FEDERAL WAY
PUBLIC SCHOOLS

FEDERAL WAY PUBLIC SCHOOLS
BID DOCUMENTS

Federal Way High School CTE Storage
Project No. 2025-02-SU

Project Manual

Federal Way Public Schools
Federal Way, WA
March 6, 2025

SECTION 000107 – DIRECTORY

OWNER

Company:	Federal Way Public Schools
Address:	1211 S. 332nd Street
	Federal Way, WA 98003
Contact:	Stephen Nutt, Project Manager
Email:	snutt@fwps.org
Phone #:	(253)261-5506

ARCHITECT

Company:	Bassetti Architects
Address:	71 Columbia Street, Suite 500
	Seattle, WA 98104
Contact:	Jordan Kiel, Principal
Email:	jkiel@bassettiarch.com
Phone #:	(206)340-9500

END OF DIRECTORY SECTION

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SECTION 001113 – BID SOLICITATION

Name of Project: **Federal Way High School CTE Storage**
Project No. 2025-02-SU
30611 16th Avenue S.
Federal Way, WA 98003

Owner: **Federal Way Public Schools**
1211 S. 332nd St.
Federal Way, WA 98003
Contact: Stephen Nutt, Project Manager
Email: snutt@fwps.org
Phone: (253)261-5506

Architect: **Bassetti Architects**
71 Columbia Street, Suite 500
Seattle, WA 98104
Contact: Jordan Kiel, Principal
Email: jkiel@bassettiarch.com
Phone: (206)340-9500

Description of Work: Work may be generally described as:

The project will create a storage space for the existing CTE classroom, as part of the Federal Way High School (FWHS) Career and Technical Education (CTE) curriculum. This space is an extension of the existing vocational/woodshop area at the Federal Way High School. The project (CTE Storage Canopy) is located directly adjacent to the existing Federal Way High School building, immediately west of the Woodshop classroom. The CTE storage canopy consists of a fenced enclosure and a canopy for class materials. It will require demolition of existing concrete slab within extent of work and a new concrete slab and column foundations. The canopy will be enclosed by a 12’ high chain-link fence 3 sides and abutting the existing building on the fourth side. The fence will be 1” mesh, black chain-link. The canopy structure will be a steel moment frame structure, with a 14’x30’ footprint, approximately 13’ high, with a low-slope metal roof, sloping in one direction. Sidewall fire sprinkler heads will be routed off the existing fire sprinkler system inside the building to the canopy area. New conduit will be routed from existing interior lighting circuit to new exterior lighting.

Please Note: Work start and completion dates will be determined after receipt of the Building Permit. Contractors should be aware this may take several months and should plan accordingly.

Estimated Cost: Between **$150,000 - $200,000**

Pre-Bid Conference: A pre-bid conference will be held on **Thursday, March 13, 2025 at 10:00 am.** at the project site. All companies intending to bid are encouraged to have an employee of the company attend and identify themselves and the company on the sign-in sheet.

Bid Submittal: Bids will be issued and received via e-Builder, an on-line bidding system.

Bids will be received up to **2:00 pm, Friday, March 28, 2025**. Bids received after this date and time will not receive consideration.

Bid Opening: Bids will be opened by Owner at the date and hour above stated. This ***will not*** be a public opening. Bid results will be available via e-Builder or requests for results may be emailed to the Owner.

Prevailing Wage: The State of Washington prevailing wage rates are applicable for this public works project located in King County. Bidders are responsible to verify and use the most recent prevailing wage rates. The "Effective Date" for this project is the bid due date above. The applicable prevailing wage rates may be found on the Department of Labor and Industries website located at: https://secure.lni.wa.gov/wagelookup/.

Bid Documents: Bid Documents are available through e-Builder.

Right to Reject: The Owner reserves the right to reject any and all bids, to waive informalities and irregularities in the bidding, and to accept bids which are considered to be in the best interests of the Owner.

Withdrawal of Bid: Bidders may not withdraw bids after time set for the Bid Opening, unless Award of Contract is delayed for a period of exceeding 45 days.

Published: **Friday, March 7, 2025**

END OF BID SOLICITATION SECTION

SECTION 002113 – INSTRUCTIONS TO BIDDERS

ARTICLE 1 - DEFINITIONS

All definitions set forth in the General Conditions of the Contract for Construction or in other Contract Documents are applicable to the Bidding Documents.

1.1 "Addenda" are written or graphic instruments issued by the Architect or Federal Way Public Schools prior to the execution of the Contract which modify or interpret the Bidding Documents by additions, deletions, clarifications or corrections. The contents of Addenda are issued in no particular order and therefore should be carefully and completely reviewed. Addenda relating to administrative matters, such as, for example, the date or time of meetings or Bid receipt, may be issued in writing, by fax, mail or other delivery.

1.2 An "Alternate Bid" (or "Alternate") is an amount stated in the Bid to be added to or deducted from the amount of the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted by Federal Way Public Schools.

1.3 "Award" means the formal decision by Federal Way Public Schools notifying a Bidder with the lowest Responsive Bid of Federal Way Public Schools' acceptance of the Bid and intent to enter into a contract with the Bidder. A contract is only formed upon execution of the contract by both parties and also the delivery of the purchase order from Federal Way Public Schools to the Bidder, and not simply by Award.

1.4 The "Award Requirements" include the statutory requirements outlined in RCW 39.04.350 as a condition precedent to Award. This includes, but is not limited to, the following criteria:

1.4.1 At the time of bid submittal, have a certificate of registration in compliance with chapter 18.27 RCW;

1.4.2 Have a current state unified business identifier number;

1.4.3 If applicable, have industrial insurance coverage for the bidder's employees working in Washington as required in Title 51 RCW; an employment security department number as required in Title 50 RCW; and a state excise tax registration number as required in Title 82 RCW;

1.4.4 Not be disqualified from bidding on any public works contract under RCW 39.06.010 or 39.12.065(3);

1.4.5 If bidding on a public works project subject to the apprenticeship utilization requirements in RCW 39.04.320, not have been found out of compliance by the Washington state apprenticeship and training council for working apprentices out of ratio, without appropriate supervision, or outside their approved work processes as outlined in their standards of apprenticeship under chapter 49.04 RCW for the one-year period immediately preceding the date of the bid solicitation;

1.4.6 Have received training on the requirements related to public works and prevailing wage under this chapter and chapter 39.12 RCW. The bidder must designate a person or persons to be trained on these requirements. The training must be provided by the department of labor and industries or by a training provider whose curriculum is approved by the department. The department, in consultation with the prevailing wage advisory committee, must determine the length of the training. Bidders that have completed three or more public works projects and have had a valid business license in Washington for three or more years are exempt from this subsection. The department of labor and industries must keep records of entities that have satisfied the training requirement or are exempt and make the records available on its website. Responsible parties may rely on the records made available by the department regarding satisfaction of the training requirement or exemption;

1.4.7 Before award of a public works contract, a bidder shall submit to the contracting agency a signed statement in accordance with chapter RCW 5.50 verifying under penalty of perjury that the bidder is in compliance with the responsible bidder criteria requirement of subsection (1)(g) of RCW 39.04.350. A contracting agency may award a contract in reasonable reliance upon such a sworn statement.

1.4.8 Within the three-year period immediately preceding the date of the bid solicitation, not have been determined by a final and binding citation and notice of assessment issued by the department of labor and industries or through a civil judgment entered by a court of limited or general jurisdiction to have willfully violated, as defined in RCW 49.48.082, any provision of chapter 49.46, 49.48, or 49.52 RCW; and

1.4.9 If the Bidder has a history of receiving monetary penalties for not achieving the apprentice utilization requirements pursuant to RCW 39.04.320, or is habitual in utilizing the good faith effort exception process, the bidder must submit an apprenticeship utilization plan within ten business days immediately following Federal Way Public Schools' notice to proceed.

1.5 The "Base Bid" is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents as the base to which work may be added to or from which work may be deleted for sums stated in Alternate Bids.

1.6 A "Bid" is a complete and properly signed proposal to do the Work or designated portion thereof, submitted in accordance with the Bidding Documents, for the sums therein stipulated and supported by any data called for by the Bidding Documents.

1.7 A "Bidder" is a person or entity who submits a Bid for a prime contract with Federal Way Public Schools for the Work described in the Contract Documents.

1.8 The "Bidding Documents" include the Advertisement or Invitation to Bid, Instructions to Bidders, the Bid form, any other sample Bidding and contract forms, the Bid Bond (if required), and the Contract Documents, including any Addenda issued prior to receipt of Bids.

1.9 The "Contract Documents" for the Work consist of the Agreement Between Owner and Contractor, the General Conditions of the Contract (as well as any Supplemental,

Special or other Conditions included in the Project Manual), the Drawings, the Specifications, and all Addenda issued prior to and all modifications issued after execution of the Contract**.**

1.10 e-Builder is the Owner's construction software and is utilized for bid management of Small Works projects.

1.11 The "Owner" is Federal Way Public Schools No. 210.

1.12 To be considered "Responsible" or meet "Responsibility" requirements, a Bidder must meet those requirements outlined in clause 1.4 as well as the following supplemental criteria applicable to this Project to the satisfaction of the Architect and Federal Way Public Schools:

1.12.1 The ability, capacity, and skill to perform the Contract;

1.12.2 The character, integrity, reputation, judgment, experience, and efficiency of the Bidder;

1.12.3 Whether the Bidder can perform the Contract within the time specified;

1.12.4 The previous and existing compliance by the Bidder with laws relating to the Contract;

1.12.5 The quality of performance of previous contracts, including demonstration of successful completion of similar projects of equal or greater size, scope and value in the last three (3) years;

1.12.6 The designated Project Manager shall have a minimum of three (3) years of successful experience in project management and scheduling of projects of similar scope and complexity;

1.12.7 The designated Superintendent shall have a minimum of five (5) years of successful supervision of projects of similar scope and complexity;

1.12.8 Any other qualifications required by the Contract Documents or Bidding Documents; and

1.12.9 Such other information as may be secured having a bearing on the decision to award the contract.

1.13 A "Sub-bidder" is a person or entity who submits a bid to a Bidder for materials, equipment or labor for a portion of the Work.

1.14 A "Unit Price" is an amount stated in the Bid as a price per unit of measurement for materials, equipment or services as described in the Bidding Documents or in the Contract Documents. Federal Way Public Schools reserves the right to reject at any time, without impairing the balance of the proposal, any or all such predetermined unit prices.

ARTICLE 2 - BIDDER'S REPRESENTATIONS

By making its Bid, each Bidder represents that:

2.1 *Bidding Documents.* The Bidder has read and understands the Bidding Documents, and its Bid is made in accordance with them.

2.2 *Pre-Bid Meeting*. The Bidder has attended any pre-bid meeting(s) required by the Bidding Documents.

2.3 *Possible Self-Performed Work Requirement*. The Bidder will perform *with its own forces* at least that percentage (if any) of the Work required by the Bidding Documents or the Contract Documents.

2.4 *Basis*. Its Bid is based upon the materials, systems, services, and equipment required by the Bidding Documents, without exception.

2.5 *Examination*. The Bidder has carefully examined and understands the Bidding Documents, the Contract Documents (including without limitation any liquidated damages and insurance provisions), and the Project site, including any existing buildings, it has familiarized itself with the local conditions under which the Work is to be performed and has correlated its observations with the requirements of the Contract Documents and it has satisfied itself as to the nature, location, character, quality and quantity of the Work, the labor, materials, equipment, goods, supplies, work, services and other items to be furnished, and all other requirements of the Contract Documents. The Bidder has also satisfied itself as to the conditions and other matters that may be encountered at the Project site or affect performance of the Work or the cost or difficulty thereof, including but not limited to those conditions and matters affecting: transportation, access, disposal, handling and storage of materials, equipment and other items; availability and quality of labor, water, electric power and utilities; availability and condition of roads; climatic conditions and seasons; physical conditions at the Project site and the surrounding locality; topography and ground surface conditions; and equipment and facilities needed preliminary to and at all times during the performance of the Work. The failure of the Bidder fully to acquaint itself with any applicable condition or matter shall not in any way relieve the Bidder from the responsibility for performing the Work in accordance with, and for the Contract Sum and within the Contract Time provided for in, the Contract Documents.

2.6 *Project Manual*. When a Project Manual is available, the Bidder has checked its copies of the Project Manual with the Table of Contents bound therein to ensure the Project Manual is complete.

2.7 *Separate Work*. The Bidder has examined and coordinated all Drawings, Contract Documents, and Specifications for any other contracts to be awarded separately from, but in connection with, the Work being bid upon, so that the Bidder is fully informed as to conditions affecting the Work under the contract being bid upon.

2.8 *License Requirements*. Bidders and their proposed Subcontractors shall be registered and shall hold such licenses as may be required by the laws of Washington for the performance of the Work specified in the Contract Documents. At the time of Bid submittal, Bidders shall have a certificate of registration in compliance with RCW 18.27.

2.9 *No Exceptions*. Bids must be based upon the materials, systems and equipment described and required by the Bidding Documents, and terms and conditions in the Contract Documents, without exception.

ARTICLE 3 - BIDDING DOCUMENTS

3.1 *Copies*

3.1.1 **Deposit**. Except when Bidding Documents are only made available electronically, Bidders may obtain complete sets of the Bidding Documents from the issuing office and other locations designated in the Advertisement or Invitation to Bid in the number and for the deposit amount, if any, stated. The deposit (if any) will be refunded to Bidders who submit a bona fide Bid and return the Bidding Documents in good condition within ten (10) days after receipt of Bids. The cost of replacement of any missing or damaged documents will be deducted from the deposit. A Bidder awarded a Contract may retain the Bidding Documents, and its deposit will be refunded.

3.1.2 **Sub-bidders**. Bidding Documents will not be issued directly to Sub-bidders or others unless specifically offered in the Advertisement or Invitation to Bid.

3.1.3 **Complete Sets**. Bidders shall use complete sets of Bidding Documents in preparing Bids and are solely responsible for utilizing established plan holder identification processes to obtain updated bid information; neither Federal Way Public Schools nor the Architect assumes any responsibility for errors or misinterpretations resulting from the use of incomplete and/or superseded sets of Bidding Documents. Printed copies (when made available) of plans take precedence over any on-line images.

3.1.4 **Conditions**. Federal Way Public Schools and/or the Architect make copies of the Bidding Documents available on the above terms only for the purpose of obtaining Bids on the Work and do not confer a license or grant permission for any other use.

3.1.5 **Legible Documents**. To the extent any drawings, specifications, or other Bidding documents are not legible, it is the Bidder's responsibility to notify Federal Way Public Schools and the Architect and to obtain legible documents from the plan center.

3.2 *Interpretation or Correction of Bidding Documents*

3.2.1 **Format**. The Contract Documents may be divided into parts, divisions, and sections for convenient organization and reference. Generally, there has been no attempt to divide the Specification sections into Work performed by the various building trades, any Work by separate contractors, or any Work required for separate facilities in or phases of the Project.

3.2.2 **Notify Owner and Architect**. Bidders and Sub-bidders shall promptly notify Federal Way Public Schools and the Architect in writing of any ambiguity, inconsistency, or error which they may discover upon examination of the Bidding Documents or of the site and local conditions. All Bidders and Sub-bidders shall thoroughly familiarize themselves with specified products and installation procedures and submit to Federal Way Public Schools and the Architect any objections (in writing) no later than seven (7) calendar days prior to the Bid Date. The submittal of the Bid constitutes acceptance of products and procedures specified as sufficient, adequate, and satisfactory for completion of the Contract.

3.2.3 **Questions/Clarifications**. Bidders and Sub-bidders requiring clarification or interpretation of the Bidding Documents shall make a request via e-Builder which shall reach the Owner at least two (2) calendar days prior to the date for receipt of Bids.

3.2.4 **Addenda**. Any interpretation, correction or change of the Bidding Documents will be made by Addendum via e-Builder. Interpretations, corrections or changes of the Bidding Documents made in any other manner will not be binding, and Bidders shall not rely upon such interpretations, corrections and changes.

3.2.5 **Singular References**. Reference in the singular to an article, device, or piece of equipment shall include as many of such articles, devices, or pieces as are indicated in the Contract Documents or as are required to complete the installation.

3.2.6 **Utilities and Runs**. The Bidder should assume that the exact locations of any underground or hidden utilities, underground fuel tanks, and any plumbing and electrical runs may be somewhat different from any location indicated in the surveys or Contract Documents.

3.3 *Substitutions*

3.3.1 **Standard**. The materials, products, procedures and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance, and quality that must be met by any proposed substitution.

3.3.2 **Substitution Procedure**. No substitution will be considered prior to receipt of Bids unless the Federal Way Public Schools and/or Architect receives a request via e-Builder for approval, at least four (4) days prior to the date for receipt of Bids. Each such request shall include the name of the material or equipment proposed to be replaced and a complete description of the proposed substitute, including drawings, cuts, performance and test data, warranty information, and any other information necessary for an evaluation. A statement setting forth any changes in other materials, equipment or other Work that incorporation of the substitute would require shall be included. The proposer has the burden to prove the merit of the proposed substitute; by proposing the substitution, the Bidder represents that it has personally investigated the proposed material or product and determined that it is equal or better in all respects to that specified, that the same or better warranty will be

provided for the substitution, that complete cost data, including all direct and indirect costs of any kind, has been presented, that the Contract Time will not be increased, and that it will coordinate the installation of the substitute if accepted and make all associated changes in the Work. Federal Way Public Schools and/or the Architect's decision to approve or disapprove a proposed substitution shall be final. Submitted requests for approval shall constitute a guarantee by the Bidder that the articles or materials are in all respects, including warranty and installation, equal or superior to those specified, unless otherwise noted. To the extent the proposed substitution will require additional services by the Architect or its consultants after Bid award, the Bidder, if successful, will be required to pay the Architect or its consultants for these services at their customary hourly rates.

3.3.3 **Addendum**. If the Federal Way Public School and/or Architect approves a proposed substitution prior to receipt of Bids, the approval will be set forth in an Addendum via e-Builder. Bidders shall not rely upon approvals made in any other manner. Bidders/Sub-bidders shall rely solely on substitution approvals listed in an Addenda.

3.3.4 **Post-Bid Substitutions**. After the Contract has been executed, Federal Way Public Schools and the Architect may consider a written request for the substitution of material or products in place of those specified in the Contract Documents only under the circumstances as specified therein.

3.4 *Addenda*

3.4.1 **e-Builder**. All Addenda will be availbe via e-Builder with notice to those bidders who have registered with e-Builder.

3.4.2 **Verification and Acknowledgment of Receipt**. Prior to bidding, each Bidder shall ascertain that it has received all Addenda issued. Each Bidder shall acknowledge its receipt of all Addenda in its Bid.

ARTICLE 4 - BIDDING PROCEDURE

4.1 *Form and Style of Bids*

4.1.1 **Form**. Bids (including any required attachments) shall be submitted via e-Builder. No oral, email or telephonic responses or modifications will be considered to be Bids.

4.1.2 **Entries on the Bid Form**. All blanks on the e-Builder Bid form shall be completed. Any additional files requested shall be uploaded into system.

4.1.3 **Words and Figures**. Where so indicated by the makeup of the Bid form, sums shall be expressed in both words and figures; in case of discrepancy between the two and regardless of any statement to the contrary on the Bid form, *the amount written in figures shall govern, and the words shall be used to determine any ambiguities in the figures*. Portions of the Bid form may require the addition of component bids to a total or the identification of component amounts within a total. In case of discrepancy

between component amounts listed and their sum(s), the component amounts listed shall govern.

4.1.4 **Alternates and Unit Prices**. All requested Alternates and unit prices should be bid. Federal Way Public Schools reserves the right, but is not obligated, to reject any Bid on which all requested Alternates or unit prices are not bid. If no change in the Base Bid is required for an Alternate, enter "*No Change.*" If there is no entry, it will be presumed that the Bidder has made no offer to accomplish this Alternate. If it is not otherwise clear from the Bid or nature of the Alternate, it will be presumed that the amount listed for an Alternate is an add rather than a deduct.

4.1.5 **No Conditions**. The Bidder shall make no conditions or stipulations on the Bid form nor qualify its Bid in any other manner.

4.1.6 **Identity of Bidder**. The Bid shall be entered into e-Builder by the person or persons legally authorized to bind the Bidder to a contract. A Bid submitted by an agent shall have a current power of attorney attached certifying the agent's authority to bind the Bidder, and provide other information requested.

4.1.7 **Bid Amounts do Not Include Sales Tax**. The Bid shall include in the sum stated all taxes imposed by law, EXCEPT state and local sales tax on the contract sum.

4.1.8 **Bid Breakdown**. The Bid form may contain, for Federal Way Public Schools' accounting purposes only, a breakdown of some or all of the components included in the Base Bid.

4.2 *Potential Listing of Subcontractors*

4.2.1 **Procedure**. On certain projects of Federal Way Public Schools, the Bid form includes a requirement that certain Subcontractors be listed, and the list must be submitted to Federal Way Public Schools as described in the bidding documents. In these circumstances, the Bidder shall name the Subcontractor with whom the Bidder, if awarded the Contract, will subcontract *directly* (i.e., not lower-tier Subcontractors) for performance of the work of:

(a) HVAC (heating, ventilation and air conditioning),

(b) plumbing as described in RCW 18.106,

(c) electrical work as described in RCW 19.28,

(d) structural steel installation,

(e) rebar installation, and

(f) any other categories of Work listed on the Subcontractor listing form(s).

In accordance with RCW 39.30.060, failure of a Bidder to submit the names of such proposed heating, ventilation and air conditioning, plumbing, electrical, structural steel installation, and rebar installation Subcontractors or to name itself to perform such Work or the naming of two or more Subcontractors to perform the same Work in the time periods described above shall render the Bidder's Bid nonresponsive and, therefore, void. The Bidder, if awarded the Contract, will subcontract with the listed Subcontractor for performance of the portion of the Work designated on the Form of Proposal, subject to the provisions of the Contract for Construction and RCW 39.30.060.

4.2.2 **Timing**: The listing of HVAC, plumbing, and electrical subcontractors shall occur within one hour of the published bid submittal time. The listing of structural steel installation and rebar installation subcontractors shall occur within forty-eight hours of the published bid submittal time. The listing of any other categories of Work listed on the Subcontractor listing form(s) shall occur as indicated on such forms or as otherwise described in the bidding documents.

4.2.3 **Self-Performance**: If the Bidder intends to self-perform any of these categories of Work, it must name itself for each such category of Work.

4.2.4 **If no Subcontractors**: If there is no work to be performed by a HVAC, plumbing, electrical, structural steel installation, rebar installation, or other subcontractor category identified on the Bid form(s), the Bidder should insert "None" or "N/A" on the Bid form. If a category is left blank, that shall indicate that the Bidder believes that there is no Work to be performed by that trade.

4.2.5 **Multiple Entries**: The Bidder shall not list more than one (1) entity for a particular category of Work identified, unless a Subcontractor varies with an Alternate Bid, in which case the Bidder shall identify the Subcontractor to be used for the Alternate and the affected portion of the Work and otherwise make its Bid clear as to which subcontractor shall be utilized depending upon the selection of alternates.

4.2.6 **Multiple Submittal Times**. In the event the Bidding Documents call for a second submittal time for receipt of alternate bids, and no additional Subcontractors are listed with such alternate bids, Federal Way Public Schools will consider that there is no change in the Subcontractors from those listed with regard to the base Bid.

4.2.7 **Replacement**. If a listed Subcontractor is unable to comply with any bondability, qualification or other requirements of the Contract or Bidding Documents (including without limitation a finding of Subcontractor non-Responsibility), Federal Way Public Schools may require the Bidder to replace the Subcontractor with a Subcontractor acceptable to Federal Way Public Schools at no change in the Contract Sum or Contract Time.

4.2.8 **Subcontractor Standards**. Subcontractors shall meet contractual and technical qualifications standards, and provide specialized certification, licensing, and payment and performance bonding where specified.

4.3 *Bid Security*

4.3.1 **Purpose and Procedure**. Each Bid exceeding the sum of Three Hundred Fifty-Thousand Dollars ($350,000.00) shall be accompanied by a bid security payable to Federal Way Public Schools in the form required in the Bidding Documents and equal to five percent (5%) of the Base Bid. The bid security constitutes a pledge that the Bidder will enter into the Contract with Federal Way Public Schools in the form provided, in a timely manner, and on the terms stated in its Bid and will furnish in a timely manner the payment and performance bonds, certificates of insurance, Contractor's Construction Schedule, and all other documents required in the Contract Documents. Should the Bidder fail or refuse to enter into the Contract or fail to furnish such documents, the amount of the bid security shall be forfeited to Federal Way Public Schools as liquidated damages, not as a penalty. By submitting its Bid and bid security, the Bidder agrees that any forfeiture is a reasonable prediction at the time of Bid submittal of future damages to Federal Way Public Schools.

4.3.2 **Form**. The bid security shall be in the form of a certified or bank cashier's check payable to Federal Way Public Schools or a bid bond executed by a bonding company acceptable to Federal Way Public Schools and licensed in the State of Washington on the form included with the Bidding Documents or equivalent form acceptable to Federal Way Public Schools. The Attorney-in-Fact who executes the bond on behalf of the surety shall be licensed to do business in the State of Washington and shall affix to the bond a certified and current copy of that person's Power of Attorney.

