equipment – Luminaire Vibration
E1.24	Entertainment Technology – Dimensional Requirements for Stage Pin Connectors
O5.2	Wood Poles
T 245	Resistance to Plastic Flow of Bituminous Mixtures Using Marshall Apparatus
AIHA	
ELPAT	Environmental Lead Proficiency Analytical Testing Program
AISI	
1018	
1019	
1020	
ANSI	
C 62.41	Surge Voltage In Low Voltage Ac Power Circuits
A 108.10	Installation of Grout in Tile Work
A 118.4	Installation of Ceramic Tile
A 118.6	Ceramic Tile Grouts
ASCE	
6	Specification for Masonry Construction (see also ACI 530.1 & TMS 602)
5-11	Building Code Requirements and Specification for Masonry Structures and Related Commentaries (see also TMS 402 & ACI 530)
ASME	
B40.1	Same as B40.100
ASME B 15.1	Safety Standard for Mechanical Power
ASTM	

A74	Cast Iron Soil Pipe and Fittings
A126	Gray Iron Castings for Valves, Flanges, and Pipe Fittings
A496	Steel Wire, Deformed, for Concrete Reinforcement
A497	Withdrawn. Replaced by ASTM A1064 Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
A510	Wire Rods and Coarse Round Wire, Carbon Steel, and Alloy Steel
A564	Hot-Rolled and Cold-Finished Age-Hardening Stainless Steel Bars and Shapes
A674	Polyethylene Encasement for Ductile Iron Pipe for Water or Other Liquids
A775	Epoxy-Coated Reinforcing Steel Bars
A780	Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
A817	Metallic-Coated Steel Wire for Chain-Link Fence Fabric and Marcelled Tension Wire
A929	Steel Sheet, Metallic-Coated by the Hot-Dip Process for Corrugated Steel Pipe
B8	Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
B16	Free-Cutting Brass Rod, Bar and Shapes for Use in Screw Machines
B29	Refined Lead
B99	Copper-Silicon Alloy Wire for General Applications
B660	Packaging/Packing of Aluminum and Magnesium Products
B783	Materials for Ferrous Powder Metallurgy (PM) Structural Parts
C219	Standard Terminology Relating to Hydraulic Cement
C858	Underground Precast Concrete Utility Structures
C890	Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures
C902	Pedestrian and Light Traffic Paving Brick
C913	Precast Concrete Water and Wastewater Structures
C1028	Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method (Withdrawn 2014)
C1093	Accreditation of Testing Agencies for Masonry
C1173 - 10	Flexible Transition Couplings for Underground Piping Systems
C1193	Use of Joint Sealants
C1277	Shielded Couplings Joining Hubless Cast Iron Soil Pipe and Fittings
C1314	Compressive Strength of Masonry Prisms
C1436	Materials for Shotcrete
C1479	Installation of Precast Concrete Sewer, Storm Drain, & Culvert Pipe
C1540	Heavy Duty Shielded Couplings Joining Hubless Cast Iron Soil Pipe and Fittings
C1582	Admixtures to Inhibit Chloride-Induced Corrosion of Reinforcing Steel in Concrete
C1586	Quality Assurance of Mortars
C1623	Manufactured Concrete Masonry Lintels
D1816	Dielectric Breakdown Voltage of Insulating Oils of Petroleum Origin Using VDE Electrodes
D2751	Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings
D3549	Thickness or Height of Compacted Bituminous Paving Mixture Specimens
D3963	Fabrication and Jobsite Handling of Epoxy-Coated Steel Reinforcing Bars
D3977	Sediment Concentration in Water Samples
D4632	Grab Breaking Load and Elongation of Geotextiles
D4829	Expansion Index of Soils
D5329	Test Methods for Sealants and Fillers, Hot-Applied, for Joints and Cracks in Asphaltic and Portland Cement Concrete Pavements
D5926	Poly Vinyl Chloride (PVC) Gaskets for Drain, Waste, and Vent (DWV), Sewer, Sanitary, and Storm Plumbing Systems
D6916	Shear Strength Between Segmental Concrete Units (Modular Concrete Blocks)
D769	Black Synthetic Iron Oxide
E1444	Magnetic Particle Testing
E492	Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine
E989	Determination of Impact Insulation Class (IIC)
F606	Mechanical Properties of Externally and Internally Threaded Fasteners, Washers, Direct Tension Indicators, and Rivets
F900	Industrial and Commercial Swing Gates
F934	Standard Colors for Polymer-Coated Chain Link Fence Materials
F969	Construction of Chain-Link Tennis Court Fence

F1136	Zinc/Aluminum Corrosion Protective Coatings for Fasteners
F1664	Poly(Vinyl Chloride) (PVC)-Coated Steel Tension Wire Used with Chain-Link Fence
F1668	Construction Procedures for Buried Plastic Pipe
F1936	Impact Attenuation of Turf Playing Systems as Measured in the Field
F2200	Automated Vehicular Gate Construction
F2223	Playground Surfacing
F2898	Permeability of Synthetic Turf Sports Field Base Stone and Surface System by Non-confined Area Flood Test Method
H 35.1	Wire Rods and Coarse Round Wire, Aluminum Material: Alloy 6063-T6
AWPA	
UC4A	Use Category System: User Specification for Treated Wood
AWWA	
C219	Bolted, Sleeve-Type Couplings for Plain-End Pipe
C506	Backflow Prevention Devices - Reduced Pressure Principle & Double Check Valve Types
M41	Ductile-Iron Pipe and Fittings
CA AB	**California Assembly Bill**
AB 1953	Re: Lead-free plumbing
CALTRANS	
Test cv 227	Evaluating Cleanness of Coarse Aggregate
CCR	
8 CCR 1637	Scaffolds
8 CCR 1760	Low-Voltage Electrical Safety Orders
8 CCR 1922	Portable Fire Fighting Equipment
8 CCR 2405.5	Ground-Fault Circuit Protection-Construction Site
8 CCR 3203	Injury and Illness Prevention Program
22 CCR 66261	Identification and Listing of Hazardous Waste
CDPH	
Form 8551	Abatement of Lead Hazards Notification
CEA	**(Consumer Electronics Association)**
310-E	Design Requirements for Cabinets, Panels, Racks, and Sub-racks
542-B	Cable Television Channel Identification Plan
2032	Performance of Indoor TV Antennas
CFR	
29 CFR 1910.7	Appendix A: Definition and Requirements for a Nationally Recognized Testing Laboratory
29 CFR 1910.141	Sanitation
29 CFR 1910.157	Portable Fire Extinguishers
29 CFR 1910.269	Electric Power Generation, Transmission, and Distribution
29 CFR 1910.304	Wiring Design and Protection
29 CFR 1926.404	
29 CFR 1926.58	This standard 1926.58 was redesignated to 1926.1101 in the Federal Register, August 10, 1994, page 40964.
40 CFR 257	Criteria For Classification Of Solid Waste Disposal Facilities And Practices
40 CFR 141	National Primary Drinking Water Regulations
49 CFR 171.8	Hazardous Materials - North American Shipments - Definitions & Abbreviations
49 CFR 173.155	Limited Quantities of Class 9 Materials
CSA	
Z245.20	External Fusion Bond Epoxy Coating for Steel Pipe
C22.2 No. 137	Electric Luminaires for Use in Hazardous Locations

DOD	**(see also MIL)**
DOD-P-21035B	Military Specification - Paint High Zinc Dust Content, Galvanizing Repair (Metric)
EN	
EN 15330	Surfaces for Sports Areas
EPA	
Method No. 8020	Aromatic Volatile Organics by Gas Chromatography
Tier 2	Vehicle and Gasoline Sulfur Program
Tier 3	Vehicle Emission and Fuel Standards Program
Tier 4	Emission Standards Regarding diesel engines used in many types of Construction
ESTA/ AASHTO	
E1.11 USITT DMX 521-A	Asynchronous Serial Digital Data Transmission Standard for Controlling Lighting Equipment and Accessories
FED-STD	
595	Colors Used in Government Procurement
FM	
Class No. 3990	Less- or Non-Flammable Liquid Insulated Transformers
GRI	
GG1	Geogrid Rib Tensile Strength
GG2	Geogrid Junction Strength
ICC	
300	**Bleachers, Folding and Telescopic Seating and Grandstands Standard**
ICEA	
CS 8	Extruded Dielectric Shielded Power Cables
S 93.639	5-46 kV Shielded Power Cable for Use in the Transmission and Distribution of Electric Energy
S 95-658	Power Cables Rated 2000 Volts or less for Distribution of Electrical Energy
S 97.682	Utility Shielded Power Cables Rated 5 through 46 kV
T 31.610	Longitudinal Water Penetration Resistance Tests on Blocked Conductors
ICRI	
310.2	Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair
IEC	
60061-1	Lamp Caps and Holders Together With Gauges for the Control of Interchangeability and Safety
60929	AC-Supplied Electronic Ballasts for Tubular Fluorescent Lamps
IEEE	
18	Shunt Power Capacitors
43	Testing Insulation Resistance of Rotating Machinery
48	Alternating Current Cable Terminations Used on Shielded Cables having Laminated Insulation
81	Measuring Earth Resistivity, Ground Impedance, and Earth Potentials of a Grounding System
344	Seismic Qualification of Equipment for Nuclear Power Generating Stations
576	Installation, Termination, and Testing of Insulated Power Cable as Used in Industrial and Commercial Applications
802.1x	Port-based Network Access Control

802.3af	Power over Ethernet
802.11	Telecommunications and Information Exchange between Systems – Local and Metropolitan Area Networks – Specific Requirements – Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications
802.11b	Wireless LAN Technology
802.11g	Wireless Local Area Networks (WLANS) that Offers Transmission Over Relatively Short Distances at up to 543 Mbps
1100	Powering and Grounding Electronic Equipment
1284	Parallel Port Standard
C37.20.4	Indoor AC Switches (1 kV to 38 kV) for Use in Metal-Enclosed Switchgear
C57.12.36	Liquid-Immersed Distribution Sub-Station Transformers
IES	
LM 5	Photometric Measurements of Area and Sports Lighting Installations
LM 45	Electrical & Photometric Measurement of General Service Incandescent Filament Lamps
LM 46	Photometric Testing of Indoor Luminaires Using High Intensity Discharge or Incandescent Filament Lamps
LM 50	Photometric Measurements of Roadway Lighting Installations
LM 52	Photometric Measurements of Roadway Sign Installations
LM 64	Photometric Measurements of Parking Areas
LM 72	Directional Positioning of Photometric Data. Lighting Measurements Testing and Calculation Guides
LM 79	Electrical and Photometric Measurements of Solid State Lighting Products
NA RP 6	Recommended Practice for Sports and Recreational Area Lighting
NA RP 16	Nomenclature and Definitions for Illuminating Engineering
LPI	
175	Design, Installation, Inspection of Lightning Protection Systems
MFMA	
4	Metal Framing Standards Publication 204
MIL	**Military Specification (see also DOD)**
C-882E	Cloth, Duck, Cotton Or Cotton-Polyester Blend, Synthetic Rubber, Impregnated, and Laminated, Oil Resistant
MPEG	
4, Part 10	Standard for Video Compression
NACE	
1	Good Workmanship in Electrical Contracting
101	Installing Steel Conduits (Rigid, IMC, EMT)
102	Installing Aluminum Rigid Metal Conduit
402	Installing and Maintaining Motor Control Centers
407	Installing and Maintaining Panel Boards
430	Installing Medium-Voltage Metal-Clad Switchgear
NCMA	
TEK 8-4A	Cleaning Concrete Masonry
NEMA	
C 12.11	Instrument Transformers for Revenue Metering: 10kV Bil through 350 kV (0.6 kV NSV through 69 kV NSV)
CP1	Shunt Trip Capacitors
FB-2.10	Fittings for Use with Non-Flexible Conduit or Tubing (Rigid Metal Conduit, Intermediate Metal Conduit)
FB-2.20	Selection and Installation Guidelines for Fittings for Use with Flexible Electrical Conduit and Cable

FB 11	Classified location plugs, receptacles, and connectors (Hazardous Location)
FG1	Fiberglass Cable Tray Systems
ICS 2	Controllers, Contactors, and Overload Relays Rated 600V
ICS 7	Adjustable-Speed Drives
ICS 18	Industrial Control and Systems. Motor Control Centers
ICS 61800-2	Standards for Adjustable Speed Electrical Power Drive Systems
ICS 61800-3	Adjustable Speed Electrical Power Drive Systems Part 3: EMC Requirements and Specific Test Methods
LE 4	Recessed Luminaires, Ceiling Compatibility
LE 6	Procedure for Determining Target Efficacy Ratings for Commercial, Industrial, and Residential Luminaires
OS-1	Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports
OS-2	Non-Metallic Outlet Boxes, Device Boxes, Covers, and Box Supports
PB 1.1	Installation, Operation, and Maintenance of Panel Boards Rated 600 V or less
PB 2.1	Handling, Installation, Operation, and Maintenance of Dead Front Distribution Switchboards Rated 600 V or less
RV-3	Application and Installation Guidelines for Flexible and Liquid-Tight Flexible Metal Conduits
TC 14	Reinforced Thermosetting Resin Conduit
TCB 2	Selection and Installation of Underground Non-Metallic Duct
TP2	Test Method for Measuring the Energy Consumption of Distribution Transformers
NFPA	
250	Enclosures for Electrical Equipment (1000 V Maximum)
262	Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces
312	Fire Protection of Vessels During Construction, Repair, or Lay-up
508A	Industrial Control Panels
NICET	
Levels 1&2	Certification for Low Voltage Professionals for Installation and Maintenance of Fire Alarm Systems
NRDCA	**National Roof Deck Contractors Association**
NOMMA	
Guideline 1	Joint Finishes
RCRA	**Resource Conservation and Recovery Act**
SATA-IO	
SATA Standard	Serial Advanced Technology Attachment Standard for Connecting Hard Drives into Computer Systems
SB460	**California Senate Bill on Lead Abatement**
SDAPCD	
Rule 67	Metal Container, Metal Closure, and Metal Coil Coating Operations
Rule 67.01	Architectural Coatings – Proposed Repeal of Existing Rule 67.0
Rule 67.21	Adhesive Material Application Operations
SHRP	
H-348	Asphalt Pavement Repair Manuals of Practice
H-349	Concrete Pavement Repair Manuals of Practice
SIA	
BIO-1	Speaker Profile and Speaking Topics
CP-01	False Alarm Reduction
DC-03	“SIA Format” Protocol – for Alarm System Communications

DC-07	Digital Communication Standard – for Central Station Equipment Communications
PIR-01	Passive Infrared Motion Detectors
TVAC	CCTV Access Control Standard – Message Set for System Integration
TIA/EIA	
310D	Cabinets, Racks, Panels, and Associated Equipment
492AAAD	Telecommunications Distribution Methods
526-14-B	One Reference Jumper Method for Measuring Attenuation in a Structured Cabling Application
529-B	Canadian Standard equivalent to TIA/EIA 568-B
568-B	Cable Color Code Standard on Each End of a Straight-Through 10/100Base T Cable
568-B-1	Commercial Building Telecommunications Cabling Standard
568-B.2	Commercial Building Telecommunications Cabling Standard, Part 2: Balanced Twisted Pair Cabling Components
568-B.3	Components and Transmission Requirements for Optical Fiber Cabling
569-A&B	Commercial Building Standards for Telecommunications Pathways and Spaces
569-C.1	Revised Temperature and Humidity Requirements for Telecommunications Spaces
598-B	Standard for Colors. Fiber/Unit NumberS 1-9
598-C	Optical Fiber Type Identification Scheme for Color Coding or Marking
604-2	Optical Fiber Cabling Components
604-2B	Fiber Optic Connector Intermateability
604-3A	Simplex and Duplex Connectors. Stable Performance: o <0.2dB typical MM. o <0.15dB typical SM
604-3B	Fiber Optic Connector Intermateability, Type SC and SC-APC
604-12	Optical Fiber Connector Intermateability MT-RJ
606-B	Updated Labeling Standard – Adopts Identification Scheme specified in TIA/EIA 606-A
TMS	
402	Building Code Requirements and Specification for Masonry Structures and Related Commentaries (see also ACI 530 & ASCE 5-11)
602	Specification for Masonry Construction (see also ACI 530.1 & ASCE 6)
UL	
5A	Non-Metallic Surface Raceways and Fittings
6A	Rigid Metal Conduit – Aluminum, Red Brass, and Stainless Steel
96A	Installation Requirements for Lightning Protection Systems
651B	Requirements for Type EB and Type A extruded rigid PVC (Polyvinyl Chloride) electrical conduit and fittings
717	Ducts and Air Transfer Openings
810	Capacitors
813	Commercial Audio Equipment
886	Outlet Boxes and Fittings, for Use in Hazardous (Classified) Locations
917	Clock-Operated Switches
1053	Ground Fault Sensing and Relaying Equipment
1062	Unit Substations
1244	Electrical and Electronic Measuring and Testing Equipment
1277	Electrical Power and Control Tray Cables with Optional Optical Fiber Members
1436	Outlet Circuit Testers and Similar Indicating Devices
1562	Distribution Transformers, Dry-Type – Over 600 Volts
1573	Stage and Studio Luminaires and Connector Strips
1651	Optical Fiber Cable Standard
1655	Construction, Test, and Marking Requirements Covering the Safety of Community-Antenna Television Cables
1684A	Supplemental Requirements for Extra Heavy Reinforced Wall
1685	Vertical Tray Fire Propagation and Smoke Release Test for Electrical and Optical Fiber Cables
1711	Amplifiers for Fire Protective Signaling Systems
1773	Termination Boxes

2024	Cable Routing Assemblies and Communications Raceways
2075	Gas and Vapor Detectors and Sensors
2200	Stationary Engine Generator Assemblies
2572	Mass Notification Systems
Category Code VZCA	Certification, as a minimum, listing the tested values for VPRs, nominal ratings, MCOVs, type designations, OCPDs
FS W-C-596	Mechanical and Electrical Life of Modular Wiring Devices
FS W-S-896	Switches, Toggles (Toggle and Lock), Flush Mounted

SECTION 01 50 00
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. General: Installation, removal of, maintenance, cleaning, and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in project to use temporary services and facilities without cost, including District, Architect, testing agencies, and authorities having jurisdiction.

1. Water Service: Pay water-service use charges for water used by all entities for construction operations.
2. Electric Power Service: Pay electric-power-service use charges for electricity used by all entities for construction operations.

1.4 INFORMATIONAL 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 fabrication and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.

C. Moisture-Protection Plan as specified herein.

D. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-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. HVAC system isolation schematic drawing.
3. Location of proposed air-filtration system discharge.
4. Waste handling procedures.
5. 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.

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 sanitary facilities and its equipment are for the District's exclusive use.

b. Provide a 24' x 44' trailer for the use of the Project Inspector, District Construction Manager, Controls Personnel and other District personnel.

c. Provide meters for all utilities.

d. 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.

e. The trailer shall contain two (2) 10' x 12' and two (2) 10' x 8' private offices with locking doors, one 5' x 5' utility room with sink, one (1) 20' x 15" conference room, and two restrooms.

f. 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 Substantial Completion.

g. The trailer layout and location shall be approved by the District Construction Manager.

h. 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.

i. Provide and mount a 2' x 4' sign containing the proposition logos provided by the District and entitled "San Diego Unified School District Construction Office".

j. The windows shall be operable, tinted on the exterior, and equipped with window blinds.

k. The exterior door shall have access to the outside with landings, stairs, a key-type lock, and a deadbolt key lock.

l. Both the window and door glass shall be protected with security bars.

m. Notify the Project Inspector forty-eight (48) hours prior to the date of hook-up of temporary utilities.

n. 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.

o. Service, repair and maintain facilities (including utilities, garbage and cleaning services) in good working order.

2. Toilet Rooms:
   a. The field office shall have two (2) toilet rooms with toilet accessories as required by applicable law.
   b. Each toilet room shall have a locking door and be equipped with a water closet with tank (also with toilet tissue dispenser, toilet seat cover dispenser) and a lavatory with hot and cold water service, soap dispenser, and hand-towel dispenser.
   c. Maintain the toilet rooms in a neat, clean, and orderly manner, and refill all consumables semi-monthly.
3. Equipment:
   a. Provide six (6) 30” x 60” office desks, five (5) tables satisfactory for the study of plans, two (2) vertical plan racks and (10) sticks, six (6) desk chairs with wheels and arms, and sixteen (16) standard chairs, one (1) 4’ x 10’ conference table, two (2) legal size horizontal type lockable 6-drawer and three (3) legal size horizontal type lockable 2-drawer filing cabinets with keys, one (1) large and six (6) small bookshelves, one (1) utility supply cabinet, seven (7) waste paper receptacles, three (3) private telephone lines, two (2) telephone answering devices, adequate electric lights, and bottled drinking water dispenser with paper cups.
   b. Provide seven (7) hands free speaker type telephones distributed as follows: one in each office, one in the conference room and remaining jacks/phones located at the District Construction Manager’s direction.
   c. 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.
   d. Provide DSL/cable service to the field office (or high speed wireless if DSL is not available). The field office shall allow for eight (8) District computers and printers. The Ethernet jacks shall be distributed as follows: one (1) in each office, two (2) in the conference room, and one (1) in common area for multifunction printer. Provide DSL/cable connection and necessary hardware for a minimum of six (6) District computers to simultaneously access the Internet and for users to login to District’s VPN to utilize District resources. The District’s DSL/cable service shall be separate from the Contractor’s jobsite network. The DSL/cable service provided by the Contractor shall have the minimum connection speed of a 40 Mbps downstream, 4 Mbps up-stream and have a static IP address for the sole and exclusive use by the District.
   e. Provide six (6) parking spaces dedicated for District use adjacent to the field office.

f. All equipment and furnishings described here shall be provided by the Contractor either in 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.

g. Re-Supply, service, repair and maintain equipment in good working order, including paper and inks/toner.

C. Contractor's Field Office and Sanitary Facilities:

1. The Contractor's Field Office: Equip with lockable entrances, operable windows and serviceable finishes, and heating and ventilation on foundations adequate for normal loading. Provide adequate space for a conference table with sufficient seating for ten (10) people. Provide the sanitary facilities, wash facilities and drinking water as required by applicable codes and regulations.

D. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations. Store combustible materials away from building(s).

2.3 EQUIPMENT

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

B. Air-Filtration Units: Primary and secondary HEPA-filter-equipped portable units with four-stage filtration. Provide single switch for emergency shutoff. Configure to run continuously.

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. 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. Prior to commencing work, isolate the HVAC system in area where work is to be performed according to coordination drawings.

    a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
    b. Maintain negative air pressure within work area using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.

2. 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.
3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.

E. 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.

F. Electric Power Service: Connect to District's existing electric power service. Maintain equipment in a condition acceptable to District.

G. 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.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.

E. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. Project Identification Sign: Provide Project identification sign as indicated on Drawings.
2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.

a. Provide temporary, directional signs for construction personnel and visitors.

3. 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.

TREE, PLANT, AND IRRIGATION SYSTEM PROTECTION

A. Take all measures necessary to protect existing trees, plants and irrigation that is to remain. Measures include, without limitation, substantial barricades to prevent damage. Maintain existing plant materials within the area of Work that are to remain,

including periodic watering, trimming, and weeding. Install temporary fencing located to protect vegetation and irrigation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

B. Inspect the irrigation system with the Project Inspector to determine existing conditions prior to commencement of Work. Repair, replace, or correct damage to existing irrigation system and plant materials caused by Contractor operations without adjustment to the Contract Time or the Contract Price. The repair, replacement, or correction of existing plant materials and irrigation system shall bring both to their original condition prior to construction, as determined by the Project Inspector.

C. Ensure existing irrigation systems are operable during selective demolition. Provide temporary power to controller. Provide temporary water source to existing mainline within and outside of project limits as required to maintain an operable system during demolition and construction. If temporary power and/or water is unavailable, hand water existing plant materials within and outside of project limits until automatic system is restored.

D. Provide a qualified arborist who shall certify that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.

E. Temporary Fencing: Install temporary fencing located as indicated or outside the drip line of trees to protect remaining vegetation from construction damage.

1. Install chain link fence according to ASTM F 567 and manufacturer's written instructions.

F. Protect tree root systems from damage due to noxious materials caused by runoff or spillage while mixing, placing, or storing construction materials. Protect root systems from flooding, eroding, or excessive wetting caused by dewatering operations.

G. Do not store construction materials, debris, or excavated material within the drip line of remaining trees. Do not permit vehicles or foot traffic within the drip line; prevent soil compaction over root system.

3.5 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

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. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Obtain extended warranty for District. Perform control operations lawfully, using environmentally safe materials approved by authorities having jurisdiction.

D. Site Enclosure Fence: Before construction operations begin, provide site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.

1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
2. Maintain security by limiting number of keys and restricting distribution to authorized personnel.

E. 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.

F. 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.

G. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.

H. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.

3.6 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. Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:

1. Protect porous materials from water damage.
2. Protect stored and installed material from flowing or standing water.
3. Keep porous and organic materials from coming into prolonged contact with concrete.
4. Remove standing water from decks.
5. Keep deck openings covered or dammed.

C. Partially Enclosed Construction Phase: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:

1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
2. Keep interior spaces reasonably clean and protected from water damage.
3. Periodically collect and remove waste containing cellulose or other organic matter.
4. Discard or replace water-damaged material.
5. Do not install material that is wet.
6. Discard, replace, or clean stored or installed material that begins to grow mold.
7. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.

D. Controlled Construction Phase of Construction: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:

1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
2. Use permanent HVAC system to control humidity.
3. 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.

3.7 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. 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 01 50 00

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SECTION 01 60 00
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 21 00 "Allowances" for products selected under an allowance.
2. Section 01 25 00 "Substitution Procedures" for requests for substitutions.
3. 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 01 60 00

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SECTION 01 73 00
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. Installation of the Work.
2. Cutting and patching.
3. Coordination of District-installed products.
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 02 41 19 "Selective Demolition" for demolition and removal of selected portions of the building.

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 PREINSTALLATION MEETINGS

A. Cutting and Patching Conference: Conduct conference at Project site.

1. Prior to commencing work requiring cutting and patching, review extent of cutting and patching anticipated and examine procedures for ensuring satisfactory result

from cutting and patching work. Require representatives of each entity directly concerned with cutting and patching to attend, including the following:

a. Contractor's superintendent.
b. Trade supervisor responsible for cutting operations.
c. Trade supervisor(s) responsible for patching of each type of substrate.
d. Mechanical, electrical, and utilities subcontractors' supervisors, to the extent each trade is affecting by cutting and patching operations.

2. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.5 ACTION SUBMITTALS

A. Cutting and Patching Request

1. Submit Cutting and Patching Plan describing procedures at least 10 days prior to the time cutting and patching will be performed.
2. Include the following information:

a. Extent: Describe reason for and extent of each occurrence of cutting and patching.
b. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
c. Products: List products to be used for patching, including product data and patching details, and firms or entities that will perform patching work.
d. Dates: Indicate when cutting and patching will be performed.
e. Contractor’s stamp, Contractor’s name, Project location and name, Contractor’s signature acknowledging review of Cutting and Patching Request, including Cutting and Patching Plan.
f. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.

1) Include description of provisions for temporary services and systems during interruption of permanent services and systems.

3. Obtain District Construction Manager’s approval prior to commencing cutting and patching work. Approval does not waive District’s right to require removal and replacement of unsatisfactory cutting and patching work.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For franchise utility project manager.

B. Landfill Receipts: Submit copies of waste hauler slips indicating the amount of waste hauled in tons and the amount of waste in tons diverted from landfill and recycled, composted or salvaged.

1.7 QUALITY ASSURANCE

A. Franchise Utility Project Manager Qualifications: A qualified franchise utility project manager/coordinator with a minimum of 10 years' experience in project management with utility agencies (SDG&E, SBC Global, Cox Cable, Time Warner, etc.). Duties shall include administering and coordinating all aspects of the administration of the franchise utility work including contractor self-performed work.

B. 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. Exterior curtain-wall construction.
d. Sprayed fire-resistive material.
e. Equipment supports.
f. Piping, ductwork, vessels, and equipment.
g. 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.

C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, 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. 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 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.

3.4 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 prevent interruption to occupied areas.

G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping.
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.

3.5 DISTRICT-INSTALLED PRODUCTS

A. Site Access: Provide access to Project site for District's construction personnel.

B. Coordination: Coordinate construction and operations of the Work with work performed by District's construction personnel.

1. Construction Schedule: Inform District of Contractor's preferred construction schedule for District's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify District if changes to schedule are required due to differences in actual construction progress.
2. Preinstallation Conferences: Include District's construction personnel at preinstallation conferences covering portions of the Work that are to receive

District's work. Attend preinstallation conferences conducted by District's construction personnel if portions of the Work depend on District's construction.

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.

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.

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 01 73 00

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SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Salvaging nonhazardous demolition and construction waste.
2. Recycling nonhazardous demolition and construction waste.
3. Disposing of nonhazardous demolition and construction waste.

B. Related Requirements:

1. Section 02 41 19 "Selective Demolition" for disposition of waste resulting from partial demolition of buildings, structures, and site improvements.

1.3 DEFINITIONS

A. Source Separated Recycling Facility (SSRF): A facility that exclusively accepts separated individual commodities for the purpose of recycling; such as metals, paper, wood, and/or inerts such as asphalt and concrete.

B. Mixed Debris: Includes solid items such as building materials, packaging, and rubble resulting from construction, remodeling, repair, and demolition operations. One mixed debris processing facility is located in San Diego County at EDCO, 6670 Federal Blvd, Lemon Grove, CA 91945, herein referred to as the EDCO Mixed Debris Recycling Facility.

C. Class III Landfill: A landfill that accepts non-hazardous waste such as household, commercial, and industrial waste.

D. Administrative Recycling Program: Separation and recovery of paper and beverage containers from both permanent administrative offices and construction site office(s).

E. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

F. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

G. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

H. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

I. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

J. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 PERFORMANCE REQUIREMENTS

A. General: Achieve end-of-Project rates for salvage/recycling of 75 percent by weight of total non-hazardous 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. Clearly label all recycling containers and list acceptable and unacceptable materials. Deliver recyclable materials to source separated recycling facilities. Facilitate recycling and salvage of materials, including the following as applicable:

1. Demolition Waste:
   a. Plywood and oriented strand board.
   b. Structural and miscellaneous steel.
   c. Rough hardware.
   d. Roofing.
   e. Insulation.
   f. Equipment.
   g. Piping.
   h. Supports and hangers.
   i. Mechanical equipment.
   j. Refrigerants.
   k. Electrical conduit.
   l. Copper wiring.
   m. Electrical devices.
   n. Switchgear and panelboards.
   o. Transformers.

2. Construction Waste:
   a. Lumber.
   b. Wood sheet materials.
   c. Wood trim.
   d. Metals.
   e. Roofing.

f. Insulation.
g. Piping.
h. Electrical conduit.
i. Packaging: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following uncontaminated packaging materials:

1) Paper.
2) Cardboard.
3) Boxes.
4) Plastic sheet and film.
5) Polystyrene packaging.
6) Wood crates.
7) Plastic pails.

B. Co-mingled Debris: Direct all co-mingled site tonnage to the EDCO Mixed Debris Processing Facility.

1.5 ACTION SUBMITTALS

A. Waste Management Plan: Submit plan within 10 days of date established for the Notice to Proceed.

1.6 INFORMATIONAL SUBMITTALS

A. SDUSD Contractor Summary Site Debris Diversion Report: Concurrent with each Application for Payment, submit report. Use District Form CSDDR-1, attached at the end of this Section. The District Construction Manager will provide an editable version. *Failure to include Report will result in a 10 percent withholding of payment.*

B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

C. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations.

D. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations.

E. 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.

F. 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.

1.7 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Waste Management Conference: Prior to commencement of work, conduct conference at Project site. Attendees shall include District Construction Manager, Waste Management Coordinator, and Contractor personnel involved in demolition and waste handling. Review methods and procedures related to waste management, including:

1. Review and discuss waste management plan including responsibilities of Waste Management Coordinator.
2. Review requirements for documenting quantities of each type of waste and its disposition.
3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
5. Review waste management requirements for each trade.

1.8 SITE DEBRIS MANAGEMENT PLAN

A. General: Develop a site debris management plan. Use District Form CSDMP-1, attached at the end of this Section. The District Construction Manager will provide an editable version. Use a separate form for each project phase (land clearing, demolition, construction).

B. Post approved plan in a prominent location at the Project site and distribute copies to superintendent and all subcontractors.

PART 2 - PRODUCTS (Not Used)

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, recycled, reused, donated, and sold.
2. Comply with Section 01 50 00 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

END OF SECTION 01 74 19

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FORM CSDMP-1
SDUSD CONTRACTOR SITE DEBRIS MANAGEMENT PLAN (CSDMP)

Complete a separate form for each project phase (i.e. demolition, land clearing, construction)

Project Title:		
Contract or Work Order No.:		
Contractor's Name:		
Street Address:		
City:	State:	Zip:
Phone: ( )	Fax: ( )	
E-Mail Address:		
Prepared by: (Print Name)		
Date Submitted:		

Reuse, Recycling or Mixed Debris Processing Processes Used

Describe the types of recycling processes or disposal activities used for material generated in the project. Indicate the type of process or activity by number, types of materials, and quantities that are estimated for reuse and recycling below:

01 - Reuse of building materials or salvage items on site (i.e. fencing or red clay brick)
02 - Salvaging building materials or salvage items at an offsite salvage or re-use center (i.e. lighting, fixtures)
03 - Recycling source separated materials on site (i.e. crushing asphalt/concrete for reuse or grinding for mulch)
04 - Recycling source separated materials at an offsite recycling center (i.e. scrap metal or green matls)
05 - Recycling commingled loads of C&D matls at EDCO Mixed Debris Recycling Facility
06 - Recycling material as Alternative Daily Cover at landfills
07 - Delivery of soils or mixed inerts to an inert landfill for disposal (inert fill).
09 - Other (please describe) _____

Types of Material Generated

Use these codes to indicate the types of material that are estimated to be generated on the project

A = Asphalt C = Concrete 1. M = Metals I = Mixed Inert G = Green Matls
D = Drywall P/C=Paper/Cardboard W/C = Wire/Cable S= Soils (Non Hazardous)
M/C = Miscellaneous Construction Debris R = Reuse/Salvage W = Wood O = Other (describe)

Facilities Used: Provide Name of Facility and Location (City)
Total Truck Loads: Provide Number of Trucks Hauled from Site During Reporting Period
Total Quantities: If scales are available at sites, report in tons. If not, quantify by cubic yards. For salvage/reuse items, quantify by estimated weight (or units). Provide weight slips or load tickets for each load delivered.