4.3.3 **Retaining Bid Security**. Federal Way Public Schools will have the right to retain the Bid Security of Bidders to whom an award is being considered until the earliest of either (a) the Contract has been executed, and payment and performance bonds have been furnished, or (b) the specified time has elapsed so that Bids may be withdrawn, or (c) all Bids have been rejected.

4.3.4 **Return of Bid Security**. Within forty-five (45) days after the Bid Date, Federal Way Public Schools will release or return Bid Securities to Bidders whose Bids are not to be further considered in awarding the Contract. Bid securities of the three apparent low Bidders will be held until the Contract has been finally executed, after which all unforfeited Bid securities will be returned.

4.4 *Submission of Bids*

4.4.1 **Procedure**. The Bid, the Bid security, and any other documents required to be submitted with the Bid shall be provided via e-Builder.

4.4.2 **Responsibility**. The Bidder assumes full responsibility for timely delivery for receipt of Bids.

4.4.3 **Form**. Oral, telephonic, email, fax or telegraphic Bids are invalid and will not receive consideration unless this Project is bid under small works and is explicitly allowed by the invitation to bid or other bidding documents.

4.5 *Modification or Withdrawal of Bid*

4.5.1 **After Receipt Time**. A Bid may not be modified, withdrawn or canceled by the Bidder during the 45-day period following the time and date designated for the receipt of Bids, and each Bidder so agrees by virtue of submitting its Bid.

4.5.2 **Before Receipt Time**. Prior to the time and date designated for receipt of Bids, any Bid submitted may be modified or withdrawn via e-Builder.

4.5.3 **Resubmittal**. Withdrawn Bids may be resubmitted up to the time designated for the receipt of Bids provided that they are then fully in conformance with these Instructions to Bidders.

4.5.4 **Bid Security With Resubmission**. Bid security shall be in an amount sufficient for the Bid as modified or resubmitted.

4.6 *Notice*

4.6.1 Notice or a request from a Bidder under these Instructions to Bidders must be in writing over the signature of the Bidder and delivered in person or by mail, email, express delivery, or fax. If the notice is by email or fax, written confirmation over the signature of the Bidder must be mailed and postmarked on or before the date and time set for the notice.

ARTICLE 5 - CONSIDERATION OF BIDS

5.1 *Opening of Bids*: Unless stated otherwise in the Advertisement or Invitation to Bid or an Addendum, the properly identified Bids received on time will be opened publicly and will be read aloud. An abstract of the Base Bids and Alternate Bids, if any, will be made available to Bidders and other interested parties.

5.2 *Rejection of Bids*: Federal Way Public Schools shall have the right but not the obligation to reject any or all Bids for any reason or for no reason, to reject a Bid not accompanied by required Bid security or by other material or data required by the Bidding Documents, or to reject a Bid which is in any way incomplete or irregular.

5.3 *Acceptance of Bid (Award)*

5.3.1 **Owner**. Federal Way Public Schools intends (but is not bound) to award a Contract to the lowest Responsible and Responsive Bidder, provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and does not exceed the funds available. Federal Way Public Schools has the right to waive any informality or irregularity in any Bid(s) received and to accept the Bid which, in its judgment, is in its own best interests.

5.3.2 **Alternates**. Federal Way Public Schools shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Contract Documents or Bidding Documents, and to determine the low Bidder on the basis of the sum of the Base Bid and the Alternates (if any) accepted. Federal Way Public Schools retains the right

to accept Alternate Bid items at the price bid within 60 days after the Agreement is executed.

5.3.3 **Requirements for Award**. Before the Award, the lowest Responsive Bidder shall meet the Award Requirements.

5.4 *Bid Protest Procedures*

5.4.1 **Procedure**. A Bidder protesting for any reason the Bidding Documents, a bidding procedure, Federal Way Public Schools' objection to the Bidder or a person or entity proposed by the Bidder, including but not limited to a finding of non-Responsibility, the rejection of a Bid; the award of the Contract or of any other aspect arising from or relating in any way to the bidding or award or lack thereof, shall cause a written (or email) protest to be filed with Federal Way Public Schools within two (2) business days of the event giving rise to the protest and, in any event, no later than two (2) business days after the date upon which Bids are opened. (Intermediate Saturdays, Sundays, and legal holidays are not counted.) The written protest shall include the name of the protesting Bidder, a detailed description of the specific factual and legal grounds for the protest, copies of all supporting documents, and the specific relief requested. The written protest shall be delivered to:

Contracts Manager
Maintenance and Operations
Federal Way Public Schools
1211 S. 332nd Street
Federal Way, Washington 98003
PWContracting@fwps.org
And shall be labeled: "Protest"

5.4.2 **Consideration**. Upon receipt of the written protest, Federal Way Public Schools will consider the protest. Federal Way Public Schools may, within three (3) business days of Federal Way Public Schools' receipt of the protest, provide any other affected Bidder(s) the opportunity to respond in writing to the protest. If the protest is not resolved by mutual agreement of the protesting Bidder and Federal Way Public Schools, the Superintendent of Federal Way Public Schools or the Superintendent's designee will review the issues and promptly furnish a final and binding written decision to the protesting Bidder and any other affected Bidder(s) within six (6) business days of Federal Way Public Schools' receipt of the protest. (If more than one protest is filed, Federal Way Public Schools' decision will be provided within six (6) business days of Federal Way Public Schools' receipt of the last protest.) If no reply is received from Federal Way Public Schools during the six-business-day period, the protest shall be deemed rejected.

5.4.3 **Waiver**. Failure to comply with these protest procedures will render a protest waived.

5.4.4 **Condition Precedent**. Timely and proper compliance with and exhaustion of these protest procedures shall be a condition precedent to any otherwise permissible judicial consideration of a protest.

ARTICLE 6 - POST BID INFORMATION

6.1 *Information From Apparent Low Bidder*

6.1.1 **Submittal**. Within twenty-four (24) hours of Federal Way Public Schools' request, the apparent low Bidder and any other Bidders so requested shall submit the following to the Architect and Federal Way Public Schools, which list may be modified by Federal Way Public Schools:

(a) a properly executed Contractor's Qualification Statement on the form provided (unless otherwise required to be submitted at the time of the Bid);

(b) a letter or form from the Bidder's insurance company stating that the insurance required by the Contract Documents will become effective upon execution of the Contract;

(c) a letter or form from the Bidder's surety stating that the bond(s) required by the Contract Documents will become effective upon execution of the Contract;

(d) if requested by Federal Way Public Schools, a detailed breakdown of the Bid in a form acceptable to Federal Way Public Schools;

(e) the names of the persons or entities (including a designation of the Work to be performed with the Contractor's own forces, and the names of those who are to furnish materials or equipment fabricated to a special design) proposed for each of the principal portions of the Work;

(f) the proprietary names and the suppliers of the principal items or systems of materials and equipment proposed for the Work; and

(g) a State Board of Education Form D-9, if requested.

Failure to provide any of the above information in a timely manner may constitute an event of breach permitting forfeiture of the Bid security.

6.1.2 **Responsibility.** The Bidder will be required to establish to the satisfaction of the Architect and Federal Way Public Schools the reliability and Responsiblity of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents as well as qualifications set forth in the Sections of the Project Manual pertaining to such proposed Subcontractor's respective trades. The Responsibility of the Bidder may be judged in part by the Responsibility of these proposed entities.

(a) *Consideration*. In considering a Bidder's Responsibility, a Bidder shall be deemed to be unqualified to perform the Contract if, after review and verification of the representations included upon the Contractor's Qualification Statement submitted by the Bidder, conditions such as, but not limited to, the following appear:

- The Bidder does not have sufficient prior experience (or an acceptable substitute thereof, as described below) with projects of a similar nature in technical, managerial, and financial requirements to that in the present Contract being bid. In addition to such established contractors, a newly established contractor may be considered qualified if it has shown on the Contractor's Qualification Statement that it is staffed with sufficient technical, managerial, and financial personnel with prior experience in the nature of construction for which the Bids are invited.

- The Bidder does not have sufficient capability to undertake the obligations of the Contract. A determination will be made when Federal Way Public Schools' review of the probable cash flow needs of the Bidder for this Project (including payroll, cost of material and supplies, equipment rental costs, and any other direct or incidental costs of the Contract), concludes that the Bidder does not have sufficient financial resources to enable it to satisfy its financial obligations under the Contract.

- The Bidder has submitted unrealistic unit prices as determined by other bidders' unit prices for this Project.

- The Bidder does not have sufficient staff, equipment, or plant available to perform the Contract. Federal Way Public Schools' determination in this matter will be based upon that represented by Bidder in the Contractor's Qualification Statement.

- The Bidder has a history of unsatisfactory performance of contracts of this or similar nature, regardless of whether such contracts existed between Federal Way Public Schools and the Bidder, or other parties.

    1) A determination of this nature will be made if Federal Way Public Schools, after review of the Bidder previous work experience, determines that the Bidder's unsatisfactory performance has resulted predominantly from the Bidder's failure rather than a failure to perform by another party. Federal Way Public Schools will give the Contractor an opportunity to explain such nonperformance's before any final determination is reached.

    2) A determination of failure to perform will be made if Federal Way Public Schools is satisfied after review of the Bidder's prior experience, that the Bidder has failed to satisfy its obligations under past contracts and Federal Way Public Schools cannot safely assume satisfactory performance of the Contract by the Bidder.

    3) In reaching its determination, Federal Way Public Schools may consider statements of other parties to the prior

unperformed contracts, as well as the representations of the Bidder on its Contractor's Qualification Statement.

6.1.3 **Subcontractors**. The Responsibility of the Bidder may be judged in part by the Responsibility of its Subcontractors. Bidders must verify Responsibility criteria for each first-tier Subcontractor. A Subcontractor of any tier that hires other Subcontractors must verify Responsibility criteria for each of its next lower-tier Subcontractors. Verification shall include that each Subcontractor, at the time of subcontract execution, is Responsible and possesses an electrical contractor license, if required by RCW 19.28, or an elevator contractor license, if required by RCW 70.87, and can obtain any payment and performance bonds required by the Bidding documents or the Contract Documents.

6.1.4 **Request to Modify Criteria**. No later than ten (10) days prior to the Bid Date, a potential Bidder may request in writing that Federal Way Public Schools modify the Responsibility criteria listed in clause 6.1.2 above or elsewhere in the Contract Documents or Bidding Documents. Federal Way Public Schools will evaluate the information submitted by the potential Bidder and respond before the Bid Date. If the evaluation results in a change of the criteria, Federal Way Public Schools will issue an Addendum identifying the new criteria.

6.1.5 **Objection**. Prior to the Award of the Contract, Federal Way Public Schools will notify the Bidder in writing if either Federal Way Public Schools or the Architect, after due investigation, has reasonable objection to the Bidder or a person or entity proposed by the Bidder, and Federal Way Public Schools will provide the reasons for the determination. The Bidder may appeal the determination within two (2) business days of its receipt of the objection by presenting additional information to Federal Way Public Schools, and Federal Way Public Schools will consider the additional information before issuing its final determination. The Bidder may, after Federal Way Public Schools' objection or determination, and at Bidder's option, (1) withdraw the Bid, (2) submit an acceptable substitute person or entity with no change in the Contract Time and no adjustment in the Base Bid or any Alternate Bid, even if there is a cost to the Bidder occasioned by the substitution, or (3) appeal by filing a protest in accordance with paragraph 5.4. In the event of withdrawal under these circumstances, Bid security will not be forfeited.

6.1.6 **Change**. Persons and entities proposed by the Bidder and to whom Federal Way Public Schools or the Architect have made no reasonable objection must be used on the Work for which they were proposed and shall not be changed except with the written consent of Federal Way Public Schools and the Architect.

6.1.7 **Right to Terminate**. The Bidder's representations concerning its qualifications will be construed as a covenant under the Contract. Should it appear that the Bidder has made a material misrepresentation on its Contractor's Qualification Statement, Federal Way Public Schools shall have the right to terminate the Contract for cause for the Contractor's breach, and Federal Way Public Schools may then pursue such remedies

as exist elsewhere under this Contract, or as otherwise are provided at law or equity.

6.2 *Information From Other Bidders*: All other Bidders designated by the Architect as under consideration for award of a Contract shall also provide a properly executed Contractor's Qualification Statement, if so requested by Federal Way Public Schools.

6.3 *Bidding Mistakes*: Federal Way Public Schools will not be obligated to consider notice of claimed bidding mistakes received more than three (3) business days after the Bid opening. In accordance with Washington law, a low Bidder that claims error and fails to enter into the Contract is prohibited from bidding on the Project if a subsequent call for Bids is made for the Project.

ARTICLE 7 - PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND

7.1 *Bond and Bondability Requirements*: Within seven (7) days after the issuance of Federal Way Public Schools' notice of intent to award the Contract, and prior to the date of execution of the Contract, the Bidder shall furnish evidence satisfactory to Federal Way Public Schools of its ability to obtain statutory bonds pursuant to RCW 39.08 covering the faithful performance of the Contract and the payment of all obligations arising thereunder in the form and amount prescribed in the Contract Documents. The cost of such bonds shall be included in the Base Bid. Such bonds for projects under $150,000 may be waived by Federal Way Public Schools; see RCW 39.08.010(3).

7.2 *Time of Delivery and Form of Bonds*: The Bidder shall deliver the required bonds to Federal Way Public Schools within seven (7) days after the date of execution of the Contract and prior to commencing operations at the site. The bonds shall be written on current AIA payment and performance bond forms (A312) and shall be in the amount of the Contract Sum plus sales tax.

ARTICLE 8 - FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

8.1 *Form to Be Used*: The Agreement for the Work will be written on the form(s) contained in or referenced by the Bidding Documents, including any General, Supplemental or Special Conditions, and the other Contract Documents included with the Project Manual. In the event no form is enclosed or referenced, an AIA Document A101-2017, "Standard Form of Agreement Between Owner and Contractor, where the basis of payment is a Stipulated Sum," along with AIA Document A201-2017, "General Conditions of the Contract for Construction" as both are revised, modified and supplemented by Federal Way Public Schools, will be used. All references in these Instructions to Bidders to the A101 or the A201 refer to the documents as revised by Federal Way Public Schools.

8.2 *Conflicts*: In case of conflict between the provisions of these Instructions and any other Bidding Document, these Instructions shall govern. In case of conflict between the provisions of the Bidding Documents and the Contract Documents, the Contract Documents shall govern.

ARTICLE 9 - NONDISCRIMINATION

9.1 *Nondiscrimination Requirement*. During the term of this Contract, Contractor, including any subcontractor, shall not discriminate on the bases enumerated at RCW 49.60.530(3). In addition, Contractor, including any subcontractor, shall give written notice of this nondiscrimination requirement to any labor organizations with which Contractor, or subcontractor, has a collective bargaining or other agreement.

9.2 *Obligation to Cooperate*. Contractor, including any subcontractor, shall cooperate and comply with any Washington state agency investigation regarding any allegation that Contractor, including any subcontractor, has engaged in discrimination prohibited by this Contract pursuant to RCW 49.60.530(3).

9.3 *Default*. Notwithstanding any provision to the contrary, Agency may suspend Contractor, including any subcontractor, upon notice of a failure to participate and cooperate with any state agency investigation into alleged discrimination prohibited by this Contract, pursuant to RCW 49.60.530(3). Any such suspension will remain in place until Agency receives notification that Contractor, including any subcontractor, is cooperating with the investigating state agency. In the event Contractor, or subcontractor, is determined to have engaged in discrimination identified at RCW 49.60.530(3), Agency may terminate this Contract in whole or in part, and Contractor, subcontractor, or both, may be referred for debarment as provided in RCW 39.26.200. Contractor or subcontractor may be given a reasonable time in which to cure this noncompliance, including implementing conditions consistent with any court-ordered injunctive relief or settlement agreement.

9.4 *Remedies for Breach*. Notwithstanding any provision to the contrary, in the event of Contract termination or suspension for engaging in discrimination, Contractor, subcontractor, or both, shall be liable for contract damages as authorized by law including, but not limited to, any cost difference between the original contract and the replacement or cover contract and all administrative costs directly related to the replacement contract, which damages are distinct from any penalties imposed under Chapter 49.60, RCW. Agency shall have the right to deduct from any monies due to Contractor or subcontractor, or that thereafter become due, an amount for damages Contractor or subcontractor will owe Agency for default under this provision.

ARTICLE 10 - CONTRACT DOCUMENTS

This paragraph contains descriptions of some but not all of the provisions of the Contract Documents.

10.1 *Retainage*: The Contract Documents specify the statutory retainage requirements of RCW 60.28 for this Project.

10.2 *Contract Time*: The Contract Documents specify the Contract Time. Timely completion of this Project is essential to Federal Way Public Schools.

10.3 *Prevailing Wages*: The Contract Documents contain requirements regarding the payment of prevailing wages pursuant to RCW 39.12.

10.4 *Written Claims and Notice*: The Contract Documents contain a number of provisions that require the Contractor to provide notice of Claims and to make and support Claims in writing within a specified time in order to maintain the Claim.

10.5 *Changes in Contract Sum*: The Contract Documents contain provisions specifying requirements for and pricing of changes in the Contract Sum.

10.6 *Dispute Resolution*: The Contract Documents contain alternative dispute resolution procedure which, among other things, requires non-binding mediation of all disputes.

10.7 *Contractor Registration*: Pursuant to RCW 39.06, the Bidder shall be registered or licensed as required by the laws of the State of Washington, including but not limited to RCW 18.27.

10.8 *Taxes*. The Contractor shall include in its Bid and pay for all applicable taxes except Washington State Sales Tax and Local Sales Tax on the Contract Sum, which shall be excluded in the preparation of its Bid. Such State and Local Sales Taxes shall be added to the Contract Sum, paid by Federal Way Public Schools to the Contractor, and then paid by the Contractor over the course of the Project. Refer to general, supplementary or other conditions regarding further information.

10.9 *Other Provisions*: The above paragraphs contain descriptions of some but not all of the provisions of the Contract Documents. Bidders should review in detail the Contract Documents themselves and not rely upon the above paragraphs in this article as complete or inclusive.

ARTICLE 11 - POSSIBLE TRENCH EXCAVATION SAFETY PROVISIONS

11.1.1 To ensure that the Bidder agrees to comply with relevant trenching safety requirements of RCW 39.04.180 and RCW 49.17, the Base Bid may include the cost of any required trenching. The Bidder shall enter in the blank provided (if any) on the Bid form the dollar amount the Bidder has included in its Base Bid for any work requiring trenching that will exceed a depth of four feet. If trench excavation safety provisions do not pertain to the Project, the Bidder should enter "N.A." or "Not Applicable" in the blank (if any) on the bid form.

END OF INSTRUCTIONS TO BIDDERS SECTION

SECTION 004250 – BIDDER'S CHECKLIST

This list is only partial and is prepared for the Contractor's convenience. This list shall not be construed to alleviate the Contractor of formalities and requirements of the bidding documents.

REVIEW

1. Bid documents.
2. Existing site conditions.
3. Addenda.

SUBMIT VIA E-BUILDER

1. Bid Form
2. Contractor Certification

END OF BIDDER CHECK LIST

SECTION 011199 – SUMMARY OF WORK

PART 1 - GENERAL

1.01 *SUMMARY*

A. Section Includes

1. Project Information
2. Work covered by Contract Documents
3. Owner-furnished, Contractor-installed (OFCI) products
4. Contractor's use of site and premises
5. Coordination with occupants
6. Work restrictions
7. Specifications and Drawing conventions

1.02 *PROJECT INFORMATION*

A. Project: Federal Way High School CTE Storage

1. 30611 16th Avenue S.
2. Federal Way, WA 98003

B. Owner: Federal Way Public Schools

1. 1211 S. 332nd St.
2. Federal way, WA 98003

C. Architect: Bassetti Architects

1. 71 Columbia Street, Suite 500
2. Seattle, WA 98104

1.03 *WORK COVERED BY CONTRACT DOCUMENTS*

A. CTE Storage

1. The project will create a storage space for the existing CTE classroom, as part of the Federal Way High School (FWHS) Career and Technical Education (CTE) curriculum. This space is an extension of the existing vocational/woodshop area at the Federal Way High School. The project (CTE Storage Canopy) is located directly adjacent to the existing Federal Way High School building, immediately west of the Woodshop classroom. The CTE storage canopy consists of a fenced enclosure and a canopy for class materials. It will require demolition of existing concrete slab within

extent of work and a new concrete slab and column foundations. The canopy will be enclosed by a 12’ high chain-link fence 3 sides and abutting the existing building on the fourth side. The fence will be 1” mesh, black chain-link. The canopy structure will be a steel moment frame structure, with a 14’x30’ footprint, approximately 13’ high, with a low-slope metal roof, sloping in one direction. Sidewall fire sprinkler heads will be routed off the existing fire sprinkler system inside the building to the canopy area. New conduit will be routed from existing interior lighting circuit to new exterior lighting.

B. Type of Contract:

1. Project will be constructed under a single prime contract.

1.04 *OWNER-FURNISHED, CONTRACTOR-ISNTALLED (OFCI) PRODUCTS*

A. Not in Use

1.05 *CONTRACTOR’S USE OF SITE AND PREMISES*

A. 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.

B. 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.

1.06 *COORDINATION WITH OCCUPANTS*

A. Partial Owner Occupancy: Owner will occupy premises during entire construction period, with exception of areas under construction. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform Work so as not to interfere with Owner'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 Owner and authorities having jurisdiction.
2. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.

1.07 *WORK RESTRICTIONS*

A. Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

B. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

1. Weekend Hours: 9:00 a.m. to 7:00 p.m.
2. Early Morning Hours: High Impact Equipment restricted to 8:00 a.m. to 5:00 p.m.

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:

1. Notify Owner not less than 2 days in advance of proposed utility interruptions.
2. Obtain Owner's written permission before proceeding with utility interruptions.

D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.

1. Notify Owner not less than 2 days in advance of proposed disruptive operations.
2. Obtain Owner's written permission before proceeding with disruptive operations.

E. Smoking and Controlled Substance Restrictions: Use of tobacco products, alcoholic beverages, and other controlled substances on Project site or within existing building is not permitted.

F. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

G. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site.

1. Maintain list of approved screened personnel with Owner's representative.

1.08 *SPECIFICATION AND DRAWING CONVENTIONS*

A. Specification Content: Specifications use certain conventions for style of language and 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 Specifications. The words "shall," "shall be," or "shall comply with," depending on context, are implied where a colon (:) is used within a sentence or phrase.
2. Specification requirements shall be performed by Contractor unless specifically stated otherwise.

B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to Work of all Sections in Specifications.

C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in Specifications. One or more of the following are used on Drawings to identify materials and products:

1. **Terminology**: Materials and products are identified by typical generic terms used in individual Specifications Sections.
2. **Abbreviations**: Materials and products are identified by abbreviations scheduled on Drawings.
3. **Keynoting**: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 011199

SECTION 024119 - SELECTIVE AND STRUCTURE DEMOLITION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Demolition and removal of selected building elements and site elements as indicated on Drawings.

1.02 DEFINITIONS

A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.

B. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

C. 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.

1.03 MATERIALS OWNERSHIP

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

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination Meetings: Conduct coordination meetings specifically for alteration Work at weekly intervals. Coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation meetings.

1. Attendees: In addition to representatives of Owner, Architect, and Contractor, each specialist, supplier, Installer, and other entity concerned with progress or involved in planning, coordination, or performance of alteration Work activities shall be represented at these meetings. Participants at meeting shall be familiar with Project and authorized to conclude matters relating to alteration Work.
2. Agenda: Review and correct or approve minutes of previous coordination meeting. Review other items of significance that could affect progress of alteration Work. Include topics for discussion as appropriate to status of Project.

a. Alteration Work Subschedule: Review progress since last coordination meeting. Determine whether each schedule item is on time, ahead of schedule, or behind schedule. Determine how construction behind schedule will be expedited with retention of quality; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities are completed within Contract Time.
b. Schedule Updating: Revise Contractor's Alteration Work Subschedule after each coordination meeting where revisions to schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
c. Review present and future needs of each entity present, including review items listed in "Preliminary Conference for Alteration Work" Paragraph in this article and the following:

1) Interface requirements of alteration Work with other Project Work.
2) Status of submittals for alteration Work.
3) Access to alteration Work locations.
4) Effectiveness of fire-prevention plan.
5) Quality and work standards of alteration Work.
6) Change Orders for alteration Work.

3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.
4. Arrange selective demolition schedule so as not to interfere with Owner's operations.

B. Preinstallation conference and Field Walk: Prior to start of Work conduct conference and field walk of area to be demolished with all team members including involved trades.

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 Fire-Protection Plan. Include the following:

a. Heat-generating equipment.
b. Fire-watch.
c. Fire-control devices, location and type.
d. Sprinkler systems.

6. Review and finalize protection requirements.
7. Review procedures for noise control and dust control.
8. Review procedures for protection of adjacent buildings.
9. Review Drawings and scope/extent of demolition.

1.05 INFORMATIONAL SUBMITTALS

A. Proposed Protection Measures: Submit report, including Drawings, that indicates 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. Adjacent Buildings: Detail special measures proposed to protect adjacent buildings to remain including means of egress from those buildings.

C. Schedule of Selective Demolition Activities: Indicate following:

1. Detailed sequence of selective demolition and removal Work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
2. Temporary interruption of utility services and extend of limited utility use.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
5. Shoring.

D. Predemolition Photographs or Video: Show existing conditions of adjoining construction, including finish surfaces, that might be misconstrued as damage caused by demolition operations. Submit before Work begins.

E. Fire Protection Plan: Develop plan that addresses use of heat-generating equipment and combustible materials and complies with authorities having jurisdiction and local codes.

1. Comply with NFPA 241 requirements unless otherwise indicated. Perform duties titled "Owner's Responsibility for Fire Protection."
2. Remove and keep area free of combustibles, including rubbish, paper, waste, and chemicals, unless necessary for immediate Work.

a. If combustible material cannot be removed, provide fire blankets to cover such materials.

1.06 CLOSEOUT SUBMITTALS

A. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.

1.07 QUALITY ASSURANCE

A. Contractor Qualifications: Work shall be performed by skilled contractors having successful experience in comparable protection, salvage and removal operations including work on at least 3 projects similar in scope and scale to this Project in the last 5 years. Submit references with name of contact person and telephone number for the 3 submitted similar projects. Work to be performed by individuals whose qualifications have been submitted and approved.

1.08 FIELD CONDITIONS

A. Buildings 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.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective or structure demolition.

D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.

1. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

E. Storage or sale of removed items or materials on-site is not permitted.

F. 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.

1.09 COORDINATION

A. Arrange demolition schedule so as not to interfere with Owner's on-site operations or operations of adjacent occupied buildings.

B. Alteration Work Subschedule: A construction schedule coordinating sequencing and scheduling of alteration Work for entire Project, including each activity to be performed, and based on Contractor's Construction Schedule. Secure time commitments for performing critical construction activities from separate entities responsible for alteration Work.

1. Schedule construction operations in sequence required to obtain best Work results.
2. Coordinate sequence of alteration Work activities to accommodate the following:

a. Owner's continuing occupancy of portions of existing building.
b. Owner's partial occupancy of completed Work.
c. Other known Work in progress.
d. Tests and inspections.

3. Detail sequence of alteration Work, with start and end dates.
4. Utility Services: Indicate how long utility services will be interrupted. Coordinate shutoff, capping, and continuation of utility services.
5. Equipment Data: List gross loaded weight, axle-load distribution, and wheel-base dimension data for mobile and heavy equipment proposed for use in existing structure. Do not use such equipment without certification from Contractor's professional engineer that the structure can support imposed loadings without damage.

PART 2 - PRODUCTS

2.01 PERFORMANCE CRITERIA

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Contractor and subcontractors performing demolition activities are to comply with lead paint regulations in OAR 437 Division 3, 1926.62.

C. Standards: Comply with ASSE A10.6 and NFPA 241.

2.02 REPAIR MATERIALS

A. Use repair materials identical to existing materials and as specified in Section as indicated on Drawings:

1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to fullest extent possible.
2. Use materials whose installed performance equals or surpasses that of existing materials.

PART 3 - EXECUTION

3.01 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 Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.

C. Determine whether removing any element might result in structural deficiency or unplanned operations

D. Engage a professional engineer to 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 Work progresses to detect hazards resulting from selective demolition activities.

E. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or video.

1. Inventory and record the condition of items to be removed. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.

3.02 PREPARATION

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.

B. Temporary Protection of Materials to Remain:

1. Protect existing materials with temporary protections and construction. Do not remove existing materials unless otherwise indicated.
2. Do not attach temporary protection to existing surfaces except as indicated as part of alteration Work program.

C. 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.

D. Remove temporary barricades and protections where hazards no longer exist.

E. Existing Facilities: Protect adjacent walkways, building entries, and other building facilities during demolition operations.

F. 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 Owner and authorities having jurisdiction.
2. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and authorities having jurisdiction.

    a. Provide at least 72 hours' notice to occupants of affected buildings if shutdown of service is required during changeover.

G. Existing Drains: Prior to start of Work in an area, test drainage system to ensure that it is functioning properly. Notify Architect immediately of inadequate drainage or blockage. Do not begin Work in an area until drainage system is functioning properly.

1. Prevent solids such as adhesive or mortar residue or other debris from entering drainage system. Clean out drains and drain lines that become sluggish or blocked by sand or other materials resulting from alteration Work.
2. Protect drains from pollutants. Block drains or filter out sediments, allowing only clean water to pass.

3.03 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 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 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 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. Maintain portable fire-suppression devices during flame-cutting operations.
5. Maintain fire watch at Project site during and until 60 minutes after conclusion of day's Work.
6. Maintain adequate ventilation when using cutting torches.
7. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
8. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
9. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
10. Dispose of demolished items and materials promptly.

B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

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

3.04 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.

B. Anchorages:

1. Remove anchorages associated with removed items.
2. Dismantle anchorages associated with dismantled items.
3. Patch holes created by anchorage removal or dismantling according to the requirements for new Work.

3.05 SITE RESTORATION

A. Below-Grade Areas: Rough grade below-grade areas ready for further excavation or new construction.

B. Below-Grade Areas: Completely fill below-grade areas and voids resulting from building demolition operations with satisfactory soil materials according to backfill requirements in Section 312000 "Earth Moving."

C. 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.

3.06 REPAIRS

A. Promptly repair damage to adjacent buildings caused by demolition operations.

3.07 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.

B. Do not burn demolished materials.

3.08 CLEANING

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

END OF SECTION

SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Cast-in-place concrete, including formwork, concrete materials, mixture design, placement procedures, and finishes.
2. Penetrating Liquid Floor Treatment
3. Vapor retarder.
4. Install products from other sections that require casting into concrete including:

    a. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts.
    b. Steel weld plates and angles.

1.02 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: Fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.

B. Concrete Surface Profile (CSP): Measure of the average distance from the peaks of the surface to the valleys as seen through a cross-sectional view of the concrete surface.

C. Design Reference Sample: Sample designated by Architect in Contract Documents that reflects acceptable surface quality and appearance of cast-in-place architectural concrete.

D. Reveal: Projection of coarse aggregate from matrix or mortar after completion of exposure operations.

E. W/C Ratio: Ratio by weight of water to cementitious materials.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Conference: Conduct meeting at Project site.

1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:

    a. Contractor.
    b. Contractor's superintendent.
    c. Owner.
    d. Architect.
    e. Independent testing agency responsible for concrete design mixtures.
    f. Party responsible for concrete design mixtures.

g. Ready-mix concrete manufacturer.
h. Concrete Subcontractor.

2. Review the following:

a. Project schedule.
b. Special inspection, testing and inspecting agency procedures for field quality control.
c. Installer's Quality Control Plan.
d. Construction joints, control joints, isolation joints, and joint-filler strips.
e. Concrete finishes and finishing.
f. Cold and hot-weather concreting procedures.
g. Curing procedures.
h. Coordination with vapor-barrier installation.
i. Mix design and strategy for carbon footprint reduction.
j. Vapor retarder installation.

1) Review Concrete Surface Profile (CSP) required by vapor retarder installer and plan for compliance.

k. Anchor rod and anchorage device installation.
l. Tolerances, steel reinforcement installation.
m. Methods for achieving specified floor and slab flatness, levelness and CSP rating.
n. Floor and slab flatness and levelness measurement.
o. Concrete repair procedures.
p. Concrete protection.
q. Initial curing and field curing of field test cylinders (ASTM C31).
r. Protection of field cured field test cylinders.

1.04 ACTION SUBMITTALS

A. Product Data: For each type of product. Portland cement.

1. Portland Cement.
2. Pozzolans (fly ash, slag cement and others).
3. Blended hydraulic cement.
4. Silica fume.
5. Performance-based hydraulic cement
6. Aggregates.
7. Admixtures:

a. Include limitations of use, including restrictions on cementitious materials, supplementary cementitious materials, air entrainment, aggregates, temperature at time of concrete placement, relative humidity at time of concrete placement, curing conditions, and use of other admixtures.

8. Curing materials.
9. Joint fillers.
10. Repair materials.

B. Design Mixtures: For each concrete mixture. Include the following

1. Mixture identification.
2. Minimum 28 day compressive strength.
3. Durability exposure class.
4. Maximum w/cm.
5. Slump limit.
6. Air content.
7. Nominal maximum aggregate size.
8. Steel-fiber reinforcement content.
9. Indicate amounts of mixing water to be withheld for later addition at Project site if permitted.

C. Steel Reinforcement Shop Drawings: Comply with ACI SP-066.

1. Shop Drawings shall contain sufficient detail and information to allow complete fabrication, bending, and placement of steel reinforcement without reference to the Drawings. Generate Shop Drawing fabrication and installation details from the Drawings and Specifications. Do not reproduce or photocopy Drawings. If CAD or REVIT files are provided, detailers responsibility to remove non-relevant information.

    a. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical and welded connections, tie spacing, hoop spacing, and supports for concrete reinforcement. Bar arrangement to identify size, shape, grade, and location of steel reinforcement.
    b. Provide details of fabrication, bending, and placement, prepared according to ACI Detailing Manual SP-66. Include special reinforcement required for openings through concrete structures.
    c. Shop drawings shall include elevations for concrete beams, walls, and columns and plans for slabs to show bar arrangement. Plans and elevations to include special reinforcement required for openings through concrete structures
    d. Shop drawing re-submittals shall clearly identify revisions to previous submittals.
    e. Heavy ink clouded outlines (revision clouds) shall be drawn around revised areas of individual sheets.
    f. Architect/Engineer will not review information outside of revision clouds on resubmitted drawings.

D. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.

1. Coordination location of construction joints with Architect's jointing pattern. Locations are subject to approval by Architect.

E. Placement Schedule: Submit concrete placement schedule before start of placement operations. Include locations of joints, including construction joints.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data for the following:

1. Installer: Include copies of applicable ACI certificates.

    a. Include installer’s project references with name of project and project architect.
    b. Include photos of finishes and documentation of floor finish tolerances achieved.

2. Manufacturer: Ready mixed concrete manufacturer.
3. Testing Agency: Include copies of applicable ACI certificates.

B. Welding certificates.

1. Reinforcement to be Welded: Welding procedure specification in accordance with AWS D1.4

C. Material Test Reports: For the following, from a qualified testing agency:

1. Steel Reinforcement:

a. Aggregates: Include service-record data indicating absence of deleterious expansion of concrete due to alkali-aggregate reactivity.

D. Material Certificates of Compliance: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Admixtures.
3. Steel reinforcement and accessories.
4. Floor and slab treatments.
5. Bonding agents.
6. Release agents.
7. Adhesives.
8. Joint filler.
9. Joint-filler strips.
10. Repair materials.

E. Floor surface flatness and levelness measurements indicating compliance with specified tolerances in accordance with ASTM E1155.

F. Manufacturer's installation and product data for fiber reinforcing.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer with a minimum 5 years of experience who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.

1. Quality Control Plan: Develop plan that outlines activities and procedures to minimize problems on Project.

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94 requirements for production facilities and equipment.

1. Manufacturer member of NRMCA and certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
2. Quality Control personnel with responsibility for concrete mixtures certified as an NRMCA Concrete Technologist Level 2 or equivalent. Include criteria or equivalent certification in submittal.

C. Testing Agency Qualifications: Independent testing agency shall meet ASTM C1077.

1. Personnel conducting field test for acceptance shall be certified as ACI Concrete Field Testing Technician Grade I or equal.
2. Test results for the purpose of acceptance shall be certified by registered design professional employed with the Testing Agency.

D. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4.

E. Moisture Content and Alkalinity Testing for Concrete Slab:

1. Take measures to control concrete mix design water content, placement, curing, and other procedures as necessary to achieve acceptable moisture and alkalinity content within time period scheduled for installation of finish flooring systems specified under other Sections.
2. Conduct testing as specified under PART 3 of this Section under Field Quality Control testing for concrete slabs. Do not begin testing until after building envelope is fully enclosed and ambient temperature and humidity approximate final interior conditions.

F. Geotechnical Report:

1. Available for information only and is not a Contract Document.
2. Where Geotechnical Report recommendations differ from Contract Document, verify with Architect prior to proceeding.

G. Capillary Break:

1. Do not install sand layer or other granular fill over vapor retarder prior to placement of concrete slab-on-grade.
2. Rounded pea gravel as a subbase is not acceptable. Subbase gravel must be crushed or angular.

1.07 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Owner will engage a qualified testing agency to perform preconstruction testing on each concrete mixture.

1. The following will be included in the test report:

a. Admixture dosage rates.
b. Slump.
c. Air content.
d. Unit weight of concrete.
e. 7-day compressive strength.
f. 28-day compressive strength.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Comply with ASTM C94 and ACI 301.

B. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement.

C. Store reinforcement to avoid contact with earth.

1.09 FIELD CONDITIONS

A. Cold-Weather Placement: Comply with ACI 301, structural general notes on drawings, and as follows:

1. Protect concrete Work from physical damage by low temperatures.
2. When average low temperature is expected to fall below 40 degree F. for 3 successive days, maintain delivered concrete mixture temperature within temperature range required by ACI 301.
3. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
4. Do not use calcium chloride in concrete with steel reinforcement. Do not use chemical accelerators unless otherwise specified and approved in mixture designs.

B. Hot-Weather Placement: Comply with ACI 301, and ACI 305.1, structural general notes on drawings, and as follows:

1. Maintain concrete temperature below 90 degree F. at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.01 PERFORMANCE CRITERIA

A. Environmental Product Declaration (EPD): Provide current certification for each concrete mix design.

1. Provide an EPD conforming to one of the following:

a. Product specific declaration conforming to ISO 14044.

b. Product specific Type III EPD conforming to ISO 14071, ISO 14025, and EN 15804 or ISO 21930.

2.02 CONCRETE, GENERAL

A. ACI Publications: Comply with the following unless modified by requirements in Contract Documents:

1. ACI 301, Specification for Structural Concrete, Sections 1 through 5.

2. ACI 117, Specifications for Tolerances for Concrete Construction and Materials.

2.03 FORM-FACING DESIGN CRITERIA

A. Formwork Design, Structural Stability, and Sufficiency: Conform to ACI 318 Chapter 6, and ACI 347R.

1. Design, and construct formwork, shoring and bracing to withstand construction loads, continuous loads, and lateral pressure as required to accomplish cast-in-place concrete work.
2. Design and construct formwork to withstand pressure resulting from placement and vibration, while maintaining specified tolerances.
3. Design for special vertical and horizontal loads conforming to ACI 347R Section 2.2.
4. Design and construct to provide resultant concrete that conforms to design with respect to shape, lines, dimensions and appearance.
5. Comply with applicable state and local codes with respect to design, fabrication, erection, and removal of formwork.

B. Concrete Finish Standards:

1. Public/ Prominently Displayed Concrete: Provide smooth concrete surface levels meeting or exceeding CSC3 from ACI 347.3R-13 for Architectural Concrete.

C. Form facing material should be of consistent type, grade and source resulting in color uniformity complying with ACI 347.3R-13.

2.04 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Class A or B, Construction Surface Category (CSC) 4.

1. Form-facing panels that provide continuous, true, and smooth concrete surfaces, matched, tight fitting, and stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished concrete. Furnish in largest practicable sizes to minimize number of joints.

a. Plywood, metal, glass-fiber-reinforced plastic, or other accepted panel materials.
b. Use for concrete that will be exposed in finished Work.

B. Rough-Formed Finished Concrete: Class C or D, Construction Surface Category (CSC) 2.

1. Plywood, lumber, metal, or another accepted material. Provide lumber dressed on at least 2 edges and 1 side for tight fit.
2. Use for concrete that will be concealed in finished Work.

C. Form Ties, Exposed Concrete Locations:

1. Fiberglass Ties: Glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
2. Color: Gray.

D. Form Ties, Concealed Concrete Locations:

1. Snap Ties:

    a. Basis of Design: Provide Loop Tie by Meadow Burke or accepted substitution:

        1) Dayton Superior.

    b. 1 inch diameter by 1 inch deep snap-tie with flattened break-offs and plastic cone.
    c. High strength, non-corrosive, non-staining finish.
    d. One inch minimum break-back below concrete surface.
    e. Wire snap-ties strength and length as required for conditions of installation.
    f. Water seals to inhibit flow of water along tie shaft and to block against leakage.

E. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.

F. Embedded Anchor Shapes, Plates, Angles and Bars: As specified in Section 051200 - Structural Steel Framing.

2.05 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A615, Grade 60, deformed.

2.06 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A615, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.

B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

C. Steel Tie Wire: ASTM A1064, annealed steel, not less than 0.0508 inch in diameter.

1. Finish: Galvanized.

2.07 CONCRETE MATERIALS

A. Source Limitations:

1. Obtain concrete mixtures from a single ready-mixed concrete manufacturer for entire Project.
2. Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant.
3. Obtain aggregate from single source.
4. Obtain admixtures from single source from single manufacturer. If admixtures from different manufacturers are used, concrete supplier to demonstrate compatibility.

B. Cementitious Materials: Portland Cement; ASTM C150, ASTM C595, ASTM C595 or ASTM C1157; as follows:

1. Exterior Locations: Type I and Type IL with specified air entrainment admixture, preferred to Type IA and Type IIA air-entrained concrete. Type IIIA acceptable for cold weather construction.
2. Fly Ash: ASTM C618, Class F or Class C.
3. Slag Cement: ASTM C989, Grade 120.
4. Recycled Ground-Glass Pozzolan: ASTM C1866.

C. Aggregates: ASTM C33.

1. Fine and Course: Class 3M.
2. Maximum Coarse Aggregate Size: 1 inch.

    a. Do not exceed guidelines set forth by ACI for distance between reinforcing steel and thickness of concrete slabs and toppings.

3. Combined Aggregate Gradation: Well graded from coarsest to finest with not more than 18 percent and not less than 8 percent retained on an individual sieve, and less than 8 percent may be retained on sieves finer than No. 50.

D. Water-Reducing and -Retarding Admixture: ASTM C494, Type D.

E. Air-Entraining Admixture: ASTM C260; for use at exterior concrete unless indicated otherwise.

1. Achieve percent entrained air per ACI 318 Table 19.3.3.1, Exposure F2, plus or minus 1 1/2 percent to batch plant concrete mix, for exterior concrete exposed to earth, weather, or freezing temperatures after curing.

2.08 VAPOR RETARDER

A. Underslab Sheet Vapor Retarder: ASTM E1745 Class A and ASTM E1643. Include manufacturer's recommended adhesive or pressure-sensitive tape.

1. Manufacturers: Provide products by one of the following:

    a. Fortifiber Building Systems Group.
    b. Raven Industries, Inc.
    c. Reef Industries, LLC.
    d. Stego Industries, LLC.
    e. W.R. Meadows, Inc.

2. Water Absorption: Maximum 0.01 percent weight-gain maximum after 48-hour immersion at 70 degree F; ASTM D570.
3. Vapor Permeance: ASTM F1249, 0.0086 perms.
4. Thickness: Minimum 15 mil.

2.09 VAPOR RETARDER ACCESSORIES

A. Vapor-Retarder Tape: Pressure-sensitive tape of type recommended by vapor-retarder manufacturer for sealing joints and penetrations in vapor retarder.

B. Adhesive for Vapor Retarders: Product recommended by vapor-retarder manufacturer and has demonstrated capability to bond vapor retarders securely to substrates indicated.

C. Vapor-Retarder Fasteners: Pancake-head, self-tapping steel drill screws; with fender washers.

D. Vapor Barrier Seam Tape: Type as recommended by vapor barrier manufacturer.

E. Pipe Boot: Type as recommended by vapor barrier manufacturer.

F. Vapor Proofing Mastic: Type as recommended by vapor barrier manufacturer.

2.10 SLAB TREATMENTS

A. Integral Hardening Admixture: Increased abrasion, durability and erosion resistance to extend life of concrete. Admixture not to affect slump, setting time, entrained air content and stability. Integral admixture to be used in horizontal, vertical surfaces as indicated on Drawings.

1. Performance Standards:

a. Particle Size: 50 percent less than 100 microns.
b. Specified Gravity: 3.55.
c. Bulk Density: 103 pounds per ft^3.
d. Abrasion Resistance: At least a 66 percent reduction in mass loss per ASTM C627.

B. Non-Pigmented Mineral Dry-Shake Floor Hardener: Factory-packaged, dry combination of portland cement, graded quartz aggregate, color pigments, and plasticizing admixture. Use color pigments that are finely ground, nonfading mineral oxides interground with cement.

1. Products: Provide one of the following:

a. Master Builders Solutions: MasterTop 100.
b. Dayton Superior Corporation: Quartz Tuff.
c. Euclid Chemical Company (The): Surflex Light Reflective.
d. L. M. Scofield Company: Lithochrome Color Hardener.
e. Laticrete International, Inc.: Quartz Plate FF.
f. Metalcrete Industries: Floor Quartz.
g. US Mix Co: Dense Top LR.

2.11 LIQUID FLOOR TREATMENTS

A. Penetrating Liquid Floor Treatment: Clear, chemically reactive, USDA approved, waterborne solution of inorganic silicate or siliconate materials and proprietary components; odorless; that penetrates, hardens, seals, and densifiers concrete surfaces.

1. Products: Provide one of the following:

a. Master Builders Solutions: MasterKure HD 200WB.
b. ChemMasters, Inc.: Chemisil Plus.
c. Curecrete Distribution Inc.: Ashford Formula.
d. Dayton Superior Corporation: Sure Hard Densifier J17.
e. Euclid Chemical Company (The): Euco Diamond Hard.

f. Laticrete International, Inc.: Seal Hard.
g. SprayLock Concrete Protection: SCP 327.
h. SpecChem, LLC: SpecHard.
i. W.R. Meadows, Inc.: LIQUI-HARD.

2. Products shall comply with requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
3. Location: Non-public spaces and back of house areas.

2.12 CURING MATERIALS

A. Contractor's choice between the following:

1. Moisture Curing: Keep surfaces continuously moist for not less than 7 days with water or continuous water-fog spray.
2. Moisture-Retaining Cover: Provide one of the following that complies with ASTM C171:

a. Impervious paper consisting of 2 sheets of kraft paper cemented together by a bituminous adhesive with fiber reinforcement.
b. Polyethylene film, clear, minimum nominal thickness of 0.0040 inch.
c. White-burlap-polyethylene sheet, 40 inches wide, weighing not less than 10 ounces per linear yard.

2.13 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D1751, asphalt-saturated cellulosic fiber.

1. Products: Provide one of the following:

a. Masco Masons Supply Company: Reflex Rubber Joint.
b. Right Pointe Company: Right-Joint Fibre Expansion Joint.
c. SpecChem: SpecFlex Fiber Expansion Joint.
d. W. R. Meadows: FIBRE Expansion Joint.
e. Western Louisville Fiberboard: WLF Expansion Joint.

2. Thickness: 1/2 inch unless indicated otherwise.
3. Colors: Standard Gray.
4. Provide for isolation joints at slab and foundation conditions, and where indicated on Drawings.

B. Semi-Rigid Joint Filler: 2-component, semi rigid, 100 percent solids, aromatic polyurea.

1. Products: Provide one of the following that complies with the Shore A Hardenss test ranging from 85 to 95 according to ASTM D2240:

a. Adhesives Technology Corp.: Crackbond JF-82 Fast.
b. Master Builders Solutions: MasterSeal CR 100.
c. Euclid Chemical Company (The): Euco Qwikjoint 200.
d. MAPEI Corporation: Planiseal RapidJoint 15.
e. Metzger/McGuire: Spal-Pro RS 88.

f. Prime Resins, Inc.: Joint Shield 5500 Polyurea 95A.
g. Sika Corporation: Sika Loadflex-524 EZ.

2. Colors: Standard Gray.
3. Tensile Strength: Minimum of 800 psi according to ASTM D412.
4. Elongation: Minimum 200 percent per ASTM D412.

C. Bonding Agent: ASTM C1059, Type II, nonredispersible, acrylic emulsion or styrene butadiene.

D. Epoxy Bonding Adhesive: ASTM C881, 2-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:

1. Types I and II, non-load bearing and Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

2.14 REPAIR MATERIALS

A. Repair Overlayment for Exterior Exposed Conditions: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch and that can be filled in over a scarified surface to match adjacent floor elevations.

1. Cement Binder: ASTM C150, portland cement as defined in ASTM C219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5,000 psi at 28 days when tested according to ASTM C109.

2.15 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on basis of laboratory trial mixture or field test data, or both, according to ACI 301.

1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

2.16 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Footings:

1. As indicated on Structural Drawings.

B. Exterior Concrete: Normal-weight concrete. Stoop slabs, exterior sidewalks, mechanical equipment pads, and other similar conditions.

1. As indicated on Structural Drawings.

2.17 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.18 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C94 and ASTM C1116, and furnish batch ticket information.

1. When air temperature is between 85 and 90 degree F., reduce mixing and delivery time from 1 1/2 hours to 75 minutes.
2. When air temperature is above 90 degree F., reduce mixing and delivery time to 60 minutes.

B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C94. Mix concrete materials in appropriate drum-type batch machine mixer.