SECTION I - RE-USED/RECYCLED MATERIALS

Include all proposed recycling activities for source separated recycling centers.

Type of Material	**Type of Activity**	**Facilities Used/ Location**	**Total Truck Loads**	**Total Quantities**		
				Tons	**Cubic YD**	**Other Wt.**
(ex.) M	04	ABC Metals, National City	24	355		
				2.		

a. Source Separated Diversion		0	0	0	0

FORM CSDMP-1 (Continued)
SDUSD CONTRACTOR SITE DEBRIS MANAGEMENT PLAN (CSDMP)

SECTION II - MIXED DEBRIS PROCESSING MATERIALS

Include estimates of all debris generated from activities where no source separated recycling will occur.

Type of Material	**Type of Activity**	**Facilities Used/ Location**	**Total Truck Loads**	**3. Total Quantities**		
				Tons	**Cubic YD**	**Other Wt.**
(ex.) M/C	5	EDCO Mixed Debris Recycling Facility	2	35		

SECTION III - TOTAL MATERIALS GENERATED EDCO

This section calculates the total materials recycled verses the total materials disposed for mixed debris sent to EDCO

	Tons Recycled (tons x 0.80)	*Tons Disposed (tons x 0.20)*
a. EDCO		

SECTION IV - CONTRACTOR'S LANDFILL DIVERSION RATE CALCULATION

Add totals from Section I + Section II +Section III

	Tons	**Cubic Yards**	**Other Wt.**
a. Materials Re-Used and Recycled (Section I + II +III)			
4. b. EDCO Disposal (Section III)			
c. Total Materials Generated (a. + b. = c.)			
d. Landfill Diversion Rate (a/c = d Tons Only)*			

** Use tons only to calculate recycling percentages: Tons Reused/Recycled/Tons Generated = % Recycled*

Contractor's Comments *(Provide any additional information pertinent to planned reuse, recycling, or disposal activities):*

Notes:

1. EDCO will recover 80% of the mixed debris for the purposes of recycling. Therefore, multiply tonnage by 0.80 for tons recycled and multiply tonnage by 0.20 for total project disposal.
2. Suggested Conversion Factors: From Cubic Yards to Tons
   - Asphalt: 0.61 (ex. 1000 CY Asphalt = 610 tons. Applies to broken chunks of asphalt)
   - Concrete: 0.93 (ex. 1000 CY Concrete = 930 tons. Applies to broken chunks of concrete)
   - Ferrous Metals: 0.22 (ex. 1000 CY Ferrous Metal = 220 tons)
   - Non-Ferrous Metals: 0.10 (ex. 1000 CY Non-Ferrous Metals = 100 tons)
   - Drywall Scrap: 0.20
   - Wood Scrap: 0.16

Section B: Plan Narrative -- Methods to Ensure Diversion

Describe the method to be used to reuse and recycle (methods shall include one or more of the following: deconstruction to salvage all or most materials generated, selective salvage with source separation, and/or reuse of materials onsite):

Describe methods to be used to provide onsite instruction regarding appropriate separation, handling, recycling, salvage, reuse and return methods to achieve waste reduction goals.

Describe methods to be used to protect materials to be recycled from contamination. Including schedule of regular clean-up, schedule visual inspections of dumpsters and recycling bins to identify potential contamination of materials.

How will materials be stored and how much space will be required?

Describe your administrative recycling program.

FORM CSDDR-1
SDUSD CONTRACTOR SUMMARY SITE DEBRIS DIVERSION REPORT (CSDDR)

(Submit With Each Progress Payment)

Project Title:				
Contract or Work Order No.:				
Contractor's Name:				
Street Address:				
City:			State:	Zip:
Phone: ( )			Fax: ( )	
E-Mail Address:				
Prepared by: (Print Name)				
Date Submitted:				
Period Covered:		From:	To:	

Reuse, Recycling or Mixed Debris Processing Processes Used

Describe the types of recycling processes or disposal activities used for material generated in the project. Indicate the type of process or activity by number, types of materials, and quantities that were recycled or disposed in the sections below:

01 - Reuse of building materials or salvage items on site (i.e. fencing or red clay brick)
02 - Salvaging building materials or salvage items at an offsite salvage or re-use center (i.e. lighting, fixtures)
03 - Recycling source separated materials on site (i.e. crushing asphalt/concrete for reuse or grinding for mulch)
04 - Recycling source separated materials at an offsite recycling center (i.e. scrap metal or green matls)
05 - Recycling commingled loads of C&D matls at EDCO Mixed Debris Recycling Facility
06 - Recycling material as Alternative Daily Cover at landfills
07 - Delivery of soils or mixed inerts to an inert landfill for disposal (inert fill).
09 - Other (please describe) _____

Types of Material Generated

Use these codes to indicate the types of material that were generated on the project

A = Asphalt	C = Concrete	M = Metals	I = Mixed Inert	G = Green Matls
D = Drywall	P/C=Paper/Cardboard	W/C = Wire/Cable	S= Soils (Non Hazardous)	
M/C = Miscellaneous Construction Debris		R = Reuse/Salvage	W = Wood	O = Other (describe)

Facilities Used: Provide Name of Facility and Location (City)

Total Truck Loads: Provide Number of Trucks Hauled from Site During Reporting Period

Total Quantities: If scales are available at sites, report in tons. If not, quantify by cubic yards. For salvage/reuse items, quantify by estimated weight (or units). Provide weight slips or load tickets for each load delivered.

SECTION I - RE-USED/RECYCLED MATERIALS

Include all recycling activities for source separated recycling centers where recycling occurred.

Type of Material	**Type of Activity**	**Facilities Used/ Location**	**Total Truck Loads**	**Total Quantities**		
				Tons	**Cubic YD**	**Other Wt.**
(ex.) M	04	ABC Metals, National City	24	355		
a. Source Separated Diversion			0	0	0	0

FORM CSDDR-1 (Continued)
SDUSD CONTRACTOR SUMMARY SITE DEBRIS DIVERSION REPORT (CSDDR)

SECTION II - MIXED DEBRIS PROCESSING MATERIALS

Include all debris generating activities for materials that were not send to source separated recycling facilities.

Type of Material	Type of Activity	Facilities Used/Location	Total Truck Loads	Total Quantities		
				Tons	Cubic YD	Other Wt.
(ex.) M/C	05	EDCO Mixed Debris Recycling Facility	2	35		

SECTION III - TOTAL MATERIALS GENERATED EDCO

This section calculates the total materials recycled verses the total materials disposed for mixed debris sent to EDCO

	Tons Recycled (tons x 0.80)	*Tons Disposed (tons x 0.20)*	
a. EDCO			

SECTION IV - CONTRACTOR'S LANDFILL DIVERSION RATE CALCULATION

Add totals from Section I + Section II

	Tons	Cubic YD	Other Wt.
a. Materials Re-Used and Recycled (Section I + II +III)	0		
b. EDCO Disposal (Section III)	0		
c. Total Materials Generated (a. + b. = c.)	0		
d. Landfill Diversion Rate (a/c = d Tons Only)*			

** Use tons only to calculate recycling percentages: Tons Reused/Recycled/Tons Generated = % Recycled*

Contractor's Comments *(Provide any additional information pertinent to planned reuse, recycling, or disposal activities):*

Notes:

5. EDCO will recover 80% of the mixed debris for the purposes of recycling. Therefore, multiply tonnage by 0.80 for tons recycled and multiply tonnage by 0.20 for total project disposal.
6. Suggested Conversion Factors: From Cubic Yards to Tons (Use when scales are not available)
   Asphalt: 0.61 (ex. 1000 CY Asphalt = 610 tons. Applies to broken chunks of asphalt)
   Concrete: 0.93 (ex. 1000 CY Concrete = 930 tons. Applies to broken chunks of concrete)
   Ferrous Metals: 0.22 (ex. 1000 CY Ferrous Metal = 220 tons)
   Non-Ferrous Metals: 0.10 (ex. 1000 CY Non-Ferrous Metals = 100 tons)
   Drywall Scrap: 0.20
   Wood Scrap: 0.16

SECTION 01 77 00
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. Warranties.
4. Final cleaning.
5. Repair of the Work.

B. Related Requirements:
1. Section 01 73 00 "Execution" for progress cleaning of Project site.
2. Section 01 78 39 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.3 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.

1.4 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest control inspection.

D. Site Waste Management Summary: Final summary of construction waste management data as specified in Section 01 74 19 “Construction Waste Management and Disposal.”

1.5 MAINTENANCE MATERIAL SUBMITTALS

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

1.6 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. Prepare and submit Contractor’s List of Incomplete Items (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 testing, adjusting, and balancing records.
5. 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. Advise District of changeover in utility services.
5. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
6. Complete final cleaning requirements.
7. 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.

1.7 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), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
2. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
3. Submit pest-control final inspection report.
4. 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.

1.8 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.
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 Contractor.

d. Page number.

4. Submit list of incomplete items in the following format:
   a. MS Excel electronic file.
   b. PDF electronic file.
   c. Three paper copies.

1.9 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 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 01 77 00

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SECTION 01 78 39
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 73 00 "Execution" for final property survey.
2. Section 01 77 00 "Closeout Procedures" for general closeout procedures.

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 01 78 39

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SECTION 02 41 16
STRUCTURE 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 buildings and site improvements.
2. Removing below-grade construction.
3. Disconnecting, capping or sealing, and removing site utilities.
4. Salvaging items for reuse by District.

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 02 "Construction Progress Documentation".
3. Section 01 32 33 “Photographic Documentation” for preconstruction photographs taken before building demolition.
4. Section 01 74 19 “Construction Waste Management and Disposal”.
5. Section 02 41 19 "Selective Demolition" for partial demolition of buildings, structures, and site improvements.

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged.

B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and deliver to the District ready for reuse. Include fasteners or brackets needed for reattachment elsewhere.

1.4 MATERIALS OWNERSHIP

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

B. Historic items, relics, antiques, and similar objects, including cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to the District that may be uncovered during demolition remain the property of the District.

1. Carefully salvage in a manner to prevent damage and promptly return to the District.

1.5 PRE-INSTALLATION MEETINGS

A. Pre-demolition Conference: Conduct conference at Project site.

1. Inspect and discuss condition of construction to be demolished.
2. Review structural load limitations of existing structures.
3. Review and finalize building demolition schedule and verify availability of demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review and finalize protection requirements.
5. Review procedures for noise control and dust control.
6. Review procedures for protection of adjacent buildings.
7. Review items to be salvaged and returned to the District.

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.

1. Adjacent Buildings: Detail special measures proposed to protect adjacent buildings to remain including means of egress from those buildings.

C. Schedule of Building Demolition Activities: Indicate the following:

1. Detailed sequence of demolition work, with starting and ending dates for each activity.
2. Temporary interruption of utility services.
3. Shutoff and capping or re-routing of utility services.

D. Pre-demolition Photographs or Video: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by demolition operations. Comply with Section 01 32 33 "Photographic Documentation." Submit before the Work begins.

E. 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 EPA-approved certification program.

1.9 FIELD CONDITIONS

A. Building(s) to be demolished will be vacated and their use discontinued before start of the Work.

B. Building(s) immediately adjacent to demolition area will be occupied. Conduct building demolition so operations of occupied buildings will not be disrupted.

1. Provide not less than 72 hours' notice of activities that will affect operations of adjacent occupied buildings.
2. Maintain access to existing walkways, exits, and other facilities used by occupants of adjacent buildings.

a. Do not close or obstruct walkways, exits, or other facilities used by occupants of adjacent buildings without written permission from authorities having jurisdiction.

C. Conditions existing at time of inspection for bidding purpose will be maintained by the District as far as practical.

D. Hazardous Materials: Present in buildings and structures to be demolished. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.

1. Hazardous material remediation is specified elsewhere in the Contract Documents.
2. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.
3. Hazardous materials and locations are shown in the Drawings. The mitigation of this material is included in the Base Bid.
4. If hazardous materials are encountered that are not shown in the Drawings, do not disturb: immediately notify the District Construction Manager. The costs

associated with such work shall be paid out of the appropriate Allowance, as approved by the District Construction Manager.

E. On-site storage or sale of removed items or materials is not permitted.

1.10 COORDINATION

A. Arrange demolition schedule so as not to interfere with The District's on-site operations or operations of adjacent occupied buildings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning 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 demolition operations.

B. 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 building demolition operations.

C. 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. Comply with Section 01 32 33 "Photographic Documentation.

3.2 PREPARATION

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

B. Salvaged Items: Comply with the following:

1. Clean salvaged items of dirt and demolition debris.
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 storage area designated by the District.
5. Protect items from damage during transport and storage.

3.3 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Utilities to be Disconnected: Locate, identify, disconnect, and seal or cap off utilities serving buildings and structures to be demolished.

1. Arrange to shut off utilities with utility companies.
2. If removal, relocation, or abandonment of utility services will affect adjacent occupied buildings, then provide temporary utilities that bypass buildings and structures to be demolished and that maintain continuity of service to other buildings and structures.
3. Cut off pipe or conduit a minimum of 24 inches below grade. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing according to requirements of authorities having jurisdiction.
4. Do not start demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.4 PROTECTION

A. Existing Facilities: Protect adjacent walkways, loading docks, building entries, and other building facilities during demolition operations. Maintain exits from existing buildings.

B. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of demolition.

C. Existing Utilities to Remain: Maintain utility services to remain and protect from damage during demolition operations.

1. Do not interrupt existing utilities serving adjacent occupied or operating facilities unless authorized in writing by the District and authorities having jurisdiction.
2. Provide temporary services during interruptions to existing utilities, as acceptable to the District and authorities having jurisdiction.

a. Provide at least 72 hours' notice to occupants of affected buildings if shutdown of service is required during changeover.

D. Temporary Protection: Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction and as indicated. Comply with requirements in Section 01 50 00 "Temporary Facilities and Controls."

1. Protect adjacent buildings and facilities from damage due to demolition activities.

2. Protect existing site improvements, appurtenances, and landscaping to remain.
3. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.
4. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
5. Provide protection to ensure safe passage of people around building demolition area and to and from occupied portions of adjacent buildings and structures.
6. Protect walls, windows, roofs, and other adjacent exterior construction that are to remain and that are exposed to building demolition operations.
7. Erect and maintain dustproof partitions and temporary enclosures to limit dust, noise, and dirt migration to occupied portions of adjacent buildings.

E. Remove temporary barriers and protections where hazards no longer exist. Where open excavations or other hazardous conditions remain, leave temporary barriers and protections in place.

3.5 DEMOLITION, GENERAL

A. General: Demolish indicated buildings and site improvements completely. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Do not use cutting torches until work area is cleared of flammable materials.
2. Maintain active fire watch and portable fire-suppression devices during flame-cutting operations.
3. Maintain active fire watch after flame-cutting operations per Contractor's approved Emergency Safety and Health (ES&H) Execution Plan.
4. Maintain adequate ventilation when using cutting torches.
5. Locate building demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

B. Site Access and Temporary Controls: Conduct building demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from the District and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
2. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

C. Explosives: Use of explosives is not permitted.

3.6 DEMOLITION BY MECHANICAL MEANS

A. Proceed with demolition of structural framing members systematically, from higher to lower level. Complete building demolition operations above each floor or tier before disturbing supporting members on the next lower level.

B. Remove debris from elevated portions of the building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

1. Remove structural framing members and lower to ground by method suitable to minimize ground impact and dust generation.

C. Salvage: Items to be removed and salvaged are indicated on Drawings.

D. Below-Grade Construction: Demolish foundation walls and other below-grade construction.

1. Remove below-grade construction, including basements, foundation walls, and footings, completely.

E. Existing Utilities: Demolish and remove existing utilities and below-grade utility structures.

3.7 SITE RESTORATION

A. Below-Grade Areas: Completely fill below-grade areas and voids resulting from building demolition operations with satisfactory soil materials.

B. Site Grading: Uniformly rough grade area of demolished construction to a smooth surface, free from irregular surface changes. Provide a smooth transition between adjacent existing grades and new grades.

3.8 REPAIRS

A. Promptly repair damage to adjacent buildings caused by demolition operations.

3.9 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove demolition waste materials from Project site and recycle or dispose of them according to Section 01 74 19 "Construction Waste Management and Disposal."

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.

B. Do not burn demolished materials.

3.10 CLEANING

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

1. Clean roadways of debris caused by debris transport.

END OF SECTION 02 41 16

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SECTION 02 41 19
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.

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 02 "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 ALLOWANCES

A. Allowances for repair of existing termite-damaged materials not included in unit prices are specified in Section 01 21 00 “Allowances.”

1.4 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.

1.5 MATERIALS OWNERSHIP

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

1.6 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.

1.7 INFORMATIONAL SUBMITTALS

A. 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.

B. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure District on-site operations are uninterrupted.
2. Interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Coordination of District continuing occupancy of portions of existing building and of District partial occupancy of completed Work.
5. Locations of proposed dust and noise control temporary partitions and means of egress.
6. Means of protection for items to remain and items in path of waste removal from building.

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. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.

1.8 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.

1.9 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: Present in buildings and structures to be selectively demolished. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.

1. Hazardous material remediation is specified elsewhere in the Contract Documents.
2. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.
3. Hazardous materials and locations are shown in the Drawings. The mitigation of this material is included in the Base Bid.
4. If hazardous materials are encountered that are not shown in the Drawings, do not disturb: immediately notify the District Construction Manager. Remove hazardous materials in accordance with Specification Sections 02 82 33. The costs associated with such work shall be paid out of the appropriate Allowance, as approved by 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 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.

3.3 PROTECTION

A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
4. Cover and protect furniture, furnishings, and equipment that have not been removed.
5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in 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.

3.4 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:

B. 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."

C. 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.

D. 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.

E. Removed and Reinstalled Items:

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.

F. 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.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Roofing: Remove no more existing roofing than what can be covered in one day by new roofing and so that building interior remains watertight and weathertight. See Section 07 54 19 Polyvinyl-Chloride (PVC) Roofing for new roofing requirements.

1. Remove existing roof membrane, flashings, copings, and roof accessories.
2. Remove existing roofing system down to substrate.

B. Air-Conditioning Equipment: Remove equipment without releasing refrigerants. Cap all ducts to remain, if new equipment is not immediately installed.

3.6 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.

3.7 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 02 41 19

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SECTION 06 10 00
ROUGH CARPENTRY

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. Framing with dimension lumber.
2. Framing with timber.
3. Framing with engineered wood products.
4. Rooftop equipment bases and support curbs.
5. Wood blocking and nailers.
6. Wood furring.
7. Wood sleepers.

1.3 DEFINITIONS

A. Boards or Strips: Lumber of less than 2 inches nominal size in least dimension.

B. Dimension Lumber: Lumber of 2 inches nominal size or greater but less than 5 inches nominal size in least dimension.

C. Exposed Framing: Framing not concealed by other construction.

D. Timber: Lumber of 5 inches nominal size or greater in least dimension.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements.

Include physical properties of treated materials based on testing by a qualified independent testing agency.

3. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664.
4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

B. Fastener Patterns: Full-size templates for fasteners in exposed framing.

1.5 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For the following, from ICC-ES:

1. Wood-preservative-treated wood.
2. Fire-retardant-treated wood.
3. Engineered wood products.
4. Metal framing anchors.

B. Material test reports from a qualified independent testing agency indicating and interpreting test results relative to compliance of fire-retardant-treated wood products with requirements indicated.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

B. Inspection Agencies: Inspection agencies, and the reference abbreviations include the following:

1. RIS: Redwood Inspection Service.
2. WCLIB: West Coast Lumber Inspection Bureau.
3. WWPA: Western Woods Products Association.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Stack wood products flat with spacers beneath and between each bundle to provide air circulation. Protect wood products from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece.
3. Dress lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content of Lumber: 19 percent.

C. Engineered Wood Products: Acceptable to authorities having jurisdiction and for which current ICC-ES research or evaluation reports exist that show compliance with CBC.

1. Allowable design stresses, as published by manufacturer, shall meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA U1.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
2. For exposed items indicated to receive a stained or natural finish, chemical formulations shall not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece.

D. Application: Pressure treat above ground items with waterborne preservatives to a minimum retention of 0.25 lb/cu. ft. After treatment, kiln-dry lumber and plywood to a

maximum moisture content of 19 and 15 percent, respectively. Treat items indicated on Drawings, and the following:

1. Wood nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, and waterproofing.

2.3 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where fire-retardant-treated materials are indicated, materials shall comply with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.

1. Treatment shall not promote corrosion of metal fasteners.
2. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.
3. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.
4. Design Value Adjustment Factors: Treated lumber shall be tested according to ASTM D 5664 and design value adjustment factors shall be calculated according to ASTM D 6841.

C. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.

1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece.

D. For exposed items indicated to receive a stained or natural finish, chemical formulations shall not bleed through, contain colorants, or otherwise adversely affect finishes.

E. Application: Treat items indicated on Drawings, and the following:

1. Concealed blocking.
2. Framing for non-load-bearing partitions.
3. Framing for non-load-bearing exterior walls.
4. Roof construction.

2.4 DIMENSION LUMBER FRAMING

A. Joists, Rafters, and Other Framing No. 1 grade unless noted otherwise on the drawings.

1. Species:

a. Douglas fir-larch; WCLIB or WWPA.
b. Douglas fir-south; WWPA.

B. Joists, Rafters, and Other Framing Not Listed Above: Any species of machine stress-rated dimension lumber with a grade of not less than 2100f-1.8E.

C. Exposed Framing Indicated to Receive a Stained or Natural Finish: Hand-select material for uniformity of appearance and freedom from characteristics, on exposed surfaces and edges, that would impair finish appearance, including decay, honeycomb, knot-holes, shake, splits, torn grain, and wane.

1. Species and Grade: As indicated above for load-bearing construction of same type.
2. Species and Grade: Douglas fir-larch; Select Structural or No. 1 grade; WCLIB or WWPA.
3. Species and Grade: Douglas fir-south; Select Structural or No. 1 grade; WWPA.

2.5 ENGINEERED WOOD PRODUCTS

A. Source Limitations: Obtain each type of engineered wood product from single source from a single manufacturer.

B. Laminated-Veneer Lumber: Structural composite lumber made from wood veneers with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D 5456 and manufactured with an exterior-type adhesive complying with ASTM D 2559.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Boise Cascade Corporation.
b. Louisiana-Pacific Corporation.
c. Weyerhaeuser Company.
d. Or Equal.

2. Extreme Fiber Stress in Bending, Edgewise: 2250 psi for 12-inch nominal-depth members.
3. Modulus of Elasticity, Edgewise: 1,800,000 psi.

2.6 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.
3. Rooftop equipment bases and support curbs.
4. Furring.

B. Dimension Lumber Items: Construction or No. 2 Standard, Stud, or No. 3 grade lumber of the following species:

1. Hem-fir; WCLIB or WWPA.
2. Western woods; WCLIB or WWPA.

C. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

2.7 FASTENERS

A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.

1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M or Type 304 stainless steel.

B. Nails, Brads, and Staples: ASTM F 1667.

C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

D. Wood Screws: ASME B18.6.1.

E. Lag Bolts: ASME B18.2.1.

F. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.

2.8 METAL FRAMING ANCHORS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. KC Metals Products, Inc.
2. Simpson Strong-Tie Co., Inc.

3. USP Structural Connectors.
4. Or Equal.

B. Allowable design loads, as published by manufacturer, shall meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency. Framing anchors shall be punched for fasteners adequate to withstand same loads as framing anchors.

C. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 coating designation.

1. Use for interior locations unless otherwise indicated.

D. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A 653/A 653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 coating designation; and not less than 0.036 inch thick.

1. Use for wood-preservative-treated lumber and where indicated.

E. Stainless-Steel Sheet: ASTM A 666, Type 304.

1. Use for exterior locations and where indicated.

F. Joist Hangers: U-shaped joist hangers with 2-inch-long seat and 1-1/4-inch-wide nailing flanges at least 85 percent of joist depth.

1. Thickness: 0.062-inch.

G. Top Flange Hangers: U-shaped joist hangers, full depth of joist, formed from metal strap with tabs bent to extend over and be fastened to supporting member.

1. Strap Width: 2 inches.
2. Thickness: 0.062-inch.

H. Bridging: Rigid, V-section, nailless type, 0.050-inch thick, length to suit joist size and spacing.

I. Post Bases: Adjustable-socket type for bolting in place with standoff plate to raise post 1 inch above base and with 2-inch-minimum side cover, socket 0.062-inch thick, and standoff and adjustment plates 0.108-inch thick.

J. Rafter Tie-Downs (Hurricane or Seismic Ties): Bent strap tie for fastening rafters or roof trusses to wall studs below, 2-1/4 inches wide by 0.062-inch thick. Tie fits over top of rafter or truss and fastens to both sides of rafter or truss, face of top plates, and side of stud below.

2.9 MISCELLANEOUS MATERIALS

A. Sill-Sealer Gaskets: Glass-fiber-resilient insulation, fabricated in strip form, for use as a sill sealer; 1-inch nominal thickness, compressible to 1/32-inch; selected from manufacturer's standard widths to suit width of sill members indicated.

B. Sill-Sealer Gaskets: Closed-cell neoprene foam, 1/4-inch thick, selected from manufacturer's standard widths to suit width of sill members indicated.

C. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber or rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025-inch.

D. Water-Repellent Preservative: NWWDA-tested and -accepted formulation containing 3-iodo-2-propynyl butyl carbamate, combined with an insecticide containing chloropyrifos as its active ingredient.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

B. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.

C. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.

D. Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.

E. Install sill sealer gasket to form continuous seal between sill plates and foundation walls.

F. Do not splice structural members between supports unless otherwise indicated.

G. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.

1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.

H. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

I. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

1. Use inorganic boron for items that are continuously protected from liquid water.
2. Use copper naphthenate for items not continuously protected from liquid water.

J. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

K. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. Table 2304.9.1, "Fastening Schedule," in the California Building Code (CBC).
2. ICC-ES evaluation report for fastener.

L. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

M. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced, and with adjacent rows staggered.

1. Comply with approved fastener patterns where applicable. Before fastening, mark fastener locations, using a template made of sheet metal, plastic, or cardboard.
2. Use common nails unless otherwise indicated. Drive nails snug but do not countersink nail heads.

3.2 WOOD BLOCKING, AND NAILER INSTALLATION

A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

C. Provide permanent grounds of dressed, pressure-preservative-treated, key-beveled lumber not less than 1-1/2 inches wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

3.3 RAFTER FRAMING INSTALLATION

A. Rafters: Notch to fit exterior wall plates and use metal framing anchors. Double rafters to form headers and trimmers at openings in roof framing, if any, and support with metal hangers. Where rafters abut at ridge, place directly opposite each other and nail to ridge member or use metal ridge hangers.

1. At valleys, provide double-valley rafters of size indicated or, if not indicated, of same thickness as regular rafters and 2 inches deeper. Bevel ends of jack rafters for full bearing against valley rafters.
2. At hips, provide hip rafter of size indicated or, if not indicated, of same thickness as regular rafters and 2 inches deeper. Bevel ends of jack rafters for full bearing against hip rafter.

B. Provide collar beams (ties) as indicated or, if not indicated, provide 1-by-6-inch nominal-size boards between every third pair of rafters, but not more than 48 inches o.c. Locate below ridge member, at third point of rafter span. Cut ends to fit roof slope and nail to rafters.

C. Provide special framing as indicated for eaves, overhangs, dormers, and similar conditions if any.

END OF SECTION 06 10 00

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SECTION 07 01 50.19
PREPARATION FOR REROOFING

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. Full tear-off of entire roof system.

B. Related Requirements:

1. Section 01 10 00 "Summary" for use of premises and for phasing requirements.
2. Section 01 21 00 “Allowances” for allowance items.
3. Section 01 50 00 "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for reroofing preparation.
4. Section 02 82 33 “Removal and Disposal of Asbestos Containing Materials” for asbestos removal procedures.

1.3 ALLOWANCES

A. Allowances for repair of existing termite-damaged materials are specified in Section 01 21 00 “Allowances.”

1.4 DEFINITIONS

A. EPS: Molded (expanded) polystyrene.

B. Full Roof Tear-off: Removal of existing roofing system down to existing roof deck.

C. OSB: Oriented strand board.

D. Roofing Terminology: Definitions in ASTM D 1079 and glossary of NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" apply to work of this Section.

1.5 PREINSTALLATION MEETINGS

A. Preliminary Roofing Conference: Before starting removal Work, conduct conference at Project site.

1. Meet with Owner, Architect, District Construction Manager**,** Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing tear-off, including the following:

a. Reroofing preparation, including roofing system manufacturer's written instructions.
b. Temporary protection requirements for existing roofing system components that are to remain.
c. Existing roof drains and roof drainage during each stage of reroofing, and roof-drain plugging and plug removal.
d. Construction schedule and availability of materials, Installer's personnel, equipment, and facilities needed to avoid delays.
e. Existing roof deck conditions requiring Architect notification.
f. Existing roof deck removal procedures and Owner notifications.
g. Condition and acceptance of existing roof deck and base flashing substrate for reuse.
h. Structural loading limitations of roof deck during reroofing.
i. Base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that affect reroofing.
j. HVAC shutdown and sealing of air intakes.
k. Shutdown of fire-suppression, -protection, and -alarm and -detection systems.
l. Asbestos removal and discovery of asbestos-containing materials.
m. Governing regulations and requirements for insurance and certificates if applicable.
n. Existing conditions that may require Architect notification before proceeding.
o. Review temporary protection requirements for roofing during and after installation.
p. Review roof observation and repair procedures after roofing installation

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

1. Include certificate that Installer is approved by warrantor of existing roofing system.

B. Fastener pull-out test report.

C. Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces that might be

misconstrued as having been damaged by reroofing operations. Submit before Work begins.

1.7 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

1.8 FIELD CONDITIONS

A. Existing Roofing System: As indicated on Drawings.

B. District will occupy portions of building immediately below reroofing area. Conduct reroofing so District's operations are not disrupted. Provide District with not less than 72 hours' notice of activities that may affect District's operations.

1. Before working over structurally impaired areas of deck, notify District to evacuate occupants from below affected area. Verify that occupants below work area have been evacuated before proceeding with work over impaired deck area.

C. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.

D. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.

E. Limit construction loads on existing roof areas to remain, and existing roof areas scheduled to be reroofed to 200 lbs. for rooftop equipment wheel loads (3/4-inch plywood or 2x plank surface required to distribute the loads) and 20 psf for uniformly distributed loads.

F. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.

G. Hazardous Materials: Hazardous materials are indicated on Drawings.

1. Remove asbestos containing materials as specified in Section 02 82 33 “Removal and Disposal of Asbestos Containing Materials.”
2. Coordinate reroofing preparation with hazardous material remediation to prevent water from entering existing roofing system or building.

H. 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 allowed on those portions of the Work suspected of having active termite infestations.

PART 2 - PRODUCTS

2.1 TEMPORARY PROTECTION MATERIALS

A. EPS Insulation: ASTM C 578.

B. Plywood: DOC PS 1, Grade CD, Exposure 1.

C. OSB: DOC PS 2, Exposure 1.

2.2 REPLACEMENT MATERIALS

A. Use replacement materials matching existing materials unless otherwise indicated.

B. Wood blocking, curbs, and nailers are specified in Section 06 10 00 "Rough Carpentry."

C. Plywood roof sheathing is specified in Section 06 00 00 "Rough Carpentry."

D. Plywood Parapet Sheathing: Pressure-preservative-treated plywood wall sheathing, complying Structural Drawings.

2.3 AUXILIARY REROOFING MATERIALS

A. General: Use auxiliary reroofing preparation materials recommended by roofing system manufacturer for intended use and compatible with components of new roofing system.

PART 3 - EXECUTION

3.1 PREPARATION

A. Seal or isolate windows that may be exposed to airborne substances created in removal of existing materials.

B. Shut off rooftop utilities and service piping before beginning the Work.

C. Test existing roof drains to verify that they are not blocked or restricted.

1. Immediately notify District Construction Manager of any blockages or restrictions.

D. Coordinate with District to shut down air-intake equipment in the vicinity of the Work.

1. Cover air-intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.

E. During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.

F. Maintain roof drains in functioning condition to ensure roof drainage at end of each workday.

1. Prevent debris from entering or blocking roof drains and conductors.

a. Use roof-drain plugs specifically designed for this purpose.
b. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.

2. If roof drains are temporarily blocked or unserviceable due to roofing system removal or partial installation of new roofing system, provide alternative drainage method to remove water and eliminate ponding.

a. Do not permit water to enter into or under existing roofing system components that are to remain.

3.2 ROOF TEAR-OFF

A. Full Roof Tear-off: Remove existing roofing and other roofing system components down to the existing roof deck.

1. Remove wood blocking, curbs, and nailers as required for installation of new roof assembly.
2. Remove fasteners from deck.

3.3 DECK PREPARATION

A. Inspect deck after tear-off of roofing system.

B. If deck surface is unsuitable for receiving new roofing or if structural integrity of deck is suspect, immediately notify the District Construction Manager. Do not proceed with installation until directed by the District Construction Manager.

C. Replace plywood roof sheathing as directed by the District Construction Manager.

D. Replace wood roof framing as directed by the District Construction Manager.

E. Inspect parapet sheathing, wood blocking, curbs, and nailers for deterioration and damage. If parapet sheathing, wood blocking, curbs, or nailers have deteriorated, immediately notify the District Construction Manager.