1. For mixer capacity of 1 cubic yard or smaller, continue mixing at least 1 1/2 minutes, but not more than 5 minutes, after ingredients are in mixer, before any part of batch is released.
2. For mixer capacity larger than 1 cubic yard., increase mixing time by 15 seconds for each additional 1 cubic yard.
3. Provide batch ticket for each batch discharged and used in Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

PART 3 - EXECUTION

3.01 FORMWORK INSTALLATION

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:

1. Class A, 1/8 inch for smooth-formed finished surfaces.
2. Class B, 1/4 inch for rough-formed finished surfaces unless indicated otherwise.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Construct forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

1. Install reglets, recesses, and the like, for easy removal.
2. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Form openings, chases, offsets, sinkages, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

H. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

I. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

J. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.02 VAPOR RETARDER INSTALLATION

A. Install per manufacturer's recommendations.

B. Install vapor retarder in accordance ASTM E1643.

1. Verify Concrete Surface Reading (CSP) value complies with manufacturer's required value for vapor retarder bonding.
2. Unroll vapor barrier with the longest dimension parallel with the direction of concrete placement and face laps away from expected direction of the placement.
3. Extend vapor barrier to the perimeter of the slab; terminate at top of slab, or at point acceptable to Structural engineer or where obstructed by impediments, such as dowels, waterstops, or other site condition requiring early termination of the vapor barrier.
4. Seal vapor barrier using method recommended by manufacturer.
5. Overlap joints 6 inches and seal with seam tape.

C. Repair damages from installation and lap seams and terminations.

3.03 EMBEDDED ITEM INSTALLATION

A. Place and secure anchorage devices and other embedded items required for adjoining Work that is attached to or supported by cast-in-place concrete. Use setting Drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.
2. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.

3.04 REMOVING AND REUSING FORMS

A. General: Formwork for sides of beams, walls, columns, and similar parts of Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 degree F. for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations, and curing and protection operations need to be maintained.

1. Leave formwork for beam soffits, joists, slabs, and other structural elements that support weight of concrete in place until concrete has achieved at least 70 percent of its 28 day design compressive strength.
2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

B. Clean and repair surfaces of forms to be reused in Work. Split, frayed, delaminated, or otherwise damaged form-facing material are not acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless accepted by Architect.

3.05 STEEL REINFORCEMENT INSTALLATION

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

1. Weld reinforcing bars according to AWS D1.4/D 1.4M, where indicated.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Install welded-wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least 1 mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.06 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as accepted by Architect.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
2. Form keyed joints as indicated. Embed keys at least 1 1/2 inches into concrete.
3. Locate joints for beams, slabs, joists, and girders in middle third of spans. Offset joints in girders a minimum distance of twice beam width from a beam-girder intersection.
4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at top of footings or floor slabs.
5. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
6. Use a bonding agent at locations where fresh concrete is placed against non-structural hardened or partially hardened concrete surfaces.
7. Use epoxy-bonding adhesive at locations where fresh concrete is placed against structural or load-bearing hardened or partially hardened concrete surfaces, and where curing in humid conditions exist.

C. Control Joints in Slabs-on-Grade: Form weakened-plane control joints, sectioning concrete into areas as indicated on Drawings and accepted Shop Drawings. Verify locations with Architect before proceeding. Construct control joints for a depth equal to at least 1/4 of concrete thickness modified as follows:

1. Early-Entry Sawed Joints: Form contraction joints on both interior and exterior slabs using early-entry dry-cut saws and methods in accordance with ACI 302.1R, Chapter 8.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, , and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Section 079200 - Joint Sealants, are indicated.
3. Install joint-filler strips in full-length. Where more than 1 length is required, lace or clip sections together.

3.07 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of vapor retarder, formwork, reinforcement, and embedded items is complete and that required inspections are completed.

B. Measure, batch, mix, deliver, and provide delivery ticket for each batch of concrete in accordance with ASTM C94.

1. Water is permitted to be added to a batch of concrete at the project site before placement provided that the amount of water added does not exceed the allowed amount indicated on the delivery ticket. Water addition shall only be permitted before any portion of the load is discharged. Samples for quality assurance tests shall be obtained after water addition and additional mixing in accordance with ASTM C94.

2. It is permitted to add water to the concrete mixture during transportation to the jobsite when concrete is transported in truck mixers equipped with automated water measurement and slump or slump flow monitoring equipment in accordance with ASTM C94.

C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

D. Deposit concrete continuously in 1 layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness.

1. If a section cannot be placed continuously, provide construction joints as indicated.
2. Deposit concrete to avoid segregation.

E. Deposit and consolidate concrete for slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Do not place concrete slabs in a checkerboard sequence.
2. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
3. Maintain reinforcement in position on chairs during concrete placement.
4. Screed slab surfaces with a straightedge and strike off to correct elevations.
5. Level concrete, cut high areas, and fill low areas.
6. Slope surfaces uniformly to drains where required. Do not exceed 2% cross slope.
7. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface.
8. Do not further disturb slab surfaces before starting finishing operations.

3.08 FINISHING FORMED SURFACES

A. As-Cast Surface Finishes:

1. ACI 301 Surface Finish SF-1.0: As-cast concrete texture imparted by form-facing material.

a. Patch voids larger than 1 1/2 inches wide or 1/2 inch deep.
b. Remove projections larger than 1 inch.
c. Tie holes do not require patching.
d. Surface Tolerance: ACI 117 Class D.
e. Apply to concrete surfaces not exposed to public view.

3.09 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.

1. Apply float finish to surfaces to receive trowel finish.

C. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.10 AS-CAST FORMED FINISHES

A. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Remove fins and other projections exceeding specified limits on formed-surface irregularities. Repair and patch tie holes and defects.

3.11 TOLERANCES FOR FLOOR FLATNESS

A. Finish concrete surfaces to the following tolerances, according to ASTM E1155, for locations indicated below. Measure flatness within 48 hours after slab installation:

1. Conventional: Specified overall values of flatness, F(F) 20; with minimum local values of flatness, F(F) 17.

a. Locations: Mechanical, electrical, janitorial, and utility rooms.

3.12 MISCELLANEOUS CONCRETE ITEM INSTALLATION

A. Filling In: Fill in holes and openings left in concrete structures after Work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete Work.

3.13 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 305.1 for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/square feet by height before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for remainder of curing period.

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than 7 days with water or continuous water-fog spray.

3.14 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.

1. Defer joint filling until concrete has aged at least 1 month for semi-rigid joint fillers, and 6 months for joint sealants specified in Section 079200. Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.

C. Install semi-rigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.15 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when accepted by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2 1/2 parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

C. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.

4. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
5. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4 inch clearance around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
6. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

D. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.16 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Inspections:

1. Steel reinforcement placement.
2. Steel reinforcement welding.
3. Headed bolts and studs.
4. Verify use of required design mixture.
5. Concrete placement, including conveying and depositing.
6. Curing procedures and maintenance of curing temperature.
7. Verification of concrete strength before removal of shores and forms from beams and slabs.

C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain at least 1 composite sample for each 150 cubic yard or fraction thereof of each concrete mixture placed each day.

    a. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least 5 randomly selected batches or from each batch if fewer than 5 are used.

2. Slump: ASTM C143; 1 test at point of placement for each composite sample, but not less than 1 test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C231, pressure method, for normal-weight concrete; 1 test for each composite sample, but not less than 1 test for each day's pour of each concrete mixture.

4. Concrete Temperature: ASTM C1064; 1 test hourly when air temperature is 40 degree F. and below or 80 degree F. and above, and 1 test for each composite sample.
5. Compression Test Specimens: ASTM C31.

    a. Cast and laboratory cure 3 sets of standard cylinder specimens for each composite sample.
    b. Cast and field cure 3 sets of standard cylinder specimens for each composite sample.

6. Compressive-Strength Tests: ASTM C39; test 1 set of 2 laboratory-cured specimens at 7 days and 1 set of 2 specimens at 28 days.

    a. Test 1 set of 3 field-cured specimens at 7 days and 1 set of 3 specimens at 28 days.

7. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
8. Strength of each concrete mixture will be satisfactory if every average of any 3 consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
9. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7 and 28 day tests.
10. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but may not be used as sole basis for approval or rejection of concrete.
11. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42 or by other methods as directed by Architect.
12. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional Work with specified requirements.
13. Correct deficiencies in Work that test reports and inspections indicate do not comply with Contract Documents.

D. Measure floor and slab flatness and levelness according to ASTM E1155 within 48 hours of finishing and promptly report test results to Architect.

3.17 CONCRETE FINISH SCHEDULE

A. Types and Finishes:

1. CONC-1: Penetrating Liquid Floor Treatment, CSC3, Medium Broom Finish.

    a. Application: Exterior spaces including, but not limited to, courtyards, outdoor classrooms, entrances and exits.

END OF SECTION

SECTION 051200 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Standard structural steel.
2. Exposed aesthetic structural steel.
3. Shrinkage-resistant grout.

1.02 DEFINITIONS

A. Structural Steel: Elements of the structural frame indicated on Drawings and as described in ANSI/AISC 303.

B. Seismic-Load-Resisting System: As noted in Structural Drawings

C. Exposed Structural Steel: Members and connections exposed to view as indicated in the Contract Documents, or in Specification.

D. Demand-Critical Welds: Those welds, the failure of which would result in significant degradation of the strength and stiffness of the seismic-load-resisting system and which are indicated as "demand critical" or "seismic critical" on Drawings.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Pre-Erection Conference: Meeting to include Owner, Architect, manufacturer, and the steel erector's personnel supervising installation of structural steel to review installation procedures including handling, fit-up and fastening.

1. Time: At least 3 weeks from commencement of Work.
2. Review sequencing of structural steel and installation of anchorage items to be embedded in or attached to other construction without delaying the Work.

    a. Review setting diagrams, sheet metal templates, instructions, and directions for installation.

1.04 ACTION SUBMITTALS

A. Product Data:

1. Structural-steel materials.
2. High-strength, bolt-nut-washer assemblies.
3. Anchor rods.
4. Threaded rods.

5. Forged-steel hardware.
6. Shop primer.
7. Etching cleaner.
8. Galvanized repair paint.
9. Shrinkage-resistant grout.
10. Filler.
11. Thermal Break Material.

B. Shop Drawings: Show fabrication of structural-steel components.

1. Structural steel Shop Drawings shall contain sufficient detail and information to allow complete fabrication and erection of structure without reference to Contract Drawings either on fabrication shop floor or Project site. Steel detailer shall generate shop Drawings fabrication and installation details from Structural and Architectural Drawings and Specifications. Do not reproduce or use photocopies of Contract Drawings. When CAD or REVIT files are provided, it is detailer's responsibility to remove information not directly relevant information or references to outside sources in creation of Drawings:

    a. Identify exposed aesthetic structural steel for each steel member and connection, including transitions between exposed aesthetic structural steel categories and between exposed aesthetic structural steel and standard structural steel.
    b. Indicate orientation of mill marks and HSS seams on exposed aesthetic structural steel members.
    c. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
    d. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
    e. Indicate grinding, finish, and profile of welds on exposed aesthetic structural steel members.
    f. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical, high-strength bolted connections. Indicate orientation and location of bolt heads on exposed aesthetic structural steel members.
    g. Indicate exposed surfaces and edges and surface preparation being used on exposed aesthetic structural steel members.
    h. Indicate special tolerances and erection requirements on exposed aesthetic structural steel members.
    i. Indicate weep holes for HSS and vent holes for galvanized HSS.
    j. Indicate surface preparation, primer, and coating requirements, including systems specified in other Sections on exposed aesthetic structural steel members.
    k. Identify members and connections of the seismic-load-resisting system.
    l. Identify demand-critical welds.
    m. Identify members not to be shop primed.

C. Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide in accordance with AWS D1.1 for each welded joint whether prequalified or qualified by testing, including the following:

1. Power source (constant current or constant voltage).
2. Electrode manufacturer and trade name, for demand-critical welds.

D. Samples: Submit Samples to set quality standards for exposed aesthetic structural steel.

E. Material Test Reports:

1. Surface Dust Tests.
2. Surface Roughness Tests.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For fabricator.

1. Provide project list to show compliance with requirements

B. Welding certificates.

C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

D. Mill test reports for structural-steel materials, including chemical and physical properties.

E. Product Test Reports: For the following:

1. Bolts, nuts, and washers, including mechanical properties and chemical analysis.
2. Direct-tension indicators.
3. Shop primers.
4. Nonshrink grout.

F. Survey of existing conditions.

G. Source quality-control reports.

H. Field quality-control reports.

1.06 QUALITY ASSURANCE

A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category BU or is accredited by the IAS Fabricator Inspection Program for Structural Steel (Acceptance Criteria 172).

1. Minimum of 5 years experience in structural steel fabrication, including involvement in not less than 3 projects of similar or greater size and complexity. Fabricator shall have own fabrication plant that has operated for at least 5 years.
2. Notify Owner and Architect if Work subcontracted to other fabricators. Subcontracted fabricators to provide qualification verification.

B. Installer Qualifications: Installer shall have minimum of 5 years experience in structural steel installation., including involvement in at least 3 projects of similar, or greater, size and complexity.

C. Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.1.

1. Welders and welding operators performing work on bottom-flange, demand-critical welds shall pass the supplemental welder qualification testing, as required by AWS D1.8/D1.8M. FCAW-S and FCAW-G shall be considered separate processes for welding personnel qualification.
2. Shop and field welders to be WABO certified or accepted equivalent as accepted by Architect and Building Official.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.

1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.

1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
2. Clean and relubricate bolts and nuts that become dry or rusty before use.
3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F3125, Grade F1852 bolt assemblies and for retesting bolt assemblies after lubrication.

C. Use special care in handling to prevent twisting, warping, nicking, and other damage during fabrication, delivery, and erection. Store materials to permit easy access for inspection and identification. Keep exposed aesthetic structural steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect exposed aesthetic structural steel members and packaged materials from corrosion and deterioration.

PART 2 - PRODUCTS

2.01 STRUCTURAL-STEEL MATERIAL

A. Structural Steel Shapes, Plates, Angles, Bars, and Rods: As specified in General Structural Notes.

B. W-Shapes: ASTM A992.

C. Channels, Angles: ASTM A36.

D. Plate and Bar: ASTM A572, Grade 50.

E. Cold-Formed Hollow Structural Sections: ASTM A500, Grade C structural tubing.

F. Welding Electrodes: Comply with AWS requirements.

2.02 BOLTS AND CONNECTORS

A. High-Strength A325 Bolts, Nuts, and Washers: ASTM A325, Type 1, heavy hex steel structural bolts; ASTM A563heavy hex carbon-steel nuts; and ASTM F436hardened carbon-steel washers.

1. Finish: Plain, Hot-dip zinc coating, ASTM A153, Class C.

B. High-Strength A490 Bolts, Nuts, and Washers: ASTM A490, Type 1, heavy hex steel structural bolts or tension-control, bolt-nut-washer assemblies with splined ends; ASTM A563 heavy hex carbon-steel nuts; and ASTM F436 hardened carbon-steel washers, plain.

C. Zinc-Coated High-Strength A325 Bolts, Nuts, and Washers: ASTM F3125, Grade A325, Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436, Type 1, hardened carbon-steel washers.

1. Finish: Hot-dip or mechanically deposited zinc coating.
2. Direct-Tension Indicators: ASTM F959, Type 325-1, compressible-washer type with mechanically deposited zinc coating finish.

D. Threaded Rods: ASTM A36.

1. Nuts: ASTM A563 heavy hex carbon steel.
2. Washers: ASTM A36 carbon steel.
3. Finish: Plain.

2.03 FILLER

A. Polyester filler intended for use in repairing dents in automobile bodies.

2.04 SHRINKAGE-RESISTANT GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

B. Compressive Strength: Per General Structural Notes.

2.05 FABRICATION, STANDARD STRUCTURAL STEEL

A. Fabricate and assemble in shop to greatest extent possible. Fabricate in accordance with ANSI/AISC 303 and to ANSI/AISC 360.

1. Camber structural-steel members where indicated.
2. Fabricate beams with rolling camber up.
3. Identify high-strength structural steel in accordance with ASTM A6 and maintain markings until structural-steel framing has been erected.
4. Mark and match-mark materials for field assembly.
5. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.

B. Re-Entrant Corners: Provide 1/2 inch radius at re-entrant corners, unless noted otherwise.

C. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.

1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1.

D. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.

E. Cleaning: Clean and prepare galvanized and ungalvanized steel surfaces to remain unpainted in accordance with SSPC-SP 2.

F. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel members.

1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning. Thermal cutting of holes is permitted with a surface roughness profile not exceeding 1,000 mico-inches as defined in ASME B46.1
2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

2.06 FABRICATION, EXPOSED AESTHETIC STRUCTURAL STEEL

A. Shop fabricate and assemble exposed aesthetic structural steel to the maximum extent possible. Locate field joints at concealed locations if possible. Detail assemblies to minimize handling and to expedite erection.

1. Use special care handling and fabricating exposed aesthetic structural steel before and after shop painting to minimize damage to shop finish.

B. Category 1:

1. Comply with overall profile dimensions of AWS D1.1 for welded built-up members. Keep appearance and quality of welds consistent. Maintain true alignment of members without warp exceeding specified tolerances.
2. Prepare surfaces according to Part 2 "Shop Priming" Article and SSPC-SP 6 (WAB)/NACE WAB-3.
3. Grind sheared, punched, and flame-cut edges to remove burrs and provide smooth surfaces and eased edges.
4. Make intermittent welds appear continuous, using filler or additional welding.
5. Seal weld open ends of hollow structural sections with 3/8 inch closure plates.
6. Limit butt and plug weld projections to 1/16 inch.
7. Install bolt heads on same side of each connection and maintain orientation consistently from one connection to another.
8. Remove weld spatter, slivers, and similar surface discontinuities.
9. Remove blemishes and surface irregularities resulting from temporary braces or fixtures by filling or grinding, before cleaning, treating, and shop priming.
10. Grind tack welds smooth unless incorporated into final welds.
11. Remove backing and runoff tabs, and grind welds smooth.
12. Limit as-fabricated straightness tolerance to one-half that permitted for structural-steel materials in ANSI/AISC 303.

13. Limit as-fabricated curved structural steel tolerance to that permitted for structural-steel materials in ANSI/AISC 303.
14. Limit as-fabricated straightness tolerance of welded built-up members to one-half that permitted by AWS D1.1/D1.1M.
15. Conceal fabrication and erection markings from view in the completed structure.
16. Make welds uniform and smooth.

2.07 SHOP CONNECTIONS

A. High-Strength Bolts: Shop install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for type of bolt and type of joint specified.

1. Joint Type: Snug tightened.

B. Weld Connections: Comply with AWS D1.1 for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. For demand critical welds, comply with AWS D1.8, seismic supplement including the following requirements:
2. Continuously seal joined members exposed to weather by continuous welds.
3. Tack welds incorporated into the final weld and weld repairs of demand critical welds shall be of the same quality as the final welds, including preheat requirements. The filler metals shall be identical.

C. Erection Connections, etc: Place holes, plates, or other attachments required by the Erector so as not to interfere with or cause other detrimental effect to structural members or their connections. Holes and attachments not permitted in the 'protected zone' as described in the Drawings.

2.08 FINISHING

A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to uncoated structural steel, nuts, bolts, and fasteners in accordance with ASTM A123.

1. Fill vent and drain holes that will be exposed in the finished Work unless they will function as weep holes, by plugging with zinc solder and filing off smooth.
2. Weep holes shall be provided at exterior closed sections where moisture may accumulate. Sizes shall be in accordance with ASTM A123.
3. Galvanize lintels, shelf angles, and welded door frames attached to structural-steel frame and located in exterior walls.
4. Materials for galvanizing shall be geometrically suitable for galvanizing as specified in ASTM A384 and A385. For built-up members, assemblies shall be fabricated as required to limit warping and distortion.

B. Steel that will be finished by hot dip galvanizing shall have controlled silicon and phosphorus contents. The silicon content shall be in either of the ranges 0 to 0.04 percent or 0.15 percent to 0.25 percent, the phosphorus content shall be below 0.04 percent. Before galvanizing, submit mill test certificates verifying silicon and phosphorus contents to the Architect and galvanizer.

C. Where welding required, weld to fullest possible extent prior to galvanizing.

D. Bolts, nuts and washers, and iron and steel hardware components shall be galvanized by the hot-dip process in accordance with ASTM A153.

E. Surface Preparation: Steel shall be free of visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter: Clean steel in accordance with Steel Structures Painting Council SSPC-SP-6 Commercial Blast Cleaning.□

F. Intermediate and Top Coat: High-Performance Coating as specified in Section 099000 - Painting and Coating.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify, with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.

1. Prepare a certified survey of existing conditions. Include bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.

B. Examine exposed aesthetic structural steel for twists, kinks, warping, gouges, and other imperfections before erecting.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated on Drawings.

1. Do not remove temporary shoring supporting composite deck construction and structural-steel framing until cast-in-place concrete has attained its design compressive strength.

3.03 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and in accordance with ANSI/AISC 303 and ANSI/AISC 360.

B. Baseplates: Clean concrete-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

1. Set plates for structural members on wedges, shims, or setting nuts as required.
2. Weld plate washers to top of baseplate.

3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
4. Promptly pack shrinkage-resistant grout solidly between bearing surfaces and plates, so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for grouting.

C. Maintain erection tolerances of structural steel within ANSI/AISC 303.

D. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that are in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure. Slope roof framing members to slopes indicated on Drawings.
2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.

E. Splice members only where indicated on Structural Drawings.

F. Do not use thermal cutting during erection unless approved by Architect. Finish thermally cut sections within smoothness limits in AWS D1.1.

G. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

H. Exposed Aesthetic Structural Steel Requirements: Comply with the following in addition to requirements specified above.

1. Avoid marking or distorting exposed aesthetic structural steel to minimize damage to shop painting/priming.
2. Set exposed aesthetic structural steel accurately in locations; to elevations indicated and according to ANSI/AISC 303 and ANSI/AISC 360.
3. Remove welded tabs that were used for attaching temporary bracing and safety cabling and that are exposed to view in completed Work. Take care to avoid blemishes, holes, or unsightly surfaces resulting from use or removal of temporary elements.
4. Grind tack welds smooth.
5. Remove backing and runoff tabs, and grind welds smooth.
6. Conceal fabrication and erection markings from view in completed structure.

I. In addition to ANSI/AISC 303, Section 10 requirements, comply with the following.

1. Erection of Category 1:

a. Erect exposed aesthetic structural steel to standard frame tolerances specified in ANSI/AISC 303 for standard structural steel.

1) Exception: Erect canopies to not exceed one-half the tolerances specified in ANSI/AISC 303.

b. Comply with AWS D1.1. Keep appearance and quality of welds consistent. Maintain true alignment of members without warp exceeding specified tolerances.

c. Remove weld spatter, slivers, and similar surface discontinuities.
d. Grind off butt and plug weld projections larger than 1/16 inch.
e. Make continuous welds of uniform size and profile.
f. Ream holes that must be enlarged. Use of drift pins or burning is not permitted. Replace misaligned connection plates where holes cannot be aligned with acceptable appearance.
g. Splice members only where indicated on Drawings.
h. No torch cutting or field fabrication is permitted.

J. Reaming: Light drifting will be permitted to draw the parts together, but drifting to match unfair holes will not be permitted. Any enlargement of holes necessary to make connections in the field shall be done by reaming with twist drills, care being taken not to weaken the adjoining metal. If, in the judgement of the Engineer/Architect, the extent of the reaming is such that holes cannot be properly filled or accurately adjusted after reaming, the faulty member shall be discarded and replaced with a new one, and costs and expenses resulting therefrom shall be paid by the Contractor.

K. Cutting and Fitting: No cutting of sections, either flanges, webs, stems or angles shall be done by the Contractor without the consent of the Engineer/Architect, unless this cutting is particularly specified or shown on the Drawings

L. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors.

3.04 FIELD CONNECTIONS

A. High-Strength Bolts: Install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for bolt and joint type specified.

1. Joint Type: Snug tightened.

B. Weld Connections: Comply with AWS D1.1 for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Comply with ANSI/AISC 303 and ANSI/AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
2. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.
3. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in ANSI/AISC 303 for mill material.

3.05 REPAIR

A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing, and repair galvanizing to comply with ASTM A780 Molten Zinc Repair.

B. Field-Touchup Painting:

1. Immediately after erection, clean exposed areas where primer is damaged or missing, and paint with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

a. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.

2. Cleaning and touchup painting are specified in Section 099000 - Painting and Coating.

3.06 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector to perform the following special inspections:

1. Verify structural-steel materials and inspect steel frame joint details.
2. Verify weld materials and inspect welds.
3. Verify connection materials and inspect high-strength bolted connections.

B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections. This will include inspection of exposed aesthetic structural steel.

1. Bolted Connections: Inspect and test bolted connections in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts."
2. Welded Connections: Visually inspect field welds in accordance with AWS D1.1.

a. In addition to visual inspection, test and inspect field welds in accordance with AWS D1.1 and the following inspection procedures, at testing agency's option:

1) Liquid Penetrant Inspection: ASTM E165.
2) Magnetic Particle Inspection: ASTM E709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
3) Ultrasonic Inspection: ASTM E164.
4) Radiographic Inspection: ASTM E94.

C. Architect will observe exposed aesthetic structural steel in place to determine acceptability relating to aesthetic effect.

3.07 STRUCTURAL STEEL FINISH SCHEDULE

A. Finishes: Structural steel level attributes and zinc-coating as indicated; hidden from view structural steel not to receive high-performance coating.

1. STL-1:

a. Zinc Application: Hot-dipped galvanized.
b. Edges: Ground smooth.
c. Tolerance: One-half of standard fabrication tolerances.
d. Visible Marks: Mill marks removed, no visible mill marks.
e. Connections: Bolted, unless indicated otherwise on Drawings.

1) Weld Appearance: Continuous, splatters removed.

f. Finish Category: Category 1.
g. Finish: As galvanized, quenching acceptable.

h. Intermediate and Top Coat: High-Performance Coating as specified in Section 099000 - Painting and Coating.

END OF SECTION

SECTION 053100 - STEEL DECKING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Steel structural roof deck.

1.02 ACTION SUBMITTALS

A. Product Data: For the following:

1. Roof deck.

B. Shop Drawings:

1. Include layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.

1.03 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Product Certificates: For each type of steel deck.

C. Research Reports: For steel deck, from ICC-ES.

D. Field quality-control reports.

1.04 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM E329 for testing indicated.

B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."

B. Fire-Resistance Ratings: Comply with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.02 ROOF DECK

A. Manufacturers: As indicated on Structural Drawings. Provide products by one of the following:

1. ASC Profiles, Inc., DGB-36
2. Verco Decking, Inc., a Nucor company, PLB-36

B. Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 31, and with the following:

1. Galvanized-Steel Sheet: ASTM A653, Structural Steel (SS), Minimum steel yield strength as specified in the Structural Notes and Drawings. G60 zinc coating.
2. Deck Profile: As indicated on Structural Drawings .
3. Profile Depth: As indicated on the Structural Drawings.
4. Design Uncoated-Steel Thickness: As indicated on the Structural Drawings.
5. Span Condition: As indicated on the Structural Drawings.
6. Side Laps: As indicated on the Structural Drawings and in accordance with manufactuer's written recommendations.

2.03 ACCESSORIES

A. Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.

B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.

C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.

D. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.

E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359 inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.

F. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck unless otherwise indicated. Refer to Secction 076200 - Sheet Metal Flashing and Trim.

G. Piercing Hanger Tabs: Piercing steel sheet hanger attachment devices for use with floor deck.

H. Flat Sump Plates: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck. For drains, cut holes in the field.

I. Galvanizing Repair Paint: SSPC-Paint 20 or MIL-P-21035B, with dry film containing a minimum of 94 percent zinc dust by weight.

J. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION, GENERAL

A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 31, manufacturer's written instructions, and requirements in this Section.

B. Install temporary shoring before placing deck panels if required to meet deflection limitations.

C. Locate deck bundles to prevent overloading of supporting members.

D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.

E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.

F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.

G. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.

H. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.

I. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer's written instructions.

3.03 INSTALLATION OF ROOF DECK

A. Fasten roof-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated or arc seam welds with an equal perimeter that is not less than 1 1/2 inches long, and as follows:

1. Weld Diameter: As indicated on Structural Drawings. (19 mm)
2. Weld Spacing: As indicated on Structural Drawings. (457 mm).
3. Weld Washers: Install weld washers at each weld location.

B. Side-Lap and Perimeter Edge Fastening: As indicated on Structural Drawings.

C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1 1/2 inches, with end joints as follows:

1. End Joints: Lapped 2 inches minimum.

D. Roof Sump Pans and Sump Plates: Install over openings provided in roof deck and weld flanges to top of deck. Space welds not more than 12 inches apart with at least one weld at each corner.

1. Install reinforcing channels or zees in ribs to span between supports and weld.

E. Miscellaneous Roof-Deck Accessories: Install finish strips, and reinforcing channels according to deck manufacturer's written instructions. Weld to substrate to provide a complete deck installation.

3.04 REPAIR

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A780 and manufacturer's written instructions.

B. Repair Painting:

1. Wire brush and clean rust spots, welds, and abraded areas on both surfaces of prime-painted deck immediately after installation, and apply repair primer.
2. Apply repair paint, of same color, to bottom surfaces of deck exposed to view.

3.05 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Field welds will be subject to inspection.

C. Testing agency will report inspection results promptly and in writing to Contractor and Architect.

D. Remove and replace work that does not comply with specified requirements.

E. Additional inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

END OF SECTION

SECTION 055000 - METAL FABRICATIONS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Steel framing and supports for:

    a. Applications where framing and supports are not specified in other Sections.

2. Miscellaneous steel trim
3. Loose bearing and leveling plates for applications where they are not specified in other Sections.

B. Products Furnished But Not Installed Under This Section:

1. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts indicated to be cast into concrete or built into unit masonry.
2. Steel weld plates and angles for casting into concrete for applications where they are not specified in other Sections.

1.02 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
2. Coordinate installation of metal fabrications that are anchored to or that receive other Work. 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.

1.03 ACTION SUBMITTALS

A. Product Data: For the following:

1. Paint products.
2. Grout.

B. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide Shop Drawings for the following:

1. Steel framing and supports for mechanical and electrical equipment.

2. Steel framing and supports for applications where framing and supports are not specified in other Sections.

1.04 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

C. Research/Evaluation Reports: For post-installed anchors, from ICC-ES.

1.05 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."
3. AWS D1.6/D1.6M, "Structural Welding Code - Stainless Steel."

1.06 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.01 PERFORMANCE CRITERIA

A. Recycled Content: Specified steel shall have recycled content with a minimum of 50 percent recycled content.

B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.

1. Temperature Change: 120 degree F., ambient; 180 degree F., material surfaces.

2.02 METALS

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Steel Plates, Shapes, and Bars: ASTM A36.

C. Stainless-Steel Sheet, Strip, and Plate: ASTM A240 or ASTM A666, Type 304.

D. Stainless-Steel Bars and Shapes: ASTM A276, Type 304.

E. Steel Tubing: ASTM A500, cold-formed steel tubing.

F. Steel Pipe: ASTM A53, Standard Weight unless otherwise indicated.

G. Cast Iron: Either gray iron, ASTM A48, or malleable iron, ASTM A47, unless otherwise indicated.

H. Aluminum Plate and Sheet: ASTM B209, Alloy 5005-H34 or 6061-T6.

I. Aluminum Extrusions: ASTM B221, Alloy 6063-T6.

J. Aluminum Castings: ASTM B26, Alloy 443.0-F.

K. Aluminum: Provide alloy and temper recommended by aluminum producer for type of use indicated, and with not less than strength and durability properties of alloy and temper designated below for each aluminum form required.

1. Extruded Bars and Shapes: ASTM B221

L. Nickel Silver Extrusions: ASTM B151, Alloy UNS No. C74500.

M. Nickel Silver Castings: ASTM B584, Alloy UNS No. C97600 (20 percent leaded nickel bronze).

2.03 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.

1. Provide stainless-steel fasteners for fastening aluminum.
2. Provide stainless-steel fasteners for fastening stainless steel.
3. Provide stainless-steel fasteners for fastening nickel silver.

B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A; with hex nuts, ASTM A563; and, where indicated, flat washers.

C. High-Strength Bolts, Nuts, and Washers: ASTM F3125,Grade A325, Type 3, heavy-hex steel structural bolts; ASTM A563, Grade DH3, heavy-hex carbon-steel nuts; and where indicated, flat washers.

D. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, ASTM F593; with hex nuts, ASTM F594; and, where indicated, flat washers; Alloy Group 1.

E. Anchor Bolts: ASTM F1554, Grade 36, of dimensions indicated; with nuts, ASTM A563; and, where indicated, flat washers.

1. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.

F. Expansion Anchors: Anchor bolt and sleeve assembly with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry and 4 times the load imposed when installed in concrete, as determined by testing per ASTM E488, conducted by a qualified independent testing agency.

1. Material for Anchors in Exterior Locations: Alloy Group 1 stainless-steel bolts complying with ASTM F593 and nuts complying with ASTM F594.

a. Acceptable Product: Kwik Bolt by Hilti or approved substitution.

G. Cast-in-Place Anchors in Concrete: Either threaded type or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A47 malleable iron or ASTM A27 cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F2329.

H. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors.

1. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainless-steel bolts, ASTM F593, and nuts, ASTM F594.

2.04 MISCELLANEOUS MATERIALS

A. Cold-Applied Zinc Primers: As specified in Section 051200 - Structural Steel Framing.

B. Cold Galvanizing Compound: High-zinc-dust-content paint complying with SSPC-Paint 20 or ASTM A780, and is compatible with paints specified to be used over it.

1. Products: Provide one of the following:

a. Alvin Products; a div. of Dampney Co., Inc.: Galvax.
b. Rust-Oleum: 7000 System Cold Galvanizing Compound.
c. ITW Professional Brands; LPS: Cold Galvanize Corrosion INHIBITOR.
d. ZRC Worldwide: Galvilite.
e. Accepted substitution.

2. Zinc Content: Minimum 93 percent by weight.

C. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187.

D. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107, factory-packaged, nonmetallic aggregate grout; recommended by manufacturer for interior and exterior use; noncorrosive and nonstaining; mixed with water to consistency suitable for application and a 30-minute working time.

2.05 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing Work.

D. Form exposed Work with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

J. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1 1/2 inches, with a minimum 6 inch embedment and 2 inch hook, not less than 8 inches from ends and corners of units and 24 inches on center, unless otherwise indicated.

2.06 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.

1. Furnish inserts for units installed after concrete is placed.

C. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.

1. Minimum Base-Metal Thickness: 0.018 inch.

D. Galvanize miscellaneous framing and supports, unless noted otherwise.

2.07 MISCELLANEOUS STEEL TRIM

A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.

B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other Work.

1. Provide with integrally welded steel strap anchors for embedding in concrete or masonry construction.

C. Hot-dip galvanize exterior miscellaneous steel trim.

2.08 LOOSE BEARING AND LEVELING PLATES

A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.

B. Finish: Hot-dip galvanize.

2.09 STEEL WELD PLATES AND ANGLES

A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete Work. Provide each unit with no fewer than 2 integrally welded steel strap anchors for embedding in concrete.

2.10 FINISHES, GENERAL

A. Finish metal fabrications after assembly.

B. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.11 STEEL FINISHES

A. Cold-Applied Zinc: As specified in Section 051200 - Structural Steel Framing.

1. Shop prime iron and steel items not indicated to be galvanized unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicate.
2. Stripe paint corners, crevices, bolts, welds, and sharp edges.
3. Cold-apply zinc to elements scheduled to be painted.

B. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A153 for steel hardware and with ASTM A123 for other steel products.

1. Galvanize elements scheduled not to be painted.

2.12 ALUMINUM FINISHES

A. As-Fabricated Finish: AA-M12.

B. Clear Anodic Finish: AAMA 611, Class I, AA-M12C22A41.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

F. Corrosion Protection: Coat concealed surfaces of aluminum that come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:

1. Cast Aluminum: Heavy coat of bituminous paint.
2. Extruded Aluminum: 2 coats of clear lacquer.

3.02 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

3.03 INSTALLING BEARING AND LEVELING PLATES

A. Clean concrete bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of plates.

B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with nonshrink grout. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.04 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with zinc-rich primer/painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0 mil dry film thickness.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780.

C. Damaged Shop Primed Ferrous Metal Surfaces: Reapply specified shop primer to make free of scratches and stains.

D. Damaged Galvanized Surfaces to Receive Finish Coating: Touch up with specified inorganic, zinc rich, urethane primer.

E. Damaged Galvanized Surfaces to remain Unfinished: Touch up with specified cold galvanizing compound.

F. Site Welding: Clean and strip primed steel to bare metal where site welding is required and apply touch-up primer or cold galvanizing compound.

END OF SECTION

SECTION 071113 - BITUMINOUS DAMPPROOFING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Cold-applied, emulsified-asphalt dampproofing.

1.02 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.03 FIELD CONDITIONS

A. Weather Limitations: Proceed with application only when existing and forecasted weather conditions permit dampproofing to be performed according to manufacturers' written instructions.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Source Limitations: Obtain primary dampproofing materials and primers from single source from single manufacturer. Provide protection course auxiliary materials recommended in writing by manufacturer of primary materials.

2.02 PERFORMANCE CRITERIA

A. VOC Content: Less than 500 g/L or authorities having jurisdiction; whichever is lower.

B. Coat Thickness: Not exceeding ASTM D1227.

2.03 COLD-APPLIED, EMULSIFIED-ASPHALT DAMPPROOFING

A. Manufacturers: Provide one of the follwing specified products:

1. BASF Corporation: MasterSeal 615.
2. Euclid Chemical Company (The); an RPM company: Dehydratine 75.
3. Henry Company: HE307 - Fibered Asphalt Emulsion.
4. Karnak Corp.: 220AF Fibered Emulsion Dampproofing.
5. W. R. Meadows, Inc.: Sealmastic Type II.

B. Trowel Coats: ASTM D 1227, Type II, Class 1.

C. Fibered Brush and Spray Coats: ASTM D 1227, Type II, Class 1.

D. Brush and Spray Coats: ASTM D 1227, Type III, Class 1.

2.04 AUXILIARY MATERIALS

A. Furnish auxiliary materials recommended in writing by dampproofing manufacturer for intended use and compatible with bituminous dampproofing.

B. Emulsified-Asphalt Primer: ASTM D1227, Type III, Class 1, except diluted with water as recommended in writing by manufacturer.

C. Asphalt-Coated Glass Fabric: ASTM D1668, Type I.

D. Patching Compound: Asbestos-free fibered mastic of type recommended in writing by dampproofing manufacturer.

E. Protection Course: Provide the following:

1. Semirigid sheets of fiberglass or mineral-reinforced-asphaltic core, ASTM D6506, pressure laminated between two asphalt-saturated fibrous liners; 1/4 inch thick.
2. Manufacturers:

a. Provide product from approved dampproofing manufacturer, or accepted substitution.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for surface smoothness, maximum surface moisture content, and other conditions affecting performance of Work.

B. Proceed with application only after substrate construction and penetrating work have been completed and unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean, prepare, and treat substrates according to manufacturer's written instructions. Provide clean, dust-free, and dry substrates for dampproofing application.

B. Mask or otherwise protect adjoining exposed surfaces from being stained, spotted, or coated with dampproofing. Prevent dampproofing materials from entering and clogging weep holes and drains.

C. Clean substrates of projections and substances detrimental to dampproofing Work; fill voids, seal joints, and remove bond breakers if any.

D. Apply patching compound to patch and fill tie holes, honeycombs, reveals, and other imperfections.

3.03 APPLICATION, GENERAL

A. Comply with manufacturer's written instructions for dampproofing application, cure time between coats, and drying time before backfilling unless otherwise indicated.

1. Apply dampproofing to provide continuous plane of protection.
2. Apply additional coats if recommended in writing by manufacturer or to achieve a smooth surface and uninterrupted coverage.

B. Where dampproofing footings and foundation walls, apply from finished-grade line to top of footing; extend over top of footing and down a minimum of 6 inches over outside face of footing.

1. Extend dampproofing 12 inches onto intersecting walls and footings, but do not extend onto surfaces exposed to view when Project is completed.
2. Install flashings and corner protection stripping at internal and external corners, changes in plane, construction joints, cracks, and where indicated as "reinforced," by embedding an 8 inch-wide strip of asphalt-coated glass fabric in a heavy coat of dampproofing. Dampproofing coat for embedding fabric is in addition to other coats required.

3.04 COLD-APPLIED, EMULSIFIED-ASPHALT DAMPPROOFING

A. Concrete Foundations: Apply 2 brush or spray coats at not less than 1.5 gallon/100 square foot for first coat and 1 gallon/100 square foot for second coat.

3.05 PROTECTION COURSE INSTALLATION

A. Install protection course over completed-and-cured dampproofing. Comply with dampproofing-material and protection-course manufacturers' written instructions for attaching protection course.

1. Support protection course over cured coating with spot application of adhesive type recommended in writing by protection-board manufacturer.
2. Install protection course on same day of dampproofing installation (while coating is tacky) to ensure adhesion.

3.06 PROTECTION

A. Correct dampproofing that does not comply with requirements; repair substrates, and reapply dampproofing.

END OF SECTION

SECTION 071416 - COLD FLUID-APPLIED WATERPROOFING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Cold-fluid applied waterproofing

1.02 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review waterproofing requirements including, but not limited to, the following:

a. Surface preparation specified in other Sections.
b. Minimum curing period.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, and tested physical and performance properties of waterproofing.
2. Include manufacturer's written instructions for evaluating, preparing, and treating substrate.

B. Shop Drawings:

1. Indicate locations and extent of waterproofing.
2. Include details for substrate joints and cracks, and termination conditions.

1.04 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by waterproofing manufacturer.

1.06 FIELD CONDITIONS

A. Environmental Limitations: Apply waterproofing within the range of ambient and substrate temperatures recommended in writing by waterproofing manufacturer.

1. Do not apply waterproofing to a damp or wet substrate, when relative humidity exceeds 85 percent, or when temperatures are less than 5 deg F above dew point.
2. Do not apply waterproofing in snow, rain, fog or mist, or when such weather conditions are imminent during application and curing period.

1.07 WARRANTY

A. Manufacturer's Special Warranty: Manufacturer agrees to repair or replace waterproofing that fails in materials or workmanship within specified warranty period.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 SOURCE LIMITATIONS

A. Obtain waterproofing materials and protection course, from single source and from single manufacturer.

2.02 COLD-FLUID APPLIED WATERPROOFING

A. Single-Coat System: Unreinforced, Liquid Waterproofing Membrane. Water-based, polymer-modified, liquid, complying with ASTM C836. Coal-tar free.

1. Basis of Design: Subject to compliance with requirements, provide one of the following:
   a. Henry Co.: CM100
   b. Carlisle: Miraseal
   c. Soprema: Colphene LM Barr
   d. W.R. Medows, Inc.: Hydralastic 836

2. Cured Film Thickness: 0.060 inch.
3. Solids Content: 97-100%
4. Tensile Strength: 100- 250 psi.
5. Flexibility: Comply with ASTM D1644.
6. Peel Adhesion to Concrete: 5 pounds per inch minimum.
7. Hydrostatic-Head/Pressure Resistance: 65 feet/100 psiaverage; ASTM D5385.
8. Elongation at Break: 360% ; ASTM D412.
9. Water Vapor Permeance (Dry Cup): 0.05 perm maximum, ASTM E96.

2.03 AUXILIARY MATERIALS

A. General: Provide auxiliary materials recommended in writing by waterproofing manufacturer for intended use and compatible with one another and with waterproofing.

1. Furnish liquid-type auxiliary materials that comply with VOC limits of authorities having jurisdiction.

B. Primer: Manufacturer's standard primer, sealer, or surface conditioner; factory-formulated.

C. Joint Reinforcing Strip: Manufacturer's recommended fiberglass mesh or polyester fabric.

D. Joint Sealant: Multicomponent polyurethane sealant, compatible with waterproofing; ASTM C920, Type M, Class 25 or greater; Grade NS for sloping and vertical applications and Grade P for deck applications; Use NT exposure as specified in Section 079200 "Joint Sealants" Insert requirement; and as recommended by manufacturer for substrate and joint conditions.

1. Backer Rod: Closed-cell polyethylene foam.

2.04 PROTECTION COURSE

A. Protection Course, Semirigid Sheets of Fiberglass or Mineral-Reinforced Asphaltic Core: ASTM D6506, pressure laminated between two asphalt-saturated fibrous liners and as follows:

1. Manufacturers:

a. Provide product from approved waterproofing manufacturer, or accepted substitution.

2. Thickness:

a. 1/4 inch

3. Adhesive: Rubber-based solvent type recommended in writing by waterproofing manufacturer.

PART 3 - EXECUTION

3.01 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 concrete has cured and aged for minimum time period recommended in writing by waterproofing manufacturer.
2. Verify that substrate is visibly dry and within the moisture limits recommended in writing by manufacturer. Test for capillary moisture by plastic sheet method in accordance with ASTM D4263.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean, prepare, and treat substrates in accordance with manufacturer's written instructions. Provide clean, dust-free, and dry substrates for waterproofing application.

B. Mask off adjoining surfaces not receiving waterproofing to prevent spillage and overspray affecting other construction.

C. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, acid residues, and other contaminants from substrate.

3.03 PREPARATION AT TERMINATIONS, PENETRATIONS, AND CORNERS

A. Prepare surfaces at terminations and penetrations through waterproofing and at expansion joints, drains, sleeves, and corners in accordance with waterproofing manufacturer's written instructions and to recommendations in ASTM C898 and ASTM C1471.

B. Apply waterproofing in two separate applications, and embed a joint reinforcing strip in the first preparation coat when recommended by waterproofing manufacturer.

3.04 INSTALLATION OF FLUID-APPLIED WATERPROOFING

A. Refer to manufacturer's literature for recommendations on installation, including but not limited to, the following:

1. Apply minimum 0.060 inch in all areas to be waterproofed.

    a. Apply minimum 0.120 inch in detail areas.

2. Apply protection course and related materials in accordance with manufacturer's written recommendations.

3.05 PROTECTION

A. Do not permit foot or vehicular traffic on unprotected membrane.

B. Protect waterproofing from damage and wear during remainder of construction period.

C. Protect installed insulation drainage panels from damage due to UV light, harmful weather exposures, physical abuse, and other causes. Provide temporary coverings where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

D. Correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates, reapply waterproofing, and repair sheet flashings.

END OF SECTION

SECTION 074113 - METAL ROOF PANELS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Standing-seam metal roof panels.
2. Underlayment.
3. Substrate board.
4. Accessories, flashing and trim.

1.02 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate sizes and locations of roof penetrations with actual equipment provided.
2. Coordinate metal panel installation with rain drainage Work, flashing, trim, construction of soffits, and other adjoining Work to provide a leakproof, secure, and noncorrosive installation.

B. Preinstallation Conference: Conduct meeting at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, metal panel Installer, metal panel manufacturer's representative, structural-support Installer, and installers whose Work interfaces with or affects metal panels, including installers of roof accessories and roof-mounted equipment.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
5. Review flashings, special details, drainage, penetrations, equipment curbs, and condition of other construction that affect metal panels.
6. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
7. Review temporary protection requirements for metal panel systems during and after installation.
8. Review procedures for repair of metal panels damaged after installation.
9. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.03 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 type of panel and accessory.
2. Include type of coating system, dry film thicknes (DTF) of each coat, product physical properties, accelerated test data and pretreatment data.

B. Shop Drawings:

1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1 1/2 inches per 12 inches.

C. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:

1. Metal Panels: 12 inches long by actual panel width. Include fasteners, clips, closures, and other metal roof panel accessories.

1.04 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For each product, for tests performed by a qualified testing agency.

C. Sample Warranties: For manufacturer's special warranties.

D. Coating Applicator Qualification: Provide coating applicator certification.

E. Installation Instructions: For roof assembly and underlayment.

1.05 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal panels to include in maintenance manuals.

B. Manufacturer's Warranty and Installers Special Guarantee: Submit signed copies. Refer to Attachment at end of this section.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: A firm that specializes in manufacturing of specified metal roofing systems with a minimum of 10 years of documented experience.

B. Coating Applicator Qualifications:

1. Applicator regularly engaged in application of shop-applied coating systems of similar type to that specified.
2. Employ persons trained for application of shop-applied coating systems.
3. Approved by manufacturer.

4. Equipped, trained, and approved for application of shop-applied coating systems required for this Project.
5. Approved to provide warranty specified in this Section.

C. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer with a minimum of 5 years of documented experience for roofing and underlayment.

D. UL-Certified, Portable Roll-Forming Equipment: UL-certified, portable roll-forming equipment capable of producing metal panels warranted by manufacturer to be the same as factory-formed products. Maintain UL certification of portable roll-forming equipment for duration of Work.

E. Partial Mockups: Build in-place Partial Mockups to demonstrate aesthetic effects, and to set quality standards for materials, execution and verification of testing requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal roof panels for protection during transportation and handling.

B. Unload, store, and erect metal roof panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Retain strippable protective covering on metal panels during installation.

E. Cover underlayment materials and store in dry condition between temperatures of 40 and 90 degrees F. Use within one year of date of manufacture. Do not store at elevated temperatures as that will reduce the shelf life of the product.

1.08 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.09 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace metal roof panel assemblies that fail in materials or workmanship within specified warranty period.

1. Failures include the following:

a. Structural failures including rupturing, cracking, or puncturing.

b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

2. Warranty Period: 2 years from date of Substantial Completion.

B. Special Warranty on Panel Finishes: Manufacturer agrees to repair finish or replace metal roof panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes the following:

a. Color fading more than Delta E of 5 Hunter units when tested according to ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

C. Special Weathertightness Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace metal roof panel assemblies that fail to remain weathertight, including leaks, within specified warranty period.

1. Warranty Period: 20 years from date of Substantial Completion.
2. Warranty coverage shall include flashings, penetrations, underlayment, field applied gutter liner material, and edge details as part of weathertightness warranty.
3. Clearly indicate design wind speed in warranty.
4. Wind Speed Warranty: Manufacturer agrees to repair or replace standing-seam metal roof panel assemblies that fail at wind speeds less than design speeds specified, within specified warranty period.

PART 2 - PRODUCTS

2.01 PERFORMANCE CRITERIA

A. Energy Performance: Provide roof panels according to one of the following when tested according to CRRC-1:

1. 3-year, aged solar reflectance of not less than 0.55 and emissivity of not less than 0.75.
2. 3-year, aged Solar Reflectance Index of not less than 64 when calculated according to ASTM E1980.

B. Structural Performance: Provide metal panel assemblies capable of withstanding effects of the following loads, based on testing according to ASTM E1592:

1. Wind Loads: As indicated on Drawings.
2. Other Design Loads: As indicated on Drawings.
3. Deflection Limits: For wind loads, no greater than L/360 of span.
4. Safety Factor for Panel and Clip Ultimate Loads: 1.65 with no increase for wind or per manufacturer's recommendation; which ever is more restrictive.