F. Replace existing parapet sheathing as directed by the District Construction Manager.

G. Replace parapet framing, wood blocking, curbs, and nailers as directed by the District Construction Manager.

3.4 FASTENER PULL-OUT TESTING

A. Perform fastener pull-out tests according to SPRI FX-1, and submit test report to the District Construction Manager before installing new roofing system.

1. Obtain the District Construction Manager’s approval to proceed with specified fastening pattern. The District Construction Manager may furnish revised fastening pattern commensurate with pull-out test results.

3.5 DISPOSAL

A. Collect demolished materials and place in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

1. Storage or sale of demolished items or materials on-site is not permitted.
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. Transport and legally dispose of demolished materials off District's property.

END OF SECTION 07 01 50.19

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SECTION 07 54 19
POLYVINYL-CHLORIDE (PVC) ROOFING

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. Adhered polyvinyl chloride (PVC) roofing system.
2. Substrate board.
3. Tapered roof insulation for crickets and saddles.
4. Walkways.
5. PVC coated metal.

B. Related Requirements:

1. Section 06 10 00 "Rough Carpentry" for wood nailers, curbs, and blocking; and for wood-based, structural-use roof deck panels.
2. Structural Drawings for wood-based, structural-use roof deck panels.
3. Section 07 01 50.19 "Preparation for Re-Roofing" for re-roofing projects.
4. Section 07 62 00 "Sheet Metal Flashing and Trim" for non-PVC coted metal roof flashings and counterflashings.
5. Section 07 92 00 "Joint Sealants" for joint sealants, joint fillers, and joint preparation.
6. Section 22 14 23 "Storm Drainage Piping Specialties" for roof drains.

1.3 DEFINITIONS

A. Roofing Terminology: Definitions in ASTM D 1079 and glossary in NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" apply to work of this Section.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Roofing Conference: Conduct conference at Project site.

1. Meet with District Construction Manager, Project Inspector, Architect, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's

representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base tie-ins, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.
7. Review governing regulations.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Include roof plans, elevations, sections, details, and attachments to other work, including:

1. Base flashings and membrane terminations.
2. Tapered insulation, thicknesses, and slopes.
3. Roof plan showing orientation of steel roof deck and orientation of roof membrane, fastening spacings, and patterns for mechanically fastened roofing system.
4. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.
5. Walkways

C. Samples for Verification: For the following products:

1. Roofing membrane, of color required.
2. Walkway pads or rolls, of color required.
3. Roof insulation.
4. PVC coated metal of color required.
5. Metal termination bars.
6. Three fasteners of each type and finish.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and manufacturer.

B. Manufacturer Certificates:

1. Performance Requirement Certificate: Signed by roof membrane manufacturer, certifying that roofing system complies with requirements specified in "Performance Requirements" Article.

    a. Submit evidence of compliance with performance requirements.

2. Special Warranty Certificate: Signed by roof membrane manufacturer, certifying that all materials supplied under this Section are acceptable for special warranty.

C. Product Test Reports: For roof membrane and insulation, tests performed by independent qualified testing agency indicating compliance with specified requirements.

D. Field quality-control reports.

E. Sample Warranties: For manufacturer's special warranties.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roofing system to include in maintenance manuals.

B. Information Card: Furnish a typewritten card, laminated in plastic. Card shall be 8-1/2-by-11 inches and shall contain the information listed on Form 1 located at end of this section.

1.8 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is UL listed for roofing system identical to that used for this Project.

B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.

1.10 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.11 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period, without monetary limitation.

1. Special warranty includes roof membrane, base flashings, roof insulation, fasteners, substrate board, walkways, and other components of roofing system.
2. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain components including roof insulation, fasteners for roofing system from same manufacturer as roof membrane or manufacturer approved by roof membrane manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. General Performance: Installed roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roof system and flashings shall remain watertight.

1. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.

B. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roof membrane manufacturer based on testing and field experience.

C. Wind Uplift Resistance: Design roofing system to resist the wind uplift pressures indicated on Structural Drawings when tested according to FM Approvals 4474, UL 580, or UL 1897.

D. Energy Performance: Roofing system shall have a minimum aged solar reflectance of 0.63 and a minimum thermal emittance of 0.75 or a minimum solar reflectance index (SRI) of 75 when tested according to CRRC-1.

E. Exterior Fire-Test Exposure: ASTM E 108 or UL 790, Class A, for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

2.3 PVC ROOFING

A. PVC Sheet: ASTM D 4434/D 4434M, Type III, fabric reinforced.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Johns Manville; a Berkshire Hathaway company.
    b. Sika Sarnafil.
    c. GAF Materials Corporation.
    d. Or Equal.

2. Thickness: 80 mils nominal on horizontal surfaces; 60 mils nominal on vertical surfaces.
3. Plasticizer: Either keytone ethylene ester (KEE) formulated into the membrane composition, or liquid plasticizers coated in the factory to prevent migration.
4. Exposed Face Color: White.

2.4 AUXILIARY ROOFING MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing.

1. Adhesives and Sealants: Comply with VOC limits of San Diego Air Pollution control District.

B. Sheet Flashing: Manufacturer's standard sheet flashing of same material, type, reinforcement, and color as PVC sheet.

C. Bonding Adhesive: Manufacturer's standard, water based for horizontal applications; solvent based for vertical applications.

D. Asphalt Shield: Fabricate from galvanized steel, .022-inch thick. or plywood, 1/2-inch thick nominal, Exposure 1.

E. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1-by-1/8-inch-thick; with anchors.

F. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roofing components to substrate, and acceptable to roofing system manufacturer.

G. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

2.5 PVC COATED SHEET METAL

A. Roof membrane manufacturer’s standard .028-inch thick minimum galvanized sheet metal laminated to minimum 20-mil-thick non-reinforced PVC membrane. Color to match roofing membrane.

2.6 SUBSTRATE BOARDS

A. Substrate Board: Substrate board must be the product that was used in testing the roof assembly to gain a Class A rating.

1. Glass-mat faced water-resistant gypsum substrate.
2. High density polyisocyanurate foam core board, 1/2-inch-thick.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening substrate board to roof deck.

2.7 TAPERED INSULATION

A. General: Preformed roof insulation boards manufactured or approved by PVC roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses to achieve slopes and R-values indicated.

B. Tapered Insulation: Provide factory-tapered insulation boards.

1. Material: Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces.
2. Minimum Thickness: 1/4-inch (6.35 mm).
3. Slope:

    a. Saddles and Crickets: 1/2-inch per foot (1:24) unless otherwise indicated on Drawings.

C. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

2.8 INSULATION ACCESSORIES

A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with roofing.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation and substrate boards to substrate, and acceptable to roofing system manufacturer.

C. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation as recommended in writing by roofing manufacturer.

2.9 WALKWAYS

A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads or rolls, color as selected by Architect, and acceptable to roofing system manufacturer.

2.10 BUILDING NUMBERS

A. Cut from factory-formed, nonporous, slip-resisting, surface-textured walkway pads or rolls, approximately 3/16-inch thick, color and size to achieve high-contrast aerial visibility, and acceptable to membrane roofing system manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

1. Verify that roof openings and penetrations are in place, curbs are set and braced, and roof-drain bodies are securely clamped in place.
2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

3.3 ROOFING INSTALLATION, GENERAL

A. Install roofing system according to roofing system manufacturer's written instructions.

B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at end of workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.4 SUBSTRATE BOARD INSTALLATION

A. Install substrate board with long joints in continuous straight lines, with end joints staggered not less than 24 inches in adjacent rows.

1. Tightly butt substrate boards together.
2. Cut substrate board to fit tight around penetrations and projections, and to fit tight to intersecting sloping roof decks.

B. Mechanically Fastened Substrate Board: Secure to deck using mechanical fasteners specifically designed and sized for fastening specified board to deck type.

1. Fasten insulation to resist uplift pressure at corners, perimeter, and field of roof.

C. Adhered Substrate Board Installation: Install substrate board and adhere to insulation as recommended in writing by roofing manufacturer.

3.5 ASPHALT SHIELD INSTALLATION

A. Install asphalt shield as indicated to provide complete separation of PVC roofing from substrate.

3.6 INSULATION INSTALLATION

A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at end of workday.

B. Comply with roofing system and insulation manufacturer's written instructions for installing roof insulation.

C. Install tapered insulation under area of roofing to conform to slopes indicated.

D. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.

1. Cut and fit insulation within 1/4-inch of nailers, projections, and penetrations.

E. Mechanically Fastened Insulation: Install each layer of insulation and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type as recommended in writing by roofing manufactuter.

F. Adhered Insulation: Install insulation and adhere to substrate as recommended in writing by roofing manufacturer.

3.7 ADHERED ROOFING INSTALLATION

A. Adhere roof membrane over area to receive roofing according to roofing system manufacturer's written instructions. Unroll roof membrane and allow to relax before installing.

B. Start installation of roofing in presence of roofing system manufacturer's technical personnel.

C. Accurately align roof membrane, and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

D. Bonding Adhesive: Apply to substrate and underside of roof membrane at rate required by manufacturer, and allow to partially dry before installing roof membrane. Do not apply to splice area of roof membrane.

E. In addition to adhering, mechanically fasten roof membrane securely at terminations, penetrations, and perimeter of roofing.

F. Apply roof membrane with side laps shingled with slope of roof deck where possible.

G. Seams: Clean seam areas, overlap roofing, and hot-air weld side and end laps of roof membrane and sheet flashings according to manufacturer's written instructions, to ensure a watertight seam installation.

1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of roof membrane and sheet flashings.
2. Verify field strength of seams a minimum of twice daily, and repair seam sample areas.
3. Repair tears, voids, and lapped seams in roof membrane that do not comply with requirements.

H. Spread sealant bed over deck-drain flange at roof drains, and securely seal roof membrane in place with clamping ring.

3.8 BASE FLASHING INSTALLATION

A. Install sheet flashings and preformed flashing accessories, and adhere to substrates according to roofing system manufacturer's written instructions.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate, and allow to partially dry. Do not apply to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.

E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.9 WALKWAY INSTALLATION

A. Flexible Walkways: Install walkway products according to manufacturer's written instructions in locations indicated on Drawings. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.10 BUILDING NUMBER INSTALLATION

A. Install building numbers in locations indicated. Heat weld to substrate or adhere to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.11 FIELD QUALITY CONTROL

A. Roofing Inspector: District will engage a qualified roofing inspector to inspect substrate conditions, surface preparation, roof membrane application, flashings, protection, and drainage components.

B. For testing and inspections not provided by District and as specified herein, provide qualified personnel and furnish reports to Project Inspector.

C. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion, in presence of District Construction Manager, and to prepare inspection report.

D. Repair or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.

E. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.12 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing, inspect roofing system for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and District Construction Manager.

B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 07 54 19

San Diego Unified School District Guide Specifications
Document Version: August 2021

FORM 1 – ROOFING SYSTEM DESCRIPTION

1. Location:_____ 2. Bldg. Name:_____

3. Bldg. No.:_____4. Roof Area (SF):_____5. Contract No.:_____

6. Deck Slope:_____

7. Type of Deck:

( ) Metal
( ) Cast-In-Place Concrete
( ) Precast/Prestressed Concrete
( ) Wood Plank or Plywood
( ) Other:_____

8. Type of Insulation Board:
( ) Polyisocyanurate/Composite
( ) Polystyrene/Composite
( ) Perlite
( ) Other:_____
( ) Polyisocyanurate
( ) Polystyrene
( ) Mineral Fiber

9. Insulation Manufacturer:_____

10. Insulation Thickness:_____

11. Roofing Type:

( ) Built-Up (Asphalt)
( ) Metal
( ) Shingles
( ) PVC
( ) SBS Mod. Bitumen
( ) Other:_____

12. Roofing Manufacturer:_____

13. Roofing Installer/Warrantor:_____

14. Roofing Application Method:

( ) Bitumen
( ) Mechanically Fastened
( ) Other:_____
( ) Fully Adhered
( ) Mechanically Fastened/Fully Adhered

15. Warranty Period: From:_____To:_____

16. Warranty Serial Number:_____

17. Date Roofing Completed:_____ 18. Inspector:_____

19. Prime Contractor Name/Address:_____

Signature:_____Date:_____

INSTRUCTIONS FOR FORM 1 (Do Not Post)

1. Location: Name of facility as shown on contract.
2. Bldg. Name: As shown on contract or as provided by District Construction Manager.
3. Bldg. Number: As provided by District Construction Manager.
4. Roof Area: Area in square feet of roof for which deck insulation, membrane, etc. are the same. A separate form is required if any part of roof system is different over other areas of the roof.
5. Contract Number: As shown on the contract.
6. Show deck slope.
7. Deck: Check appropriate block.
8. Type of Insulation Board: Check appropriate block.
9. Show manufacturer of insulation.
10. Show minimum thickness of installed insulation.
11. Roofing Type: Check appropriate block.
12. Show roofing manufacturer's name.
13. Roofing Installer's or Contractor's name.
14. Roofing Application Method: Check appropriate block.
15. Warranty Period: Insert start and end dates.
16. Warranty Serial Number: Insert serial number.
17. Show date of Substantial Completion. Warranty period begins on this date.
18. Show Project Inspector's name.
19. Prime Contractor Name/Address/Signature: Must be signed and dated by an official of Contracting firm.

SECTION 07 62 00
SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Formed roof-drainage sheet metal fabrications.
2. Formed low-slope roof sheet metal fabrications.
3. Formed equipment support flashing.
4. Formed overhead-piping safety pans.

B. Related Requirements:

1. Section 06 10 00 "Rough Carpentry" for wood nailers, curbs, and blocking.
2. Section 07 72 00 "Roof Accessories" for set-on-type curbs, equipment supports, vents, and other manufactured roof accessory units.

1.3 COORDINATION

A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.

B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leak proof, secure, and noncorrosive installation.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review special roof details, roof drainage, roof-penetration flashing, equipment curbs, and condition of other construction that affect sheet metal flashing and trim.

3. Review sheet metal flashing observation and repair procedures after flashing installation.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.

B. Shop Drawings: For sheet metal flashing and trim.

1. Include plans, elevations, sections, and attachment details, including attachments to other work.
2. Detail fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled work.
3. Include identification of material, thickness, weight, and finish for each item and location in Project.
4. Include details for forming, including profiles, shapes, seams, and dimensions.
5. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
6. Include details of termination points and assemblies.
7. Include details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction from fixed points.
8. Include details of roof-penetration flashing.
9. Include details of edge conditions, including eaves, crickets, and counter flashings as applicable.
10. Include details of special conditions.
11. Include details of connections to adjoining work.
12. Detail formed flashing and trim at scale of not less than 1-1/2 inches per 12 inches.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For fabricator.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For sheet metal flashing and trim, and its accessories, to include in maintenance manuals.

1.8 QUALITY ASSURANCE

A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.

B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

1.10 WARRANTY

A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes:

a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.

C. SPRI Wind Design Standard: Manufacture and install copings capable of resisting the following design pressure:

1. Design Pressure: As indicated on Drawings.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 SHEET METALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Metallic-Coated Steel Sheet: Provide zinc-coated (galvanized) steel sheet according to ASTM A 653/A 653M, G90 coating designation; prepainted by coil-coating process to comply with ASTM A 755/A 755M where indicated.

1. Surface: Smooth, flat.
2. Exposed Coil-Coated Finish:

a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

3. Color: As selected by Architect from manufacturer's full range.
4. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5-mil.

2.3 UNDERLAYMENT MATERIALS

A. Felt: ASTM D 226**/**D 226M, Type II (No. 30), asphalt-saturated organic felt; nonperforated.

B. Synthetic Underlayment: Laminated or reinforced, woven polyethylene or polypropylene, synthetic roofing underlayment; bitumen free; slip resistant; suitable for high temperatures over 220 deg F; and complying with physical requirements of ASTM D 226/D 226M for Type I and Type II felts.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Atlas Roofing Corporation.

b. Kirsch Building Products, LLC.
c. SDP Advanced Polymer Products Inc.
d. Or Equal.

C. Self-Adhering, High-Temperature Sheet: Minimum 30 mils thick, consisting of a slip-resistant polyethylene- or polypropylene-film top surface laminated to a layer of butyl- or SBS-modified asphalt adhesive, with release-paper backing; specifically designed to withstand high metal temperatures beneath metal roofing. Provide primer according to written recommendations of underlayment manufacturer.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Carlisle Coatings & Waterproofing Inc.
b. Henry Company.
c. Owens Corning.
d. Or Equal.

2. Thermal Stability: ASTM D 1970; stable after testing at 240 deg F or higher.
3. Low-Temperature Flexibility: ASTM D 1970; passes after testing at minus 20 deg F.or lower.

D. Slip Sheet: Rosin-sized building paper, 3 lb/100 sq. ft. minimum.

2.4 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal unless otherwise indicated.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal.

1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.

a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.

2. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Series 300 stainless steel or hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.

C. Solder:

1. For Zinc-Coated (Galvanized) Steel: ASTM B 32, with maximum lead content of 0.2 percent.

D. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2-inch wide and 1/8-inch thick.

E. Elastomeric Sealant: ASTM C 920, elastomeric silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

F. Bituminous Coating: Cold-applied asphalt emulsion according to ASTM D 1187.

G. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

2.5 FABRICATION, GENERAL

A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.

1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
2. Obtain field measurements for accurate fit before shop fabrication.
3. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
4. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4-inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

1. Use lapped expansion joints only where indicated on Drawings.

D. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.

E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

F. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured.

G. Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder where indicated.

H. Seams: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use.

2.6 ROOF-DRAINAGE SHEET METAL FABRICATIONS

A. Downspouts: Fabricate downspouts to dimensions indicated, complete with mitered elbows. Furnish with metal hangers. Shop fabricate elbows.

1. Hanger Style: As indicated on Drawings.
2. Fabricate from the following materials:

a. Galvanized Steel: 0.028-inch thick.

B. Parapet Scuppers: Fabricate scuppers to dimensions indicated on Drawings, with closure flange trim to exterior, 4-inch-wide wall flanges to interior, and base extending 4 inches beyond cant or tapered strip into field of roof. Fabricate from the following materials:

1. Galvanized Steel: 0.028-inch thick.

C. Conductor Heads: Fabricate conductor heads with flanged back and stiffened top edge and of dimensions and shape indicated on Drawings, complete with outlet tubes, exterior flange trim, and built-in overflows. Fabricate from the following materials:

1. Galvanized Steel: 0.028-inch thick.

D. Splash Pans: Fabricate to dimensions and shape required and from the following materials:

1. Galvanized Steel: 0.032-inch thick.

2.7 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

A. Roof Edge Flashing (Gravel Stop) and Fascia Cap: Fabricate in minimum 96-inch-long, but not exceeding 12-foot-long sections. Furnish with 6-inch-wide, joint cover plates. Shop fabricate interior and exterior corners.

1. Fabricate from the Following Materials:

a. Galvanized Steel: 22 gage / 0.03125-inch minimum thick.

B. Copings: Fabricate in minimum 96-inch-long, but not exceeding 12-foot-long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and drill elongated holes for fasteners on interior leg. Miter corners, fasten and seal watertight. Shop fabricate interior and exterior corners.

1. Coping Profile: As indicated on Drawings.
2. Fabricate from the Following Materials:

    a. Galvanized Steel: 0.040-inch thick.

C. Roof and Roof-to-Wall Transition, Roof-to-Roof Edge-Flashing (Gravel-Stop) Transition, Roof-to-Roof Edge-Flashing (Gravel-Stop) and Fascia-Cap Transition Expansion-Joint Cover: Fabricate from the following materials: Shop fabricate interior and exterior corners.

    a. Galvanized Steel: 20 gage / 0.0375-inch minimum thick.

D. Counterflashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:

1. Galvanized Steel: 22 gage / 0.03125-inch minimum thick.

E. Flashing Receivers: Fabricate from the following materials:

1. Galvanized Steel: 22 gage / 0.03125-inch minimum thick.

F. Roof-Penetration Flashing: Fabricate from the following materials:

1. Galvanized Steel: 22 gage / 0.03125-inch minimum thick.

G. Roof-Drain Flashing: Liquid-applied elastomeric membrane flashing system compatible with roofing system.

1. PermaFlash System as manufactured by Johns Manville.
2. Or Equal

2.8 MISCELLANEOUS SHEET METAL FABRICATIONS

A. Equipment Support Flashing: Fabricate from the following materials:

1. Galvanized Steel: 0.028-inch thick.

B. Overhead-Piping Safety Pans: Fabricate from the following materials:

1. Galvanized Steel: 0.028-inch thick.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.

1. Verify compliance with requirements for installation tolerances of substrates.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
3. Verify that water-resistant barriers have been installed over sheathing or backing substrate to prevent water penetration.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 UNDERLAYMENT INSTALLATION

A. Felt Underlayment: Install felt underlayment, wrinkle free, using adhesive to minimize use of mechanical fasteners under sheet metal flashing and trim. Apply in shingle fashion to shed water, with lapped joints of not less than 2 inches.

B. Synthetic Underlayment: Install synthetic underlayment, wrinkle free, according to manufacturers' written instructions, and using adhesive where possible to minimize use of mechanical fasteners under sheet metal.

C. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free. Prime substrate if recommended by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures. Apply in shingle fashion to shed water, with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. Roll laps and edges with roller. Cover underlayment within 14 days.

D. Apply slip sheet, wrinkle free, directly on substrate before installing sheet metal flashing and trim.

3.3 INSTALLATION, GENERAL

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.

2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
3. Space cleats not more than 12 inches apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
4. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
5. Torch cutting of sheet metal flashing and trim is not permitted.

B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.

1. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.

C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.
2. Use lapped expansion joints only where indicated on Drawings.

D. Fasteners: Use fastener sizes that penetrate wood blocking or sheathing not less than 1-1/4 inches for nails and not less than 3/4-inch for wood screws.

E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

F. Seal joints as required for watertight construction.

1. Use sealant-filled joints unless otherwise indicated. Embed hooked flanges of joint members not less than 1-inch into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F.
2. Prepare joints and apply sealants to comply with requirements in Section 07 92 00 "Joint Sealants."

G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets with solder to width of 1-1/2 inches; however, reduce pre-tinning where pre-tinned surface would show in completed Work.

1. Do not solder metallic-coated steel sheet.
2. Do not use torches for soldering.

3. Heat surfaces to receive solder, and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.

3.4 ROOF-DRAINAGE SYSTEM INSTALLATION

A. General: Install sheet metal roof-drainage items to produce complete roof-drainage system according to cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.

B. Hanging Gutters: Join sections with riveted and soldered joints. Provide for thermal expansion. Attach gutters at eave or fascia to firmly anchor them in position. Provide end closures and seal watertight with sealant. Slope to downspouts.

C. Downspouts: Join sections with 1-1/2-inch telescoping joints.

1. Provide hangers with fasteners designed to hold downspouts securely to walls. Locate hangers at top and bottom and at approximately 60 inches o.c.
2. Provide elbows at base of downspout to direct water away from building.

D. Parapet Scuppers: Continuously support scupper, set to correct elevation, and seal flanges to interior wall face, over cants or tapered edge strips, and under roofing membrane.

1. Anchor scupper closure trim flange to exterior wall and solder or seal with elastomeric sealant to scupper.
2. Loosely lock front edge of scupper with conductor head.
3. Solder or seal with elastomeric sealant exterior wall scupper flanges into back of conductor head.

E. Conductor Heads: Anchor securely to wall, with elevation of conductor head rim at minimum of 1 inch below scupper or gutter discharge.

F. Expansion-Joint Covers: Install expansion-joint covers at locations and of configuration indicated. Lap joints minimum of 4 inches in direction of water flow.

3.5 ROOF FLASHING INSTALLATION

A. General: Install sheet metal flashing and trim to comply with performance requirements and cited sheet metal standard. Provide concealed fasteners where possible, and set units true to line, levels, and slopes. Install work with laps, joints, and seams that are permanently watertight and weather resistant.

B. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate at staggered 3-inch centers.

C. Copings: Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated.

D. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches over base flashing. Install stainless-steel draw band and tighten.

E. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in receivers and fit tightly to base flashing. Extend counterflashing 4 inches over base flashing. Lap counterflashing joints minimum of 4 inches. Secure in waterproof manner.

F. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with elastomeric sealant and clamp flashing to pipes that penetrate roof.

3.6 MISCELLANEOUS FLASHING INSTALLATION

A. Equipment Support Flashing: Coordinate installation of equipment support flashing with installation of roofing and equipment. Weld or seal flashing with elastomeric sealant to equipment support member.

B. Overhead-Piping Safety Pans: Suspend pans from structure above, independent of other overhead items such as equipment, piping, and conduit, unless otherwise indicated on Drawings. Pipe and install drain line to plumbing waste or drainage system.

3.7 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.8 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder.

C. Clean off excess sealants.

D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended by sheet metal flashing and trim manufacturer. Maintain sheet metal flashing and trim in clean condition during construction.

E. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07 62 00

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SECTION 07 71 29
MANUFACTURED ROOF EXPANSION JOINTS

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. Flanged Bellows-type roof expansion joints.

B. Related Requirements:

1. Section 06 10 00 "Rough Carpentry" for wooden curbs or cants for mounting roof expansion joints.
2. Section 07 62 00 "Sheet Metal Flashing and Trim" for shop- and field-fabricated sheet metal expansion-joint systems, flashing, and other sheet metal items.
3. Section 07 72 00 "Roof Accessories" for manufactured and prefabricated metal roof curbs.
4. Section 07 54 19 “Polyvinyl-Chloride (PVC) Roofing” for roofing system.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For roof expansion joints.

1. Include plans, elevations, sections, and attachment details.
2. Include details of splices, intersections, transitions, fittings, method of field assembly, and location and size of each field splice.
3. Provide isometric drawings of intersections, terminations, and changes in joint direction or planes, depicting how components interconnect with each other and adjacent construction to allow movement and achieve waterproof continuity.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For each fire-barrier provided as part of a roof-expansion-joint assembly, for tests performed by a qualified testing agency.

C. Sample Warranties: For special warranties.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Installer of roofing membrane.

1.7 WARRANTY

A. Special Warranty: Manufacturer and Installer agree to repair or replace roof expansion joints and components that leak, deteriorate beyond normal weathering, or otherwise fail in materials or workmanship within specified warranty period.

1. Warranty Period: One year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, hole elongation, overstressing of components, failure of joint seals, failure of connections, and other detrimental effects.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 FLANGED BELLOWS-TYPE ROOF EXPANSION JOINTS

A. Flanged Bellows Roof Expansion Joint: Factory-fabricated, continuous, waterproof, joint-cover consisting of exposed membrane bellows, laminated to flexible, closed-cell support foam, and secured along each edge to a 3- to 4-inch-wide metal flange.

1. Basis-of-Design Product: Subject to compliance with requirements, provide EJ/WC Curb Mounted Expand-O-Flash Expansion Joint Cover manufactured by Johns Manville; a Berkshire Hathaway Company, or comparable product by one of the following:

a. Balco, Inc.
b. InPro Corporation (IPC).
c. Johns Manville; a Berkshire Hathaway company.

d. Or Equal.

2. Source Limitations: Obtain flanged bellows-type roof expansion joints approved by roofing manufacturer and that are part of roofing membrane warranty.
3. Joint Movement Capability: Plus and minus As indicated on Drawings.
4. Bellows: EPDM and closed cell foam flexible membrane, nominal 60 mils thick.
5. Flanges: Galvanized steel, 0.022-inch thick.
6. Configuration: As indicated on Drawings.
7. Corner, Intersection, and Transition Units: Provide factory-fabricated units for corner and joint intersections and horizontal and vertical transitions including those to other building expansion joints.
8. Cover Membrane: EPDM flexible membrane, factory laminated to bellows and covering entire joint assembly and curbs.

   a. Color: Black.

9. Accessories: Provide splicing units, adhesives, and other components as recommended by roof-expansion-joint manufacturer for complete installation.

B. Materials

1. Galvanized-Steel Sheet: ASTM A 653/A 653M, hot-dip zinc-coating designation G90.
2. EPDM Membrane: ASTM D 4637, Type standard with manufacturer for application.
3. Closed Cell Foam: Manufacturer’s standard.

2.3 MISCELLANEOUS MATERIALS

A. Adhesives: As recommended by roof-expansion-joint manufacturer.

B. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to withstand design loads.

1. Exposed Fasteners: Gasketed. Use screws with hex washer heads matching color of material being fastened.

C. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.

B. Examine roof-joint openings, inside surfaces of parapets, and expansion-control joint systems that interface with roof expansion joints, for suitable conditions where roof expansion joints will be installed.

C. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Comply with manufacturer's written instructions for handling and installing roof expansion joints.

1. Anchor roof expansion joints securely in place, with provisions for required movement. Use fasteners, protective coatings, sealants, and miscellaneous items as required to complete roof expansion joints.
2. Install roof expansion joints true to line and elevation; with limited oil-canning and without warping, jogs in alignment, buckling, or tool marks.
3. Provide for linear thermal expansion of roof expansion joint materials.
4. Provide uniform profile of roof expansion joint throughout its length; do not stretch or squeeze membranes.
5. Provide uniform, neat seams.
6. Install roof expansion joints to fit substrates and to result in watertight performance.
7. Torch cutting of roof expansion joints is not permitted.

B. Directional Changes: Install factory-fabricated units at directional changes to provide continuous, uninterrupted, and watertight joints.

C. Splices: Splice roof expansion joints with materials provided by roof-expansion-joint manufacturer for this purpose, to provide continuous, uninterrupted, and waterproof joints.

D. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.

3.3 PROTECTION

A. Protect roof expansion joints from foot traffic, displacement, or other damage.

B. Remove and replace roof expansion joints and components that become damaged by moisture or otherwise.

END OF SECTION 07 71 29

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SECTION 07 72 00
ROOF ACCESSORIES

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. Roof curbs.

B. Related Sections:

1. Section 07 62 00 "Sheet Metal Flashing and Trim" for shop- and field-formed metal flashing, roof-drainage systems, roof expansion-joint covers, and miscellaneous sheet metal trim and accessories.
2. Section 07 71 29 "Manufactured Roof Expansion Joints" for manufactured roof expansion-joint covers.

1.3 COORDINATION

A. Coordinate layout and installation of roof accessories with roofing membrane and base flashing and interfacing and adjoining construction to provide a leakproof, weathertight, secure, and noncorrosive installation.

B. Coordinate dimensions with rough-in information or Shop Drawings of equipment to be supported.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of roof accessory.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: For roof accessories.

1. Include plans, elevations, keyed details, and attachments to other work. Indicate dimensions, loadings, and special conditions. Distinguish between plant- and field-assembled work.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Roof plans, drawn to scale, and coordinating penetrations and roof-mounted items. Show the following:

1. Size and location of roof accessories specified in this Section.
2. Method of attaching roof accessories to roof or building structure.
3. Other roof-mounted items including mechanical and electrical equipment, ductwork, piping, and conduit.
4. Required clearances.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For roof accessories to include in operation and maintenance manuals.

1.7 QUALITY ASSURANCE

A. Standards: Comply with the following:

1. SMACNA's "Architectural Sheet Metal Manual" details for fabrication of units, including flanges and cap flashing to coordinate with type of roofing indicated.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General Performance: Roof accessories shall withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.

2.2 ROOF CURBS

A. Roof Curbs: Internally reinforced roof-curb units capable of supporting superimposed live and dead loads, including equipment loads and other construction indicated on Drawings, bearing continuously on roof structure, and capable of meeting performance requirements; with welded or mechanically fastened and sealed corner joints, and integrally formed deck-mounting flange at perimeter bottom.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Air Balance Inc.; a division of MESTEK, Inc.
    b. Bristolite Daylighting Systems, Inc.
    c. Greenheck Fan Corporation.
    d. Or Equal.

B. Size: Coordinate dimensions with roughing-in information or Shop Drawings of equipment to be supported.

C. Supported Load Capacity: As indicated on Drawings.

D. Material: Zinc-coated (galvanized) steel sheet, 0.064-inch thick.

1. Finish: Mill phosphatized.

E. Material: Aluminum sheet, 0.125-inch thick.

F. Finish: Mill.

G. Construction:

1. Curb Profile: Profile as indicated on Drawings compatible with roofing system.
2. On ribbed or fluted metal roofs, form deck-mounting flange at perimeter bottom to conform to roof profile.
3. Fabricate curbs to minimum height of 10 inches above roofing surface unless otherwise indicated.
4. Top Surface: Level top of curb, with roof slope accommodated by sloping deck-mounting flange or by use of leveler frame.
5. Sloping Roofs: Where roof slope exceeds 1:48, fabricate curb with perimeter curb height tapered to accommodate roof slope so that top surface of perimeter curb is level. Equip unit with water diverter or cricket on side that obstructs water flow.
6. Insulation: Factory insulated with 1-1/2-inch-thick glass-fiber board insulation.
7. Liner: Same material as curb, of manufacturer's standard thickness and finish.
8. Nailer: Factory-installed wood nailer continuous around curb perimeter.
9. Platform Cap: Where portion of roof curb is not covered by equipment, provide weathertight platform cap formed from 3/4-inch thick plywood covered with metal sheet of same type, thickness, and finish as required for curb.
10. Metal Counterflashing: Manufacturer's standard, removable, fabricated of same metal and finish as curb.

2.3 METAL MATERIALS

A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90coating designation and mill phosphatized for field painting where indicated.

1. Mill-Phosphatized Finish: Manufacturer's standard for field painting.

2. Factory Prime Coating: Where field painting is indicated, apply pretreatment and white or light-colored, factory-applied, baked-on epoxy primer coat, with a minimum dry film thickness of 0.2-mil.

B. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, AZ50coated.

1. Factory Prime Coating: Where field painting is indicated, apply pretreatment and white or light-colored, factory-applied, baked-on epoxy primer coat, with a minimum dry film thickness of 0.2-mil.

C. Aluminum Sheet: ASTM B 209, manufacturer's standard alloy for finish required, with temper to suit forming operations and performance required.

1. Mill Finish: As manufactured.
2. Factory Prime Coating: Where field painting is indicated, apply pretreatment and white or light-colored, factory-applied, baked-on epoxy primer coat, with a minimum dry film thickness of 0.2-mil.

D. Aluminum Extrusions and Tubes: ASTM B 221, manufacturer's standard alloy and temper for type of use, finished to match assembly where used; otherwise mill finished.

E. Steel Shapes: ASTM A 36/A 36M, hot-dip galvanized according to ASTM A 123/A 123M unless otherwise indicated.

F. Steel Tube: ASTM A 500**/**A 500M, round tube.

G. Galvanized-Steel Tube: ASTM A 500**/**A 500M, round tube, hot-dip galvanized according to ASTM A 123/A 123M.

H. Steel Pipe: ASTM A 53/A 53M, galvanized.

2.4 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.

B. Wood Nailers: Softwood lumber, pressure treated with waterborne preservatives for aboveground use, acceptable to authorities having jurisdiction, containing no arsenic or chromium, and complying with AWPA C2; not less than 1-1/2 inches thick.

C. Bituminous Coating: SSPC-12, cold-applied asphalt emulsion complying with ASTM D 1187**/**D 1187M. Free of sulfur and containing no asbestos fibers, compounded for 15-mil dry film thickness per coating.

D. Underlayment:

1. Felt: ASTM D 226**/**D 226M, Type II (No. 30), asphalt-saturated organic felt, nonperforated.
2. Polyethylene Sheet: 6-mil-thick polyethylene sheet complying with ASTM D 4397.

3. Slip Sheet: Building paper, 3 lb/100 sq. ft minimum, rosin sized.
4. Self-Adhering, High-Temperature Sheet: Minimum 30 to 40 mils thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.
5. Fasteners: Roof accessory manufacturer's recommended fasteners suitable for application and metals being fastened. Match finish of exposed fasteners with finish of material being fastened. Provide nonremovable fastener heads to exterior exposed fasteners. Furnish the following unless otherwise indicated:
6. Fasteners for Zinc-Coated or Aluminum-Zinc Alloy-Coated Steel: Series 300 stainless steel or hot-dip zinc-coated steel according to ASTM A 153/A 153M or ASTM F 2329.
7. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.

E. Gaskets: Manufacturer's standard tubular or fingered design of neoprene, EPDM, PVC, or silicone or a flat design of foam rubber, sponge neoprene, or cork.

F. Elastomeric Sealant: ASTM C 920, elastomeric silicone polymer sealant as recommended by roof accessory manufacturer for installation indicated; low modulus; of type, grade, class, and use classifications required to seal joints and remain watertight.

G. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for expansion joints with limited movement.

H. Asphalt Roofing Cement: ASTM D 4586**/**D 4586M, asbestos free, of consistency required for application.

2.5 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.

B. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

C. Verify dimensions of roof openings for roof accessories.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install roof accessories according to manufacturer's written instructions.

1. Install roof accessories level; plumb; true to line and elevation; and without warping, jogs in alignment, buckling, or tool marks.
2. Coordinate installation of roof accessories with installation of roof deck, roof insulation, flashing, roofing membranes, penetrations, equipment, and other construction involving roof accessories to ensure that each element of the Work performs properly and that combined elements are waterproof and weathertight.
3. Anchor roof accessories securely in place so they are capable of resisting indicated loads.
4. Use fasteners, separators, sealants, and other miscellaneous items as required to complete installation of roof accessories and fit them to substrates.
5. Install roof accessories to resist exposure to weather without failing, rattling, leaking, or loosening of fasteners and seals.

B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.

1. Coat concealed side of uncoated aluminum roof accessories with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
2. Underlayment: Where installing roof accessories directly on cementitious or wood substrates, install a course of underlayment and cover with manufacturer's recommended slip sheet.
3. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof accessories for waterproof performance.

C. Roof Curb Installation: Install each roof curb so top surface is level.

D. Equipment Support Installation: Install equipment supports so top surfaces are level with each other.

E. Cap Flashing: Where required as component of accessory, install cap flashing to provide waterproof overlap with roof flashing (as counterflashing). Seal overlap with thick bead of mastic sealant.

F. Seal joints with elastomeric sealant as required by roof accessory manufacturer.

3.3 REPAIR AND CLEANING

A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing according to ASTM A 780/A 780M.

B. Touch up factory-primed surfaces with compatible primer ready for field painting according to Section 09 91 13 "Exterior Painting."

C. Clean exposed surfaces according to manufacturer's written instructions.

D. Clean off excess sealants.

E. Replace roof accessories that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION 07 72 00

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SECTION 07 92 00
JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Nonstaining silicone joint sealants.

B. Related Requirements:

1. Section 07 62 00 "Sheet Metal Flashing and Trim " for joint sealant for sheet metal flashing and trim.
2. Section 07 54 19 “Polyvinyl-Chloride (PVC) Roofing” for lap sealant.

1.3 PRE-INSTALLATION MEETINGS

A. Pre-installation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified testing agency.

B. Product Test Reports: For each kind of joint sealant, for tests performed by manufacturer and witnessed by a qualified testing agency.

C. Product Certificates: Signed by manufacturers of joint sealants certifying that products furnished comply with requirements and are suitable for the use indicated.

D. Sample Warranties: For special warranties.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration date, pot life, and curing time.

B. Store and handle materials in compliance with manufacturer's written instructions to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.8 FIELD CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.9 WARRANTY

A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Manufacturer's standard.

C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:

1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.

4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. Elastomeric Sealant Standard: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant in the Elastomeric Joint-Sealant Schedule at the end of Part 3, including those referencing ASTM C 920 classifications for type, grade, class, and uses.

C. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

D. Sealants shall comply with the testing and product requirements of San Diego Air Pollution Control District Rule 67.0 “Architectural Coatings” and Rule 67.21 “Adhesive Material Application Operations”.

2.2 NONSTAINING SILICONE JOINT SEALANTS

A. Nonstaining Joint Sealants: No staining of substrates when tested according to ASTM C 1248.

B. Silicone, Nonstaining, S, NS, 50, NT: Nonstaining, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Use NT.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Dow Corning Corporation.
    b. Pecora Corporation.
    c. Tremco Incorporated.
    d. Or Equal.

2.3 JOINT-SEALANT BACKING

A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.4 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles

remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air.

3. Remove laitance and form-release agents from concrete.
4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs

below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.

    a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.4 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.6 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:
    a. Control and expansion joints.
    b. Other joints as indicated on Drawings.

2. Joint Sealant: Silicone, nonstaining, Type S, Grade NS, Class 50, Use NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION 07 92 00

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SECTION 09 91 13
EXTERIOR PAINTING

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 surface preparation and the application of paint systems on the following exterior substrates:

1. Galvanized metal.
2. Aluminum (not anodized or otherwise coated).
3. Wood.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

1. Indicate VOC content.

B. Samples for Initial Selection: For each type of topcoat product.

C. Samples for Verification: For each type of paint system and each color and gloss of topcoat.

1. Submit Samples on rigid backing, 8 inches square.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

D. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.4 QUALITY ASSURANCE

A. Paint Contractor shall have a minimum of five years documented experience in application of paints and coatings specified. Contractor shall maintain qualified painting crews during entire painting process.

B. Regardless of selected paint manufacturer, Contractor is to provide exact color and gloss to match Architect's selection at no additional cost.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.6 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply paints in rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

1.7 EXTRA MATERIALS

A. Do not provide any extra materials.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. PPG Industries.
2. Sherwin-Williams Company (The).
3. Vista Paint Corporation.
4. Dunn-Edwards Paints.
5. Or Equal.

2.2 PAINT, GENERAL

A. Do not provide materials that contain substances classified by the Global Hazard System as carcinogenic.

B. Do not provide materials that contain substances listed in the Significant New Use Rule (SNUR) under Toxic Substances Control Act (TSCA).

C. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

D. Colors: As indicated in a color schedule on Drawings.

E. Material Quality: Provide manufacturer's best quality paint material of the various types specified that are factory formulated and recommended by manufacturer for application indicated. Use only paint material containers displaying manufacturer's product identification.

F. Regulatory Requirements: Coatings shall comply with the testing and product requirements of San Diego Air Pollution Control District Rule 67.0 "Architectural Coatings."

2.3 PRIMERS/SEALERS

A. Acrylic Bonding Primer (for previously painted or glossy surfaces):

1. Dunn-Edwards Paints; SLPR00 Super-Loc.
2. PPG Paints; Seal Grip Interior/Exterior Acrylic Universal Primer/Sealer, 17-921XI.
3. Sherwin-Williams Company; PrepRite ProBlock B51W8020.
4. Vista Paint Corporation; 4000 Uniprime.
5. Or Equal.

2.4 METAL PRIMERS

A. Acrylic Ferrous Metal Primer:

1. Dunn-Edwards Paints; ENPR00 EnduraPrime.
2. PPG Paints; Pitt Tech Plus 4020PF Primer.
3. Sherwin-Williams Company; ProCryl B66.
4. Vista Paint Corporation; 4800 Metal Pro Acrylic Primer.
5. Or Equal.

B. Acrylic Galvanized and Non-Ferrous Metal Waterborne Primer. (Galvanized metal shall be acid-etched with manufacturer's recommended phosphoric acid solution and rinsed before priming.):

1. Dunn-Edwards Paints; ULGM00 UltraShield Galvanized Metal Primer.
2. PPG Paints; Pitt Tech Plus 4020PF Primer.
3. Sherwin-Williams Company; ProCryl B66.
4. Vista Paint Corporation; 4800 Metal Pro Acrylic Primer.
5. Or Equal.

2.5 WOOD PRIMERS

A. Exterior Latex Wood Primer:

1. Dunn-Edwards Paints; EZPR00 EZ-Prime Premium.
2. PPG Paints; Seal Grip Interior/Exterior Stain-Killing Primer 17-921.
3. Sherwin-Williams Company; Prep Rite Pro Block B51W8020.
4. Vista Paint Corporation; 4200 Terminator.
5. Or Equal.

2.6 EXTERIOR LATEX PAINTS

A. Exterior Acrylic Latex (Flat):

1. Dunn-Edwards Paints; SSHL10 Sparta Shield Flat.
2. PPG Paints; Sun Proof Exterior Flat, 72-45XI.
3. Sherwin-Williams Company; A-100 Flat A6.
4. Vista Paint Corporation; 2000 Duratone.
5. Or Equal.

B. Exterior Acrylic Latex (Semigloss):

1. Dunn-Edwards Paints; SSHL50 Sparta Shield Semi Gloss.
2. PPG; 4216 HP Series Pitt-Tech Plus DTM Semigloss.
3. Sherwin-Williams Company; ProIndustrial DTM Acrylic Semigloss B66-1150.
4. Vista Paint Corporation; 8400 Carefree.
5. Or Equal.

C. Exterior Acrylic Latex (Gloss):

1. Dunn-Edwards Paints; SSHL60 Sparta Shield Gloss.
2. PPG; 4216 HP Pitt-Tech Plus DTM Gloss.
3. Sherwin-Williams Company; ProIndustrial DTM Acrylic Gloss, B66-1050.
4. Vista Paint Corporation; 8500 Carefree Gloss.
5. Or Equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Wood: 15 percent.

C. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.

D. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer

E. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

G. Aluminum Substrates: Remove surface oxidation per SSPC-SP1.

H. Wood Substrates:

1. Scrape and clean knots. Before applying primer, apply coat of knot sealer recommended in writing by topcoat manufacturer for exterior use in paint system indicated.
2. Sand surfaces that will be exposed to view, and dust off.
3. Prime edges, ends, faces, undersides, and backsides of wood.
4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions.

1. Use applicators and techniques suited for paint and substrate indicated.
2. Apply paints to meet manufacturer’s recommended dry film thickness per coat.
3. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

B. Tint undercoats same color as topcoat, but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

E. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:

1. Paint the following work where exposed to view:

a. Equipment, including panelboards.
b. Uninsulated plastic piping.

c. Pipe hangers and supports.
d. Metal conduit.
e. Plastic conduit.
f. Exterior condensate piping, all exposed exterior conditions whether exposed to view or not.

3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: District may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.

1. Contractor shall touch up and restore painted surfaces damaged by testing.
2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 EXTERIOR PAINTING SCHEDULE

A. Galvanized-Metal Substrates:

1. Latex System:

a. Pretreatment: Non-ferrous metal pretreatment recommended by paint system manufacturer.
b. Prime Coat: Acrylic Galvanized and Non-Ferrous Metal Waterborne Primer.
c. Topcoats: Two coats of Exterior Acrylic Latex, sheen as selected by Architect.

B. Aluminum Substrates:

1. Latex System:

    a. Prime Coat: Acrylic Galvanized and Non-Ferrous Metal Waterborne Primer.
    b. Intermediate Coat: Exterior Latex, match topcoat.
    c. Topcoat: Exterior Latex, sheen as selected by Architect.

C. Wood Substrates: Exposed framing.

1. Latex System:

    a. Prime Coat: Exterior Latex Wood Primer.
    b. Intermediate Coat: Exterior Acrylic Latex.
    c. Topcoat: Exterior Acrylic Latex, sheen as selected by Architect.

END OF SECTION 09 91 13

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SECTION 22 05 16
EXPANSION FITTINGS AND LOOPS FOR PLUMBING PIPING

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. Pipe loops and swing connections.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 INFORMATIONAL SUBMITTALS

A. Welding certificates.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For expansion joints to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Compatibility: Products shall be suitable for piping service fluids, materials, working pressures, and temperatures.

2.2 PACKLESS EXPANSION JOINTS

A. Flexible-Hose Packless Expansion Joints:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Flex-Hose Co., Inc.
   b. Mason Industries, Inc.
   c. Metraflex Company (The).
   d. Or Equal.

2. Description: Manufactured assembly with inlet and outlet elbow fittings and two flexible-metal-hose legs joined by long-radius, 180-degree return bend or center section of flexible hose.
3. Expansion Joints for Copper Tubing NPS 2and Smaller: Copper-alloy fittings with solder-joint end connections.

   a. Bronze hoses and single-braid bronze sheaths with 450 psig at 70 deg F and 340 psig at 450 deg F ratings.
   b. Bronze hoses and double-braid bronze sheaths with 700 psig at 70 deg F and 500 psig at 450 deg F ratings.

4. Expansion Joints for Copper Tubing NPS 2-1/2 to NPS 4: Copper-alloy fittings with flanged end connections.

   a. Stainless-steel hoses and double-braid, stainless-steel sheaths with 420 psig at 70 deg F and 315 psig at 450 deg F ratings.

5. Expansion Joints for Steel Piping NPS 2 and Smaller: Stainless-steel fittings with threaded end connections.

   a. Stainless-steel hoses and double-braid, stainless-steel sheaths with 700 psig at 70 deg F and 515 psig at 600 deg F ratings.

6. Expansion Joints for Steel Piping NPS 2-1/2 to NPS 6: Stainless-steel fittings with flanged end connections.

   a. Stainless-steel hoses and double-braid, stainless-steel sheaths with 275 psig at 70 deg F and 200 psig at 600 deg F ratings.
7. End Connections: Full-faced, integral steel flanges with steel retaining rings.

PART 3 - EXECUTION

3.1 EXPANSION JOINT INSTALLATION

A. Install expansion joints of sizes matching sizes of piping in which they are installed.

B. Install metal-bellows expansion joints according to EJMA's "Standards of the Expansion Joint Manufacturers Association, Inc."

C. Install rubber packless expansion joints according to FSA-PSJ-703.

3.2 PIPE LOOP AND SWING CONNECTION INSTALLATION

A. Install pipe loops cold-sprung in tension or compression as required to partly absorb tension or compression produced during anticipated change in temperature.

B. Connect mains and branch connections to terminal units with at least four pipe fittings, including tee in main.

END OF SECTION 22 05 16

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SECTION 22 05 53
IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

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. Equipment labels.
2. Pipe labels.
3. Stencils.
4. Valve tags.

1.3 ACTION SUBMITTALS

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

B. Equipment Label Schedule: Include a listing of all equipment to be labeled with the proposed content for each label.

C. Valve numbering scheme.

D. Valve Schedules: For each piping system to include in maintenance manuals.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

A. Plastic Labels for Equipment:

1. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/16 inch thick, and having predrilled holes for attachment hardware.
2. Letter Color: Black.
3. Background Color: White.
4. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
5. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4-inch.

6. Minimum Letter Size: 1/4-inch for name of units if viewing distance is less than 24 inches, 1/2-inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-quarters the size of principal lettering.
7. Fasteners: Stainless-steel rivets.
8. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

B. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details, and schedules), and the Specification Section number and title where equipment is specified.

2.2 PIPE LABELS

A. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction.

B. Pretensioned Pipe Labels: Precoiled, semirigid plastic formed to cover full circumference of pipe and to attach to pipe without fasteners or adhesive.

C. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.

D. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings; also include pipe size and an arrow indicating flow direction.

1. Flow-Direction Arrows: Integral with piping-system service lettering to accommodate both directions or as separate unit on each pipe label to indicate flow direction.

2.3 STENCILS

A. Stencils for Piping:

1. Lettering Size: At least 1/2-inch for viewing distances up to 72 inches and proportionately larger lettering for greater viewing distances.
2. Stencil Material: Fiberboard or metal.
3. Stencil Paint: Exterior, gloss acrylic enamel in colors complying with recommendations in ASME A13.1 unless otherwise indicated. Paint may be in pressurized spray-can form.
4. Identification Paint: Exterior, acrylic enamel in colors according to ASME A13.1 unless otherwise indicated. Paint may be in pressurized spray-can form.

2.4 VALVE TAGS

A. Valve Tags: Stamped or engraved with 1/4-inch letters for piping system abbreviation and 1/2-inch numbers.

1. Tag Material: Brass, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
2. Fasteners: Brass beaded chain or S-hook.

B. Valve Schedules: For each piping system, on 8-1/2-by-11-inch bond paper. Tabulate valve number, piping system, system abbreviation (as shown on valve tag), location of valve (room or space), normal-operating position (open, closed, or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.

1. Valve-tag schedule shall be included in operation and maintenance data.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

3.2 GENERAL INSTALLATION REQUIREMENTS

A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

3.3 EQUIPMENT LABEL INSTALLATION

A. Install or permanently fasten labels on each major item of mechanical equipment.

B. Locate equipment labels where accessible and visible.

3.4 PIPE LABEL INSTALLATION

A. Install stenciled pipe labels, complying with ASME A13.1, on each piping system.

1. Identification Paint: Use for contrasting background.
2. Stencil Paint: Use for pipe marking.

B. Pipe Label Locations: Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:

1. Near each valve and control device.
2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
3. Near major equipment items and other points of origination and termination.
4. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.

C. Directional Flow Arrows: Arrows shall be used to indicate direction of flow in pipes, including pipes where flow is allowed in both directions.

D. Pipe Label Color Schedule:

1. Sanitary Waste Piping:

   a. Background Color: Green.
   b. Letter Color: White.

2. Natural Gas Piping:

   a. Background Color: Yellow.
   b. Letter Color: Black.

3.5 VALVE-TAG INSTALLATION

A. Install tags on valves and control devices in piping systems, except check valves, valves within factory-fabricated equipment units, shutoff valves, faucets, convenience and lawn-watering hose connections, and similar roughing-in connections of end-use fixtures and units. List tagged valves in a valve schedule.

B. Valve-Tag Application Schedule: Tag valves according to size, shape, and color scheme and with captions similar to those indicated in the following subparagraphs:

1. Valve-Tag Size and Shape:
   a. Natural Gas: 1-1/2 inches, round.

2. Valve-Tag Colors:
   a. Natural Gas: Natural.

3. Letter Colors:
   a. Natural Gas: Black.

END OF SECTION 22 05 53

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SECTION 22 13 16
SANITARY WASTE AND VENT PIPING

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. Pipe, tube, and fittings.

1.3 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.

1.4 ACTION SUBMITTALS

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

1.5 INFORMATIONAL SUBMITTALS

A. Seismic Qualification Certificates: For waste and vent piping, accessories, and components, from manufacturer.

B. Field quality-control reports.

1.6 QUALITY ASSURANCE

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

1.7 PROJECT CONDITIONS

A. Interruption of Existing Sanitary Waste Service: Do not interrupt service to facilities occupied by District or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:

1. Notify District Construction Manager no fewer than five days in advance of proposed interruption of sanitary waste service.
2. Do not proceed with interruption of sanitary waste service without District 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.

2.2 HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS

A. Pipe and Fittings: ASTM A 888 or CISPI 301.

B. Heavy-Duty, Hubless-Piping Couplings:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. ANACO-Husky.
b. Mission Rubber Company, LLC; a division of MCP Industries.
c. Tyler Pipe; a subsidiary of McWane Inc.
d. Or Equal.

2. Standards: ASTM C 1277 and ASTM C 1540.
3. Description: Stainless-steel shield with stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve with integral, center pipe stop.

2.3 COPPER TUBE AND FITTINGS

A. Copper DWV Tube: ASTM B 306, drainage tube, drawn temper.

B. Copper Drainage Fittings: ASME B16.23, cast copper or ASME B16.29, wrought copper, solder-joint fittings.

C. Hard Copper Tube: ASTM B 88, Type M, water tube, drawn temper.

D. Solder: ASTM B 32, lead free with ASTM B 813, water-flushable flux.

2.4 SPECIALTY PIPE FITTINGS

A. Transition Couplings:

1. General Requirements: Fitting or device for joining piping with small differences in OD's or of different materials. Include end connections same size as and compatible with pipes to be joined.
2. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.

3. Shielded, Nonpressure 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.

B. Dielectric Fittings:

1. General Requirements: Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.

2. Dielectric Nipples:

a. Description:

1) Standard: IAPMO PS 66.
2) Electroplated steel nipple.
3) Pressure Rating: 300 psig at 225 deg F.
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. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.

B. Install piping indicated to be exposed at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

C. Install piping at indicated slopes.

D. Install piping free of sags and bends.

E. Install fittings for changes in direction and branch connections.

F. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends. 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. 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. Straight tees, elbows, and crosses may be used on vent lines. Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.

G. Install 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."

1. Install encasement on underground piping according to ASTM A 674 or AWWA C105/A 21.5.

H. Install steel piping according to applicable plumbing code.

I. Install aboveground copper tubing according to CDA's "Copper Tube Handbook."

J. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

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. Join copper tube and fittings with soldered joints according to ASTM B 828. Use ASTM B 813, water-flushable, lead-free flux and ASTM B 32, lead-free-alloy solder.

3.3 SPECIALTY PIPE FITTING INSTALLATION

A. Transition Couplings:

1. Install transition couplings at joints of piping with small differences in OD's.
2. In Drainage Piping: Shielded, nonpressure transition couplings.

B. Dielectric Fittings:

1. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.
2. Dielectric Fittings for piping: Use dielectric nipples.

3.4 HANGER AND SUPPORT INSTALLATION

A. Install carbon-steel pipe hangers for horizontal piping in noncorrosive environments.
   1. Install individual, straight, horizontal piping runs:

      a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.

B. Support horizontal piping and tubing within 12 inches of each fitting and coupling.

C. Support piping and tubing not listed above according to MSS SP-69 and manufacturer's written instructions.

3.5 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect drainage and vent piping to the following:
   1. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by authorities having jurisdiction.
   2. Plumbing Specialties: Connect drainage and vent piping in sizes indicated, but not smaller than required by plumbing code.

C. Where installing piping adjacent to equipment, allow space for service and maintenance of equipment.

3.6 IDENTIFICATION

A. Identify exposed sanitary waste and vent piping. Comply with requirements for identification specified in Section 22 05 53 "Identification for Plumbing Piping and Equipment."

3.7 FIELD QUALITY CONTROL

A. During installation, notify Project Inspector at least 24 hours before inspection must be made. Perform tests specified below in presence of Project Inspector.

   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 project Inspector to observe tests specified below and to ensure compliance with requirements.

B. Reinspection: If Project Inspector finds that piping will not pass test or inspection, make required corrections and arrange for reinspection.

C. Reports: Prepare inspection reports and have them signed by Project Inspector.

D. Test sanitary drainage and vent piping according to procedures required by Project Inspector 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. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
2. Leave uncovered and unconcealed new, altered, extended, or replaced drainage and vent piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.
3. Roughing-in Plumbing Test Procedure: Test drainage and vent piping except outside leaders on completion of roughing-in. Close openings in piping system and fill with water to point of overflow, but not less than 10-foot head of water. From 15 minutes before inspection starts to completion of inspection, water level must not drop. Inspect joints for leaks.
4. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
5. Prepare reports for tests and required corrective action.

3.8 CLEANING AND PROTECTION

A. Clean interior of piping. Remove dirt and debris as work progresses.

B. Protect drains 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.

3.9 PIPING SCHEDULE

A. Aboveground, vent piping NPS 4 and smaller shall be any of the following:
   1. Hubless, cast-iron soil pipe and fittings; heavy-duty hubless-piping couplings; and coupled joints.
   2. Copper DWV tube, copper drainage fittings, and soldered joints.
      a. Option for Vent Piping, NPS 2-1/2 and NPS 3-1/2: Hard copper tube, Type M; copper pressure fittings; and soldered joints.
   3. Dissimilar Pipe-Material Couplings: Shielded, nonpressure transition couplings.

END OF SECTION 22 13 16

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SECTION 22 13 19
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. Miscellaneous sanitary drainage piping specialties.
   2. Flashing materials.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include, as applies, materials of fabrication, dimensions, rated capacities, retention capacities, operating characteristics, size and location of each pipe connection, furnished specialties, and accessories.

B. Field quality-control reports.

1.4 CLOSEOUT SUBMITTALS

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

1.5 QUALITY ASSURANCE

A. Drainage piping specialties shall bear label, stamp, or other markings of specified testing agency.

1.6 COORDINATION

A. Coordinate size and location of roof penetrations.

PART 2 - PRODUCTS

2.1 ASSEMBLY DESCRIPTIONS

A. Sanitary waste piping specialties shall bear label, stamp, or other markings of specified testing agency.

2.2 MISCELLANEOUS SANITARY DRAINAGE PIPING SPECIALTIES

A. 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.

PART 3 - EXECUTION

3.1 INSTALLATION

3.2 CONNECTIONS

A. Comply with requirements in Section 22 13 16 "Sanitary Waste and Vent Piping" for piping installation requirements. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to equipment to allow service and maintenance.

3.3 LABELING AND IDENTIFYING

A. 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 Section 22 05 53 "Identification for Plumbing Piping and Equipment."

3.4 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.5 PROTECTION

A. Protect drains during 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 22 13 19

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SECTION 22 14 23
STORM DRAINAGE 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. Roof drains.
2. Miscellaneous storm drainage piping specialties.

B. Related Requirements:

1. Section 07 62 00 "Sheet Metal Flashing and Trim" for roof drain elastomeric flashing system.

1.3 ACTION SUBMITTALS

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

1.4 QUALITY ASSURANCE

A. Drainage piping specialties shall bear label, stamp, or other markings of specified testing agency.

PART 2 - PRODUCTS

2.1 METAL ROOF DRAINS

A. Cast-Iron, Large-Sump, General-Purpose Roof Drains :

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Josam Company.
b. Smith, Jay R. Mfg. Co.

c. Zurn Industries, LLC.
d. Or Equal.

2. Standard: ASME A112.6.4, for general-purpose roof drains.
3. Body Material: Cast iron.
4. Dimension of Body: Nominal 14-inch diameter.
5. Combination Flashing Ring and Gravel Stop: Required.
6. Flow-Control Weirs: Not required.
7. Outlet: Bottom.
8. Outlet Type: No hub.
9. Extension Collars: Not required.
10. Underdeck Clamp: Required.
11. Expansion Joint: Not required.
12. Sump Receiver Plate: Not required.
13. Dome Material: Cast iron.
14. Perforated Gravel Guard: Stainless steel .
15. Vandal-Proof Dome: Required.
16. Water Dam: 2 inches high for overflow drains.

B. Cast-Iron, Medium-Sump, General-Purpose Roof Drains :

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Josam Company.
b. Smith, Jay R. Mfg. Co.
c. Watts; a Watts Water Technologies company.
d. Or Equal.

2. Standard: ASME A112.6.4, for general-purpose roof drains.
3. Body Material: Cast iron.
4. Dimension of Body: 8- to 12-inch diameter.
5. Combination Flashing Ring and Gravel Stop: Required.
6. Flow-Control Weirs: Not required.
7. Outlet: Bottom.
8. Outlet Type: No hub.
9. Extension Collars: Not required.
10. Underdeck Clamp: Required.
11. Expansion Joint: Not required.
12. Sump Receiver Plate: Not required.
13. Dome Material: Cast iron.
14. Perforated Gravel Guard: Stainless steel.
15. Vandal-Proof Dome: Required.
16. Water Dam: 2 inches high for overflow drains.

C. Cast-Iron, Small-Sump, General-Purpose Roof Drains :

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Smith, Jay R. Mfg. Co.
b. Watts; a Watts Water Technologies company.
c. Zurn Industries, LLC.
d. Or Equal.

2. Standard: ASME A112.6.4, for general-purpose roof drains.
3. Body Material: Cast iron.
4. Dimension of Body: Nominal 8-inch diameter.
5. Combination Flashing Ring and Gravel Stop: Required.
6. Outlet: Bottom.
7. Outlet Type: No hub.
8. Extension Collars: Not required.
9. Underdeck Clamp: Required.
10. Expansion Joint: Not required.
11. Sump Receiver Plate: Not required.
12. Dome Material: Cast iron.
13. Vandal-Proof Dome: Required.

2.2 MISCELLANEOUS STORM DRAINAGE PIPING SPECIALTIES

A. Downspout Covers:

1. Description: Stainless steel body with securing wall flange with mounting holes and vandal proof secured perforated stainless steel hinged strainer.
2. Size: Same as connected conductor.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install roof drains at low points of roof areas according to roof membrane manufacturer's written installation instructions.

1. Install flashing collar or flange of roof drain to prevent leakage between drain and adjoining roofing. Maintain integrity of waterproof membranes where penetrated.
2. Position roof drains for easy access and maintenance.

B. Install downspout covers through wall on bottom of conductors at 6 inches above grade. Secure to building wall and conductors.

3.2 PROTECTION

A. Protect drains during 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 22 14 23

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SECTION 23 05 53
IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

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. Equipment labels.
2. Pipe labels.
3. Duct labels.
4. Stencils.
5. Valve tags.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For color, letter style, and graphic representation required for each identification material and device.

C. Equipment Label Schedule: Include a listing of all equipment to be labeled with the proposed content for each label.

D. Valve numbering scheme.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

A. Plastic Labels for Equipment:

1. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8-inch thick, and having predrilled holes for attachment hardware.
2. Letter Color: Black.
3. Background Color: White.
4. Maximum Temperature: Able to withstand temperatures up to 160 deg F.

5. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2-by-3/4-inch.
6. Minimum Letter Size: 1/4-inch for name of units if viewing distance is less than 24 inches, 1/2-inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-quarters the size of principal lettering.
7. Fasteners: Stainless-steel rivets.
8. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

B. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details, and schedules), and the Specification Section number and title where equipment is specified.

2.2 PIPE LABELS

A. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction according to ASME A13.1.

B. Pipe Label Colors: As specified in Article “Pipe Label Installation.”

C. Pretensioned Pipe Labels: Precoiled, semirigid plastic formed to cover full circumference of pipe and to attach to pipe without fasteners or adhesive.

D. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.

E. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings; also include pipe size and an arrow indicating flow direction.

1. Flow-Direction Arrows: Integral with piping system service lettering to accommodate both directions or as separate unit on each pipe label to indicate flow direction.
2. Lettering Size: Size letters according to ASME A13.1 for piping.

2.3 STENCILS

A. Stencils for Piping:

1. Lettering Size: At least 1/2-inch and as follows for outside pipe diameter listed:

a. 3/4-inch to 1-1/4-inch OD: 1/2-inch high.
b. 1-1/2-inch to 2-inch OD: 3/4-inch high.
c. 2-1/2-inch to 6-inch OD: 1-1/2-inch high.

2. Stencil Material: Aluminum.

3. Stencil Paint: Exterior, gloss, acrylic enamel in colors complying with recommendations in ASME A13.1 unless otherwise indicated. Paint may be in pressurized spray-can form.
4. Identification Paint: Exterior, acrylic enamel in colors according to ASME A13.1 unless otherwise indicated. Paint may be in pressurized spray-can form.

B. Stencils for Ducts:

1. Lettering Size: Minimum letter height of 1-1/4 inches.
2. Stencil Material: Aluminum.
3. Stencil Paint: Exterior, gloss, acrylic enamel. Paint may be in pressurized spray-can form.
4. Identification Paint: Exterior, acrylic enamel. Paint may be in pressurized spray-can form.

2.4 VALVE TAGS

A. Description: Stamped or engraved with 1/4-inch letters for piping system abbreviation and 1/2-inch numbers.

1. Tag Material: Stainless steel, 0.025-inch or anodized aluminum, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
2. Fasteners: Brass wire-link chain or beaded chain.

B. Valve Schedules: For each piping system, on 8-1/2-by-11-inch bond paper. Tabulate valve number, piping system, system abbreviation (as shown on valve tag), location of valve (room or space), normal-operating position (open, closed, or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.

1. Valve-tag schedule shall be included in operation and maintenance data.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

3.2 GENERAL INSTALLATION REQUIREMENTS

A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

3.3 EQUIPMENT LABEL INSTALLATION

A. Install or permanently fasten labels on each major item of mechanical equipment.

B. Locate equipment labels where accessible and visible.

3.4 PIPE LABEL INSTALLATION

A. Stenciled Pipe Label Option: Stenciled labels may be provided instead of manufactured pipe labels, at Installer's option. Install stenciled pipe labels, complying with ASME A13.1, on each piping system.

1. Identification Paint: Use for contrasting background.
2. Stencil Paint: Use for pipe marking.

B. Pipe Label Locations: Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:

1. Near each valve and control device.
2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
3. Near penetrations and on both sides of through walls, floors, ceilings, and inaccessible enclosures.
4. At access doors, manholes, and similar access points that permit view of concealed piping.
5. Near major equipment items and other points of origination and termination.
6. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.
7. On piping above removable acoustical ceilings. Omit intermediately spaced labels.