5. Safety Factor for Fasteners: 3.0 for single fasterner in each connection and 2.25 for 2 or more fasteners in each connection or per manufacturer's recommendation; which ever is more restrictive.

C. Air Infiltration: Air leakage through assembly of not more than 0.06 cfm/square feet of roof area when tested according to ASTM E1680 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/ square feet.

D. Water Penetration: No water penetration when tested according to ASTM E1646 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/square feet.

E. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.

1. Uplift Rating: UL 90.
2. Field-of-Roof Uplift Pressures for Field of Roof, Perimeter, and Corner: As indicated on structural Drawings.

F. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 degree F, ambient; 180 degree F, material surfaces.

G. Code and Standards Compliance:

1. Underwriters Laboratories Inc. Class A fire classification under fiber-glass shingles and Class C under organic felt shingles (per ASTM E108/UL 790).

2. Underwriters Laboratories Inc. Classified Sheathing Material Fire Resistance Classification with Roof Designs: P225, P227, P230, P237, P259, P508, P510, P512, P514, P701, P711, P717, P722, P723, P732, P734, P736, P742, P803, P814, P818, P824

3. ICC ESR-1677 approval according to AC-48 Acceptance Criteria for Self-Adhered underlayments used as Ice Barriers.

2.02 STANDING-SEAM METAL ROOF PANELS

A. General: Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.

1. Steel Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E1514.

B. Low-Pitch Standing-Seam Metal Roof Panels: Formed with vertical ribs at panel edges and flat pan between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under 1 side of panels, engaging opposite edge of adjacent panels, and mechanically seaming panels together.

1. Basis of Design: Provide SpanSeam by AEP Span, a Division of ASC Profiles, Inc, or accepted equal by one of the following:

    a. Berridge Manufacturing Company.
    b. ATAS International.
    c. Metal Sales Manufacturing Corporation.
    d. Morin; a Kingspan Group Company.
    e. PAC-CLAD; Petersen Aluminum Corporation; a Carlisle company.

2. Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheet complying with ASTM A653, G90 coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A792/A792M, Class AZ50 coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A755.

    a. Nominal Thickness: 22 Gauge 0.034 inch (22 gauge) .
    b. Exterior Finish: High-Performance Liquid Fluoropolymer.
    c. Color: As selected by Architect from manufacturer's full range.

3. Clips: Floating to accommodate thermal movement.

    a. Material: Nominal thickness, zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet. type and thickness as required to meet performance requirements. Provide clips to comply with metal roofing manufacturer's written installation guidelines for clip types.

4. Joint Type: Single folded.
5. Panel Coverage: 16 inchpanel width, with 2 pencil ribs spaced 6 inches on center.
6. Panel/Seam Height: 2.0 inches.
7. Seam Type: SpanSeam

2.03 UNDERLAYMENT MATERIALS

A. Self-Adhering, High-Temperature Sheet Underlayment: 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 and flashing; suitable for high temperatures over 240 degrees F. Provide primer in accordance with underlayment manufacturer's written instructions.

1. Products: Provide one of the following:

    a. Carlisle Coatings & Waterproofing Inc.: WIP 300HT.
    b. GCP Applied Technologies Inc.: Grace Ice and Water Shield HT.
    c. Henry Company: Blueskin PE200 HT.
    d. InterWrap Inc.: Titanium PSU30.
    e. MFM Building Products Corp.: Wind & Water Seal.
    f. Polyguard Products, Inc.: Deckguard HT.
    g. Protecto Wrap Company: Protecto Jiffy Seal Ice & Water Guard HT.

2. Thickness: Minimum of 40 mils.
3. Allowable UV Exposure Time: Not less than 60 days.
4. Thermal Stability: ASTM D1970, stable after testing at 240 degrees F.
5. Low-Temperature Flexibility: ASTM D1970; passes after testing at minus 20 degrees F.
6. Location: Provide under metal roof panels.

2.04 SUBSTRATE BOARD

A. Substrate Board: ASTM C1177, glass-mat, water-resistant gypsum substrate, Type X, 1/2 inch thick, with unprimed surface finish.

1. Products: Provide the following:

a. Georgia-Pacific Gypsum LLC: DensDeck Prime.
b. National Gypsum Company: DEXcell FA Glass Mat Roof Board.
c. United States Gypsum Company: Securock Glass-Mat Roof Board.
d. Approved substitutions.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance, designed for fastening substrate board to roof deck.

2.05 MISCELLANEOUS MATERIALS

A. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.

1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal panels.
2. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1 inch thick, flexible closure strips; cut or premolded to match metal roof panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
3. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.

B. Panel Fasteners: Self-tapping screws designed to withstand design loads.

1. Steel Panels: Use carbon steel fasteners with triple seal coating.
2. Aluminum Panels: Use aluminum or metal recommended by manufacturer.

C. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.

1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing; 1/2 inch wide and 1/8 inch thick.
2. Joint Sealant: ASTM C920; as recommended in writing by metal roof panel manufacturer and complying with Section 079200.
3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.

D. Bearing Plate: Manufacturer's standard for mounting clips over rigid insulation. ASTM A792 G60 hot-dipped aluminum-zinc alloy or ASTM A653 G60 hot-dipped zinc galvanized to provisions of ASTM A924.

2.06 FABRICATION

A. Fabricate and finish metal roof panels and accessories at factory, by manufacturer's standard procedures and processes, and as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panels may be fabricated on-site using UL-certified, portable roll-forming equipment if panels are of same profile and warranted by manufacturer to be equal to factory-formed panels. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.

C. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with metal roof panel manufacturer's recommendations, recommendations in SMACNA's "Architectural Sheet Metal Manual," and Section 076200- Sheet Metal Flashing and Trim that apply to design, dimensions, metal, and other characteristics of items indicated.

E. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.

2.07 FINISHES

A. Appearance of Finished Work:

1. Variations in appearance of abutting or adjacent pieces are acceptable if they are within 1/2 of range of approved Samples. Noticeable variations in same piece are unacceptable.

2. Variations in appearance of other components are acceptable if they are within range of approved Samples and are assembled or installed to minimize contrast.

B. Finish designations prefixed by AA comply with system established by Aluminum Association for designating aluminum finishes.

C. High-Performance Liquid Fluoropolymer Paint (PVDF):

1. Exterior Surface: AAMA 2605-17; at least 70 percent PVDF resin by weight in color coat; 2-coat system.
2. Color: Selected by Architect from manufacturer's full range.

D. Concealed Conditions: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil; AAMA 2503-17.

E. Liquid Strippable Coating: Apply in shop to prefinished surfaces to protect finish during fabrication, shipping, and field-handling.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal roof panel supports, and other conditions affecting performance of Work.

1. Examine primary and secondary roof framing to verify that rafters, purlins, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal roof panel manufacturer.
2. Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof panel manufacturer.

a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Examine roughing-in for components and systems penetrating metal roof panels to verify actual locations of penetrations relative to seam locations of metal roof panels before metal roof panel installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Miscellaneous Supports: Install subpurlins, eave angles, furring, and other miscellaneous panel support members and anchorage according to ASTM C754 and metal roof panel manufacturer's written instructions.

Substrate Tolerances: Deviations from flat plane shall not exceed the following:
1/4 inch in 20 feet.
1/2 inch across building elevation.
1/8 inch in 5 feet.

3.03 UNDERLAYMENT INSTALLATION

A. Self-Adhering High-Temperature Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply at locations indicated below and indicated on Drawings, wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3 1/2 inches. Roll laps with roller. Cover underlayment within 14 days.

1. Apply over the entire canopy roof surface.

3.04 SUBSTRATE BOARD INSTALLATION

A. Install substrate board with long joints in continuous straight lines, perpendicular to roof slopes with end joints staggered between rows. Tightly butt substrate boards together.

B. Fasten substrate board to top flanges of steel deck to resist uplift pressure at corners, perimeter, and field of roof per roofing system manufacturers' written instructions.

3.05 METAL ROOF PANEL INSTALLATION

A. Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of Work securely in place, with provisions for thermal and structural movement.

1. Shim or otherwise plumb substrates receiving metal panels.
2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
3. Install screw fasteners in predrilled holes.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Install flashing and trim as metal panel Work proceeds.
6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a 4-panel lap splice condition.
7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
8. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

B. Fasteners:

1. Steel Panels: Use stainless-steel fasteners for surfaces exposed to exterior.

C. Anchor Clips: Anchor metal roof panels and other components of Work securely in place, using manufacturer's approved fasteners according to manufacturers' written instructions.

D. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action as recommended by metal panel manufacturer.

1. Coat back side of roof panels with bituminous coating where roof panels will contact wood, ferrous metal, or cementitious construction.

E. Standing-Seam Metal Roof Panel Installation: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended by manufacturer.

1. Install clips to supports with self-tapping fasteners.
2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
3. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.
4. Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal roof panel, and factory-applied sealant are completely engaged.

5. Watertight Installation:

    a. Apply a continuous ribbon of sealant or tape to seal joints of metal panels, using sealant or tape as recommend in writing by manufacturer as needed to make panels watertight.
    b. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
    c. At panel splices, nest panels with minimum 6 inch end lap, sealed with sealant and fastened together by interlocking clamping plates.

F. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal roof panel manufacturers; or, if not indicated, types recommended by metal roof panel manufacturer.

G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install Work with laps, joints, and seams that will be permanently watertight and weather resistant.

1. Install exposed flashing and trim that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

H. Gutters: Join sections with riveted and soldered or lapped and sealed joints. Attach gutters to eave with gutter hangers spaced not more than 36 inches on center using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.

I. Downspouts: Join sections with telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches on center in between.

1. Provide elbows at base of downspouts to direct water away from building.
2. Connect downspouts to underground drainage system.

3.06 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align metal roof panel units within installed tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8 inch offset of adjoining faces and of alignment of matching profiles.

3.07 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect metal roof panel installation, including accessories. Report results in writing.

B. Remove and replace applications of metal roof panels where inspections indicate that they do not comply with specified requirements.

C. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.

D. Prepare test and inspection reports.

3.08 CLEANING AND PROTECTION

A. Protect underlayment from damage during construction operations and installation of roofing materials. Promptly repair any damaged or deteriorated surfaces.

B. Repair minor damage to underlayment to eliminate all evidence of repair. Remove and replace work which cannot be satisfactorily repaired in the opinion of the Architect.

C. Provide temporary protection of underlayment to ensure work being without damage or deterioration at time of final acceptance. Remove protective film and reclean as necessary immediately before final acceptance.

D. Remove temporary protective coverings and strippable films, if any, as metal roof panels are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of metal roof panel installation, clean finished surfaces as recommended by metal roof panel manufacturer. Maintain in a clean condition during construction.

E. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

3.09 ATTACHMENTS

A. Roofing Installer's Guarantee.

ATTACHMENT

ROOFING INSTALLER'S GUARANTEE

B. WHEREAS _____ of _____, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:
   1. Owner: Federal Way Public Schools
   2. Address: 30611 16th Ave S, Federal Way, WA 98003.
   3. Building Name/Type: Federal Way High School CTE Storage.
   4. Area of Work: New CTE Storage Canopy Roofing.
   5. Acceptance Date: _____.
   6. Warranty Period: 3 years from date of Substantial Completion.
   7. Expiration Date: _____.

C. AND WHEREAS Roofing Installer has contracted to warrant said work against leaks and faulty or defective materials and workmanship for designated Guarantee Period,

D. NOW THEREFORE Roofing Installer hereby guaranties, subject to terms and conditions herein set forth, that during Guarantee Period Roofing Installer will, at Roofing Installer's own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.

E. This Guarantee is made subject to the following terms and conditions:
   1. Specifically excluded from this Guarantee are damages to work and other parts of the building, and to building contents, caused by:
      a. Lightning;
      b. Fire;
      c. Failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
      d. Faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
      e. Vapor condensation on bottom of roofing; and
      f. Activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.
   2. When work has been damaged by any of foregoing causes, Guarantee shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
   3. Roofing Installer is responsible for damage to work covered by this Guarantee but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.
   4. During Guarantee Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.

5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Guarantee.
6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
7. This Guarantee is recognized to be the only guarantee of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

F. IN WITNESS THEREOF, this instrument has been duly executed this _____ day of

_____, _____.

1. Authorized Signature: _____
2. Name: _____
3. Title: _____

END OF ATTACHMENT

END OF SECTION

SECTION 076200 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Sheet metal fabrications and formed systems.
2. Reglets with counterflashing.
3. Factory prefinished coating systems.
4. Accessories

1.02 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. 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.
2. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

B. Preinstallation Conference: Conduct meeting 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 requirements for insurance and certificates if applicable.
4. Review sheet metal flashing observation and repair procedures after flashing installation.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Manufacturer's Certification: Submit manufacturer's certification that coating systems comply with specified requirements and are suitable for intended application.

C. Shop Drawings: For sheet metal flashing and trim.

1. Include plans, elevations, sections, attachment and installation details.
2. Describe general construction, configuration, profile, dimensions of individual components, jointing pattern, jointing details, expansion-joint locations, and keyed details.
3. Include identification of material, thickness, weight, and finish for each item and location in Project.
4. Detail formed flashing and trim at a scale of not less than 1 1/2 inches per 12 inches.

D. Samples: Submit samples of each color and gloss specified for each coating systems specified for verification, indicating compliance with matching requirements.

1.04 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For special warranty.

1.05 CLOSEOUT SUBMITTALS

A. Maintenance Data: For sheet metal flashing, trim, and accessories, to include in maintenance manuals.

B. Special warranty.

1.06 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 with a minimum 5 years documented experience installing commercial work.

B. Coating Applicator Qualifications:

1. Applicator regularly engaged in application of shop-applied coating systems of similar type to that specified.
2. Employ persons trained for application of shop-applied coating systems.
3. Approved by manufacturer.
4. Equipped, trained, and approved for application of shop-applied coating systems required for this Project.
5. Approved to provide warranty specified in this Section.

C. Refer to SMACNA recommendations for configuration and installation.

D. Exposed sharp corners are not allowed.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Do not store sheet metal flashing and trim materials in contact with dissimilar materials that might cause staining, denting, or other surface damage.

1. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
2. Protect stored sheet metal flashing and trim from contact with water, excessive moisture.
3. Protect with breathable material.
4. Store materials off of ground.

B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to the extent necessary for the period of sheet metal flashing and trim installation.

1.08 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 the following:

a. Color fading more than 5 Delta E (Hunter Lab) when tested per ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested per ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 10 years from date of Substantial Completion.

B. Weathertightness: Contractor to provide 2 year material and labor weathertightness Warranty for work of this Section subject to conditions of ordinary wear and usage.

PART 2 - PRODUCTS

2.01 PERFORMANCE CRITERIA

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: Architectural Metal Flashing, Condensation and Air Leakage Control, and Reroofing" 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 roof edge flashing tested in accordance with ANSI/SPRI/FM 4435/ES-1 and capable of resisting design pressure as indicated on Drawings.

1. Design Pressure: As indicated on Structural 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 (Range): 120 degree F., ambient; 180 degree F., material surfaces.

2.02 SHEET METALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying a strippable, temporary protective film before shipping.

B. Metallic-Coated Steel Sheet: Provide aluminum-zinc alloy-coated steel sheet in accordance with ASTM A792, Class AZ50 coating designation, Grade 40; prepainted by coil-coating process to comply with ASTM A755.

1. Nominal Thickness: 18 gauge (0.0478 inches).
2. Color: Match Roof Panel. As selected by Architect from manufacturer's full range.
3. 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.

2.03 UNDERLAYMENT MATERIALS

A. Felt: ASTM D226, Type II (No. 30), asphalt-saturated organic felt, nonperforated.

B. Self-Adhering, High-Temperature Sheet Underlayment: 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, flashing; suitable for high temperatures over 240 degrees F. Provide primer in accordance with underlayment manufacturer's written instructions.

1. Products: Provide one of the following:

a. Carlisle Coatings & Waterproofing Inc.: WIP 300HT.
b. GCP Applied Technologies Inc.: Grace Ice and Water Shield HT.
c. Henry Company: Blueskin PE200 HT.
d. InterWrap Inc.: Titanium PSU30.
e. MFM Building Products Corp.: Wind & Water Seal.
f. Polyguard Products, Inc.: Deckguard HT.
g. Protecto Wrap Company: Protecto Jiffy Seal Ice & Water Guard HT.

2. Thickness: Minimum of 40 mils.
3. Allowable UV Exposure Time: Not less than 60 days.
4. Thermal Stability: ASTM D1970, stable after testing at 240 degrees F.
5. Low-Temperature Flexibility: ASTM D1970; passes after testing at minus 20 degrees F.
6. Location: Provide under metal roof panels.

2.04 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.

1. General: Blind fasteners-drilling screws, gasketed, with hex-washer head.

a. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.

b. Concealed Sheet Metal Fasteners: No. 12 to 14, panhead, self-drilling, self-tapping, non-corrosive fasteners, and as instructed by manufacturer.

2. Fasteners for Aluminum-Zinc Alloy-Coated Steel Sheet: Series 300 stainless steel or hot-dip galvanized steel in accordance with ASTM A153/A153M or ASTM F2329.

C. Solder:

1. For Zinc-Coated (Galvanized) Steel: ASTM B32, Grade Sn50, 50 percent tin and 50 percent lead or Grade Sn60, 60 percent tin and 40 percent lead.

D. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.

E. Sealant: As specified in Section 079200 - Joint Sealants.

F. Electrolytic Protection: Bituminous Coating; Cold-applied asphalt emulsion complying with ASTM D1187 not less than 15 mils dry film thickness.

G. Asphalt Roofing Cement: ASTM D4586, asbestos free, of consistency required for application.

H. Rivets: Close-ended watertight of corrosion-resistant material compatible with material being secured.

I. Reglets and Counterflashings: Units of type, material, and profile required, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated.

1. Source Limitations: Obtain reglets for single source from single manufacturer.
2. Color: Match existing.
3. Accessories:

a. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing's lower edge.

2.05 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. Shop-fabricate sheet metal flashing and trim to greatest extent possible.
2. 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.
3. Verify shapes and dimensions of surfaces to be covered and obtain field measurements for accurate fit before shop fabrication.
4. 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.

5. 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 as indicated 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. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
2. 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 per cited sheet metal standard. Install laps with 3 continuous beads of non-shrinking, non-skinning silicone sealant as specified in Section 079200 - Joint Sealants.

E. Continuous Cleats and Starter Strips: Fabricate cleats and attachment devices of one gauge heavier than sheet material, in widths required by SMACNA to interlock with sheet, but not less than thickness of metal being secured. Metal to be noncorrosive and compatible with material being anchored to.

F. Drip edges to be minimum 3/4 inch long with 1/2 inch seams. Cleats to have minimum 1/2 inch engagement.

G. Seams:

1. Coated Coils: Fabricate nonmoving seams with standing seams. Form seams and seal with 3-beads of non-skin forming silicone sealant as specified in Section 079200 - Joint Sealants unless otherwise recommended by sealant manufacturer for intended use. Rivet joints where necessary for strength.

H. Do not use graphite pencils to mark metal surfaces.

2.06 MISCELLANEOUS ACCESSORIES

A. Adhesives, Primers, and Seam Tapes for Flexible Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

2.07 MISCELLANEOUS SHEET METAL FABRICATIONS

A. Equipment Support Flashing: Fabricate from 0.028 inch thick galvanized steel.

B. Sheet metal flashing stretch-out dimensions of 11 inches or larger shall be fabricated from 0.028 inch thick minimum, pre-finished sheet metal.

2.08 FINISHES

A. Aluminum Sheet and Coil High-Performance Liquid Fluoropolymer Paint (PVDF) Finish:

1. Exterior Surface: AAMA 2605-17; at least 70 percent PVDF resin by weight in color coat; 2-coat system.

a. Basis of Design: Provide Fluropon Pure by Sherwin Williams or accepted equal:

1) Color Retention: Less than 5 Delta E in 10 years.
2) Pre-Treat: Minimum 40 mg/ square foot chrome.
3) Prohesion: ASTM G85 Annex A5, at least 2,000 hours.
4) Humidity Testing: ASTM D2247, at least 4,000 hours.

2. Concealed Conditions: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil; AAMA 2503-17.
3. Include strippable protective film for protection of prefinished steel finish.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of Work.

1. Verify compliance with requirements for installation tolerances of substrates.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION, GENERAL

A. Install sheet metal flashing and trim to comply with details indicated on Drawings and recommendations of cited sheet metal standard that apply to installation characteristics required unless otherwise indicated on Drawings.

1. Install fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
2. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
3. Anchor sheet metal flashing and trim and other components of Work securely in place, with provisions for thermal and structural movement.
4. Install sheet metal flashing and trim to fit substrates and to result in watertight performance.
5. Install continuous cleats with fasteners spaced not more than 12 inches on center.

6. Space individual cleats not more than 12 inches apart. Attach each cleat with at least 2 fasteners. Bend tabs over fasteners.
7. Install exposed sheet metal flashing and trim with limited oil-canning, and free of buckling and tool marks.
8. Do not field cut sheet metal flashing and trim by torch or electric saw.

    a. Prime cut edges and coat to protect against corrosion.

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. Coat concealed side of uncoated aluminum and stainless-steel sheet metal flashing and trim with bituminous coating where flashing and trim will contact wood, ferrous metal, or cementitious construction.
2. Underlayment: Where installing metal flashing and trim directly on cementitious or wood substrates, install a course of high heat-resistant self-adhered membrane roofing underlayment under flashing.

C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim.

1. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.
2. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.
3. Use lapped expansion joints only where indicated on Drawings.

D. Fasteners: Use fastener sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.

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.

    a. Embed hooked flanges of joint members not less than 1 inch into sealant.
    b. Form joints to completely conceal sealant.
    c. When ambient temperature at time of installation is between 40 and 70 d F, set joint members for 50 percent movement each way.
    d. Adjust setting proportionately for installation at higher ambient temperatures.

        1) Do not install sealant-type joints at temperatures below 40 degree F.

2. Prepare joints and apply sealants to comply with requirements in Section 079200 - Joint Sealants.

G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter.

1. Pre-tin edges of sheets to be soldered to a width of 1 1/2 inches, except reduce pre-tinning where pre-tinned surface would show in completed Work.
2. Do not solder metallic-coated steel sheet.
3. Do not use torches for soldering.
4. Heat surfaces to receive solder and flow solder into joint.

    a. Fill joint completely.
    b. Completely remove flux and spatter from exposed surfaces.

3.03 ROOF DRAINAGE SYSTEM INSTALLATION

A. General: Install sheet metal roof-drainage items to produce complete roof-drainage system per cited sheet metal standard unless otherwise indicated.

3.04 ROOF FLASHING INSTALLATION

A. Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and cited sheet metal standard.

1. Provide concealed fasteners where possible, set units true to line, levels, and slopes.
2. Install Work with laps, joints, and seams that will be permanently watertight and weather resistant.

B. Roof Edge Flashing:

1. Install roof edge flashings in accordance with ANSI/SPRI/FM 4435/ES-1.
2. Anchor to resist uplift and outward forces in accordance with 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.
3. Anchor to resist uplift and outward forces in accordance with recommendations in FM Global Property Loss Prevention Data Sheet 1-49 for FM Approvals' listing for required windstorm classification.

C. Counterflashing: Coordinate installation of counterflashing with installation of base flashing.

1. Insert counterflashing in reglets or receivers and fit tightly to base flashing.
2. Extend counterflashing 4 inches over base flashing.
3. Lap counterflashing joints a minimum of 4 inches.
4. Secure in a waterproof manner by means of snap-in installation and sealant or lead wedges and sealant, or interlocking folded seam or blind rivets and sealant unless indicated otherwise.

3.05 MISCELLANEOUS FLASHING INSTALLATION

A. Equipment Support Flashing: Coordinate installation of equipment support flashing with installation of roofing and equipment. Weld or seal flashing with elastomeric sealant to equipment support member.

3.06 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8 inch offset of adjoining faces and of alignment of matching profiles.

3.07 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 installation, remove unused materials and clean finished surfaces. Maintain in a 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

SECTION 079200 - JOINT SEAL AND SEALANTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Joint Seals

    a. Mixed Penetration Seals.

2. Joint Sealants

    a. Elastomeric joint sealants.
    b. Mildew-resistant joint sealants.
    c. Precompressed foam sealants.
    d. Joint sealant backing.

1.02 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2 inch wide joints formed between two 6 inch long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

C. Sealant Schedule: Submit schedule of sealant applications listing joint sealants proposed for this Work and materials to which joint sealants are specified to be applied. Obtain Architect's written approval of this sealant schedule before starting Work of this Section.

1. Joint-Sealant Schedule: Include the following information:

    a. Joint-sealant application, joint location, and designation.
    b. Joint-sealant manufacturer and product name.
    c. Joint-sealant formulation.
    d. Joint-sealant color.
    e. Joint-sealant VOC.

1.03 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified testing agency and installer.

1. Submit list of qualifying projects of similar scope.

B. Product Test Reports: For each kind of joint sealant, for tests performed by a qualified testing agency.

C. Preconstruction Laboratory Test Schedule: Include the following information for each joint sealant and substrate material to be tested:

1. Joint-sealant location and designation.
2. Manufacturer and product name.
3. Type of substrate material.
4. Proposed test.
5. Number of samples required.

D. Preconstruction Laboratory Test Reports: From sealant manufacturer, indicating the following:

1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
2. Interpretation of test results and written recommendations for primers and substrate preparation are needed for adhesion.