C. Pipe Label Color Schedule:
1. Refrigerant Piping: White letters on a safety-purple background.

3.5 DUCT LABEL INSTALLATION

A. Install plastic-laminated duct labels with permanent adhesive on air ducts in the following color codes:

1. Blue: For cold-air supply ducts.
2. Green: For exhaust-, outside-, relief-, return-, and mixed-air ducts.

B. Stenciled Duct Label Option: Stenciled labels showing service and flow direction may be provided instead of plastic-laminated duct labels, at District’s option if lettering larger than 1-inch high is needed for proper identification due to distance from normal location of required identification.

C. Locate labels near points where ducts enter into and exit from concealed spaces and at maximum intervals of 50 feet in each space where ducts are exposed or concealed by removable ceiling system.

3.6 VALVE-TAG INSTALLATION

A. Install tags on valves and control devices in piping systems, except check valves, valves within factory-fabricated equipment units, faucets, convenience and lawn-watering hose connections, and HVAC terminal devices and similar roughing-in connections of end-use fixtures and units. List tagged valves in a valve schedule.

B. Valve-Tag Application Schedule: Tag valves according to size, shape, and color scheme and with captions similar to those indicated in the following subparagraphs:

1. Valve-Tag Size and Shape:
   a. Refrigerant: 2 inches, round.
   b. Gas: 1-1/2 inches, round.

END OF SECTION 23 05 53

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SECTION 23 05 93
TESTING, ADJUSTING, AND BALANCING FOR HVAC

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. Balancing Air Systems:

a. Constant-volume air systems.

2. Testing, Adjusting, and Balancing Equipment:
a. Motors.

3. Testing, adjusting, and balancing existing systems and equipment.

1.3 DEFINITIONS

A. BAS: Building automation system.

B. TAB: Testing, adjusting, and balancing.

C. TAB Specialist: An independent entity meeting qualifications to perform TAB work.

D. TDH: Total dynamic head.

1.4 PREINSTALLATION MEETINGS

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: Within 30 days of Contractor's Notice to Proceed, submit documentation that the TAB specialist and this Project's TAB team members meet the qualifications specified in "Quality Assurance" Article.

B. Contract Documents Examination Report: Within 30 days of Contractor's Notice to Proceed, submit the Contract Documents review report as specified in Part 3.

C. Strategies and Procedures Plan: Within 30 days of Contractor's Notice to Proceed, submit TAB strategies and step-by-step procedures as specified in "Preparation" Article.

D. System Readiness Checklists: Within 30 days of Contractor's Notice to Proceed, submit system readiness checklists as specified in "Preparation" Article.

E. Examination Report: Submit a summary report of the examination review required in "Examination" Article.

F. Certified TAB reports.

G. Sample report forms.

H. Instrument calibration reports, to include the following:

1. Instrument type and make.
2. Serial number.
3. Application.
4. Dates of use.
5. Dates of calibration.

1.6 QUALITY ASSURANCE

A. TAB Specialists Qualifications: Certified by AABC NEBB or TABB.

1. TAB Field Supervisor: Employee of the TAB specialist and certified by AABC NEBB or TABB.
2. TAB Technician: Employee of the TAB specialist and certified by AABC NEBB or TABB as a TAB technician.

B. Instrumentation Type, Quantity, Accuracy, and Calibration: Comply with requirements in ASHRAE 111, Section 4, "Instrumentation."

1.7 FIELD CONDITIONS

A. Partial District Occupancy: District may occupy completed areas of building before Substantial Completion. Cooperate with District during TAB operations to minimize conflicts with District's operations.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine the Contract Documents to become familiar with Project requirements and to discover conditions in systems designs that may preclude proper TAB of systems and equipment.

B. Examine installed systems for balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers. Verify that locations of these balancing devices are applicable for intended purpose and are accessible.

C. Examine the approved submittals for HVAC systems and equipment.

D. Examine design data including HVAC system descriptions, statements of design assumptions for environmental conditions and systems output, and statements of philosophies and assumptions about HVAC system and equipment controls.

E. Examine ceiling plenums and underfloor air plenums used for supply, return, or relief air to verify that they are properly separated from adjacent areas. Verify that penetrations in plenum walls are sealed and fire-stopped if required.

F. Examine equipment performance data including fan and pump curves.

1. Relate performance data to Project conditions and requirements, including system effects that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.
2. Calculate system-effect factors to reduce performance ratings of HVAC equipment when installed under conditions different from the conditions used to rate equipment performance. To calculate system effects for air systems, use tables and charts found in AMCA 201, "Fans and Systems," or in SMACNA's "HVAC Systems - Duct Design." Compare results with the design data and installed conditions.

G. Examine system and equipment installations and verify that field quality-control testing, cleaning, and adjusting specified in individual Sections have been performed.

H. Examine test reports specified in individual system and equipment Sections.

I. Examine HVAC equipment and verify that bearings are greased, belts are aligned and tight, filters are clean, and equipment with functioning controls is ready for operation.

J. Examine strainers. Verify that startup screens have been replaced by permanent screens with indicated perforations.

K. Examine operating safety interlocks and controls on HVAC equipment.

L. Report deficiencies discovered before and during performance of TAB procedures. Observe and record system reactions to changes in conditions. Record default set points if different from indicated values.

3.2 PREPARATION

A. Prepare a TAB plan that includes the following:

1. Equipment and systems to be tested.
2. Strategies and step-by-step procedures for balancing the systems.
3. Instrumentation to be used.
4. Sample forms with specific identification for all equipment.

B. Perform system-readiness checks of HVAC systems and equipment to verify system readiness for TAB work. Include, at a minimum, the following:

1. Airside:

a. Verify that leakage and pressure tests on air distribution systems have been satisfactorily completed.
b. Duct systems are complete with terminals installed.
c. Volume, smoke, and fire dampers are open and functional.
d. Clean filters are installed.
e. Fans are operating, free of vibration, and rotating in correct direction.
f. Variable-frequency controllers' startup is complete and safeties are verified.
g. Automatic temperature-control systems are operational.
h. Ceilings are installed.
i. Windows and doors are installed.
j. Suitable access to balancing devices and equipment is provided.

3.3 GENERAL PROCEDURES FOR TESTING AND BALANCING

A. Perform testing and balancing procedures on each system according to the procedures contained in NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems" and in this Section.

B. Cut insulation, ducts, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary for TAB procedures.

1. After testing and balancing, patch probe holes in ducts with same material and thickness as used to construct ducts.
2. Install and join new insulation that matches removed materials. Restore insulation, coverings, vapor barrier, and finish according to Section 23 07 19 “HVAC Piping Insulation.”

C. Mark equipment and balancing devices, including damper-control positions, valve position indicators, fan-speed-control levers, and similar controls and devices, with paint or other suitable, permanent identification material to show final settings.

D. Take and report testing and balancing measurements in inch-pound (IP) units.

3.4 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

A. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Cross-check the summation of required outlet volumes with required fan volumes.

B. Prepare schematic diagrams of systems' "as-built" duct layouts.

C. Determine the best locations in main and branch ducts for accurate duct-airflow measurements.

D. Check airflow patterns from the outdoor-air louvers and dampers and the return- and exhaust-air dampers through the supply-fan discharge and mixing dampers.

E. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.

F. Verify that motor starters are equipped with properly sized thermal protection.

G. Check dampers for proper position to achieve desired airflow path.

H. Check for airflow blockages.

I. Check condensate drains for proper connections and functioning.

J. Check for proper sealing of air-handling-unit components.

K. Verify that air duct system is sealed as specified in Section 23 31 13 "Metal Ducts."

3.5 PROCEDURES FOR CONSTANT-VOLUME AIR SYSTEMS

A. Adjust fans to deliver total indicated airflows within the maximum allowable fan speed listed by fan manufacturer.

1. Measure total airflow.

    a. Set outside-air, return-air, and relief-air dampers for proper position that simulates minimum outdoor-air conditions.
    b. Where duct conditions allow, measure airflow by Pitot-tube traverse. If necessary, perform multiple Pitot-tube traverses to obtain total airflow.
    c. Where duct conditions are not suitable for Pitot-tube traverse measurements, a coil traverse may be acceptable.
    d. If a reliable Pitot-tube traverse or coil traverse is not possible, measure airflow at terminals and calculate the total airflow.

2. Measure fan static pressures as follows:

a. Measure static pressure directly at the fan outlet or through the flexible connection.
b. Measure static pressure directly at the fan inlet or through the flexible connection.
c. Measure static pressure across each component that makes up the air-handling system.
d. Report artificial loading of filters at the time static pressures are measured.

3. Review Record Documents to determine variations in design static pressures versus actual static pressures. Calculate actual system-effect factors. Recommend adjustments to accommodate actual conditions.
4. Obtain approval from District Construction Manager for adjustment of fan speed higher or lower than indicated speed. Comply with requirements in HVAC Sections for air-handling units for adjustment of fans, belts, and pulley sizes to achieve indicated air-handling-unit performance.
5. Do not make fan-speed adjustments that result in motor overload. Consult equipment manufacturers about fan-speed safety factors. Modulate dampers and measure fan-motor amperage to ensure that no overload occurs. Measure amperage in full-cooling, full-heating, economizer, and any other operating mode to determine the maximum required brake horsepower.

B. Adjust volume dampers for main duct, submain ducts, and major branch ducts to indicated airflows.

1. Measure airflow of submain and branch ducts.
2. Adjust submain and branch duct volume dampers for specified airflow.
3. Re-measure each submain and branch duct after all have been adjusted.

C. Adjust air inlets and outlets for each space to indicated airflows.

1. Set airflow patterns of adjustable outlets for proper distribution without drafts.
2. Measure inlets and outlets airflow.
3. Adjust each inlet and outlet for specified airflow.
4. Re-measure each inlet and outlet after they have been adjusted.

D. Verify final system conditions.

1. Re-measure and confirm that minimum outdoor, return, and relief airflows are within design. Readjust to design if necessary.
2. Re-measure and confirm that total airflow is within design.
3. Re-measure all final fan operating data, rpms, volts, amps, and static profile.
4. Mark all final settings.
5. Test system in economizer mode. Verify proper operation and adjust if necessary.
6. Measure and record all operating data.
7. Record final fan-performance data.

3.6 PROCEDURES FOR MOTORS

A. Motors 1/2 HP and Larger: Test at final balanced conditions and record the following data:

1. Manufacturer's name, model number, and serial number.
2. Motor horsepower rating.
3. Motor rpm.
4. Phase and hertz.
5. Nameplate and measured voltage, each phase.
6. Nameplate and measured amperage, each phase.
7. Starter size and thermal-protection-element rating.
8. Service factor and frame size.

B. Motors Driven by Variable-Frequency Controllers: Test manual bypass of controller to prove proper operation.

3.7 PROCEDURES FOR CONDENSING UNITS

A. Verify proper rotation of fans.

B. Measure entering- and leaving-air temperatures.

C. Record fan and motor operating data.

3.8 PROCEDURES FOR TESTING, ADJUSTING, AND BALANCING EXISTING SYSTEMS

A. Perform a preconstruction inspection of existing equipment that is to remain and be reused.

1. Measure and record the operating speed, airflow, and static pressure of each fan.
2. Measure motor voltage and amperage. Compare the values to motor nameplate information.
3. Check the refrigerant charge.
4. Check the condition of filters.
5. Check the condition of coils.
6. Check the operation of the drain pan and condensate-drain trap.
7. Check bearings and other lubricated parts for proper lubrication.
8. Report on the operating condition of the equipment and the results of the measurements taken. Report deficiencies.

B. Before performing testing and balancing of existing systems, inspect existing equipment that is to remain and be reused to verify that existing equipment has been cleaned and refurbished. Verify the following:

1. New filters are installed.

2. Coils are clean and fins combed.
3. Drain pans are clean.
4. Fans are clean.
5. Bearings and other parts are properly lubricated.
6. Deficiencies noted in the preconstruction report are corrected.

C. Perform testing and balancing of existing systems to the extent that existing systems are affected by the renovation work.

1. Compare the indicated airflow of the renovated work to the measured fan airflows, and determine the new fan speed and the face velocity of filters and coils.
2. Verify that the indicated airflows of the renovated work result in filter and coil face velocities and fan speeds that are within the acceptable limits defined by equipment manufacturer.
3. If calculations increase or decrease the airflow rates and water flow rates by more than 5 percent, make equipment adjustments to achieve the calculated rates. If increase or decrease is 5 percent or less, equipment adjustments are not required.
4. Balance each air outlet.

3.9 TOLERANCES

A. Set HVAC system's airflow rates and water flow rates within the following tolerances:

1. Supply, Return, and Exhaust Fans and Equipment with Fans: Plus or minus 5 percent.
2. Air Outlets and Inlets: Plus or minus 5 percent.

B. Maintaining pressure relationships as designed shall have priority over the tolerances specified above.

3.10 PROGRESS REPORTING

A. Initial Construction-Phase Report: Based on examination of the Contract Documents as specified in "Examination" Article, prepare a report on the adequacy of design for systems balancing devices. Recommend changes and additions to systems balancing devices to facilitate proper performance measuring and balancing. Recommend changes and additions to HVAC systems and general construction to allow access for performance measuring and balancing devices.

3.11 FINAL REPORT

A. General: Prepare a certified written report; tabulate and divide the report into separate sections for tested systems and balanced systems.

1. Include a certification sheet at the front of the report's binder, signed and sealed by the certified testing and balancing engineer.
2. Include a list of instruments used for procedures, along with proof of calibration.
3. Certify validity and accuracy of field data.

B. Final Report Contents: In addition to certified field-report data, include the following:

1. Pump curves.
2. Fan curves.
3. Manufacturers' test data.
4. Field test reports prepared by system and equipment installers.
5. Other information relative to equipment performance; do not include Shop Drawings and Product Data.

C. General Report Data: In addition to form titles and entries, include the following data:

1. Title page.
2. Name and address of the TAB specialist.
3. Project name.
4. Project location.
5. Architect's name and address.
6. Engineer's name and address.
7. Contractor's name and address.
8. Report date.
9. Signature of TAB supervisor who certifies the report.
10. Table of Contents with the total number of pages defined for each section of the report. Number each page in the report.
11. Summary of contents including the following:

    a. Indicated versus final performance.
    b. Notable characteristics of systems.
    c. Description of system operation sequence if it varies from the Contract Documents.

12. Nomenclature sheets for each item of equipment.
13. Data for terminal units, including manufacturer's name, type, size, and fittings.
14. Notes to explain why certain final data in the body of reports vary from indicated values.
15. Test conditions for fans and pump performance forms including the following:

    a. Settings for outdoor-, return-, and exhaust-air dampers.
    b. Conditions of filters.
    c. Cooling coil, wet- and dry-bulb conditions.
    d. Face and bypass damper settings at coils.
    e. Fan drive settings including settings and percentage of maximum pitch diameter.
    f. Inlet vane settings for variable-air-volume systems.
    g. Settings for supply-air, static-pressure controller.
    h. Other system operating conditions that affect performance.

D. System Diagrams: Include schematic layouts of air and hydronic distribution systems. Present each system with single-line diagram and include the following:

1. Quantities of outdoor, supply, return, and exhaust airflows.
2. Water and steam flow rates.
3. Duct, outlet, and inlet sizes.
4. Pipe and valve sizes and locations.
5. Balancing stations.
6. Position of balancing devices.

E. Gas-Fired Heat Apparatus Test Reports: In addition to manufacturer's factory startup equipment reports, include the following:

1. Unit Data:

a. System identification.
b. Location.
c. Make and type.
d. Model number and unit size.
e. Manufacturer's serial number.
f. Fuel input data.
g. Output capacity in Btu/h.
h. Ignition type.
i. Burner-control types.
j. Motor horsepower and rpm.
k. Motor volts, phase, and hertz.
l. Motor full-load amperage and service factor.
m. Sheave make, size in inches, and bore.
n. Center-to-center dimensions of sheave and amount of adjustments in inches.

2. Test Data (Indicated and Actual Values):

a. Total airflow rate in cfm.
b. Entering-air temperature in deg F.
c. Leaving-air temperature in deg F.
d. Air temperature differential in deg F.
e. Entering-air static pressure in inches wg.
f. Leaving-air static pressure in inches wg.
g. Air static-pressure differential in inches wg.
h. Low-fire fuel input in Btu/h.
i. High-fire fuel input in Btu/h.
j. Manifold pressure in psig.
k. High-temperature-limit setting in deg F.
l. Operating set point in Btu/h.
m. Motor voltage at each connection.
n. Motor amperage for each phase.
o. Heating value of fuel in Btu/h.

F. Fan Test Reports: For supply, return, and exhaust fans, include the following:

1. Fan Data:

    a. System identification.
    b. Location.
    c. Make and type.
    d. Model number and size.
    e. Manufacturer's serial number.
    f. Arrangement and class.
    g. Sheave make, size in inches, and bore.
    h. Center-to-center dimensions of sheave and amount of adjustments in inches.

2. Motor Data:

    a. Motor make, and frame type and size.
    b. Horsepower and rpm.
    c. Volts, phase, and hertz.
    d. Full-load amperage and service factor.
    e. Sheave make, size in inches, and bore.
    f. Center-to-center dimensions of sheave, and amount of adjustments in inches.
    g. Number, make, and size of belts.

3. Test Data (Indicated and Actual Values):

    a. Total airflow rate in cfm.
    b. Total system static pressure in inches wg.
    c. Fan rpm.
    d. Discharge static pressure in inches wg.
    e. Suction static pressure in inches wg.

G. Round and Rectangular Duct Traverse Reports: Include a diagram with a grid representing the duct cross-section and record the following:

1. Report Data:

    a. System and air-handling-unit number.
    b. Location and zone.
    c. Traverse air temperature in deg F.
    d. Duct static pressure in inches wg.
    e. Duct size in inches.
    f. Duct area in sq. ft.
    g. Indicated airflow rate in cfm.
    h. Indicated velocity in fpm.
    i. Actual airflow rate in cfm.
    j. Actual average velocity in fpm.
    k. Barometric pressure in psig.

H. System-Coil Reports: For reheat coils and water coils of terminal units, include the following:

1. Unit Data:

    a. System and air-handling-unit identification.
    b. Location and zone.
    c. Room or riser served.
    d. Coil make and size.
    e. Flowmeter type.

2. Test Data (Indicated and Actual Values):

    a. Airflow rate in cfm.
    b. Entering-water temperature in deg F.
    c. Leaving-water temperature in deg F.
    d. Water pressure drop in feet of head or psig.
    e. Entering-air temperature in deg F.
    f. Leaving-air temperature in deg F.

I. Instrument Calibration Reports:

1. Report Data:

    a. Instrument type and make.
    b. Serial number.
    c. Application.
    d. Dates of use.
    e. Dates of calibration.

3.12 VERIFICATION OF TAB REPORT

A. The TAB specialist's test and balance engineer shall conduct the inspection in the presence of District Construction Manager.

B. District Construction Manager shall randomly select measurements, documented in the final report, to be rechecked. Rechecking shall be limited to either 10 percent of the total measurements recorded or the extent of measurements that can be accomplished in a normal 8-hour business day.

C. If rechecks yield measurements that differ from the measurements documented in the final report by more than the tolerances allowed, the measurements shall be noted as "FAILED."

D. If the number of "FAILED" measurements is greater than 10 percent of the total measurements checked during the final inspection, the testing and balancing shall be considered incomplete and shall be rejected.

E. If TAB work fails, proceed as follows:

1. TAB specialists shall recheck all measurements and make adjustments. Revise the final report and balancing device settings to include all changes; resubmit the final report and request a second final inspection.
2. If the second final inspection also fails, District may contract the services of another TAB specialist to complete TAB work according to the Contract Documents and deduct the cost of the services from the original TAB specialist's final payment.

F. Prepare test and inspection reports.

END OF SECTION 23 05 93

San Diego Unified School District Guide Specifications
Document Version: August 2021

SECTION 23 07 19
HVAC 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 HVAC piping systems:
   1. Refrigerant suction and hot-gas piping, outdoors.

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. 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 insulation application at elbows, fittings, flanges, valves, and specialties for each type of insulation.
   3. Detail removable insulation at piping specialties.
   4. Detail application of field-applied jackets.

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.

B. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84, by a testing and inspecting 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.
   1. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

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.

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.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

A. Comply with 2019 Title 24 Building Energy Efficiency Standards

   1. Cooling Systems: Section 503.7.3(2), Table E.
   2. Prior to insulating pipes, confirm piping temperature with manufacturer.

B. Comply with requirements in "Piping Insulation Schedule, General," "Outdoor, Aboveground Piping Insulation Schedule," articles for where insulating materials shall be applied.

C. Products shall not contain asbestos, lead, mercury, or mercury compounds.

D. 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.

E. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.

F. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.

G. Flexible Elastomeric Insulation: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials.

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.

B. Flexible Elastomeric Adhesive: Comply with MIL-A-24179A, Type II, Class I.

1. Adhesive shall comply with the testing and product requirements of San Diego Air Pollution Control District Rule 67.0 "Architectural Coatings" and Rule 67.21 “Adhesive Material Application Operations.”

2.3 MASTICS

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

1. Mastics shall comply with the testing and product requirements of San Diego Air Pollution Control District Rule 67.0 "Architectural Coatings" and Rule 67.21 “Adhesive Material Application Operations.”

B. Vapor-Barrier Mastic: Water based; suitable for indoor use on below-ambient services.

1. Water-Vapor Permeance: ASTM E 96/E 96M, Procedure B, 0.013 perm at 43-mil dry film thickness.
2. Service Temperature Range: Minus 20 to plus 180 deg F.
3. Solids Content: ASTM D 1644, 58 percent by volume and 70 percent by weight.
4. 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. Lagging adhesive shall comply with the testing and product requirements of San Diego Air Pollution Control District Rule 67.0 "Architectural Coatings" and Rule 67.21 “Adhesive Material Application Operations.”

2. Fire-resistant, water-based lagging adhesive and coating for use indoors to adhere fire-resistant lagging cloths over pipe insulation.
3. Service Temperature Range: 0 to plus 180 deg F.
4. Color: White.

2.5 SEALANTS

A. Joint Sealants:
1. Materials shall be compatible with insulation materials, jackets, and substrates.
2. Permanently flexible, elastomeric sealant.
3. Service Temperature Range: Minus 100 to plus 300 deg F.
4. Color: White or gray.
5. Sealants shall comply with the testing and product requirements of San Diego Air Pollution Control District Rule 67.0 "Architectural Coatings."

B. FSK and Metal Jacket Flashing Sealants:

1. Materials shall be compatible with insulation materials, jackets, and substrates.
2. Fire- and water-resistant, flexible, elastomeric sealant.
3. Service Temperature Range: Minus 40 to plus 250 deg F.
4. Color: Aluminum.
5. Sealants shall comply with the testing and product requirements of San Diego Air Pollution Control District Rule 67.0 "Architectural Coatings."

2.6 FIELD-APPLIED JACKETS

A. Field-applied jackets shall comply with ASTM C 921, Type I, unless otherwise indicated.

B. FSK Jacket: Aluminum-foil-face, fiberglass-reinforced scrim with kraft-paper backing.

C. Metal Jacket:

1. Aluminum Jacket: Comply with ASTM B 209, Alloy 3003, 3005, 3105, or 5005, Temper H-14.

a. Sheet and roll stock ready for shop or field sizing.
b. Finish and thickness are indicated in field-applied jacket schedules.
c. Moisture Barrier for Outdoor Applications: 3-mil-thick, heat-bonded polyethylene and kraft paper.
d. 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.

2.7 TAPES

A. Aluminum-Foil Tape: Vapor-retarder tape with acrylic adhesive.

1. Width: 2 inches.
2. Thickness: 3.7 mils.
3. Adhesion: 100 ounces force/inch in width.
4. Elongation: 5 percent.
5. Tensile Strength: 34 lbf/inch in width.

2.8 SECUREMENTS

A. Bands:

1. Stainless Steel: ASTM A 167 or ASTM A 240/A 240M, Type 304 or Type 316; 0.015-inch thick, 1/2-inch wide with wing seal or closed seal.
2. Aluminum: ASTM B 209, Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020-inch thick, 1/2-inch wide with wing seal orclosed seal.

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.
3. 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. 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.

C. Coordinate insulation installation with the trade installing heat tracing. Comply with requirements for heat tracing that apply to insulation.

D. 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. Manholes.
5. Handholes.
6. 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.

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. 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.
4. 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.
5. 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.
6. 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.
7. 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.

8. 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.
9. 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. 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.
4. 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.
5. Unless a PVC jacket is indicated in field-applied jacket schedules, finish exposed surfaces with a metal jacket.

3.6 INSTALLATION OF FLEXIBLE ELASTOMERIC INSULATION

A. Seal longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

B. Insulation Installation on Pipe Flanges:

1. Install 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 cut sections of sheet insulation of same thickness as pipe insulation.
4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install mitered sections of pipe insulation.
2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed valve covers manufactured of same material as pipe insulation when available.
2. When preformed valve covers are not available, install cut sections of pipe and sheet insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.
4. Secure insulation to valves and specialties and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

3.7 FIELD-APPLIED JACKET INSTALLATION

A. 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. Flexible Elastomeric Thermal Insulation: After adhesive has fully cured, apply two coats of insulation manufacturer's recommended protective coating.

B. Color: Final color as selected by Architect. Vary first and second coats to allow visual inspection of the completed Work.

C. Do not field paint aluminum or stainless-steel jackets.

3.9 FIELD QUALITY CONTROL

A. Testing Agency: 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 the Project Inspector, 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 OUTDOOR, ABOVEGROUND PIPING INSULATION SCHEDULE

A. Refrigerant Suction and Hot-Gas Piping:

1. All Pipe Sizes: Insulation shall be the following:
   a. Flexible Elastomeric: 2 inches thick.

B. Refrigerant Suction and Hot-Gas Flexible Tubing:

1. All Pipe Sizes: Insulation shall be the following:

   a. Flexible Elastomeric: 2 inches thick.

3.12 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, Exposed:

1. Aluminum, Smooth with Z-Shaped Locking Seam: 0.016-inch thick.

END OF SECTION 23 07 19

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SECTION 23 08 00
COMMISSIONING OF HVAC

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 commissioning process requirements for the following HVAC&R systems, assemblies, and equipment:
   1. Cooling generation systems, including direct-expansion systems.
   2. Distribution systems, including air distribution (heating and cooling) systems exhaust systems.
   3. Terminal and packaged units, including packaged units.
   4. Systems testing and balancing verification, including supply-air systems return-air systems exhaust-air systems.

1.3 DEFINITIONS

A. BAS: Building automation system.

B. DDC: Direct digital controls.

C. HVAC&R: Heating, Ventilating, Air Conditioning, and Refrigeration.

D. "Systems," "Subsystems," "Equipment," and "Components": Where these terms are used together or separately, they shall mean "as-built" systems, subsystems, equipment, and components.

E. TAB: Testing, adjusting, and balancing.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For HVAC&R Testing Technician.

B. Construction Checklists: See related Sections for technical requirements for the following construction checklists:
   1. Refrigerant piping.
   2. Metal ducts and accessories.
   3. Fans.

1.5 QUALITY ASSURANCE

A. HVAC&R Testing Technician Qualifications: Technicians to perform HVAC&R construction checklist verification tests, construction checklist verification test demonstrations, commissioning tests, and commissioning test demonstrations shall have the following minimum qualifications:

1. Journey-level or equivalent skill level. Vocational School four-year program graduate or an Associate degree in mechanical systems, air conditioning, or similar field. Degree may be offset by three years' experience in servicing mechanical systems in the HVAC industry. Generally, required knowledge includes HVAC&R systems, electrical concepts, building operations, and application and use of tools and instrumentation to measure performance of HVAC&R equipment, assemblies, and systems.
2. Minimum three years' experience installing, servicing, and operating systems manufactured by approved manufacturer.
3. One of the following:

    a. National Environmental Balancing Bureau (NEBB) Certified Testing, Adjusting, and Balancing Technician.
    b. Testing, Adjusting and Balancing Bureau (TABB).
    c. District retains the right to waive NEBB or TABB Certification.

B. Testing Equipment and Instrumentation Quality and Calibration: For test equipment and instrumentation required to perform HVAC&R commissioning work, perform the following:

1. Submit test equipment and instrumentation list. For each equipment or instrument, identify the following:

    a. Equipment/instrument identification number.
    b. Planned commissioning application or use.
    c. Manufacturer, make, model, and serial number.
    d. Calibration history, including certificates from agencies that calibrate the equipment and instrumentation.

2. Test equipment and instrumentation shall meet the following criteria:

    a. Capable of testing and measuring performance within the specified acceptance criteria.
    b. Be calibrated at the manufacturer's recommended intervals with current calibration tags permanently affixed to the instrument being used.
    c. Be maintained in good repair and operating condition throughout the duration of use on this Project.
    d. Be recalibrated/repaired if dropped or damaged in any way since last calibrated.

C. Proprietary Test Instrumentation and Tools:

1. Equipment Manufacturer's Proprietary Instrumentation and Tools: For installed equipment included in the commissioning process, test instrumentation and tools manufactured or prescribed by equipment manufacturer to service, calibrate, adjust, repair, or otherwise work on its equipment or required as a condition of equipment warranty, perform the following:

    a. Submit proprietary instrumentation and tools list. For each instrument or tool, identify the following:

        1) Instrument or tool identification number.
        2) Equipment schedule designation of equipment for which the instrument or tool is required.
        3) Manufacturer, make, model, and serial number.
        4) Calibration history, including certificates from agencies that calibrate the instrument or tool, where appropriate.

    b. Include a separate list of proprietary test instrumentation and tools in the operation and maintenance manuals.
    c. HVAC&R proprietary test instrumentation and tools become the property of District at the time of Substantial Completion.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 GENERAL TESTING REQUIREMENTS

A. Certify that HVAC&R systems, subsystems, and equipment have been installed, calibrated, and started and are operating according to the Contract Documents.

B. Certify that TAB procedures have been completed and that TAB reports have been submitted, discrepancies corrected, and corrective work approved.

C. Set systems, subsystems, and equipment into operating mode to be tested according to approved test procedures (e.g., normal shutdown, normal auto position, normal manual position, unoccupied cycle, emergency power, and alarm conditions).

D. Measure capacities and effectiveness of systems, assemblies, subsystems, equipment, and components, including operational and control functions to verify compliance with acceptance criteria.

E. Test systems, assemblies, subsystems, equipment, and components operating modes, interlocks, control responses, and responses to abnormal or emergency conditions, and response according to acceptance criteria.

F. Construction Checklists: Prepare and submit detailed construction checklists for HVAC&R systems, subsystems, equipment, and components.

1. Contributors to the development of construction checklists shall include:

    a. HVAC&R systems and equipment installers.
    b. TAB technicians.
    c. HVAC&R instrumentation and controls installers.

G. Perform tests using design conditions, whenever possible.

1. Simulated conditions may, with approval of the District Construction Manager, be imposed using an artificial load when it is impractical to test under design conditions. Before simulating conditions, calibrate testing instruments. Provide equipment to simulate loads. Set simulated conditions as directed by Commissioning Agent and document simulated conditions and methods of simulation. After tests, return configurations and settings to normal operating conditions.
2. Commissioning test procedures may direct that set points be altered when simulating conditions is impractical.
3. Commissioning test procedures may direct that sensor values be altered with a signal generator when design or simulating conditions and altering set points are impractical.

H. If tests cannot be completed because of a deficiency outside the scope of the HVAC&R system, document the deficiency and report it to District. After deficiencies are resolved, reschedule tests.

I. Coordinate schedule with, and perform activities at the direction of, Commissioning Agent.

J. Comply with construction checklist requirements, including material verification, installation checks, start-up, and performance tests requirements specified in Sections specifying HVAC systems and equipment.

K. Provide technicians, instrumentation, tools, and equipment to complete and document the following:

1. Performance tests.
2. Demonstration of a sample of performance tests.
3. Commissioning tests.
4. Commissioning test demonstrations.

3.2 TAB COMMISSIONING TESTS

A. TAB Verification:

1. Prerequisites: Completion of "Examination" Article requirements and correction of deficiencies, as specified in Section 23 05 93 "Testing, Adjusting, and Balancing for HVAC."
2. Completion of "Preparation" Article requirements for preparation of a TAB plan that includes strategies and step-by-step procedures, and system-readiness

checks and reports, as specified in Section 23 05 93 "Testing, Adjusting, and Balancing for HVAC."

3. Scope: HVAC&R air systems.
4. Purpose: Differential flow relationships intended to maintain air pressurization differentials between the various areas of Project.
5. Conditions of the Test:

    a. Commissioning Test Demonstration Sampling Rate: As specified in "Inspections" Article in Section 23 05 93 "Testing, Adjusting, and Balancing for HVAC."
    b. Systems operating in full heating mode with minimum outside-air volume.
    c. Systems operating in full cooling mode with minimum outside-air volume.

6. Acceptance Criteria:

    a. Under all conditions, rechecked measurements comply with "Inspections" Article in Section 23 05 93 "Testing, Adjusting, and Balancing for HVAC."
    b. Additionally, no rechecked measurement shall differ from measurements documented in the final report by more than two times the tolerances allowed.
    c. Under all conditions, where the Contract Documents indicate a differential in airflow between supply and exhaust and/or return in a space, the differential relationship shall be maintained.

END OF SECTION 23 08 00

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SECTION 23 11 23
FACILITY NATURAL-GAS PIPING

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. Pipes, tubes, and fittings.
2. Piping specialties.
3. Piping and tubing joining materials.
4. Valves.
5. Pressure regulators.

1.3 DEFINITIONS

A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.

B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.

C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.

1.4 PERFORMANCE REQUIREMENTS

A. Minimum Operating-Pressure Ratings:

1. Piping and Valves: 100 psig minimum unless otherwise indicated.
2. Service Regulators: 100 psig minimum unless otherwise indicated.
3. Minimum Operating Pressure of Service Meter: 5 psig.

B. Natural-Gas System Pressure within Buildings: 0.5 psig or less.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of the following:

1. Piping specialties.
2. Valves. Include pressure rating, capacity, settings, and electrical connection data of selected models.
3. Pressure regulators. Indicate pressure ratings and capacities.
4. Dielectric fittings.

B. Shop Drawings: For facility natural-gas piping layout. Include plans, piping layout and elevations, sections, and details for fabrication of pipe anchors, hangers, supports for multiple pipes, alignment guides, expansion joints and loops, and attachments of the same to building structure. Detail location of anchors, alignment guides, and expansion joints and loops.

1. Shop Drawing Scale: 1/4-inch per foot.
2. Detail mounting, supports, and valve arrangements for pressure regulator assembly.

1.6 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Plans and details, drawn to scale, on which natural-gas piping is shown and coordinated with other installations, using input from installers of the items involved.

B. Site Survey: Plans, drawn to scale, on which natural-gas piping is shown and coordinated with other services and utilities.

C. Welding certificates.

D. Field quality-control reports.

1.7 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For pressure regulators to include in emergency, operation, and maintenance manuals.

1.8 QUALITY ASSURANCE

A. Steel Support Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

B. Pipe Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Handling Flammable Liquids: Remove and dispose of liquids from existing natural-gas piping according to requirements of authorities having jurisdiction.

B. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.

C. Store and handle pipes and tubes having factory-applied protective coatings to avoid damaging coating, and protect from direct sunlight.

1.10 PROJECT CONDITIONS

A. Perform site survey, research public utility records, and verify existing utility locations. Contact utility-locating service for area where Project is located.

B. Interruption of Existing Natural-Gas Service: Do not interrupt natural-gas service to facilities occupied by District or others unless permitted under the following conditions and then only after arranging to provide purging and startup of natural-gas supply according to requirements indicated:

1. Notify District Construction Manager no fewer than two days in advance of proposed interruption of natural-gas service.
2. Do not proceed with interruption of natural-gas service without District Construction Manager's written permission.

1.11 COORDINATION

A. Coordinate sizes and locations of concrete bases with actual equipment provided.

PART 2 - PRODUCTS

2.1 PIPES, TUBES, AND FITTINGS

A. Steel Pipe: ASTM A 53/A 53M, black steel, Schedule 40, Type E or S, Grade B.

1. Malleable-Iron Threaded Fittings: ASME B16.3, Class 150, standard pattern.
2. Wrought-Steel Welding Fittings: ASTM A 234/A 234M for butt welding and socket welding.
3. Unions: ASME B16.39, Class 150, malleable iron with brass-to-iron seat, ground joint, and threaded ends.
4. Forged-Steel Flanges and Flanged Fittings: ASME B16.5, minimum Class 150, including bolts, nuts, and gaskets of the following material group, end connections, and facings:

a. Material Group: 1.1.

b. End Connections: Threaded or butt welding to match pipe.
c. Lapped Face: Not permitted underground.
d. Gasket Materials: ASME B16.20, metallic, flat, asbestos free, aluminum o-rings, and spiral-wound metal gaskets.
e. Bolts and Nuts: ASME B18.2.1, carbon steel aboveground and stainless steel underground.

2.2 PIPING SPECIALTIES

A. Appliance Flexible Connectors:

1. Indoor, Fixed-Appliance Flexible Connectors: Comply with ANSI Z21.24.
2. Indoor, Movable-Appliance Flexible Connectors: Comply with ANSI Z21.69.
3. Outdoor, Appliance Flexible Connectors: Comply with ANSI Z21.75.
4. Corrugated stainless-steel tubing with polymer coating.
5. Operating-Pressure Rating: 0.5 psig.
6. End Fittings: Zinc-coated steel.
7. Threaded Ends: Comply with ASME B1.20.1.
8. Maximum Length: 72 inches

B. Y-Pattern Strainers:

1. Body: ASTM A 126, Class B, cast iron with bolted cover and bottom drain connection.
2. End Connections: Threaded ends for NPS 2 and smaller; flanged ends for NPS 2-1/2 and larger.
3. Strainer Screen: 40-mesh startup strainer, and perforated stainless-steel basket with 50 percent free area.
4. CWP Rating: 125 psig.

C. Weatherproof Vent Cap: Cast- or malleable-iron increaser fitting with corrosion-resistant wire screen, with free area at least equal to cross-sectional area of connecting pipe and threaded-end connection.

D. Protective PVC Tape: 20 mil, stabilized, plasticized PVC film with adhesive backing.

2.3 JOINING MATERIALS

A. Joint Compound and Tape: Suitable for natural gas.

B. Welding Filler Metals: Comply with AWS D10.12/D10.12M for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

2.4 MANUAL GAS SHUTOFF VALVES

A. General Requirements for Metallic Valves, NPS 2 and Smaller: Comply with ASME B16.33.

1. CWP Rating: 125 psig.
2. Threaded Ends: Comply with ASME B1.20.1.
3. Dryseal Threads on Flare Ends: Comply with ASME B1.20.3.
4. Tamperproof Feature: Locking feature for valves indicated in "Underground Manual Gas Shutoff Valve Schedule" and "Aboveground Manual Gas Shutoff Valve Schedule" Articles.
5. Listing: Listed and labeled by an NRTL acceptable to authorities having jurisdiction for valves 1-inch and smaller.
6. Service Mark: Valves 1-1/4 inches to NPS 2 shall have initials "WOG" permanently marked on valve body.

B. General Requirements for Metallic Valves, NPS 2-1/2 and Larger: Comply with ASME B16.38.

1. CWP Rating: 125 psig.
2. Flanged Ends: Comply with ASME B16.5 for steel flanges.
3. Tamperproof Feature: Locking feature for valves indicated in "Underground Manual Gas Shutoff Valve Schedule" and "Aboveground Manual Gas Shutoff Valve Schedule" Articles.
4. Service Mark: Initials "WOG" shall be permanently marked on valve body.

C. Bronze Plug Valves: MSS SP-78.

1. Body: Bronze, complying with ASTM B 584.
2. Plug: Bronze.
3. Ends: Threaded, socket, or flanged as indicated in "Underground Manual Gas Shutoff Valve Schedule" and "Aboveground Manual Gas Shutoff Valve Schedule" Articles.
4. Operator: Square head or lug type with tamperproof feature where indicated.
5. Pressure Class: 125 psig.
6. Listing: Valves NPS 1 and smaller shall be listed and labeled by an NRTL acceptable to authorities having jurisdiction.
7. Service: Suitable for natural-gas service with "WOG" indicated on valve body.

2.5 PRESSURE REGULATORS

A. General Requirements:

1. Single stage and suitable for natural gas.
2. Steel jacket and corrosion-resistant components.
3. Elevation compensator.
4. End Connections: Threaded for regulators NPS 2 and smaller; flanged for regulators NPS 2-1/2 and larger.

B. Line Pressure Regulators: Comply with ANSI Z21.80.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. American Meter Company.
b. Fisher Control Valves & Instruments; a brand of Emerson Process Management.
c. Maxitrol Company.
d. Or Equal.

2. Body and Diaphragm Case: Cast iron or die-cast aluminum.
3. Springs: Zinc-plated steel; interchangeable.
4. Diaphragm Plate: Zinc-plated steel.
5. Seat Disc: Nitrile rubber resistant to gas impurities, abrasion, and deformation at the valve port.
6. Orifice: Aluminum; interchangeable.
7. Seal Plug: Ultraviolet-stabilized, mineral-filled nylon.
8. Single-port, self-contained regulator with orifice no larger than required at maximum pressure inlet, and no pressure sensing piping external to the regulator.
9. Pressure regulator shall maintain discharge pressure setting downstream, and not exceed 150 percent of design discharge pressure at shutoff.
10. Overpressure Protection Device: Factory mounted on pressure regulator.
11. Atmospheric Vent: Factory- or field-installed, stainless-steel screen in opening if not connected to vent piping.
12. Maximum Inlet Pressure: 5 psig.

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. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. A.Y. McDonald Mfg. Co.
b. Watts; a Watts Water Technologies company.
c. Wilkins.
d. Or Equal.

2. Description:

a. Standard: ASSE 1079.
b. Pressure Rating: 125 psig minimum at 180 deg F.
c. End Connections: Solder-joint copper alloy and threaded ferrous.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in for natural-gas piping system to verify actual locations of piping connections before equipment installation.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Close equipment shutoff valves before turning off natural gas to premises or piping section.

B. Inspect natural-gas piping according to the California Plumbing Code to determine that natural-gas utilization devices are turned off in piping section affected.

C. Comply with the California Plumbing Code requirements for prevention of accidental ignition.

3.3 OUTDOOR PIPING INSTALLATION

A. Comply with the California Plumbing Code for installation and purging of natural-gas piping.

B. Steel Piping with Protective Coating:

1. Apply joint cover kits to pipe after joining to cover, seal, and protect joints.
2. Where coated steel pipe or transition fittings penetrate a concrete slab, install two wrappings of 20 mil PVC tape extending six inches above and below penetration
3. Repair damage to PE coating on pipe as recommended in writing by protective coating manufacturer.
4. Replace pipe having damaged PE coating with new pipe.

C. Install fittings for changes in direction and branch connections.

3.4 VALVE INSTALLATION

A. Install manual gas shutoff valve for each gas appliance ahead of corrugated stainless-steel tubing, aluminum, or copper connector.

B. Install regulators and overpressure protection devices with maintenance access space adequate for servicing and testing.

3.5 PIPING JOINT CONSTRUCTION

A. Ream ends of pipes and tubes and remove burrs.

B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

C. Threaded Joints:

1. Thread pipe with tapered pipe threads complying with ASME B1.20.1.
2. Cut threads full and clean using sharp dies.
3. Ream threaded pipe ends to remove burrs and restore full inside diameter of pipe.
4. Apply appropriate tape or thread compound to external pipe threads unless dryseal threading is specified.
5. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

D. Welded Joints:

1. Construct joints according to AWS D10.12/D10.12M, using qualified processes and welding operators.
2. Bevel plain ends of steel pipe.
3. Patch factory-applied protective coating as recommended by manufacturer at field welds and where damage to coating occurs during construction.

3.6 HANGER AND SUPPORT INSTALLATION

A. Install hangers for horizontal steel piping with the following maximum spacing and minimum rod sizes:

1. NPS 1 and Smaller: Maximum span, 96 inches; minimum rod size, 3/8-inch.
2. NPS 1-1/4: Maximum span, 108 inches; minimum rod size, 3/8-inch.
3. NPS 1-1/2 and NPS 2: Maximum span, 108 inches; minimum rod size, 3/8-inch.
4. NPS 2-1/2 to NPS 3-1/2: Maximum span, 10 feet; minimum rod size, ½-inch.
5. NPS 4 and Larger: Maximum span, 10 feet; minimum rod size, 5/8-inch.

3.7 CONNECTIONS

A. Install natural-gas piping electrically continuous, and bonded to gas appliance equipment grounding conductor of the circuit powering the appliance according to NFPA 70.

B. Install piping adjacent to appliances to allow service and maintenance of appliances.

C. Connect piping to appliances using manual gas shutoff valves and unions. Install valve within 72 inches of each gas-fired appliance and equipment. Install union between valve and appliances or equipment.

D. Sediment Traps: Install tee fitting with capped nipple in bottom to form drip, as close as practical to inlet of each appliance.

3.8 LABELING AND IDENTIFYING

A. Comply with requirements in Section 23 05 53 "Identification for HVAC Piping and Equipment" for piping and valve identification.

3.9 PAINTING

A. Comply with requirements in Section 09 91 13 "Exterior Painting" for painting exterior natural-gas piping.

B. Paint exposed, exterior metal piping, valves, service regulators, service meters and meter bars, earthquake valves, and piping specialties, except components, with factory-applied paint or protective coating.

1. Alkyd System: MPI EXT 5.1D.

a. Prime Coat: Alkyd anticorrosive metal primer.
b. Intermediate Coat: Exterior alkyd enamel matching topcoat.
c. Topcoat: Exterior alkyd enamel (semigloss).
d. Color: Gray.

C. Damage and Touchup: Repair marred and damaged factory-applied finishes with materials and by procedures to match original factory finish.

3.10 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Tests and Inspections:

1. Test, inspect, and purge natural gas according to the California Plumbing Code.
2. Medium Pressure Systems (5psi Minimum): Perform graph-recorded 24 hour pressure test of 60 psi.
3. Low Pressure Systems (Less than 5psi): Must hold 10psi pressure for 5 minutes minimum.
4. Submit test results to District Construction Manager for review by District Physical Plant Operations Plumbing Inspector.

C. Natural-gas piping will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

3.11 DEMONSTRATION

A. Engage a factory-authorized service representative to train District's maintenance personnel to adjust, operate, and maintain earthquake valves.

3.12 OUTDOOR PIPING SCHEDULE

A. Aboveground natural-gas piping shall be:

1. Galvanized steel pipe and fittings.

B. Containment Conduit: Steel pipe with wrought-steel fittings and welded joints. Coat pipe and fittings with protective coating for steel piping.

3.13 ABOVEGROUND MANUAL GAS SHUTOFF VALVE SCHEDULE

A. Valves for pipe sizes NPS 2 and smaller at service meter shall be the following:
1. Bronze plug valve.

B. Valves for pipe sizes NPS 2-1/2 and larger at service meter shall be the following:
1. Bronze plug valve.

C. Distribution piping valves for pipe sizes NPS 2 and smaller shall be the following:
1. Bronze plug valve.

D. Distribution piping valves for pipe sizes NPS 2-1/2 and larger shall be the following:
1. Bronze plug valve.

E. Valves in branch piping for single appliance shall be the following:
1. Bronze plug valve.

END OF SECTION 23 11 23

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SECTION 23 23 00
REFRIGERANT PIPING

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. Refrigerant pipes and fittings.
2. Refrigerant piping valves and specialties.
3. Refrigerants.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of valve and refrigerant piping specialty.

1. Include pressure drop, based on manufacturer's test data, for the following:

a. Thermostatic expansion valves.
b. Solenoid valves.
c. Hot-gas bypass valves.
d. Filter dryers.
e. Strainers.
f. Pressure-regulating valves.

B. Shop Drawings:

1. Show layout of refrigerant piping and specialties, including pipe, tube, and fitting sizes; flow capacities; valve arrangements and locations; slopes of horizontal runs; oil traps; double risers; wall and floor penetrations; and equipment connection details.
2. Show interface and spatial relationships between piping and equipment.
3. Shop Drawing Scale: 1/4-inch equals 1-foot.

1.4 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For refrigerant valves and piping specialties to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to 2010 ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."

B. Comply with ASHRAE 15, "Safety Code for Refrigeration Systems."

C. Comply with ASME B31.5, "Refrigeration Piping and Heat Transfer Components."

1.7 PRODUCT STORAGE AND HANDLING

A. Store piping with end caps in place to ensure that piping interior and exterior are clean when installed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Line Test Pressure for Refrigerant R-410A:

1. Suction Lines for Air-Conditioning Applications: 300 psig.
2. Suction Lines for Heat-Pump Applications: 535 psig.
3. Hot-Gas and Liquid Lines: 535 psig.

2.2 COPPER TUBE AND FITTINGS

A. Copper Tube: ASTM B 280, Type ACR.

B. Wrought-Copper Fittings: ASME B16.22.

C. Wrought-Copper Unions: ASME B16.22.

D. Solder Filler Metals: ASTM B 32. Use 95-5 tin antimony or alloy HB solder to join copper socket fittings on copper pipe.

E. Brazing Filler Metals: AWS A5.8/A5.8M.

F. Flexible Connectors:

1. Body: Tin-bronze bellows with woven, flexible, tinned-bronze-wire-reinforced protective jacket.
2. End Connections: Socket ends.
3. Offset Performance: Capable of minimum 3/4-inch misalignment in minimum 7-inch-long assembly.
4. Working Pressure Rating: Factory test at minimum 500 psig.
5. Maximum Operating Temperature: 250 deg F.

2.3 VALVES AND SPECIALTIES

A. Diaphragm Packless Valves:

1. Body and Bonnet: Forged brass or cast bronze; globe design with straight-through or angle pattern.
2. Diaphragm: Phosphor bronze and stainless steel with stainless-steel spring.
3. Operator: Rising stem and hand wheel.
4. Seat: Nylon.
5. End Connections: Socket, union, or flanged.
6. Working Pressure Rating: 500 psig.
7. Maximum Operating Temperature: 275 deg F.

B. Packed-Angle Valves:

1. Body and Bonnet: Forged brass or cast bronze.
2. Packing: Molded stem, back seating, and replaceable under pressure.
3. Operator: Rising stem.
4. Seat: Nonrotating, self-aligning polytetrafluoroethylene.
5. Seal Cap: Forged-brass or valox hex cap.
6. End Connections: Socket, union, threaded, or flanged.
7. Working Pressure Rating: 500 psig.
8. Maximum Operating Temperature: 275 deg F.

C. Check Valves:

1. Body: Ductile iron, forged brass, or cast bronze; globe pattern.
2. Bonnet: Bolted ductile iron, forged brass, or cast bronze; or brass hex plug.
3. Piston: Removable polytetrafluoroethylene seat.
4. Closing Spring: Stainless steel.
5. End Connections: Socket, union, threaded, or flanged.
6. Maximum Opening Pressure: 0.50 psig.
7. Working Pressure Rating: 500 psig.
8. Maximum Operating Temperature: 275 deg F.

D. Service Valves:

1. Body: Forged brass with brass cap including key end to remove core.
2. Core: Removable ball-type check valve with stainless-steel spring.
3. Seat: Polytetrafluoroethylene.
4. End Connections: Copper spring.

5. Working Pressure Rating: 500 psig.

E. Solenoid Valves: Comply with AHRI 760 and UL 429; listed and labeled by a National Recognized Testing Laboratory (NRTL).

1. Body and Bonnet: Plated steel.
2. Solenoid Tube, Plunger, Closing Spring, and Seat Orifice: Stainless steel.
3. Seat: Polytetrafluoroethylene.
4. End Connections: Threaded.
5. Electrical: Molded, watertight coil in NEMA 250 enclosure of type required by location with 1/2-inch conduit adapter, and 24-V ac coil.
6. Working Pressure Rating: 400 psig.
7. Maximum Operating Temperature: 240 deg F.

F. Thermostatic Expansion Valves: Comply with AHRI 750.

1. Body, Bonnet, and Seal Cap: Forged brass or steel.
2. Diaphragm, Piston, Closing Spring, and Seat Insert: Stainless steel.
3. Packing and Gaskets: Non-asbestos.
4. Capillary and Bulb: Copper tubing filled with refrigerant charge.
5. Suction Temperature: 40 deg F.
6. Superheat: Adjustable.
7. Reverse-flow option (for heat-pump applications).
8. End Connections: Socket, flare, or threaded union.
9. Working Pressure Rating: 700 psig.

G. Hot-Gas Bypass Valves: Comply with UL 429; listed and labeled by an NRTL.

1. Body, Bonnet, and Seal Cap: Ductile iron or steel.
2. Diaphragm, Piston, Closing Spring, and Seat Insert: Stainless steel.
3. Packing and Gaskets: Non-asbestos.
4. Solenoid Tube, Plunger, Closing Spring, and Seat Orifice: Stainless steel.
5. Seat: Polytetrafluoroethylene.
6. Equalizer: Internal.
7. Electrical: Molded, watertight coil in NEMA 250 enclosure of type required by location with 1/2-inch conduit adapter and 24-V ac coil.
8. End Connections: Socket.
9. Throttling Range: Maximum 5 psig.
10. Working Pressure Rating: 500 psig.
11. Maximum Operating Temperature: 240 deg F.

H. Straight-Type Strainers:

1. Body: Welded steel with corrosion-resistant coating.
2. Screen: 100-mesh stainless steel.
3. End Connections: Socket or flare.
4. Working Pressure Rating: 500 psig.
5. Maximum Operating Temperature: 275 deg F.

I. Angle-Type Strainers:

1. Body: Forged brass or cast bronze.
2. Drain Plug: Brass hex plug.
3. Screen: 100-mesh monel.
4. End Connections: Socket or flare.
5. Working Pressure Rating: 500 psig.
6. Maximum Operating Temperature: 275 deg F.

J. Moisture/Liquid Indicators:

1. Body: Forged brass.
2. Window: Replaceable, clear, fused glass window with indicating element protected by filter screen.
3. Indicator: Color coded to show moisture content in parts per million (ppm).
4. Minimum Moisture Indicator Sensitivity: Indicate moisture above 60 ppm.
5. End Connections: Socket or flare.
6. Working Pressure Rating: 500 psig.
7. Maximum Operating Temperature: 240 deg F.

K. Replaceable-Core Filter Dryers: Comply with AHRI 730.

1. Body and Cover: Painted-steel shell with ductile-iron cover, stainless-steel screws, and neoprene gaskets.
2. Filter Media: 10 micron, pleated with integral end rings; stainless-steel support.
3. Desiccant Media: Activated alumina.
4. Designed for reverse flow (for heat-pump applications).
5. End Connections: Socket.
6. Access Ports: NPS 1/4 connections at entering and leaving sides for pressure differential measurement.
7. Maximum Pressure Loss: 2 psig.
8. Working Pressure Rating: 500 psig.
9. Maximum Operating Temperature: 240 deg F.
10. Access Ports: NPS 1/4 connections at entering and leaving sides for pressure differential measurement.
11. Maximum Pressure Loss: 2 psig.
12. Working Pressure Rating: 500 psig.
13. Maximum Operating Temperature: 240 deg F.

L. Mufflers:

1. Body: Welded steel with corrosion-resistant coating.
2. End Connections: Socket or flare.
3. Working Pressure Rating: 500 psig.
4. Maximum Operating Temperature: 275 deg F.

M. Receivers: Comply with AHRI 495.

1. Comply with 2010 ASME Boiler and Pressure Vessel Code; listed and labeled by an NRTL.
2. Comply with UL 207; listed and labeled by an NRTL.
3. Body: Welded steel with corrosion-resistant coating.

4. Tappings: Inlet, outlet, liquid level indicator, and safety relief valve.
5. End Connections: Socket or threaded.
6. Working Pressure Rating: 500 psig.
7. Maximum Operating Temperature: 275 deg F.

N. Liquid Accumulators: Comply with AHRI 495.

1. Body: Welded steel with corrosion-resistant coating.
2. End Connections: Socket or threaded.
3. Working Pressure Rating: 500 psig.
4. Maximum Operating Temperature: 275 deg F.

2.4 REFRIGERANTS

A. ASHRAE 34, R-410A: Pentafluoroethane/Difluoromethane.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Arkema Inc.
b. DuPont Fluorochemicals Div.
c. Genetron Refrigerants; Honeywell International Inc.
d. Or Equal.

PART 3 - EXECUTION

3.1 PIPING APPLICATIONS FOR REFRIGERANT R-410A

A. Suction Lines NPS 1-1/2 and Smaller for Conventional Air-Conditioning Applications: Copper, Type ACR, annealed-temper tubing and wrought-copper fittings with brazed joints.

B. Suction Lines NPS 3-1/2 and smaller for Conventional Air-Conditioning Applications: Copper, Type ACR, drawn-temper tubing and wrought-copper fittings with brazed joints.

C. Hot-Gas and Liquid Lines: Copper, Type ACR, drawn-temper tubing and wrought-copper fittings with brazed joints.

D. Safety-Relief-Valve Discharge Piping: Copper, Type ACR, drawn-temper tubing and wrought-copper fittings with Alloy HB soldered joints.

3.2 VALVE AND SPECIALTY APPLICATIONS

A. Install diaphragm packless valves in suction and discharge lines of compressor.

B. Install service valves for gage taps at inlet and outlet of hot-gas bypass valves and strainers if they are not an integral part of valves and strainers.

C. Install a check valve at the compressor discharge and a liquid accumulator at the compressor suction connection.

D. Except as otherwise indicated, install diaphragm packless valves on inlet and outlet side of filter dryers.

E. Install a full-size, three-valve bypass around filter dryers.

F. Install solenoid valves upstream from each expansion valve and hot-gas bypass valve. Install solenoid valves in horizontal lines with coil at top.

G. Install thermostatic expansion valves as close as possible to distributors on evaporators.

1. Install valve so diaphragm case is warmer than bulb.
2. Secure bulb to clean, straight, horizontal section of suction line using two bulb straps. Do not mount bulb in a trap or at bottom of the line.
3. If external equalizer lines are required, make connection where it will reflect suction-line pressure at bulb location.

H. Install safety relief valves where required by 2010 ASME Boiler and Pressure Vessel Code. Pipe safety-relief-valve discharge line to outside according to ASHRAE 15.

I. Install moisture/liquid indicators in liquid line at the inlet of the thermostatic expansion valve or at the inlet of the evaporator coil capillary tube.

J. Install strainers upstream from and adjacent to the following unless they are furnished as an integral assembly for the device being protected:

1. Solenoid valves.
2. Thermostatic expansion valves.
3. Hot-gas bypass valves.
4. Compressor.

K. Install filter dryers in liquid line between compressor and thermostatic expansion valve, and in the suction line at the compressor.

L. Install receivers sized to accommodate pump-down charge.

M. Install flexible connectors at compressors.

3.3 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems; indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Shop Drawings.

B. Install refrigerant piping according to ASHRAE 15.

C. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.

D. 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.

E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

F. Install piping adjacent to machines to allow service and maintenance.

G. Install piping free of sags and bends.

H. Install fittings for changes in direction and branch connections.

I. Select system components with pressure rating equal to or greater than system operating pressure.

J. Install piping as short and direct as possible, with a minimum number of joints, elbows, and fittings.

K. Arrange piping to allow inspection and service of refrigeration equipment. Install valves and specialties in accessible locations to allow for service and inspection.

L. Install refrigerant piping in rigid or flexible conduit in locations where exposed to mechanical injury.

M. Slope refrigerant piping as follows:

1. Install horizontal hot-gas discharge piping with a uniform slope downward away from compressor.
2. Install horizontal suction lines with a uniform slope downward to compressor.
3. Install traps and double risers to entrain oil in vertical runs.
4. Liquid lines may be installed level.

N. When brazing or soldering, remove solenoid-valve coils and sight glasses; also remove valve stems, seats, and packing, and accessible internal parts of refrigerant specialties. Do not apply heat near expansion-valve bulb.

O. Install piping with adequate clearance between pipe and adjacent walls and hangers or between pipes for insulation installation.

P. Identify refrigerant piping and valves according to Section 23 05 53 "Identification for HVAC Piping and Equipment."

Q. Install sleeves for piping penetrations of walls, ceilings, and floors.

R. Install sleeve seals for piping penetrations of concrete walls and slabs.

S. Install escutcheons for piping penetrations of walls, ceilings, and floors.

3.4 PIPE 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 pipe and fittings before assembly.

C. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," Chapter "Pipe and Tube."

1. Use Type BCuP (copper-phosphorus) alloy for joining copper socket fittings with copper pipe.
2. Use Type BAg (cadmium-free silver) alloy for joining copper with bronze or steel.

3.5 HANGERS AND SUPPORTS

A. Install the following pipe attachments:

1. Adjustable steel clevis hangers for individual horizontal runs less than 20 feet long.
2. Roller hangers and spring hangers for individual horizontal runs 20 feet or longer.
3. Pipe Roller: MSS SP-58, Type 44 for multiple horizontal piping 20 feet or longer, supported on a trapeze.
4. Spring hangers to support vertical runs.
5. Copper-clad hangers and supports for hangers and supports in direct contact with copper pipe.

B. Install hangers for copper tubing with the following maximum spacing and minimum rod diameters:

1. NPS 1/2: Maximum span, 60 inches; minimum rod, 1/4-inch.
2. NPS 5/8: Maximum span, 60 inches; minimum rod, 1/4-inch.
3. NPS 1: Maximum span, 72 inches; minimum rod, 1/4-inch.
4. NPS 1-1/4: Maximum span, 96 inches; minimum rod, 3/8-inch.
5. NPS 1-1/2: Maximum span, 96 inches; minimum rod, 3/8-inch.
6. NPS 2: Maximum span, 96 inches; minimum rod, 3/8-inch.
7. NPS 2-1/2: Maximum span, 108 inches; minimum rod, 3/8-inch.
8. NPS 3: Maximum span, 10 feet; minimum rod, 3/8-inch.
9. NPS 4: Maximum span, 12 feet; minimum rod, 1/2-inch.

3.6 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Comply with ASME B31.5, Chapter VI.

2. Test refrigerant piping, specialties, and receivers. Isolate compressor, condenser, evaporator, and safety devices from test pressure if they are not rated above the test pressure.
3. Test high- and low-pressure side piping of each system separately at not less than the pressures indicated in "Performance Requirements" Article.

    a. Fill system with nitrogen to the required test pressure.
    b. System shall maintain test pressure at the manifold gage throughout duration of test.
    c. Test joints and fittings with electronic leak detector or by brushing a small amount of soap and glycerin solution over joints.
    d. Remake leaking joints using new materials, and retest until satisfactory results are achieved.

B. Prepare test and inspection reports.

3.7 SYSTEM CHARGING

A. Charge system using the following procedures:

1. Install core in filter dryers after leak test but before evacuation.
2. Evacuate entire refrigerant system with a vacuum pump to 500 micrometers. If vacuum holds for 12 hours, system is ready for charging.
3. Break vacuum with refrigerant gas, allowing pressure to build up to 2 psig.
4. Charge system with a new filter-dryer core in charging line.

3.8 ADJUSTING

A. Adjust thermostatic expansion valve to obtain proper evaporator superheat.

B. Adjust high- and low-pressure switch settings to avoid short cycling in response to fluctuating suction pressure.

C. Adjust set-point temperature of air-conditioning or chilled-water controllers to the system design temperature.

D. Perform the following adjustments before operating the refrigeration system, according to manufacturer's written instructions:

1. Open shutoff valves in condenser water circuit.
2. Verify that compressor oil level is correct.
3. Open compressor suction and discharge valves.
4. Open refrigerant valves except bypass valves that are used for other purposes.
5. Check open compressor-motor alignment and verify lubrication for motors and bearings.

E. Replace core of replaceable filter dryer after system has been adjusted and after design flow rates and pressures are established.

END OF SECTION 23 23 00

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SECTION 23 31 13
METAL DUCTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Single-wall rectangular ducts and fittings.
2. Single-wall round ducts and fittings.
3. Sheet metal materials.
4. Duct liner.
5. Sealants and gaskets.
6. Hangers and supports.

B. Related Sections:

1. Section 23 05 93 "Testing, Adjusting, and Balancing for HVAC" for testing, adjusting, and balancing requirements for metal ducts.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of the following products:

1. Liners and adhesives.
2. Sealants and gaskets.
3. Seismic-restraint devices.

B. Shop Drawings:

1. Fabrication, assembly, and installation, including plans, elevations, sections, components, and attachments to other work.
2. Factory- and shop-fabricated ducts and fittings.
3. Duct layout indicating sizes, configuration, liner material, and static-pressure classes.
4. Elevation of top of ducts.
5. Dimensions of main duct runs from building grid lines.
6. Fittings.
7. Reinforcement and spacing.

8. Seam and joint construction.
9. Penetrations through fire-rated and other partitions.
10. Equipment installation based on equipment being used on Project.
11. Locations for duct accessories, including dampers, turning vanes, and access doors and panels.
12. Hangers and supports, including methods for duct and building attachment**,** seismic restraints, and vibration isolation.

1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Duct installation in congested spaces, indicating coordination with general construction, building components, and other building services. Indicate proposed changes to duct layout.
2. Structural members to which duct will be attached.

B. Welding certificates.

C. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel," for hangers and supports.
2. AWS D9.1M/D9.1, "Sheet Metal Welding Code," for duct joint and seam welding.

PART 2 - PRODUCTS

2.1 SINGLE-WALL RECTANGULAR DUCTS AND FITTINGS

A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on indicated static-pressure class unless otherwise indicated.

B. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-1, "Rectangular Duct/Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

C. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-2, "Rectangular Duct/Longitudinal Seams," for static-pressure class, applicable sealing requirements,

materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

D. Elbows, Transitions, Offsets, Branch Connections, and Other Duct Construction: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 4, "Fittings and Other Construction," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.2 SINGLE-WALL ROUND DUCTS AND FITTINGS

A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 3, "Round, Oval, and Flexible Duct," based on indicated static-pressure class unless otherwise indicated.

B. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-1, "Round Duct Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

1. Transverse Joints in Ducts Larger Than 60 Inches in Diameter: Flanged.

C. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-2, "Round Duct Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

1. Fabricate round ducts larger than 90 inches in diameter with butt-welded longitudinal seams.
2. Fabricate flat-oval ducts larger than 72 inches in width (major dimension) with butt-welded longitudinal seams.

D. Tees and Laterals: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.3 SHEET METAL MATERIALS

A. General Material Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

B. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.

1. Galvanized Coating Designation: G90.
2. Finishes for Surfaces Exposed to View: Mill phosphatized.

C. Reinforcement Shapes and Plates: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

1. Where black- and galvanized-steel shapes and plates are used to reinforce aluminum ducts, isolate the different metals with butyl rubber, neoprene, or EPDM gasket materials.

D. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

2.4 DUCT LINER

A. Fibrous-Glass Duct Liner: Comply with ASTM C 1071, NFPA 90A, or NFPA 90B; and with NAIMA AH124, "Fibrous Glass Duct Liner Standard."

1. Antimicrobial Erosion-Resistant Coating: Apply to the surface of the liner that will form the interior surface of the duct to act as a moisture repellent and erosion-resistant coating. Antimicrobial compound shall be tested for efficacy by an NRTL and registered by the EPA for use in HVAC systems.
2. Water-Based Liner Adhesive: Comply with NFPA 90A or NFPA 90B and with ASTM C 916.

B. Insulation Pins and Washers:

1. Cupped-Head, Capacitor-Discharge-Weld Pins: Copper- or zinc-coated steel pin, fully annealed for capacitor-discharge welding, 0.135-inch-diameter shank, length to suit depth of insulation indicated with integral 1-1/2-inch galvanized carbon-steel washer.
2. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch-thick stainless steel; with beveled edge sized as required to hold insulation securely in place but not less than 1-1/2 inches in diameter.

C. Shop Application of Duct Liner: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 7-11, "Flexible Duct Liner Installation."