E. Preconstruction Field-Adhesion-Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.

F. Sealant, Waterproofing, and Restoration Institute (SWRI) Validation Certificate: For each sealant specified to be validated by SWRI's Sealant Validation Program.

G. Sample Warranties: For special warranties.

H. Product Installation Instructions: Submit for each product, accessory and component. Include surface preparation, cleaning, priming, joint size ratios, adhesion testing and perimeter conditions requiring special attention.

1.04 QUALITY ASSURANCE

A. Product Testing: Test joint sealants using a qualified testing agency.

1. Testing Agency Qualifications: Qualified per ASTM C1021 to conduct testing indicated.
2. Test per SWRI's Sealant Validation Program for compliance with requirements specified by reference to ASTM C920 for adhesion and cohesion under cyclic movement, adhesion-in-peel, and indentation hardness.

B. Installer Qualifications: Minimum of 5 years experience installing specified products and materials.

C. Stain Testing: Conduct stain tests in accordance with ASTM C 1248 on substrate materials with orientation and exposure that replicates finished joint conditions.

D. Compatibility Testing: Include sealant and sealers or coatings that may come into contact with sealant following sealant application.

1.05 PRECONSTRUCTION TESTING

A. Preconstruction Laboratory Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.

1. Adhesion Testing: Use ASTM C794 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
2. Compatibility Testing: Use ASTM C1087 to determine sealant compatibility when in contact with glazing and gasket materials.
3. Stain Testing: Use ASTM C1248 to determine stain potential of sealant when in contact with masonry substrates.
4. Submit manufacturer's recommended number of pieces of each type of material, including joint substrates, joint sealant backings, and miscellaneous materials.
5. Schedule sufficient time for testing and analyzing results to prevent delaying Work.
6. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures, including use of specially formulated primers.
7. Testing will not be required if joint-sealant manufacturers submit data that are based on previous testing, not older than 24 months, of sealant products for adhesion to, staining of, and compatibility with joint substrates and other materials matching those submitted.

B. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as follows:

1. Locate test joints where indicated on Project or, if not indicated, as directed by Architect.
2. Conduct field tests for each kind of sealant and joint substrate.
3. Notify Architect 7 days in advance of dates and times when test joints will be erected.
4. Arrange for tests to take place with joint-sealant manufacturer's technical representative present.

    a. Test Method: Test joint sealants per Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C1193 or Method A, Tail Procedure, in ASTM C1521.

        1) For joints with dissimilar substrates, verify adhesion to each substrate separately: extend cut along 1 side, verifying adhesion to opposite side. Repeat procedure for opposite side.

5. Report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
6. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store products in a dry, ventilated location out of direct sunlight and weather in accordance with manufacturer's written instructions.

B. Deliver in original, unopened container and packing bearing name of manufacturer and product identification.

1.07 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 degrees 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.

1.08 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: 2 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: 20 years from date of Substantial Completion.

C. Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:

1. Movement of structure caused by stresses on sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from natural causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.01 JOINT SEALS AND SEALANTS, GENERAL

A. Low Emitting Material: Sealants shall comply with requirements of California Department of Public Health's South Coast Air Quality Management District Rule 1168.

B. 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.

C. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

1. Match adjacent substrates or match existing, provide either manufacturer's standard color if matching color is available, or, if not available, provide field-tintable custom color.

D. Install joint sealant systems with a pressure gun.

2.02 EXTERIOR JOINT SEALANTS, VERTICAL

A. Moving Joints: Joints and cracks receiving painted coating over sealant, use between dissimilar materials and EIFS. Contractor's choice between one of the following.

1. Elastomeric Hybrid: High movement, ASTM C920 Type S, Grade NS, Class 50 Use NT, M, A and O.

a. Products: Provide one of the following:

1) Sika: MasterSeal NP 150.

2. Polyurethane: ASTM C719, Type S, Grade NS, Class 100/50, Use NT, O, M, and A.

a. Products: Provide one of the following:

1) Sika Corporation: Sikaflex 15 LM. Tremco Incorporated: Vulkem 921.
3) Accepted substitution.

2.03 EXTERIOR HORIZONTAL/SKY FACING JOINTS

A. Exterior Paving Joints: Gunable.

1. Silicone: Neutral-curing, ASTM C920, Type S, Grade NS, Class 100/50, Use T.

a. Products: Provide one of the following:

1) Dow Chemical Company: Dowsil 888 SIlicone Joint Sealant.
2) Pecora Corporation: 311 NS Silicone Parking Deck Sealant.
3) Sika Corporation: Sikasil 728 SL.
4) Tremco Incorporated: Spectrem 800.
5) Accepted substitution.

B. Exterior Paving Joints, Vehicular Traffic Pavement:

1. Neutral-Curing Silicone Joint Sealant: ASTM C920, Type S, Grade P, Class 100/50, Use T.

a. Products: Provide one of the following:

1) Dow Chemical Company: Dowsil 890-SL Sealant.
2) Pecora Corporation: 300 SL.
3) Tremco Incorporated: Spectrem 900 SL.
4) Accepted substitution.

C. Exterior Paving Joints, Vehicular Traffic Pavement: Quick cure.

1. Neutral-curing, silicon sealant, ASTM C920, Type M, Grade P, Class 100/50, Uses T and NT.

    a. Products: Provide one of the following:

        1) Dow Chemical Company: Dowsil FC Parking Structure Sealant.
        2) Sika Corporation: Sikasil 728 RCS.
        3) Accepted substitution.

2.04 JOINT-SEALANT BACKING

A. Joint Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; as approved in writing by joint-sealant manufacturer, for joint applications indicated based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C1330, Type C (bi-cell or closed-cell material with a surface skin), of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

1. Products: Provide one of the following:

    a. Backer Rod Manufacturing Inc.: Mile High Foam.
    b. Sika: MasterSeal 920.
    c. Nomaco Engineered Foam Solutions: SOF rod.
    d. W. R. Meadows, Inc.: Kool-Rod.

2. Accessory: Backer rod insertion tool with adjustable depth.

C. Precompressed Foam Seals: Self-expanding, polyurethane foam tape joint seal, size as appropriate for plus and minus 50 percent elongation and compression of joint.

1. Products: Provide one of the following:

    a. Emseal Joint System: Backerseal.
    b. Schul International Company: Sealtite B.
    c. Tremco Inc.: Illmod 600.

D. 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.

2.05 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated and as determined from mockups.

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.

D. Concrete Joint Backer: Closed cell neoprene sponge

1. Basis of Design: Provide Closed Cell Neoprene Sponge with Tear Strip by Hohmann and Barnard or accepted equal:

a. Tensile Strength: ASTM D3575, minimum 65 psi.
b. Density: 2 to 5 pcf.
c. Elongation: ASTM Method 3575, 305.
d. Compression Set: ASTM 3575/1056, maximum 12 to 25 percent.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 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 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), existing 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. Porous joint substrates include the following:

a. Concrete.
b. Masonry.
c. Unglazed surfaces of ceramic tile.
d. Exterior insulation and finish systems.

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. Nonporous joint substrates include the following:

a. Metal.
b. Glass.

c. Porcelain enamel.
d. Glazed surfaces of ceramic tile.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by mockup. 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.

D. Deteriorated/Damaged Substrates: Prepare substrate surfaces according to sealant manufacturer's written instructions.

E. Field Adhesion Test: Preform at least 3 sealant field adhesion tests for the first 1000 feet of installed sealant for each exterior sealant joint type.

1. Subsequently perform 1 test for every 1000 feet or one test per floor, per elevation.
2. Remove additional sealant and prepare substrate as required to provide neat repair joint to match the original, like-new condition.
3. Performing 3 additional tests after a test fail.
4. Coordinate Field Adhesion Test and Partial Mockup installations.
5. Locations to be selected by Architect.

3.03 INSTALLATION

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 C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Seal interior joints to make smoke and acoustically tight and exterior joints to make watertight and weathertight. Refer to requirements of individual Sections. Include:

1. Exterior double weather seal consisting of pre-compressed foam sealant, backer rod and sealant around windows, doors, wall louvers, and other openings in walls.
2. Exterior furring penetrations.
3. Joints between dissimilar materials.
4. Horizontal joints, including exterior paving joints over joint filler.
5. At joints in sheet metal, flashing, and trim.
6. At joints in concrete, precast concrete, and cast stone.
7. Expansion joints and control joints at masonry and concrete. Moving cracks and joints subject to movement, except where firestopping is required as specified Section 078400 - Firestopping.

D. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
4. Use backer rod insertion tool to achieve proper and consistent depth.

E. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

F. Install sealants using proven techniques that comply with the following and at same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

G. Install 3 beads of sealants to make watertight joints at flashing and other metal overlaps.

H. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C1193, unless otherwise indicated.
4. Provide flush joint profile where indicated per Figure 8B in ASTM C1193.
5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 8C in ASTM C1193.

    a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.04 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Conduct joint-sealant field-adhesion tests as required to meet manufacturer's extended warranty requirements and as follows:

1. Extent of Testing: Test completed and cured sealant joints as follows:

    a. Perform 10 tests for the first 1000 feet of joint length for each kind of sealant and joint substrate.
    b. Perform 1 test for each 1000 feet of joint length thereafter or 1 test per each floor per elevation.

2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

    a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

3. Inspect tested joints and report on the following:

    a. Whether sealants filled joint cavities and are free of voids.
    b. Whether sealant dimensions and configurations comply with specified requirements.
    c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.

4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.
5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

B. Evaluation of Field-Adhesion Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory.

1. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

C. Quality of Work Corrections: Correct deficiencies and present remediation plan to address deficiencies if Architect, Building Envelope Consultant, Consultant's Monitor, Owner's Project Manager or Manufacturer determine that the quality of Work does not align with Specifications, Drawings, and/or Manufacturer's published requirements, industry standards.

3.05 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as Work progresses.

1. Clean per manufacturers instructions.

B. Clean entire facade where sealants show dirt.

1. If joint sealants show dirt 10 months after Final Completion, clean joint sealants over entire facade.

3.06 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other cause.

1. If damage/deterioration occurs, cut out and remove damaged/deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original Work.

END OF SECTION

SECTION 099000 - PAINTING AND COATING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Surface preparation and application of paint and coating systems on exterior substrates as indicated.

1.02 ACTION SUBMITTALS

A. Samples for Verification: For each type of paint system and each color and gloss of topcoat.

1. Submit Samples on rigid backing, 8 inches by 8 inches square.

1.03 INFORMATIONAL SUBMITTALS

A. Product List: For each product indicated, include the following:

1. Color designations.

1.04 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Paint: 5 percent, but not less than 1 gallon of each material and color applied.

1.05 QUALITY ASSURANCE

A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1.06 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 50 degrees F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.07 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 degrees and 95 degrees F. unless data page indicates otherwise.

B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 degrees F. above dew point; or to damp or wet surfaces.

1.08 WARRANTY

A. Installer Guarantee: Installer agrees to repair failing adhesion and evidence of deterioration within 3 years of Final Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Provide products by the following:

1. Tnemec Company Inc.
2. Carboline.
3. Cloverdale Paint.
4. Benjamin Moore & Co.
5. PPG Paints Finishes, Inc.
6. Rodda Paint Co.
7. Rust-Oleum Corporation.
8. Sherwin Williams Company (The).
9. Other manufacturers where specifically indicated.

2.02 PAINT AND COATINGS, GENERAL

A. MPI Standards: Provide products that comply with MPI standards indicated and that are listed in its "MPI Approved Products List."

B. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
3. If a manufacturer provides more than one product within an MPI category, provide highest quality product within that category.

C. Material Quality: Paint material containers not displaying paint manufacturer's product identification will not be accepted.

D. Product line to meet or exceed the basis of design products' composition, physical properties, and dry film thickness (DFT) requirements and Manufacturer's warranty duration.

2.03 EXTERIOR PRIMERS, SEALERS, PREP PRODUCTS

A. Exposed Concrete Foundation Walls: Waterborne modified polyamine epoxy. Sealing cementitious and other porous substrates and tie-coat

1. Product:

a. Tnemec Series 151.
b. Rodda, 512301 pHlextite XL Flat

B. Non-Ferrous metals aluminum or galvanized metals: Wash Primer. A two component, vinyl butyral/phosphoric acid wash primer used over cleaned metal surfaces, as a tie coat for subsequent priming with anti-corrosive primers or finish coatings. Primer, Vinyl Wash; MPI #80.

1. Products, provide one of the following:

a. PPG Architectural: Truefinish, Spectracron 701/702.
b. Sherwin-Williams: Industrial Wash Primer.

C. Ferrous Metals: Anti-corrosive primer including Spot Repair/Touch-Up: Alkyd anti-corrosive primer; MPI #79.

1. Products, provide one of the following:

a. Tnemec: Series AK01 Tnemec Shop Primer.
b. Benjamin Moore: Super Spec HP, DTM Alkyd Low Luster.
c. Cloverdale Paint: Universal Shop Primer, Rustex .
d. PPG Paints: Protective and Marine Coatings, Multiprime 4160/Devguard 4160, 4160.
e. Rodda Paint: Barrier III HS Rust Inhibitive Metal Primer.
f. Rust-Oleum: High Performance 7400 System Quick Dry.
g. Sherwin-Williams: Kem Bond HS.

2. Surface preparation: SSPC SP 6 commercial blast or power tool cleaning to SSPC SP 11.

2.04 EXTERIOR INTERMEDIATE AND TOPCOATS

A. Concrete: Latex, Exterior, High Performance Architectural, Low Sheen (MPI Gloss Level 3-4): MPI #315.

1. Products: Provide one of the following:

a. Benjamin Moore: Regal Select, Exterior High Build Low Lustre Finish.
b. PPG Paints: Sun Proof Exterior Satin 100% Acrylic Latex Paint.
c. Rodda Paint: Covercoat XL Acrylic Exterior Low Sheen.
d. Sherwin Williams: SuperPaint, Exterior Acrylic Latex Satin.

B. Primed Metals: Alkyd, Quick Dry, Semi-Gloss; MPI #81.

1. Products, provide one of the following:

a. Benjamin Moore: D.T.M. Alkyd Semi-Gloss.
b. PPG Architectural: HPC Urethane Alkyd 4336 / Devguard 4336.
c. Rodda Paint Co.: Renaissance WB Urethane Alkyd Enamel Semi Gloss..
d. Rust-Oleum: V7400 System DTM Alkyd Enamel.
e. Sherwin-Williams: Protective & Marine Direct-To-Metal.

2.05 EXTERIOR POLYURETHANE-BASED PAINTS

A. Metals: Polyurethane, Two-Component, Pigmented, Gloss (MPI Gloss Level 6-7): MPI #72.

1. Basis of Design: Provide Endura-Shield Series 73 or Series 1095 by Tnemec or accepted substitution from one of the following:

a. Benjamin Moore: Corotech, Aliphatic Acrylic Urethane Gloss, V500.
b. Carboline: Carbothane 134 MC
c. Cloverdale Paint: ArmourShield 847 High Gloss
d. PPG Architectural: Protective and Marine Coatings, Pitthane Ultra Gloss Series.
e. Sherwin-Williams: Protective & Marine, Acrolon 218 HS.

B. Concrete, Metal Surfaces: Polyurethane, Two-Component, Pigmented, Semi-Gloss (Gloss Level 5); MPI #174.

1. Abrasion, weathering, chemical and solvent resistance.
2. Products, provide one of the following:

a. Benjamin Moore: Corotech, Aliphatic Acrylic Urethane Semi-Gloss.
b. Carboline: Carbothane 133 MC.
c. Carboline: Carbozinc 134 HG
d. Cloverdale: ArmourShield 8475 Semi Gloss.
e. PPG Paints: Amercoat 450 HSG.
f. Sherwin Williams: Protective & Marine, Acrolon 218 HS Polyurethane Semi-Gloss.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of Work.

B. Maximum Moisture Content of Substrates: Measure at least 5 opposing points on substrate. When measured with an electronic moisture meter averages should equal the following:

1. Concrete: 12 percent.
2. Masonry/ Concrete Masonry Units: 12 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.

3.02 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates indicated.

B. 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 to produce paint systems indicated.

C. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

D. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

E. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints. Provide a 1.0 mil profile on galvanized surface to be finished.

1. Painting Galvanized Steel: Clean using methods recommended in writing by paint manufacturer but not less than SSPC-SP 1, "Solvent Cleaning".

3.03 APPLICATION

A. Materials to be finished:

1. Prepare and finish all surfaces of materials, except as specifically excluded or otherwise specified.

B. Apply paints and coatings per manufacturer's written instructions and to recommendations in "MPI Manual."

C. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

D. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

E. Apply paints and coatings 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.

F. Mix aluminum oxide into concrete floor opaque finish at a rate of 8 onces per gallon of paint.

G. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:

1. Paint the following Work where exposed in spaces listed on the drawings to receive paint:

a. Equipment, including panelboards.
b. Uninsulated metal piping.
c. Uninsulated plastic piping.
d. Pipe hangers and supports.
e. Metal conduit.
f. Plastic conduit.
g. Ducts, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
h. Other items as directed by Architect.

2. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

3.04 MATERIALS NOT TO RECEIVE PAINT OR COATING

A. Metals: Brass, bronze, copper, stainless steel, pre-finished metal, plated metals other than galvanized metal.

B. Plastic laminate, melamine, and other finished plastic surfacing.

C. Roofing, masonry, stone, and concrete.

D. Glass and clear plastic.

E. Substrates with specified factory-applied colored finishes:

1. Includes: Door hardware, electrical switch plates, fabrics, tackboards, porcelain enameled metal fabrications, and lighting fixtures.
2. Exception: Wire mold and other normally prefinished items mounted on surfaces receiving paints or coatings. Paint to match field surface.

F. Inaccessible materials permanently enclosed behind building construction and structural components.

3.05 FIELD QUALITY CONTROL

A. Contractor shall keep a daily record of wet film gage readings.

B. Dry Film Thickness Testing: Owner may engage services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.

1. 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, pay for testing and apply additional coats to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.06 CLEANING AND PROTECTION

A. 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.

B. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

C. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces. Touch up shall include refinishing the surface from edge to edge.

3.07 EXTERIOR PAINTING SCHEDULE

A. Concrete Substrates, Vertical, Opaque: EXT 3.1.

1. Application: Vertical surfaces concrete and masonry surfaces.

a. Prime Coat: Primer Alkali-Resistant Primer, Water Based MPI #3.
b. Intermediate Coat: Match topcoat.
c. Topcoat: Latex, Exterior, High Performance Architectural, Eggshell MPI #315.

B. Galvanized Steel Substrates, Opaque: Water-Based Light Industrial Coating System EXT 5.3L

1. Application: Exterior miscellaneous galvanized metals, prepared to receive opaque colored finish.

a. Pretreatment: Cleaner, etching for galvanized metal, MPI #25.
b. Pre-primer Coat: Primer, Rust-inhibitive, water-based MPI #134.
c. Primer: Epoxy, Anti-Corrosive, for Metal: MPI #101.
d. Intermediate Coat: Match topcoat.
e. Topcoat: Polyurethane, Two-Component, Pigmented, (Gloss Level 6-7): MPI #72.

3.08 EXTERIOR HIGH PERFORMANCE COATINGS

A. Galvanized and Shop-Primed Steel Substrates including Spot Repair/Touch-Up:

1. Application: .

a. Primer: Tnemec Series 394; PerimePrime at 2.5-3.5 mils DFT minimum 62 percent solids by volume. (Aromatic Polyurethane, Mio-Zinc Filled Primer)
b. Intermediate Coat: Tnemec Series 27 FC Typoxy at 2-4 mils DFT.
c. Topcoat: Tnemec Series 1072V at 2-3 mils DFT.

B. Exposed Concrete Foundation walls:

1. Application: .

    a. Primer: Tnemec Series 151 at 1-2 mils DFT. (Waterborne Modified Polyamine Epoxy)
    b. Intermediate Coat: Tnemec 156 at 6-8 mils DFT. (Modified Waterborne Acrylate)
    c. Finish Coat: Tnemec 156 at 6-8 mils DFT. (Modified Waterborne Acrylate)

3.09 GLOSS AND COLOR SCHEDULES

A. Gloss Levels: As scheduled in this Section.

1. Concrete:

    a. Vertical/Walls: MPI Level 3 (Eggshell).

2. Metal:

    a. Exterior

        1) Metal Doors: MPI Level 5 (Semi-Gloss)
        2) Metal Frames: MPI Level 5 (Semi-Gloss)
        3) Overhead Metal Decking: MPI Level 5 (Semi-Gloss)
        4) Gutters/ Downspouts: MPI Level 5 (Semi-Gloss)
        5) Metal Railings: MPI Level 6 (Gloss)

END OF SECTION

SECTION 323113 - CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Chain-link fences.
2. Swing gates.

B. Related Requirements:

1. Section 033000 "Cast-in-Place Concrete" for cast-in-place concrete and post footings.

1.03 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Inspect and discuss equipment bases, and other preparatory work specified elsewhere.
2. Review required testing, inspecting, and certifying procedures.

1.04 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. Fence and gate posts, rails, and fittings.
b. Chain-link fabric, reinforcements, and attachments.
c. Gates and hardware.

B. Shop Drawings: For each type of fence and gate assembly.

1. Include plans, elevations, sections, details, and attachments to other work.
2. Include accessories, hardware, gate operation, and operational clearances.

C. Samples for Initial Selection: For each type of factory-applied finish.

D. Samples for Verification: For each type of component with factory-applied finish, prepared on Samples of size indicated below:

1. Polymer-Coated Components: In 6-inch lengths for components and on full-sized units for accessories.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For factory-authorized service representative.

B. Product Certificates: For each type of chain-link fence, and gate.

C. Product Test Reports: For framework strength according to ASTM F 1043, for tests performed by manufacturer and witnessed by a qualified testing agency.

D. Field quality-control reports.

E. Sample Warranty: For special warranty.

1.06 FIELD CONDITIONS

A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

1.07 WARRANTY

A. Special Warranty: Installer agrees to repair or replace components of chain-link fences and gates that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Failure to comply with performance requirements.
b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

2. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Structural Performance: Chain-link fence and gate frameworks shall withstand the design wind loads and stresses for fence height(s) and under exposure conditions indicated according to ASCE/SEI 7.

1. Design Wind Load: As indicated on Drawings.

a. Minimum Post Size and Maximum Spacing: Determine according to CLFMI WLG 2445, based on mesh size and pattern specified.

B. Lightning Protection System: Maximum resistance-to-ground value of 25 ohms at each grounding location along fence under normal dry conditions.

2.02 CHAIN-LINK FENCE FABRIC

A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist according to "CLFMI Product Manual" and requirements indicated below:

1. Fabric Height: As indicated on Drawings.
2. Steel Wire for Fabric: Wire diameter of 0.148 inch (9 gauge).

a. Mesh Size: 1 inch.
b. Zinc-Coated Fabric: ASTM A 392, Type II, Class 1, 1.2 oz./sq. ft. with zinc coating applied before, or after weaving.
c. Polymer-Coated Fabric: ASTM F 668, Class 2a over zinc -coated steel wire.

1) Color: Black, according to ASTM F 934.

d. Coat selvage ends of metallic-coated fabric before or after the weaving process with manufacturer's standard clear protective coating.

3. Selvage: Knuckled at both selvages.

2.03 FENCE FRAMEWORK

A. Posts and Rails: ASTM F 1043 for framework, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F 1043 based on the following:

1. Fence Height: As indicated on Drawings.
2. Heavy-Industrial-Strength Material: Group IA, round steel pipe, Schedule 40.

a. Line Post: 2.875 inches in diameter.
b. End, Corner, and Pull Posts: 2.875 inches in diameter.

3. Horizontal Framework Members: Intermediate top and bottom rails according to ASTM F 1043.

a. Top Rail: 1.66 inches in diameter.
b. External, Type B: Zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. (0.27 kg/sq. m) of zinc after welding, a chromate conversion coating, and a black, verifiable polymer film.

4. Polymer coating over metallic coating.

a. Color: Match chain-link fabric. Black, according to ASTM F 934.

2.04 SWING GATES

A. General: ASTM F900 for gate posts and double swing gate types.

1. Gate Leaf Width: As indicated.
2. Framework Member Sizes and Strength: Based on gate fabric height as indicated.

B. Pipe and Tubing:

1. Zinc-Coated Steel: ASTM F1043 and ASTM F1083; protective coating and finish to match fence framework.
2. Gate Posts: Round tubular steel .
3. Gate Frames and Bracing: Round tubular steel.

C. Frame Corner Construction: Welded or assembled with corner fittings.

D. Hardware:

1. Hinges: 180-degree outward swing.
2. Latch: Permitting operation from both sides of gate with provision for padlocking accessible from both sides of gate.
3. Lock: Manufacturer's standard internal device.

2.05 FITTINGS

A. Provide fittings according to ASTM F626.

B. Post Caps: Provide for each post.

1. Provide line post caps with loop to receive tension wire or top rail.

C. Rail and Brace Ends: For each gate, corner, pull, and end post.

D. Rail Fittings: Provide the following:

1. Top Rail Sleeves: Pressed-steel or round-steel tubing not less than 6 inches long.
2. Rail Clamps: Line and corner boulevard clamps for connecting intermediate and bottom rails to posts.

E. Tension and Brace Bands: Pressed steel.

F. Tension Bars: Steel, length not less than 2 inches shorter than full height of chain-link fabric. Provide one bar for each gate and end post, and two for each corner and pull post, unless fabric is integrally woven into post.