1. Adhere a single layer of indicated thickness of duct liner with at least 90 percent adhesive coverage at liner contact surface area. Attaining indicated thickness with multiple layers of duct liner is prohibited.
2. Apply adhesive to transverse edges of liner facing upstream that do not receive metal nosing.
3. Butt transverse joints without gaps, and coat joint with adhesive.
4. Fold and compress liner in corners of rectangular ducts or cut and fit to ensure butted-edge overlapping.

5. Do not apply liner in rectangular ducts with longitudinal joints, except at corners of ducts, unless duct size and dimensions of standard liner make longitudinal joints necessary.
6. Apply adhesive coating on longitudinal seams in ducts with air velocity of 2500 fpm.
7. Secure liner with mechanical fasteners 4 inches from corners and at intervals not exceeding 12 inches transversely; at 3 inches from transverse joints and at intervals not exceeding 18 inches longitudinally.
8. Secure transversely oriented liner edges facing the airstream with metal nosings that have either channel or "Z" profiles or are integrally formed from duct wall. Fabricate edge facings at the following locations:

    a. Fan discharges.
    b. Intervals of lined duct preceding unlined duct.
    c. Upstream edges of transverse joints in ducts where air velocities are higher than 2500 fpm or where indicated.

2.5 SEALANT AND GASKETS

A. General Sealant and Gasket Requirements: Surface-burning characteristics for sealants and gaskets shall be a maximum flame-spread index of 25 and a maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL.

B. Two-Part Tape Sealing System:

1. Tape: Woven cotton fiber impregnated with mineral gypsum and modified acrylic/silicone activator to react exothermically with tape to form hard, durable, airtight seal.
2. Tape Width: 4 inches
3. Sealant: Modified styrene acrylic.
4. Water resistant.
5. Mold and mildew resistant.
6. Maximum Static-Pressure Class: 10-inch wg, positive and negative.
7. Service: Indoor and outdoor.
8. Service Temperature: Minus 40 to plus 200 deg F.
9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum.

C. Water-Based Joint and Seam Sealant:

1. Application Method: Brush on.
2. Solids Content: Minimum 65 percent.
3. Shore A Hardness: Minimum 20.
4. Water resistant.
5. Mold and mildew resistant.
6. VOC: Maximum 75 g/L (less water).
7. Maximum Static-Pressure Class: 10-inch wg, positive and negative.
8. Service: Indoor or outdoor.

9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum sheets.

D. Flanged Joint Sealant: Comply with ASTM C 920.

1. General: Single-component, acid-curing, silicone, elastomeric.
2. Type: S.
3. Grade: NS.
4. Class: 25.
5. Use: O.

E. Flange Gaskets: Butyl rubber, neoprene, or EPDM polymer with polyisobutylene plasticizer.

F. Round Duct Joint O-Ring Seals:

1. Seal shall provide maximum 3 cfm/100 sq. ft. at 1-inch wg and shall be rated for10-inch wg static-pressure class, positive or negative.
2. EPDM O-ring to seal in concave bead in coupling or fitting spigot.
3. Double-lipped, EPDM O-ring seal, mechanically fastened to factory-fabricated couplings and fitting spigots.

2.6 HANGERS AND SUPPORTS

A. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.

B. Trapeze and Riser Supports:

1. Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.

PART 3 - EXECUTION

3.1 DUCT INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of duct system. Indicated duct locations, configurations, and arrangements were used to size ducts and calculate friction loss for air-handling equipment sizing and for other design considerations. Install duct systems as indicated unless deviations to layout are approved on Shop Drawings and Coordination Drawings.

B. Install ducts according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" unless otherwise indicated.

C. Install ducts in maximum practical lengths.

D. Install ducts with fewest possible joints.

E. Install factory- or shop-fabricated fittings for changes in direction, size, and shape and for branch connections.

F. Unless otherwise indicated, install ducts vertically and horizontally, and parallel and perpendicular to building lines.

G. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building.

H. Install ducts with a clearance of 1-inch, plus allowance for insulation thickness.

3.2 INSTALLATION OF EXPOSED DUCTWORK

A. Protect ducts exposed in finished spaces from being dented, scratched, or damaged.

B. Trim duct sealants flush with metal. Create a smooth and uniform exposed bead. Do not use two-part tape sealing system.

C. Grind welds to provide smooth surface free of burrs, sharp edges, and weld splatter. When welding stainless steel with a No. 3 or 4 finish, grind the welds flush, polish the exposed welds, and treat the welds to remove discoloration caused by welding.

D. Maintain consistency, symmetry, and uniformity in the arrangement and fabrication of fittings, hangers and supports, duct accessories, and air outlets.

E. Repair or replace damaged sections and finished work that does not comply with these requirements.

3.3 ADDITIONAL INSTALLATION REQUIREMENTS FOR COMMERCIAL KITCHEN HOOD EXHAUST DUCT

A. Install commercial kitchen hood exhaust ducts without dips and traps that may hold grease, and sloped a minimum of 2 percent to drain grease back to the hood.

B. Install fire-rated access panel assemblies at each change in direction and at maximum intervals of 12 feet in horizontal ducts, and at every floor for vertical ducts, or as indicated on Drawings.

C. Do not penetrate fire-rated assemblies except as allowed by applicable building codes and authorities having jurisdiction.

3.4 DUCT SEALING

A. Seal ducts for duct static-pressure, seal classes, and leakage classes specified in "Duct Schedule" Article according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

B. Seal ducts, at a minimum, to the following seal classes according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible":

1. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
2. Outdoor, Supply-Air Ducts: Seal Class A.
3. Outdoor, Exhaust Ducts: Seal Class C.
4. Outdoor, Return-Air Ducts: Seal Class C.
5. Unconditioned Space, Supply-Air Ducts in Pressure Classes 2-Inch wg and Lower: Seal Class B.
6. Unconditioned Space, Supply-Air Ducts in Pressure Classes Higher Than 2-Inch wg: Seal Class A.
7. Unconditioned Space, Exhaust Ducts: Seal Class C.
8. Unconditioned Space, Return-Air Ducts: Seal Class B.

3.5 HANGER AND SUPPORT INSTALLATION

A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 5, "Hangers and Supports."

B. Building Attachments: Concrete inserts, powder-actuated fasteners, or structural-steel fasteners appropriate for construction materials to which hangers are being attached.

1. Where practical, install concrete inserts before placing concrete.
2. Install powder-actuated concrete fasteners after concrete is placed and completely cured.
3. Use powder-actuated concrete fasteners for standard-weight aggregate concretes or for slabs more than 4 inches thick.
4. Do not use powder-actuated concrete fasteners for lightweight-aggregate concretes or for slabs less than 4 inches thick.
5. Do not use powder-actuated concrete fasteners for seismic restraints.

C. Hanger Spacing: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1, "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct," for maximum hanger spacing; install hangers and supports within 24 inches of each elbow and within 48 inches of each branch intersection.

D. Support vertical ducts with steel angles or channel secured to the sides of the duct with welds, bolts, sheet metal screws, or blind rivets; support at each floor and at a maximum intervals of 16 feet.

3.6 CONNECTIONS

A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for branch, outlet and inlet, and terminal unit connections.

3.7 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Duct System Cleanliness Tests:

1. Visually inspect duct system to ensure that no visible contaminants are present.
2. Test sections of metal duct system, chosen randomly by District, for cleanliness according to "Vacuum Test" in NADCA ACR, "Assessment, Cleaning and Restoration of HVAC Systems."

a. Acceptable Cleanliness Level: Net weight of debris collected on the filter media shall not exceed 0.75 mg/100 sq. cm.

C. Duct system will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

3.8 START UP

A. Air Balance: Comply with requirements in Section 23 05 93 "Testing, Adjusting, and Balancing for HVAC."

3.9 DUCT SCHEDULE

A. Supply Ducts:

1. Ducts Connected to Equipment:

a. Pressure Class: Positive 2-inch wg.
b. Minimum SMACNA Seal Class: A.
c. SMACNA Leakage Class for Rectangular: 6.
d. SMACNA Leakage Class for Round and Flat Oval: 6.

B. Return Ducts:

1. Ducts Connected to Equipment:

a. Pressure Class: Positive or negative 2-inch wg.
b. Minimum SMACNA Seal Class: A.
c. SMACNA Leakage Class for Rectangular: 6.
d. SMACNA Leakage Class for Round and Flat Oval: 6.

C. Exhaust Ducts:

1. Ducts Connected to Fans Exhausting (ASHRAE 62.1, Class 1 and 2) Air:

a. Pressure Class: Negative 2-inch wg.

b. Minimum SMACNA Seal Class: A if negative pressure, and A if positive pressure.
c. SMACNA Leakage Class for Rectangular: 12.
d. SMACNA Leakage Class for Round and Flat Oval: 6.

2. Ducts Connected to Commercial Kitchen Hoods: Comply with NFPA 96.
   a. Concealed: Carbon-steel sheet.
   b. Welded seams and joints.
   c. Pressure Class: Positive or negative 2-inch wg.
   d. Airtight/Watertight.

D. Liner:

1. Supply Air Ducts: Fibrous glass, Type I, 2 inches thick.
2. Return Air Ducts: Fibrous glass, Type I, 2 inches thick.

END OF SECTION 23 31 13

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SECTION 23 34 23
HVAC POWER VENTILATORS

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. Centrifugal roof ventilators.

1.3 PERFORMANCE REQUIREMENTS

A. Project Altitude: Base fan-performance ratings on actual Project site elevations.

B. Operating Limits: Classify according to AMCA 99.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories. Also include the following:

   1. Certified fan performance curves with system operating conditions indicated.
   2. Certified fan sound-power ratings.
   3. Motor ratings and electrical characteristics, plus motor and electrical accessories.
   4. Material thickness and finishes, including color charts.
   5. Dampers, including housings, linkages, and operators.
   6. Roof curbs.
   7. Fan speed controllers.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Reflected ceiling plans and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from Installers of the items involved:

   1. Roof framing and support members relative to duct penetrations.

B. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For power ventilators to include in emergency, operation, and maintenance manuals.

1.7 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. AMCA Compliance: Fans shall have AMCA-Certified performance ratings and shall bear the AMCA-Certified Ratings Seal.

C. UL Standards: Power ventilators shall comply with UL 705. Power ventilators for use for restaurant kitchen exhaust shall also comply with UL 762.

1.8 COORDINATION

A. Coordinate size and location of structural-steel support members.

B. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.

PART 2 - PRODUCTS

2.1 CENTRIFUGAL ROOF VENTILATORS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Greenheck Fan Corporation.
2. Loren Cook Company.
3. Twin City Fan & Blower.
4. Or Equal.

B. Housing: Removable, spun-aluminum, dome top and outlet baffle; square, one-piece, aluminum base with venturi inlet cone.

1. Upblast Units: Provide spun-aluminum discharge baffle to direct discharge air upward, with rain drains a grease collector.
2. Hinged Subbase: Galvanized-steel hinged arrangement permitting service and maintenance.

C. Fan Wheels: Aluminum hub and wheel with backward-inclined blades.

D. Belt Drives:

1. Resiliently mounted to housing.
2. Fan Shaft: Turned, ground, and polished steel; keyed to wheel hub.
3. Shaft Bearings: Permanently lubricated, permanently sealed, self-aligning ball bearings.
4. Pulleys: Cast-iron, adjustable-pitch motor pulley.
5. Fan and motor isolated from exhaust airstream.

E. Accessories:

1. Variable-Speed Controller: Solid-state control to reduce speed from 100 to less than 50 percent.
2. Disconnect Switch: Nonfusible type, with thermal-overload protection mounted inside fan housing, factory wired through an internal aluminum conduit.
3. Bird Screens: Removable, 1/2-inch mesh, aluminum or brass wire.
4. Dampers: Counterbalanced, parallel-blade, backdraft dampers mounted in curb base; factory set to close when fan stops.
5. Motorized Dampers: Parallel-blade dampers mounted in curb base with electric actuator; wired to close when fan stops.

F. Roof Curbs: Galvanized steel; mitered and welded corners; 1-1/2-inch-thick, rigid, fiberglass insulation adhered to inside walls; and 1-1/2-inch wood nailer. Size as required to suit roof opening and fan base.

1. Configuration: Self-flashing without a cant strip, with mounting flange.
2. Overall Height: 12 inches.
3. Sound Curb: Curb with sound-absorbing insulation.
4. Pitch Mounting: Manufacture curb for roof slope.
5. Metal Liner: Galvanized steel.
6. Mounting Pedestal: Galvanized steel with removable access panel.
7. Vented Curb: Unlined with louvered vents in vertical sides.

2.2 SOURCE QUALITY CONTROL

A. Certify sound-power level ratings according to AMCA 301, "Methods for Calculating Fan Sound Ratings from Laboratory Test Data." Factory test fans according to AMCA 300, "Reverberant Room Method for Sound Testing of Fans." Label fans with the AMCA-Certified Ratings Seal.

B. Certify fan performance ratings, including flow rate, pressure, power, air density, speed of rotation, and efficiency by factory tests according to AMCA 210, "Laboratory Methods of Testing Fans for Aerodynamic Performance Rating." Label fans with the AMCA-Certified Ratings Seal.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install power ventilators level and plumb.

B. Equipment Mounting:

1. Support units using restrained elastomeric mounts or having a static deflection of 1 inch.

C. Secure roof-mounted fans to roof curbs with cadmium-plated hardware. See Section 07 72 00 "Roof Accessories" for installation of roof curbs.

D. Install units with clearances for service and maintenance.

E. Label units according to requirements specified in Section 23 05 53 "Identification for HVAC Piping and Equipment."

3.2 CONNECTIONS

A. Drawings indicate general arrangement of ducts and duct accessories. Make final duct connections with flexible connectors.

B. Install ducts adjacent to power ventilators to allow service and maintenance.

C. Ground equipment according to Section 26 05 26 "Grounding and Bonding for Electrical Systems."

D. Connect wiring according to Section 26 05 19 "Low-Voltage Electrical Power Conductors and Cables."

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

B. Tests and Inspections:

1. Verify that shipping, blocking, and bracing are removed.
2. Verify that unit is secure on mountings and supporting devices and that connections to ducts and electrical components are complete. Verify that proper thermal-overload protection is installed in motors, starters, and disconnect switches.
3. Verify that cleaning and adjusting are complete.

4. Disconnect fan drive from motor, verify proper motor rotation direction, and verify fan wheel free rotation and smooth bearing operation. Reconnect fan drive system, align and adjust belts, and install belt guards.
5. Adjust belt tension.
6. Adjust damper linkages for proper damper operation.
7. Verify lubrication for bearings and other moving parts.
8. Verify that manual and automatic volume control and fire and smoke dampers in connected ductwork systems are in fully open position.
9. Disable automatic temperature-control operators, energize motor and adjust fan to indicated rpm, and measure and record motor voltage and amperage.
10. Shut unit down and reconnect automatic temperature-control operators.
11. Remove and replace malfunctioning units and retest as specified above.

C. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Prepare test and inspection reports.

3.4 ADJUSTING

A. Adjust damper linkages for proper damper operation.

B. Adjust belt tension.

C. Comply with requirements in Section 23 05 93 "Testing, Adjusting, and Balancing for HVAC" for testing, adjusting, and balancing procedures.

D. Replace fan and motor pulleys as required to achieve design airflow.

E. Lubricate bearings.

END OF SECTION 23 34 23

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SECTION 26 05 19
LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

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. Building wires and cables rated 600 V and less.
2. Photovoltaic cable, Type PV, rated 2000 V or less.
3. Connectors, splices, and terminations rated 600 V and less.

1.3 DEFINITIONS

A. PV: Photovoltaic.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing agency.

B. Field quality-control reports.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent company, with the experience and capability to conduct the testing indicated, that is a member company of the National Electrical Testing Association (NETA) or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.

1. Testing Agency's Field Supervisor: Person currently certified by the National Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.

PART 2 - PRODUCTS

2.1 CONDUCTORS AND CABLES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Cerro Wire LLC.
2. General Cable; General Cable Corporation.
3. Southwire Company.
4. Or Equal.

B. Copper Conductors: Copper, complying with ASTM B 3 for bare annealed copper and with ASTM B 8 for stranded conductors.

C. Conductor Insulation:

1. Type THHN and Type THWN-2: Comply with UL 83.
2. Type XHHW-2: Comply with UL 44.

2.2 CONNECTORS AND SPLICES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. 3M.
2. Ideal Industries, Inc.
3. O-Z/Gedney; a brand of Emerson Industrial Automation.
4. Or Equal.

B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

2.3 SYSTEM DESCRIPTION

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and application.

B. Comply with CEC.

C. Date of manufacture for cables and splicing/termination materials shall not exceed 12 months prior to installation.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

A. Feeders: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

B. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

3.2 CONDUCTOR INSULATION AND WIRING METHODS

A. Service Entrance: Type XHHW-2, single conductors in raceway.

B. Exposed Feeders: Type XHHW-2, single conductors in raceway.

C. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspaces: Type XHHW-2, single conductors in raceway.

D. Feeders Installed below Raised Flooring: Type XHHW-2, single conductors in raceway.

E. Exposed Branch Circuits, Including in Crawlspaces: Type THHN/THWN-2, single conductors in raceway.

F. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN/THWN-2, single conductors in raceway.

G. Branch Circuits Installed below Raised Flooring: Type THHN/THWN-2, single conductors in raceway.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

A. Conceal cables in finished walls, ceilings, and floors unless otherwise indicated.

B. Complete raceway installation between conductor and cable termination points according to Section 26 05 33 "Raceways and Boxes for Electrical Systems" prior to pulling conductors and cables.

C. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

D. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, which will not damage cables or raceway.

E. Support cables according to Section 26 05 29 "Hangers and Supports for Electrical Systems."

3.4 CONNECTIONS

A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.

B. Make splices, terminations, and taps that are compatible with conductor material.

C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches of slack.

3.5 IDENTIFICATION

A. Identify and color-code conductors and cables according to Section 26 05 53 "Identification for Electrical Systems."

3.6 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly.

3.7 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform the following tests and inspections.

1. After installing conductors and cables and before electrical circuitry has been energized, test service entrance and feeder conductors, and branch circuit conductors feeding critical equipment and services, for compliance with requirements.

a. “Critical equipment and services” for purposes of compliance with this paragraph shall be defined as equipment and services essential for life safety or facility operations and shall include but not be limited to emergency lighting inverters, generator auxiliary and control circuits, fire alarm system power supplies, and area of refuge emergency communication system power supplies.

2. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.

a. Inspect exposed sections of conductor and cable for physical damage and correct connection according to the single-line diagram.
b. Test bolted connections for high resistance using one of the following:

1) A low-resistance ohmmeter.
2) Calibrated torque wrench.
3) Thermographic survey.

c. Inspect compression applied connectors for correct cable match and indentation.
d. Inspect for correct identification.
e. Inspect cable jacket and condition.
f. Insulation-resistance test on each conductor with respect to ground and adjacent conductors. Apply a potential of 1000-V dc for 600-V rated cable for a one-minute duration.
g. Continuity test on each conductor and cable.
h. Uniform resistance of parallel conductors.

3. Initial Infrared Scanning: After Substantial Completion, but before Final Acceptance, perform an infrared scan of each splice in conductors No. 3 AWG and larger. Remove box and equipment covers so splices are accessible to portable scanner. Correct deficiencies determined during the scan.

   a. Instrument: Use an infrared scanning device designed to measure the temperature or to detect significant deviations from normal values. Provide calibration record for device.
   b. Record of Infrared Scanning: Prepare a certified report that identifies switches checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

B. Cables will be considered defective if they do not pass tests and inspections.

C. Test and Inspection Reports: Prepare a written report to record the following:

1. Procedures used.
2. Results that comply with requirements.
3. Results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

END OF SECTION 26 05 19

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SECTION 26 05 26
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

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 grounding and bonding systems and equipment.

B. Section includes grounding and bonding systems and equipment, plus the following special applications:

1. Underground distribution grounding.

1.3 ACTION SUBMITTALS

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

1.4 INFORMATIONAL SUBMITTALS

A. As-Built Data: Plans showing dimensioned as-built locations of grounding features specified in "Field Quality Control" Article, including the following:

1. Test wells.
2. Ground rods.
3. Ground rings.
4. Grounding arrangements and connections for separately derived systems.

B. Qualification Data: For testing agency and testing agency's field supervisor.

C. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

1. In addition to items specified in Section 01 78 23 "Operation and Maintenance Data," include the following:

a. Instructions for periodic testing and inspection of grounding features at grounding connections for separately derived systems based on NFPA 70B and EIA/TIA 607.

1) Tests shall determine if ground-resistance or impedance values remain within specified maximums, and instructions shall recommend corrective action if values do not.
2) Include recommended testing intervals.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: Certified by NETA.

1. Testing Agency's Field Supervisor: Certified by NETA.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Burndy; Part of Hubbell Electrical Systems.
2. ILSCO.
3. O-Z/Gedney; a brand of Emerson Industrial Automation.
4. Or Equal.

2.2 SYSTEM DESCRIPTION

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and application.

B. Comply with UL 467 for grounding and bonding materials and equipment.

2.3 CONDUCTORS

A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.

B. Bare Copper Conductors:

1. Solid Conductors: ASTM B 3.
2. Stranded Conductors: ASTM B 8.
3. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch in diameter.

4. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
5. Bonding Jumper: Copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.

2.4 CONNECTORS

A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.

B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy.

C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

D. Bus-Bar Connectors: Mechanical type, cast silicon bronze, solderless compression-type wire terminals, and long-barrel, two-bolt connection to ground bus bar.

E. Cable-to-Cable Connectors: Compression type, copper or copper alloy.

F. Conduit Hubs: Mechanical type, terminal with threaded hub.

G. Ground Rod Clamps: Mechanical type, copper or copper alloy, terminal with hexagon head bolt.

H. Retain "Service Post Connectors" Paragraph to allow use of split-bolt connectors.

I. Service Post Connectors: Mechanical type, bronze alloy terminal, in short- and long-stud lengths, capable of single and double conductor connections.

J. Signal Reference Grid Clamp: Mechanical type, stamped-steel terminal with hex head screw.

K. Straps: Solid copper, copper lugs. Rated for 600 A.

L. Water Pipe Clamps:

1. Mechanical type, two pieces with zinc-plated bolts.

    a. Material: Die-cast zinc alloy.
    b. Listed for direct burial.

2. U-bolt type with malleable-iron clamp and [copper ground connector] [copper ground connector rated for direct burial].

PART 3 - EXECUTION

3.1 APPLICATIONS

A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger unless otherwise indicated.

B. Grounding Bus: Install in electrical equipment rooms, in rooms housing service equipment, and elsewhere as indicated.

1. Install bus horizontally, on insulated spacers 2 inches minimum from wall, 6 inches above finished floor unless otherwise indicated.
2. Where indicated on both sides of doorways, route bus up to top of door frame, across top of doorway, and down; connect to horizontal bus.

C. Conductor Terminations and Connections:

1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
2. Underground Connections: Welded connectors except at test wells and as otherwise indicated.
3. Connections to Ground Rods at Test Wells: Bolted connectors.
4. Connections to Structural Steel: Welded connectors.
5. Connections to Metallic Ramps: Point of connection shall be on the ramp legs under the ramps.

3.2 EQUIPMENT GROUNDING

A. Install insulated equipment grounding conductors with all feeders and branch circuits.

B. Install insulated equipment grounding conductors with the following items, in addition to those required by CEC:

1. Feeders and branch circuits.
2. Lighting circuits.
3. Receptacle circuits.
4. Single-phase motor and appliance branch circuits.
5. Three-phase motor and appliance branch circuits.
6. Flexible raceway runs.

3.3 INSTALLATION

A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

B. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.

1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
3. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection is required, use a bolted clamp.

C. Grounding and Bonding for Piping:

1. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes; use a bolted clamp connector or bolt a lug-type connector to a pipe flange by using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.
2. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.
3. Bond each aboveground portion of gas piping system downstream from equipment shutoff valve.

D. All metallic ramps, landings, stairs, and handrails not attached to permanent building structural steel shall be permanently bonded and grounded.

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform the following tests and inspections.

1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
3. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, at ground test wells, and at individual ground rods. Make tests at ground rods before any conductors are connected.

    a. Measure ground resistance no fewer than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
    b. Perform tests by fall-of-potential method according to IEEE 81.

B. Grounding system will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

D. Report measured ground resistances that exceed the following values:

1. Power Equipment or System with Capacity of 500 kVA and less: 25 ohms.

E. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify District Construction Manager promptly and include recommendations to reduce ground resistance.

END OF SECTION 26 05 26

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SECTION 26 05 29
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Steel slotted support systems.
2. Conduit and cable support devices.
3. Support for conductors in vertical conduit.
4. Structural steel for fabricated supports and restraints.
5. Mounting, anchoring, and attachment components, including powder-actuated fasteners, mechanical expansion anchors, concrete inserts, clamps, through bolts, toggle bolts, and hanger rods.

B. Related Requirements:

1. Section 26 05 48.16 "Seismic Controls for Electrical Systems" for products and installation requirements necessary for compliance with seismic criteria.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:

a. Slotted support systems, hardware, and accessories.
b. Clamps.
c. Hangers.
d. Sockets.
e. Eye nuts.
f. Fasteners.
g. Anchors.
h. Saddles.
i. Brackets.

2. Include rated capacities and furnished specialties and accessories.

1.4 INFORMATIONAL SUBMITTALS

A. Seismic Qualification Data: Certificates, for hangers and supports for electrical equipment and systems, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
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. Welding certificates.

1.5 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M

B. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Hangers and supports shall withstand the effects of earthquake motions determined according to ASCE/SEI 7

1. The term "withstand" means "the supported equipment and systems will remain in place without separation of any parts when subjected to the seismic forces specified
2. Component Importance Factor 1.0.

B. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame Rating: Class 1.
2. Self-extinguishing according to ASTM D 635.

2.2 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems: Preformed steel channels and angles with minimum 13/32-inch-diameter holes at a maximum of 8 inches on center in at least one surface.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Allied Tube & Conduit; a part of Atkore International.
    b. G-Strut.
    c. Unistrut; Part of Atkore International.
    d. Or Equal

2. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
3. Material for Channel, Fittings, and Accessories: Galvanized steel
4. Channel Width: 1-5/8 inches.
5. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
6. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

C. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for nonarmored 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 made of malleable iron.

D. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M steel plates, shapes, and bars; black and galvanized.

E. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

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. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

        1) Hilti, Inc.
        2) ITW Ramset/Red Head; Illinois Tool Works, Inc.
        3) MKT Fastening, LLC.
        4) Or Equal.

2. Mechanical-Expansion Anchors: Insert-wedge-type, stainlesssteel, for use in hardened Portland cement concrete, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.

    a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1) Hilti, Inc.
2) ITW Ramset/Red Head; Illinois Tool Works, Inc.
3) MKT Fastening, LLC.
4) Or Equal.

3. Concrete Inserts: Steel or malleable-iron, slotted support system units are similar to MSS Type 18 units and comply with MFMA-4 or MSS SP-58.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58 units are suitable for attached structural element.
5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
6. Toggle Bolts: Stainless-steel springhead type.
7. Hanger Rods: Threaded steel.

PART 3 - EXECUTION

3.1 APPLICATION

A. Comply with the following standards for application and installation requirements of hangers and supports, except where requirements on Drawings or in this Section are stricter:

1. NECA 1.

B. Comply with requirements in Section 07 84 13 "Penetration Firestopping" for firestopping materials and installation for penetrations through fire-rated walls, ceilings, and assemblies.

C. Comply with requirements for raceways and boxes specified in Section 26 05 33 "Raceways and Boxes for Electrical Systems."

D. Maximum Support Spacing and Minimum Hanger Rod Size for Raceways: Space supports for EMT, and RMC as scheduled in NECA 1, where its Table 1 lists maximum spacings that are less than those stated inCEC. Minimum rod size shall be 1/4 inch in diameter.

E. 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.

1. Secure raceways and cables to these supports with two-bolt conduit clamps Retain paragraph below for projects where seismic design requirements do not apply. Consider retaining for light-commercial projects only.

F. 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.

B. Raceway Support Methods: In addition to methods described in NECA 1, EMTand RMC may be supported by openings through structure members, according to CEC.

C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.

D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

1. To Wood: Fasten with lag screws or through bolts.
2. To New Concrete: Bolt to concrete inserts.
3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
4. To Existing Concrete: Expansion anchor fasteners.
5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches thick.
6. To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts.
7. To Light Steel: Sheet metal screws.
8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrateby means that comply with seismic-restraint strength and anchorage requirements.

E. Drill holes for expansion anchors in concrete at locations and to depths that avoid the need for reinforcing bars.

3.3 PAINTING

A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.

B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION 26 05 29

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SECTION 26 05 33
RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

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. Metal conduits, tubing, and fittings.
2. Nonmetal conduits, tubing, and fittings.
3. .
4. Surface raceways.
5. Boxes, enclosures, and cabinets.

1.3 DEFINITIONS

A. EMT: Electrical metallic tubing.

B. FMC: Flexible metal conduit.

C. GRC: Galvanized rigid steel conduit.

D. LFMC: Liquid-tight flexible metal conduit.

E. RNC: Rigid non-metallic conduit.

1.4 ACTION SUBMITTALS

A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.

1.5 INFORMATIONAL SUBMITTALS

A. Seismic Qualification Certificates: For enclosures, cabinets, and conduit racks and their mounting provisions, including those for internal components, from manufacturer.

PART 2 - PRODUCTS

2.1 METAL CONDUITS, TUBING, AND FITTINGS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Allied Tube & Conduit; a part of Atkore International.
2. Western Tube and Conduit Corporation.
3. Wheatland Tube Company.
4. Or Equal.

B. Listing and Labeling: Metal conduits, tubing, and fittings shall be listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and application.

C. GRC: Comply with ANSI C80.1 and UL 6.

D. PVC-Coated Steel Conduit: PVC-coated rigid steel conduit.

1. Comply with NEMA RN 1.
2. Coating Thickness: 0.040 inch, minimum.

E. EMT: Comply with ANSI C80.3 and UL 797.

F. FMC: Comply with UL 1; zinc-coated steel.

G. LFMC: Flexible steel conduit with PVC jacket and complying with UL 360.

H. Fittings for Metal Conduit: Comply with NEMA FB 1 and UL 514B.
1. Fittings for EMT:

a. Material: Steel.
b. Type: Compression.

2. Expansion Fittings: PVC or steel to match conduit type, complying with UL 651, rated for environmental conditions where installed, and including flexible external bonding jumper.
3. Coating for Fittings for PVC-Coated Conduit: Minimum thickness of 0.040 inch, with overlapping sleeves protecting threaded joints.

2.2 NONMETALLIC CONDUITS, TUBING, AND FITTINGS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. CANTEX INC.
2. Carlon; ABB Group.
3. Kraloy.

4. Or Equal.

B. Listing and Labeling: Nonmetallic conduits, tubing, and fittings shall be listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and application.

C. RNC: Type EPC-40-PVC, complying with NEMA TC 2 and UL 651 unless otherwise indicated.

D. Fittings for RNC: Comply with NEMA TC 3; match to conduit or tubing type and material.

E. Solvent cements and adhesive shall comply with the testing and product requirements of San Diego Air Pollution Control District Rule 67.0 "Architectural Coatings" and Rule 67.21 “Adhesive Material Application Operations.”

2.3 SURFACE RACEWAYS

A. Listing and Labeling: Surface raceways and tele-power poles shall be listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and application.

B. Surface Metal Raceways: Galvanized steel with snap-on covers complying with UL 5. Manufacturer's standard enamel finish in color selected by Architect.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Hubbell Incorporated; Wiring Device-Kellems.
b. Panduit Corp.
c. Wiremold / Legrand.
d. Or Equal.

C. Surface Nonmetallic Raceways: Two- or three-piece construction, complying with UL 5A, and manufactured of rigid PVC with texture and color selected by Architect from manufacturer's standard colors. Product shall comply with UL 94 V-0 requirements for self-extinguishing characteristics.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Hubbell Incorporated.
b. Panduit Corp.
c. Wiremold / Legrand.
d. Or Equal.

2.4 BOXES, ENCLOSURES, AND CABINETS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Hoffman; a brand of Pentair Equipment Protection.
2. Hubbell Incorporated.
3. RACO; Hubbell.
4. Or Equal.

B. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.

C. Sheet Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.

D. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

E. Device Box Dimensions: 4 inches square by 2-1/8 inches deep.

F. Gangable boxes are allowed.

G. Hinged-Cover Enclosures: Comply with UL 50 and NEMA 250, Type 3R with continuous-hinge cover with flush latch unless otherwise indicated.

1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
2. Interior Panels: Steel; all sides finished with manufacturer's standard enamel.

H. Cabinets:

1. NEMA 250, Type 3Rgalvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
2. Hinged door in front cover with flush latch and concealed hinge.
3. Key latch to match panelboards.
4. Metal barriers to separate wiring of different systems and voltage.
5. Accessory feet where required for freestanding equipment.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

A. Outdoors: Apply raceway products as specified below unless otherwise indicated:

1. Exposed Conduit: GRC.
2. Concealed Conduit, in masonry or poured-in-place concrete walls, aboveground: RNC, Type EPC-40-PVC.
3. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
4. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.

B. Indoors: Apply raceway products as specified below unless otherwise indicated:

1. Exposed, Above 8'-0", Not Subject to Physical Damage: EMT.
2. Exposed, At 8'-0" or Below, Not Subject to Severe Physical Damage: GRC.
3. Exposed and Subject to Severe Physical Damage: GRC. Raceway locations include the following:
   a. Mechanical rooms.
   b. Gymnasiums.
4. Concealed in Ceilings and Interior Walls and Partitions: EMT.
5. Concealed Conduit, in masonry or poured in place concrete walls: RNC, Type EPC-40-PVC.
6. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
7. Damp or Wet Locations: GRC.
8. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4 stainless steel in institutional and commercial kitchens and damp or wet locations.

C. Minimum Raceway Size: 3/4-inch trade size.

D. Raceway Fittings: Compatible with raceways and suitable for use and location.

1. Rigid Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings listed for use with this type of conduit. Patch and seal all joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Use sealant recommended by fitting manufacturer and apply in thickness and number of coats recommended by manufacturer.
3. EMT: Use compression type; steel Comply with NEMA FB 2.10.
4. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.

E. Install surface raceways only where indicated on Drawings.

F. Do not install nonmetallic conduit where ambient temperature exceeds 120 deg F.

3.2 INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with CEC limitations for types of raceways allowed in specific occupancies and number of floors.

B. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

C. Complete raceway installation before starting conductor installation.

D. Comply with requirements in Section 26 05 29 "Hangers and Supports for Electrical Systems" for hangers and supports.

E. Arrange stub-ups so curved portions of bends are not visible above finished slab.

F. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed. Support within 12 inches of changes in direction.

G. Conceal conduit and EMT within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.

H. Support conduit within 12 inches of enclosures to which attached.

I. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.

J. .

K. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors including conductors smaller than No. 4 AWG.

L. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch trade size and insulated throat metal bushings on 1-1/2-inch trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.

M. Install raceways square to the enclosure and terminate at enclosures with locknuts. Install locknuts hand tight plus 1/4 turn more.

N. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to assure a continuous ground path.

O. Cut conduit perpendicular to the length. For conduits 2-inch trade size and larger, use roll cutter or a guide to make cut straight and perpendicular to the length.

P. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire. Cap underground raceways designated as spare above grade alongside raceways in use.

Q. Surface Raceways:

1. Install surface raceway with a minimum 2-inch radius control at bend points.
2. Secure surface raceway with screws or other anchor-type devices at intervals not exceeding 48 inches and with no less than two supports per straight raceway section. Support surface raceway according to manufacturer's written instructions. Tape and glue are not acceptable support methods.

R. Install raceway sealing fittings at accessible locations according to CEC and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings according to CEC.

S. Install devices to seal raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal the interior of all raceways at the following points:

1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
2. Where an underground service raceway enters a building or structure.
3. Where otherwise required by CEC.

T. Comply with manufacturer's written instructions for solvent welding RNC and fittings.

U. Expansion-Joint Fittings:

1. Install in each run of aboveground RNC that is located where environmental temperature change may exceed 30 deg F and that has straight-run length that exceeds 25 feet. Install in each run of aboveground GRC and EMT conduit that is located where environmental temperature change may exceed 100 deg F and that has straight-run length that exceeds 100 feet.
2. Install type and quantity of fittings that accommodate temperature change listed for each of the following locations:

    a. Outdoor Locations Not Exposed to Direct Sunlight: 125 deg F temperature change.
    b. Outdoor Locations Exposed to Direct Sunlight: 155 deg F temperature change.
    c. Indoor Spaces Connected with Outdoors without Physical Separation: 125 deg F temperature change.
    d. Attics: 135 deg F temperature change.

3. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per deg F of temperature change for PVC conduits. Install fitting(s) that provide expansion and contraction for at least 0.000078 inch per foot of length of straight run per deg F of temperature change for metal conduits.
4. Install expansion fittings at all locations where conduits cross building or structure expansion joints.
5. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at time of installation. Install conduit supports to allow for expansion movement.

V. Flexible Conduit Connections: Comply with NEMA RV 3. Use a maximum of 72 inches of flexible conduit for recessed and semi-recessed luminaires, equipment subject to vibration, noise transmission, or movement; and for transformers and motors.

1. Use LFMC in damp or wet locations.

W. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to top of box for control devices and to the bottom of box for receptacles and convenience devices, unless otherwise indicated.

X. Horizontally separate boxes mounted on opposite sides of walls so they are not in the same vertical channel.

Y. Locate boxes so that cover or plate will not span different building finishes.

Z. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.

AA. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.

3.3 FIRESTOPPING

A. Install firestopping at penetrations of fire-rated floor and wall assemblies. Comply with requirements in Section 07 84 13 "Penetration Firestopping."

3.4 PROTECTION

A. Protect coatings, finishes, and cabinets from damage and deterioration.

1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION 26 05 33

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SECTION 26 05 53
IDENTIFICATION FOR ELECTRICAL SYSTEMS

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. Identification for raceways.
2. Identification of power and control cables.
3. Identification for conductors.
4. Instruction signs.
5. Equipment identification labels.
6. Miscellaneous identification products.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for electrical identification products.

B.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Comply with ASME A13.1 and IEEE C2

B. Comply with CEC.

C. Comply with ANSI Z535.4 for safety signs and labels.

D. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

E. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

2.2 COLOR AND LEGEND REQUIREMENTS

A. Raceways and Cables Carrying Circuits at 600 V or Less:

1. Black letters on an orange field.
2. Legend: Indicate voltage and system or service type.

B. Color-Coding for Phase- and Voltage-Level Identification, 600 V or Less: Use colors listed below for ungrounded service, feeders, and branch-circuit conductors.

1. Color shall be factory applied or field applied for sizes larger than No. 8 AWG.
2. Colors for 208/120-V Circuits:

a. Phase A: Black.
b. Phase B: Red.
c. Phase C: Blue.

3. Colors for 240-V Circuits:

a. Phase A: Black.
b. Phase B: Red.

4. Colors for 480/277-V Circuits:

a. Phase A: Brown.
b. Phase B: Orange.
c. Phase C: Yellow.

5. Color for Neutral: White.
6. Color for Equipment Grounds: Bare copper orGreen.
7. Colors for Isolated Grounds: Green with white stripe.

2.3 LABELS

A. Vinyl Wraparound Labels: Preprinted, flexible labels laminated with a clear, weather- and chemical-resistant coating and matching wraparound clear adhesive tape for securing label ends.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Brady Corporation.
b. emedco.
c. Panduit Corp.
d. Or Equal.

B. Snap-around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeves, with diameters sized to suit diameters and that stay in place by gripping action.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Brady Corporation.
    b. Marking Services, Inc.
    c. Panduit Corp.
    d. Or Equal.

C. Self-Adhesive Wraparound Labels: Preprinted], 3-mil- (0.08-mm-) thick, vinylflexible label with acrylic pressure-sensitive adhesive.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Brady Corporation.
    b. emedco.
    c. Panduit Corp.
    d. Or Equal
2. Self-Lamination: Clear; UV-, weather- and chemical-resistant; self-laminating, protective shield over the legend. Labels sized to fit the cablediameter, such that the clear shield overlaps the entire printed legend.
3. Marker for Labels: Permanent, waterproof, black ink marker recommended by tag manufacturer.
4. Marker for Labels: Machine-printed, permanent, waterproof, black ink recommended by printer manufacturer.

D. Self-Adhesive Labels: Vinyl, thermal, transfer-printed, 3-mil-thick, multicolor, weather- and UV-resistant, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment unless otherwise indicated.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Brady Corporation.
    b. emedco.
    c. Panduit Corp.
    d. Or Equal.

2. Minimum Nominal Size:

    a. 1-1/2 by 6 inches for raceway and conductors.
    b. 3-1/2 by 5 inches for equipment.

2.4 BANDS AND TUBES:

A. Snap-around, Color-Coding Bands: Slit, pretension, flexible, solid-colored acrylic sleeves, and 2 inches long, with diameters sized to suit diameters and that stay in place by gripping action.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Brady Corporation.
b. Marking Services, Inc.
c. Panduit Corp.
d. Or Equal

B. Heat-Shrink Preprinted Tubes: Flame-retardant polyolefin tubes with machine-printed identification labels, sized to suit diameters of and shrunk to fit firmly around cables they identify. Full shrink recovery occurs at a maximum of 200 degree F. Comply with UL 224.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Brady Corporation.
b. Marking Services, Inc.
c. Panduit Corp.
d. Or Equal

2.5 TAPES AND STENCILS

A. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Ideal Industries, Inc.
b. Marking Services, Inc.
c. Panduit Corp.
d. Or Equal

B. Self-Adhesive Vinyl Tape: Colored, heavy duty, waterproof, fade resistant; not less than 3 mils thick by 1 to 2 inches wide; compounded for outdoor use.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Brady Corporation.
b. emedco.
c. Marking Services, Inc.

d. Or Equal

2. Color and Printing:

a. Comply with ANSI Z535.1, ANSI Z535.2, ANSI Z535.3, ANSI Z535.4, and ANSI Z535.5.
b. Inscriptions for Red-Colored Tapes: "ELECTRIC LINE, HIGH VOLTAGE".
c. Inscriptions for Orange-Colored Tapes: "TELEPHONE CABLE, CATV CABLE, COMMUNICATIONS CABLE, OPTICAL FIBER CABLE".

2.6 TAGS

A. Metal Tags: Brass or aluminum, 2 by 2 by 0.05 inch, with stamped legend, punched for use with self-locking cable tie fastener.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Brady Corporation.
b. emedco.
c. Seton Identification Products.
d. Or Equal

B. Nonmetallic Preprinted Tags: Polyethylene tags, 0.015 inch thick, color-coded for phase and voltage level, with factory [printed permanent designations; punched for use with self-locking cable tie fastener.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Brady Corporation.
b. emedco.
c. Panduit Corp.
d. Or Equal

2.7 SIGNS

A. Baked-Enamel Signs:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Carlton Industries, LP.
b. emedco.
c. Marking Services, Inc.
d. Or Equal

2. Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application.

3. 1/4-inch grommets in corners for mounting.
4. Nominal Size: 7 by 10 inches.

B. Metal-Backed Butyrate Signs:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Brady Corporation.
    b. emedco.
    c. Marking Services, Inc.
    d. Or Equal

2. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs, with 0.0396-inch galvanized-steel backing and with colors, legend, and size required for application.
3. 1/4-inch grommets in corners for mounting.
4. Nominal Size: 10 by 14 inches.

C. Laminated Acrylic or Melamine Plastic Signs:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Brady Corporation.
    b. emedco.
    c. Marking Services, Inc.
    d. Or Equal

2. Engraved legend.
3. Thickness:

    a. For signs up to 20 sq. inches, minimum 1/16-inch-.
    b. For signs larger than 20 sq. inches, 1/8 inch thick.
    c. Engraved legend with black letters on white face.
    d. Punched or drilled for mechanical fasteners.
    e. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

2.8 CABLE TIES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Ideal Industries, Inc.
2. Marking Services, Inc.
3. Panduit Corp.
4. Or Equal

B. General-Purpose Cable Ties: Fungus inert, self-extinguishing, one piece, self-locking, Type 6/6 nylon.

1. Minimum Width: 3/16 inch.
2. Tensile Strength at 73 deg F according to ASTM D 638: 12,000 psi.
3. Temperature Range: Minus 40 to plus 185 deg F.
4. Color: Black, except where used for color-coding.

C. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self-extinguishing, one piece, self-locking, Type 6/6 nylon.

1. Minimum Width: 3/16 inch.
2. Tensile Strength at 73 deg F according to ASTM D 638: 12,000 psi.
3. Temperature Range: Minus 40 to plus 185 deg F.
4. Color: Black.

2.9 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Paint: Comply with requirements in painting Sections for paint materials and application requirements. Retain paint system applicable for surface material and location (exterior or interior).

B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 PREPARATION

A. Self-Adhesive Identification Products: Before applying electrical identification products, clean substrates of substances that could impair bond, using materials and methods recommended by manufacturer of identification product.

3.2 INSTALLATION

A. Verify and coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and operation and maintenance manual. Use consistent designations throughout Project.

B. Install identifying devices before installing acoustical ceilings and similar concealment.

C. Verify identity of each item before installing identification products.

D. Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment. Install access doors or panels to provide view of identifying devices.

E. Apply identification devices to surfaces that require finish after completing finish work.

F. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.

G. Attach plastic raceway and cable labels that are not self-adhesive type with clear vinyl tape, with adhesive appropriate to the location and substrate.

H. Cable Ties: For attaching tags. Use general-purpose type, except as listed below:

1. Outdoors: UV-stabilized nylon.
2. In Spaces Handling Environmental Air: Plenum rated.

I. Painted Identification: Comply with requirements in painting Sections for surface preparation and paint application.

J. Aluminum Wraparound Marker Labels and Metal Tags: Secure tight to surface of conductor or cable at a location with high visibility and accessibility.

K. System Identification Color-Coding Bands for Raceways and Cables: Each color-coding band shall completely encircle cable or conduit. Place adjacent bands of two-color markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.

3.3 IDENTIFICATION SCHEDULE

A. Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment. Install access doors or panels to provide view of identifying devices.

B. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, pull points, and locations of high visibility. Identify by system and circuit designation.

C. Accessible Raceways and Cables within Buildings: Identify the covers of each junction and pull box of the following systems with self-adhesive vinyl labels containing the wiring system legend and system voltage. System legends shall be as follows:

1. Label Colors:

System Type	Identification	Background	Lettering
Lighting and Power Voltage	Standard	Orange	White
Fire Alarm	FIRE	Red	White

2. Label Sizes:

System Type	Size	Background	Lettering
Lighting and Power	2” (w) x3” (h)	Orange	3/8” White
Fire Alarm System	2” (w) x3” (h)	Red	3/8” White

D. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase.

E. Control-Circuit Conductor Termination Identification: For identification at terminations, provide heat shrink preprinted tubes with the conductor designation.

F. Branch Circuit Conductor Identification: For conductors in pull and junction boxes use heat shrink preprinted tubes with the conductor branch circuit number and panel designation.

G. Receptacle Cover Plates: For all receptacles the cover plates shall be engraved or silkscreened with the panel and circuit number identified.

H. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and operation and maintenance manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm unless equipment is provided with its own identification.

1. Labeling Instructions:

   a. Indoor Equipment: Engraved, laminated acrylic or melamine plastic label, punched or drilled for mechanical fasteners. Unless otherwise indicated, provide a single line of text with 1/2-inch-high letters on 1-1/2-inch-high label; where two lines of text are required, use labels 2 inches high.
   b. Outdoor Equipment: Engraved, laminated acrylic or melamine label.
   c. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
   d. Unless labels are provided with self-adhesive means of attachment, fasten them with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.

2. Equipment To Be Labeled:

   a. Panelboards: Typewritten directory of circuits in the location provided by panelboard manufacturer. Panelboard identification shall be in the form of an engraved, laminated acrylic or melamine label.
   b. Enclosures and electrical cabinets.
   c. Access doors and panels for concealed electrical items.
   d. Enclosed switches.
   e. Enclosed circuit breakers.

f. Enclosed controllers.
g. Receptacle and switch cover plates

END OF SECTION 26 05 53

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SECTION 26 27 26
WIRING DEVICES

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. Standard-grade receptacles 125 V, 20 A.
2. GFCI receptacles 125 V, 20 A.
3. Twist-locking receptacles.

B. Related Requirements:

1. Section 26 05 53 “Identification for Electrical Systems” for labeling of device cover plates.

1.3 DEFINITIONS

A. EMI: Electromagnetic interference.

B. GFCI: Ground-fault circuit interrupter.

C. Pigtail: Short lead used to connect a device to a branch-circuit conductor.

D. RFI: Radio-frequency interference.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.

1.5 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

PART 2 - PRODUCTS

2.1 GENERAL WIRING-DEVICE REQUIREMENTS

A. Wiring Devices, Components, and Accessories: Listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and application.

B. Comply with CEC.

C. Comply with NEMA WD 1.

D. Devices for District-Furnished Equipment:

1. Receptacles: Match plug configurations.

E. Device Color:

1. Wiring Devices Connected to Normal Power System: unless otherwise indicated or required by CEC or device listing.
2. Isolated-Ground Receptacles: Orange.

F. Source Limitation: Obtain each type of wiring device and associated wall plate from single source from single manufacturer.

2.2 STRAIGHT-BLADE RECEPTACLES

A. Duplex Receptacles, 125 V, 20 A:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Hubbell Incorporated; Wiring Device-Kellems.
b. Leviton Manufacturing Co., Inc.
c. Pass & Seymour/Legrand (Pass & Seymour).
d. Or Equal.

2. Description: Two pole, three wire, and self-grounding.
3. Configuration: NEMA WD 6, Configuration 5-20R.
4. Standards: Comply with UL 498 and FS W-C-596.
5. Grade: Heavy duty.

B. Isolated-Ground Duplex Receptacles, 125 V, 20 A:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Hubbell Incorporated; Wiring Device-Kellems.
b. Leviton Manufacturing Co., Inc.
c. Pass & Seymour/Legrand (Pass & Seymour).

d. Or Equal

2. Description: Straight blade; equipment grounding contacts shall be connected only to green grounding screw terminal of the device and with inherent electrical isolation from mounting strap. Isolation shall be integral to receptacle construction and not dependent on removable parts. Two pole, three wire, and self-grounding.
3. Configuration: NEMA WD 6, Configuration 5-20R.
4. Standards: Comply with UL 498 and FS W-C-596.

2.3 GFCI RECEPTACLES 125 V, 20 A

A. Duplex GFCI Receptacles, 125 V, 20 A: Heavy-Duty Specification Grade.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Hubbell Incorporated; Wiring Device-Kellems.
b. Leviton Manufacturing Co., Inc.
c. Pass & Seymour/Legrand (Pass & Seymour).
d. Or equal.

2. Description: Integral GFCI with "Test" and "Reset" buttons and LED indicator light. Two pole, three wire, and self-grounding.
3. Configuration: NEMA WD 6, Configuration 5-20R.
4. Type: Feed through.
5. Standards: Comply with UL 498, UL 943 Class A, and FS W-C-596.

2.4 TWIST-LOCKING RECEPTACLES

A. Single Convenience Receptacles, 125 V, 20 A:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Hubbell Incorporated; Wiring Device-Kellems.
b. Leviton Manufacturing Co., Inc.
c. Pass & Seymour/Legrand (Pass & Seymour).
d. Or Equal.

2. Configuration: NEMA WD 6, Configuration L5-20R.
3. Standards: Comply with UL 498
4. Grade: Heavy duty.

B. Single Convenience Receptacles, 250 V, 20 A:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Hubbell Incorporated; Wiring Device-Kellems.
b. Leviton Manufacturing Co., Inc.
c. Pass & Seymour/Legrand (Pass & Seymour).
d. Or Equal.

2. Configuration: NEMA WD 6, Configuration L6-20R.
3. Standards: Comply with UL 498
4. Grade: Heavy duty.

2.5 WALL PLATES

A. Single Source: Obtain wall plates from same manufacturer of wiring devices.

B. Single and combination types shall match corresponding wiring devices.

1. Plate-Securing Screws: Metal with head color to match plate finish.
2. Material for Finished Spaces: 0.035-inch-thick, satin-finished, Type 302 stainless steel.
3. Material for Unfinished Spaces: Galvanized steel.
4. Material for Damp Locations: Cast aluminum with spring-loaded lift cover, and listed and labeled for use in wet and damp locations.

C. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with Type 3R, weather-resistant**,** die-cast aluminum with lockable cover.

2.6 FINISHES

A. Device Color:

1. Wiring Devices Connected to Normal Power System: [White unless otherwise indicated or required by CEC or device listing.

B. Wall Plate Color: 0.035-inch-thick, satin-finished, Type 302 stainless steel.

C. Receptacle and Cover Plates: For all receptacles, the plates shall be engraved or silk screened with the panel and circuit number identified for each device

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with NECA 1, including mounting heights listed in that standard or per the CEC unless otherwise noted on Drawings.

B. Coordination with Other Trades:

1. Protect installed devices and their boxes. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of boxes.
2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
3. Install wiring devices after all wall preparation, including painting, is complete.

C. Conductors:

1. Do not strip insulation from conductors until right before they are spliced or terminated on devices.
2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
3. The length of free conductors at outlets for devices shall meet provisions of CEC, Article 300, without pigtails.
4. Existing Conductors:

    a. Cut back and pigtail, or replace all damaged conductors.
    b. Straighten conductors that remain and remove corrosion and foreign matter.
    c. Pigtailing existing conductors is permitted, provided the outlet box is large enough.

D. Device Installation:

1. Replace devices that have been in temporary use during construction and that were installed before building finishing operations were complete.
2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
4. Connect devices to branch circuits using pigtails that are not less than 6 inches in length.
5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, two-thirds to three-fourths of the way around terminal screw.
6. Use a torque screwdriver when a torque is recommended or required by manufacturer.
7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
8. Tighten unused terminal screws on the device.
9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device-mounting screws in yokes, allowing metal-to-metal contact.

E. Receptacle Orientation:

1. Install ground pin of vertically mounted receptacles up, and on horizontally mounted receptacles to the left.

F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.

G. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.

3.2 GFCI RECEPTACLES

A. Install non-feed-through-type GFCI receptacles where protection of downstream receptacles is not required.

3.3 IDENTIFICATION

A. Comply with Section 26 05 53 "Identification for Electrical Systems."

B. Receptacle Cover Plates: Engraved or silk screened with panel and circuit number identified for each device.

3.4 FIELD QUALITY CONTROL

A. Test Instruments: Use instruments that comply with UL 1426.

B. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated digital-display indicators of measurement.

C. Tests for Receptacles:

1. Line Voltage: Acceptable range is 105 to 132 V.
2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is unacceptable.
3. Ground Impedance: Values of up to 2 ohms are acceptable.
4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
5. Using the test plug, verify that the device and its outlet box are securely mounted.
6. Tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new ones, and retest as specified above.

D. Wiring device will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports.

END OF SECTION 26 27 26

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SECTION 26 28 13
FUSES

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. Cartridge fuses rated 600 V ac and less for use in the following:
   a. Enclosed switches.

1.3 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fuses to include in emergency, operation, and maintenance manuals. In addition to items specified in Section 01 77 00 "Closeout Procedures," include the following:

1. Ambient temperature adjustment information.
2. Current-limitation curves for fuses with current-limiting characteristics.
3. Time-current coordination curves (average melt) and current-limitation curves (instantaneous peak let-through current) for each type and rating of fuse used on the Project. Submit in PDF format.
4. Coordination charts and tables and related data.

1.4 FIELD CONDITIONS

A. Where ambient temperature to which fuses are directly exposed is less than 40 deg F or more than 100 deg F, apply manufacturer's ambient temperature adjustment factors to fuse ratings.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Cooper Bussmann; a division of Cooper Industries.
2. Littelfuse, Inc.
3. Mersen USA.
4. Or Equal.

B. Source Limitations: Obtain fuses, for use within a specific product or circuit, from single source from single manufacturer.

2.2 CARTRIDGE FUSES

A. Characteristics: NEMA FU 1, current-limiting, nonrenewable cartridge fuses with voltage ratings consistent with circuit voltages.
1. Type RK-5: 600Vtime delay. Use this type of fuse with HVAC units.
2. Type CC: 600-V, time delay.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Comply with NEMA FU 1 for cartridge fuses.

D. Comply with NFPA 70.

E. Coordinate fuse ratings with utilization equipment nameplate limitations of maximum fuse size and with system short-circuit current levels.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine fuses before installation. Reject fuses that are moisture damaged or physically damaged.

B. Examine holders to receive fuses for compliance with installation tolerances and other conditions affecting performance, such as rejection features.

C. Examine utilization equipment nameplates and installation instructions. Install fuses of sizes and with characteristics appropriate for each piece of equipment.

D. Evaluate ambient temperatures to determine if fuse rating adjustment factors must be applied to fuse ratings.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 FUSE APPLICATIONS

A. Cartridge Fuses:

1. Motor Branch Circuits: Class RK5, time delay.
2. Large Motor Branch (601-4000 A): Class L, time delay.

3.3 INSTALLATION

A. Install fuses in fusible devices. Arrange fuses so rating information is readable without removing fuse.

B. Install spare-fuse cabinet(s) in location shown on the Drawings or as indicated in the field by District Construction Manager.

3.4 IDENTIFICATION

A. Install labels complying with requirements for identification specified in Section 26 05 53 "Identification for Electrical Systems" and indicating fuse replacement information inside of door of each fused switch and adjacent to each fuse block, socket, and holder.

END OF SECTION 26 28 13

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SECTION 26 28 16
ENCLOSED SWITCHES AND CIRCUIT BREAKERS

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. Fusible switches.
2. Nonfusible switches.
3. Enclosures.

1.3 DEFINITIONS

A. NC: Normally closed.

B. NO: Normally open.

C. SPDT: Single pole, double throw.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated. Include dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.

1. Enclosure types and details for types other than NEMA 250, Type 1.
2. Current and voltage ratings.
3. Short-circuit current ratings (interrupting and withstand, as appropriate).
4. Include evidence of NRTL listing for series rating of installed devices.
5. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices, accessories, and auxiliary components.

B. Shop Drawings: For enclosed switches and circuit breakers. Include plans, elevations, sections, details, and attachments to other work.

1. Wiring Diagrams: For power wiring.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified testing agency.

B. Seismic Qualification Certificates: For enclosed switches and circuit breakers, accessories, and components, from manufacturer.

C. Field quality-control reports.

1. Test procedures used.
2. Test results that comply with requirements.
3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For enclosed switches and circuit breakers to include in emergency, operation, and maintenance manuals. In addition to items specified in Section 01 78 23 "Operation and Maintenance Data," include the following:

1. Manufacturer's written instructions for testing and adjusting enclosed switches and circuit breakers.
2. Time-current coordination curves (average melt) for each type and rating of overcurrent protective device; include selectable ranges for each type of overcurrent protective device. Provide in PDF format.

1.7 QUALITY ASSURANCE

A. Testing Agency Qualifications: Accredited by NETA.

1. Testing Agency's Field Supervisor: Currently certified by NETA to supervise on-site testing.

1.8 FIELD CONDITIONS

A. Environmental Limitations: Rate equipment for continuous operation under the following conditions unless otherwise indicated:

1. Ambient Temperature: Not less than minus 22 deg F and not exceeding 104 deg F.
2. Altitude: Not exceeding 6600 feet.

B. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by District or others unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:

1. Notify District Construction Manager no fewer than seven days in advance of proposed interruption of electric service.
2. Indicate method of providing temporary electric service.
3. Do not proceed with interruption of electric service without District Construction Manager's written permission.
4. Comply with NFPA 70E.

1.9 COORDINATION

A. Coordinate layout and installation of switches, circuit breakers, and components with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

1.10 WARRANTY

A. Manufacturer's Warranty: Manufacturer and Installer agree to repair or replace components that fail in materials or workmanship within specified warranty period.

1. Warranty Period: One year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Enclosed switches and circuit breakers shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

B. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified.

2.2 GENERAL REQUIREMENTS

A. Source Limitations: Obtain enclosed switches and circuit breakers, overcurrent protective devices, components, and accessories, within same product category, from single source from single manufacturer.

B. Product Selection for Restricted Space: Drawings indicate maximum dimensions for enclosed switches and circuit breakers, including clearances between enclosures, and adjacent surfaces and other items. Comply with indicated maximum dimensions.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and application.

D. Comply with CEC.

2.3 FUSIBLE SWITCHES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Eaton Electrical Sector; Eaton Corporation.
2. Siemens Industry, Inc.
3. Square D; by Schneider Electric.
4. Or Equal.

B. Type HD, Heavy Duty.

1. Singlethrow.
2. Three pole.
3. 600V ac.
4. 1200 A and smaller.
5. UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate specifiedfuses.
6. Lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

C. Accessories:

1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.
3. Lugs: Mechanical type, suitable for number, size, and conductor material.
4. Service-Rated Switches: Labeled for use as service equipment.

2.4 NONFUSIBLE SWITCHES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Eaton Electrical Sector; Eaton Corporation.
2. Siemens Industry, Inc.
3. Square D; by Schneider Electric.
4. Or Equal.

B. Type HD, Heavy Duty, Single Throw, 600V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

C. Type HD, Heavy Duty, Three Pole, Double Throw, 600V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

D. Accessories:

1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Lugs: Mechanical type, suitable for number, size, and conductor material.

2.5 ENCLOSURES

A. Enclosed Switches and Circuit Breakers: NEMA AB 1, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location.

B. Enclosure Finish: The enclosure shall be gray baked enamel paint, electrodeposited on cleaned, phosphatized galvannealed steel (NEMA 250 Types 3R).

C. Operating Mechanism: The circuit-breaker operating handle shall be externally operable with the operating mechanism being an integral part of the box, not the cover. The cover interlock mechanism shall have an externally operated override. The override shall not permanently disable the interlock mechanism, which shall return to the locked position once the override is released. The tool used to override the cover interlock mechanism shall not be required to enter the enclosure in order to override the interlock.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine elements and surfaces to receive enclosed switches and circuit breakers for compliance with installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected

1. Commencement of work shall indicate Installer's acceptance of the areas and conditions as satisfactory.

3.2 PREPARATION

A. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:

1. Notify District Construction Manager no fewer than seven days in advance of proposed interruption of electric service.
2. Indicate method of providing temporary electric service.
3. Do not proceed with interruption of electric service without District Construction Manager's written permission.
4. Comply with NFPA 70E.

3.3 ENCLOSURE ENVIRONMENTAL RATING APPLICATIONS

A. Enclosed Switches and Circuit Breakers: Provide enclosures at installed locations with the following environmental ratings.

1. Indoor, Dry and Clean Locations: NEMA 250, Type 1.
2. Outdoor Locations: NEMA 250, Type 3R .

3.4 INSTALLATION

A. Coordinate layout and installation of switches, circuit breakers, and components with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

B. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.

C. Install fuses in fusible devices.

D. Comply with NECA 1.

3.5 IDENTIFICATION

A. Comply with requirements in Section 26 05 53 "Identification for Electrical Systems."

1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
2. Label each enclosure with engraved metal or laminated-plastic nameplate.

3.6 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Tests and Inspections for Switches:

1. Visual and Mechanical Inspection:

a. Inspect physical and mechanical condition.
b. Inspect anchorage, alignment, grounding, and clearances.
c. Verify that the unit is clean.
d. Verify blade alignment, blade penetration, travel stops, and mechanical operation.
e. Verify that fuse sizes and types match the Specifications and Drawings.
f. Verify that each fuse has adequate mechanical support and contact integrity.
g. Inspect bolted electrical connections for high resistance using one of the two following methods:

1) Use a low-resistance ohmmeter.

a) Compare bolted connection resistance values to values of similar connections. Investigate values that deviate from those of similar bolted connections by more than 50 percent of the lowest value.

2) Verify tightness of accessible bolted electrical connections by calibrated torque-wrench method in accordance with manufacturer's published data or NETA ATS Table 100.12.

a) Bolt-torque levels shall be in accordance with manufacturer's published data. In the absence of manufacturer's published data, use NETA ATS Table 100.12.

h. Verify that operation and sequencing of interlocking systems is as described in the Specifications and shown on the Drawings.
i. Verify correct phase barrier installation.
j. Verify lubrication of moving current-carrying parts and moving and sliding surfaces.

2. Electrical Tests:

a. Perform resistance measurements through bolted connections with a low-resistance ohmmeter. Compare bolted connection resistance values to values of similar connections. Investigate values that deviate from adjacent poles or similar switches by more than 50 percent of the lowest value.
b. Measure contact resistance across each switchblade fuseholder. Drop values shall not exceed the high level of the manufacturer's published data. If manufacturer's published data are not available, investigate values that deviate from adjacent poles or similar switches by more than 50 percent of the lowest value.
c. Perform insulation-resistance tests for one minute on each pole, phase-to-phase and phase-to-ground with switch closed, and across each open pole. Apply voltage in accordance with manufacturer's published data. In the absence of manufacturer's published data, use Table 100.1 from the NETA ATS. Investigate values of insulation resistance less than those published in Table 100.1 or as recommended in manufacturer's published data.
d. Measure fuse resistance. Investigate fuse-resistance values that deviate from each other by more than 15 percent.

3.7 ADJUSTING

A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.

END OF SECTION 26 28 16

San Diego Unified School District Guide Specifications
Section Version: August 2021

SAN DIEGO UNIFIED SCHOOL DISTRICT
PRE-LABOR DAY TRADITIONAL 2022-23 INSTRUCTIONAL CALENDAR

REVISED 11.12.2021

*(**ADOPTED BY THE BOARD OF EDUCATION 1-11-22**)*

	M	T	W	Th	F	M	T	W	Th	F	M	T	W	Th	F	M	T	W	Th	F	M	T	W	Th	F
JULY					1	4 **H**	5	6	7	8	11	12	13	14	15	18	19	20	21	22	25	26	27	28	29
AUGUST	1	2	3	4	5	8	9	10	11	12	15	16	17	18	19	22	23	24	25	26	29 **F**	30	31		
SEPTEMBER				1	2	5 **H**	6	7	8	9	12	13	14	15	16	19	20	21	22	23	26	27	28	29	30
OCTOBER	3	4	5	6	7	10	11	12	13	14	17	18	19	20	21	24	25	26	27	28	31				
NOVEMBER		1	2	3	4	7	8	9	10	11 **H**	14	15	16	17	18	21 **NI**	22 **NI**	23 **NI**	24 **H**	25 **H**	28	29	30		
DECEMBER				1	2	5	6	7	8	9	12	13	14	15	16	19 **NI**	20 **NI**	21 **NI**	22 **NI**	23 **H**	26 **H**	27 **NI**	28 **NI**	29 **NI**	30 **H**
JANUARY	2 **H**	3	4	5	6	9	10	11	12	13	16 **H**	17	18	19	20	23	24	25	26	27	30	31			
FEBRUARY			1	2	3	6	7	8	9	10	13	14	15	16	17 **H**	20 **H**	21	22	23	24	27	28			
MARCH			1	2	3	6	7	8	9	10	13	14	15	16	17	20	21	22	23	24	27 **NI**	28 **NI**	29 **NI**	30 **NI**	31 **NI**
APRIL	3	4	5	6	7	10	11	12	13	14	17	18	19	20	21	24	25	26	27	28					
MAY	1	2	3	4	5	8	9	10	11	12	15	16	17	18	19	22	23	24	25	26 **NI**	29 **H**	30	31		
JUNE				1	2	5	6	7	8	9	12	13	14 **L**	15	16	19	20	21	22	23	26	27	28	29	30

	TOTALS
Jul	0
Aug	3
Sep	21
Oct	21
Nov	16
Dec	12
Jan	20
Feb	18
Mar	18
Apr	20
May	21
Jun	10
Total	**180**

H	Holiday	**Blue**
F/L	First/Last Day of School	**Orange**
N/I	Non-Instructional Day (No School)	**Green**
I	Instruction Day	**Yellow**

2022 - 2023