G. Truss Rod Assemblies: Steel, hot-dip galvanized after threading rod and turnbuckle or other means of adjustment.

H. Tie Wires, Clips, and Fasteners: According to ASTM F626.

1. Standard Round Wire Ties: For attaching chain-link fabric to posts, rails, and frames, according to the following:

a. Hot-Dip Galvanized Steel: 0.148-inch- diameter wire; galvanized coating thickness matching coating thickness of chain-link fence fabric.

I. Finish:

1. Metallic Coating for Pressed Steel or Cast Iron: Not less than 1.2 oz./sq. ft. of zinc.

a. Polymer coating over metallic coating.

2.06 GROUT AND ANCHORING CEMENT

A. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout, recommended in writing by manufacturer, for exterior applications.

B. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating, and that is recommended in writing by manufacturer for exterior applications.

2.07 GROUNDING MATERIALS

A. Connectors and Grounding Rods: Listed and labeled for complying with UL 467.

1. Connectors for Below-Grade Use: Exothermic welded type.
2. Grounding Rods: Copper-clad steel, 5/8 by 96 inches.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for earthwork, pavement work, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.03 CHAIN-LINK FENCE INSTALLATION

A. Install chain-link fencing according to ASTM F567 and more stringent requirements specified.

B. Post Setting: Set posts in concreteat indicated spacing.

1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
2. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect above ground portion of posts from concrete splatter.

a. Posts Set into Holes in Concrete: Form or core drill holes not less than 5 inches deep and 3/4 inch larger than OD of post. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout or anchoring cement, mixed and placed according to anchoring material manufacturer's written instructions. Finish anchorage joint to slope away from post to drain water.

C. Terminal Posts: Install terminal end, corner, and gate posts according to ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of as indicated on Drawings.

D. Line Posts: Space line posts uniformly as indicated on Drawings.

E. Post Bracing and Intermediate Rails: Install according to ASTM F 567, maintaining plumb position and alignment of fence posts. Diagonally brace terminal posts to adjacent line posts with truss rods and turnbuckles. Install braces at end and gate posts and at both sides of corner and pull posts.

1. Locate horizontal braces at midheight of fabric 72 inches or higher, on fences with top rail. Install so posts are plumb when diagonal rod is under proper tension.

F. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fence posts. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.

G. Intermediate and Bottom Rails: Secure to posts with fittings.

H. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 1-inch to 2-inch bottom clearance between finish slab surface and bottom selvage unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.

I. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts, with tension bands spaced not more than 15 inches o.c.

J. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric according to ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.

1. Maximum Spacing: Tie fabric to line posts at 12 inches o.c. and to braces at 24 inches o.c.

K. Fasteners: Install nuts for tension bands and carriage bolts on the side of fence opposite the fabric side.

3.04 GATE INSTALLATION

A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation.

3.05 GROUNDING AND BONDING

A. Fence and Gate Grounding:

1. Ground for fence and fence posts shall be a separate system from ground for gate and gate posts.
2. Fences within 100 Feet of Buildings, Structures, Walkways, and Roadways: Ground at maximum intervals of 750 feet.
3. Ground fence on each side of gates and other fence openings.

    a. Bond metal gates to gate posts.
    b. Bond across openings, with and without gates, except openings indicated as intentional fence discontinuities. Use No. 2 AWG wire and bury it at least 18 inches below finished grade.

B. Grounding Method: At each grounding location, drive a grounding rod vertically until the top is 6 inches below finished grade. Connect rod to fence with No. 6 AWG conductor. Connect conductor to each fence component at grounding location.

C. Connections:

1. Make connections with clean, bare metal at points of contact.
2. Make aluminum-to-galvanized-steel connections with tin-plated copper jumpers and mechanical clamps.
3. Make above-grade ground connections with mechanical fasteners.
4. Make below-grade ground connections with exothermic welds.
5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

D. Bonding to Lightning Protection System: Ground fence and bond fence grounding conductor to lightning protection down conductor or lightning protection grounding conductor according to NFPA 780.

3.06 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests.

B. Prepare test reports.

3.07 ADJUSTING

A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

B. Lubricate hardware and other moving parts.

END OF SECTION

CONTRACTOR CERTIFICATION
WAGE THEFT PREVENTION – RESPONSIBLE BIDDER CRITERIA
WASHINGTON STATE PUBLIC WORKS CONTRACTS

Return this signed "Contractor Certification" with your signed Bid Form.

Prior to awarding a public works contract, Federal Way Public Schools is required to determine that a bidder meets the responsibility criteria to be considered a 'responsible bidder' and is qualified to be awarded a public works project. See RCW 39.04.350(1)(g) & (2). Pursuant to legislative enactment in 2017, the responsibility criteria include a contractor certification that the contractor has not willfully violated Washington's wage laws. See Chap. 258, 2017 Laws (enacting SSB 5301).

Project Number: _____

Project Name: _____

Procurement Solicitation Date: _____

I hereby certify, on behalf of the firm identified below, as follows (check one):

☐ **NO WAGE VIOLATIONS.** This firm has NOT been determined by a final and binding citation and notice of assessment issued by the Washington Department of Labor and Industries or through a civil judgment entered by a court of limited or general jurisdiction to have willfully violated, as defined in RCW 49.48.082, any provision of RCW chapters 49.46, 49.48, or 49.52 within three (3) years prior to the date of the above-referenced procurement solicitation date.

OR

☐ **VIOLATIONS OF WAGE LAWS.** This firm has been determined by a final and binding citation and notice of assessment issued by the Washington Department of Labor and Industries or through a civil judgment entered by a court of limited or general jurisdiction to have willfully violated, as defined in RCW 49.48.082, a provision of RCW chapters 49.46, 49.48, or 49.52 within three (3) years prior to the date of the above-referenced procurement solicitation date.

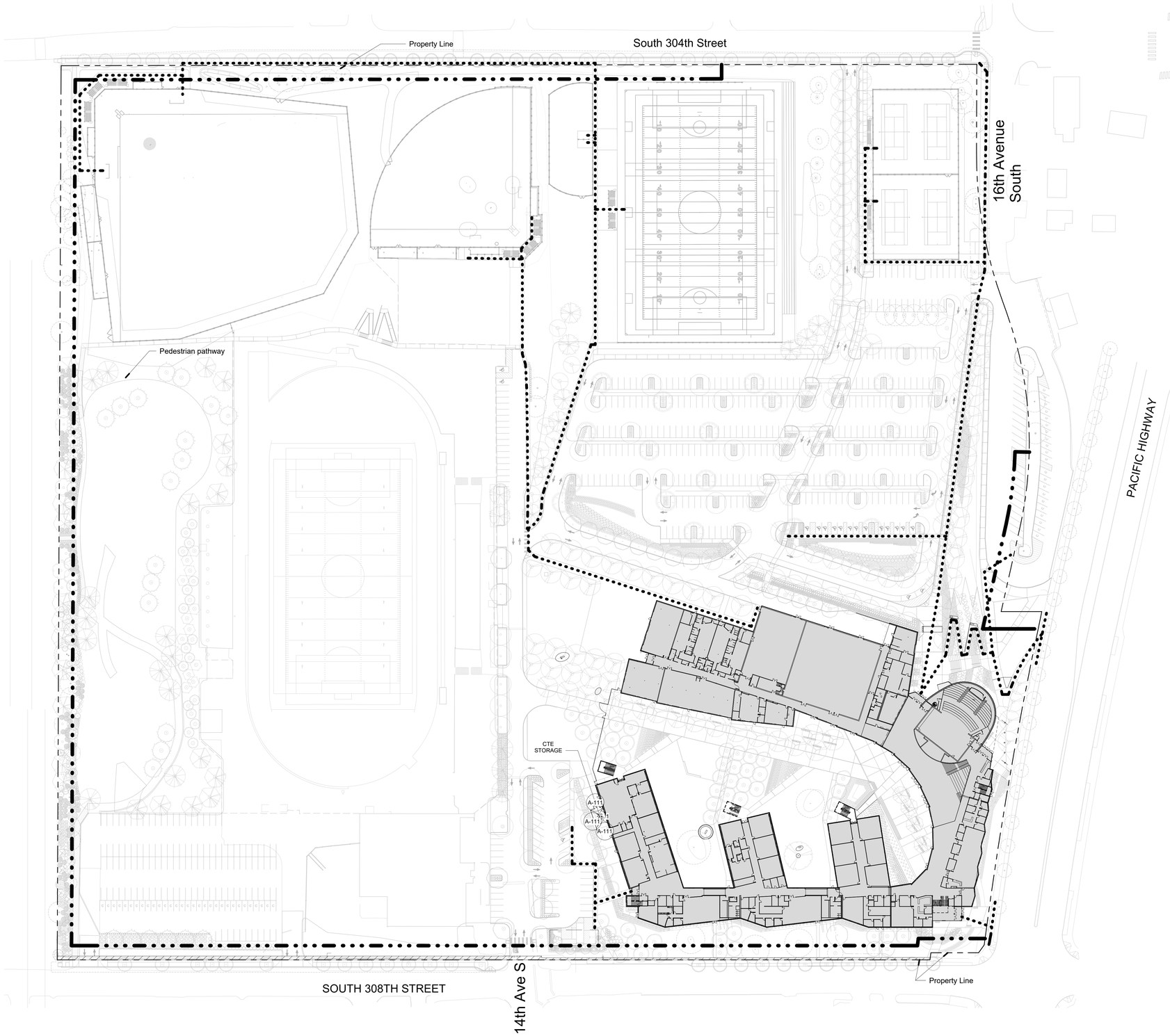
I hereby certify, under penalty of perjury under the laws of the State of Washington, that the certifications herein are true and correct and that I am authorized to make these certifications on behalf of the firm listed herein.

FIRM NAME: _____
Name of Contractor/Bidder – Print full legal entity name of firm

By: _____ _____
Signature of authorized person | Print name of person making certifications for firm

Title: _____ Place: _____
Title of person signing certificate | Print city and state where signed

Date: _____



1 G-100 SITE PLAN
1" = 60'-0"

0' 30' 60' 120'

3/5/2025 9:23:39 AM

PROJECT INFORMATION - CTE

PROJECT DESCRIPTION

Construction of an exterior storage canopy (535 SF) fo the CTE classroom next to the existing building. The canopy will be located on the exsiting concete pad next to the exisitng building. There will be no changes to the existing grading or landscae areas

PARCEL NUMBER: 082104-9001

LEGAL DESCRIPTION

Chicago Title Insurance Company order no. 1345567 dated July 16, 2012.

The northeast quarter of the northeast quarter of section 8, township 21 north, range 4 east, Willamette meridian, in King County, Washington;
Except county roads;
And that portion of the northwest quarter of the northwest quarter of section 9, township 21 north, range 4 east, Willamette meridian, in King County, Washington, lying westerly of 16th Avenue South as now established, and also any portion thereof lying westerly of new Pacific Highway South;
Together with that portion of vacated 16th Avenue South as vacated under King County ordinance number 1938;
Except that portion conveyed to the City of Federal Way under recording number 200712240000367; and
Except that portion conveyed to the City of Federal Way under recording number 20081216001287.

Zoning
BC

Occupancies
Groups E

Construction Type
Type IIB

Building Areas

EXISTING OVERALL BUILDING AREA:	235,885 sf
- Allowable Building Area:	53,650 sf per IBC Chapter 5
- Existing Building Area:	34,036 sf
- Level 1 CTE Storage Canopy:	535 sf
- Proposed Building Area:	35,571 sf
	35,571/53,650 = .66 < 1

Special Inspections:

- See Structural sheet S001 for all other required Special Inspections

Deferred Submittals:

- Steel Joists
- Metal fabrications
- Miscellaneous steel
- Fall arrest anchors

ARCHITECTURAL SYMBOLS LEGEND

Building Section Identification — A1 / A301

Wall Section Identification — A1 / A321

Detail Identification — A1 / A501

Exterior Elevation Identification — A201 / A1

Interior Elevation Identification — A4 / A221 / A2 / A3

Drawing Identification — A1 / A101 VIEW NAME 1/8" = 1'-0"

Building Grid Identification — A

Match Line Identification — A101

North Point

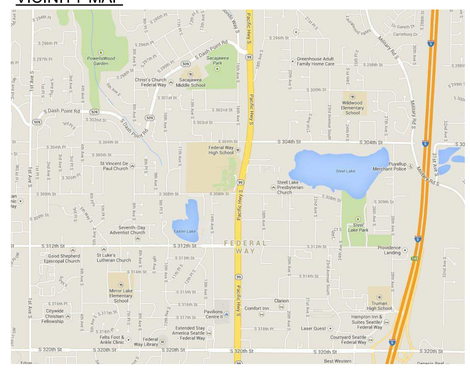
Room Name and Number — ROOM NAME

Elevation Mark

PROJECT INFORMATION - SHEET INDEX

G-1.00	ARCHITECTURAL SITE PLAN
C1.0	CIVIL SITE WORK
A-1.01	FLOOR PLAN - LEVEL 1 OVERALL
A-1.10	FLOOR PLAN - LEVEL 1 PATIAL SW
A-1.11	ENLARGED FLOOR PLANS, BUILDING ELEVATIONS & SECTIONS
S101	GENERAL STRUCTURAL NOTES
S201	CANOPY FOUNDATION AND ROOF FRAMING PLANS
S301	DETAILS
M001	MECHANICAL LEGEND, SHEET LIST & SCHEDULE
M100	MECHANICAL PLAN LEVEL 1 PARTIAL SW
M101	MECHANICAL ENLARGED PLAN
E001	ELECTRICAL LEGEN, GENEAL NOTES ABBREVIATIONS AND DRAWING INDEX
E002	ELECTRICAL SPECIFICATIONS
E100	ELECTRICAL OVERALL PLAN
E101	ELECTRICAL ENLARGED PLAN AND LIGHT FIXTURE SCHEDULE
E901	ELECTRICAL ONE-LINE DIAGRAM
E1001	PANEL SCHEDULES

VICINITY MAP



ONE INCH
AT FULL SIZE

REVISIONS DATE

PLACEHOLDER FOR CLIENT LOGO (ERASE AFTER EDITING)

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MECHANICAL ENGINEER
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Seattle, WA 98101
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ELECTRICAL ENGINEERS
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Federal Way Public Schools

Federal Way High School CTE Storage

30611 16th Ave S
Federal Way, WA 98003

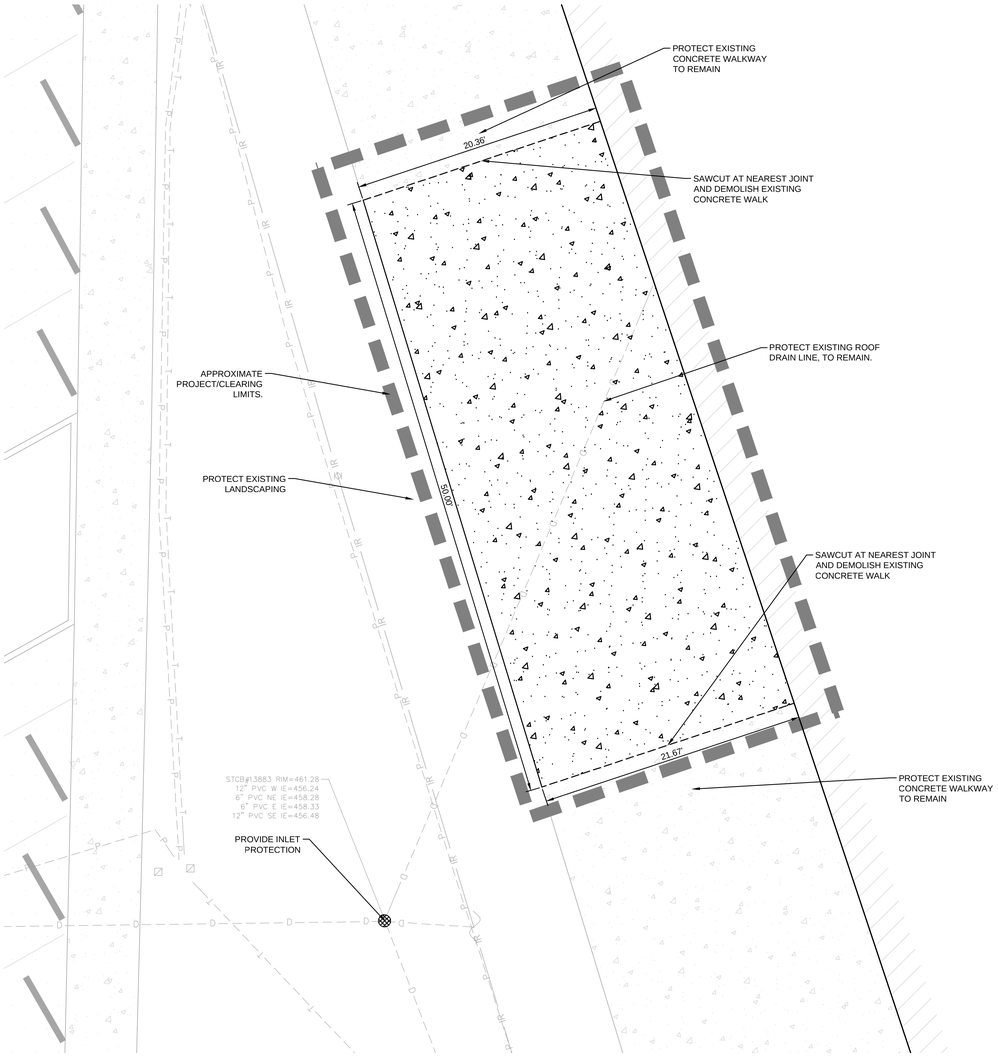
JOB NO: 2426
ISSUE DATE: 3/7/25

Jurisdiction Stamp Area

BID SET

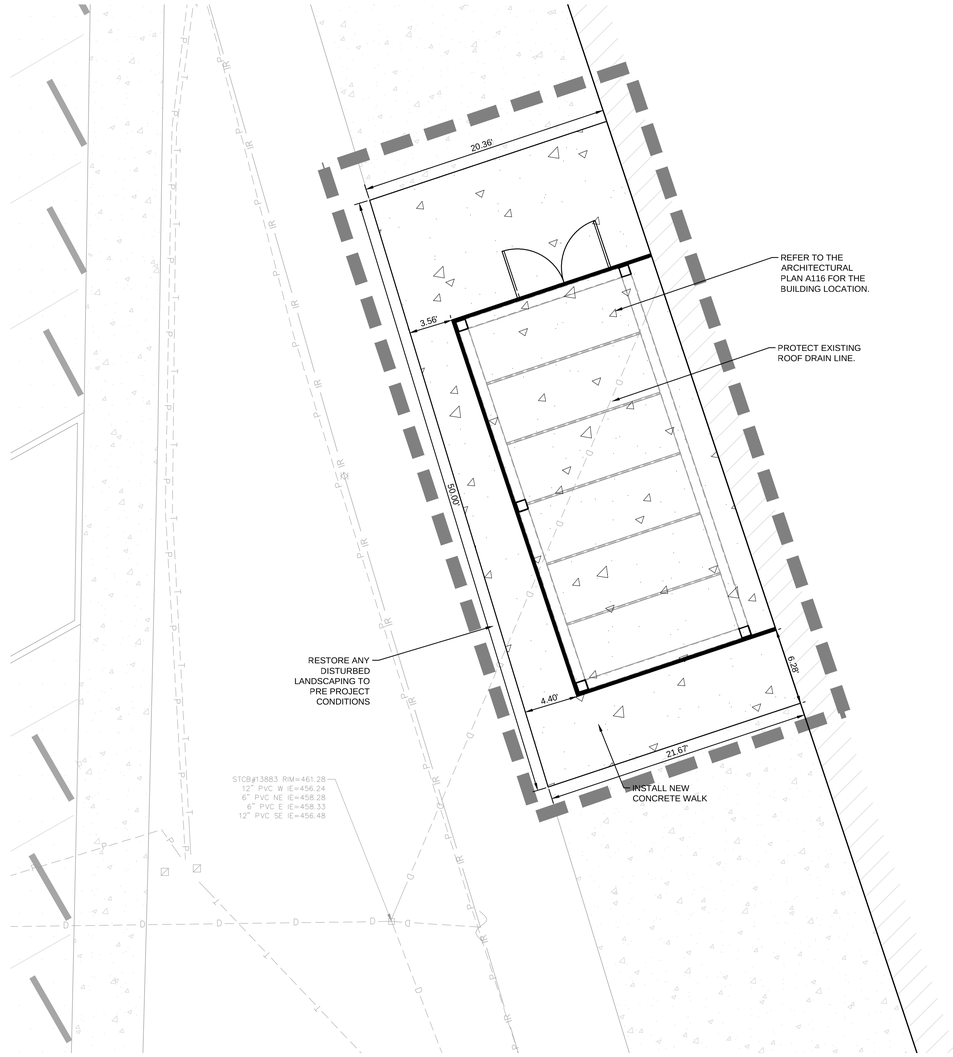
ARCHITECTURAL SITE PLAN

G-100



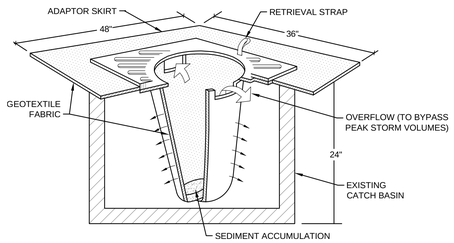
DEMOLITION PLAN

1" = 5'



SITE IMPROVEMENT PLAN

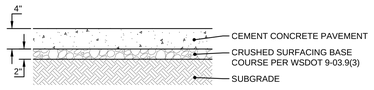
1" = 5'



NOTES:
1. FILTERS SHALL BE INSPECTED AFTER EACH STORM EVENT AND CLEANED OR REPLACED WHEN 1/3 FULL.
2. INSTALL INLET PROTECTION IN ALL NEW STORM STRUCTURES THAT WILL COLLECT STORMWATER AS THEY ARE INSTALLED.

1 CATCH BASIN INLET PROTECTION

NOT TO SCALE



NOTES:
1. DEPTHS INDICATED ARE COMPACTED THICKNESSES.
2. CEMENT CONCRETE PAVEMENT SHALL CONSIST OF PORTLAND CEMENT CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AND A MINIMUM RUPTURE MODULUS OF 580 PSI.
3. ALL BASE MATERIAL SHALL BE COMPACTED TO A MINIMUM DENSITY OF 95% BASED ON THE MODIFIED PROCTOR MAXIMUM DRY DENSITY PER ASTM D-1557.
4. SUBGRADE SHALL BE COMPACTED TO A FIRM AND UNYIELDING CONDITION PRIOR TO PLACEMENT OF ANY PAVEMENT LAYERS. ANY LOCALIZED ZONES OF SOFT, ORGANIC-RICH, OR DEBRIS-LADEN SOILS SHOULD BE OVEREXCAVATED AND REPLACED WITH STRUCTURAL FILL MATERIAL.
5. RECYCLED CONCRETE IS NOT ACCEPTABLE FOR USE IN BASE COURSE.
6. PROVIDE A LIGHT BROOM FINISH AND MATCH EXISTING JOINT LAYOUT. PROVIDE A JOINT LAYOUT SKETCH FOR OWNER TO REVIEW PRIOR TO FORMING.
7. JOINTING PER WSDOT STANDARD PLAN F-30.10-04. DETAILS "E" AND "F". PROVIDE SELF LEVELING JOINT FILLER IN EXPANSION JOINTS TO MATCH EXISTING CONDITIONS.

2 TYPICAL CONCRETE PAVEMENT SECTION

NOT TO SCALE

CLEARING LIMITS NOTE

THE CLEARING LIMITS SHOWN MAY NEED TO BE ADJUSTED TO PERFORM THE WORK. CONTRACTOR IS RESPONSIBLE FOR REVIEWING LIMITS AND CONFIRMING WORK LIMITS PRIOR TO WORK. ANY ADJUSTMENTS SHALL BE INCLUDED IN THE BASE BID.

N

GRAPHIC SCALE

0 5 10

1" = 5 FEET

DEMOLITION NOTES

1. DEMOLITION: IT IS THE INTENT OF THE WORK UNDER THIS CONTRACT TO INCLUDE THE DEMOLITION OF PAVING AS REQUIRED FOR NEW CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FULLY REVIEW THE SITE CONDITIONS AND TO CORRELATE THESE OBSERVATIONS WITH THE PROJECT WORK AND INCLUDE ALL NECESSARY DEMOLITION, WHETHER SHOWN OR NOT, AND INCLUDE ALL SUCH COSTS IN THE BASE BID.
2. CLEARING: IT IS THE INTENT OF THE WORK UNDER THIS CONTRACT TO CONDUCT ALL CLEARING NECESSARY TO BE ABLE TO COMPLETE ALL THE WORK OF THIS PROJECT.
3. CONTRACTOR SHALL LEGALLY DISPOSE ALL DEMOLISHED AND REMOVED MATERIALS OFFSITE UNLESS INDICATED OTHERWISE.
4. CONTRACTOR SHALL ENSURE THAT ADEQUATE FIRE PROTECTION ACCESS IS PROVIDED TO SITE AND EXISTING STRUCTURES TO REMAIN. CONTRACTOR SHALL ALSO PROVIDE ADEQUATE FIRE PROTECTION FOR THE NEW BUILDING.
5. CONTRACTOR SHALL MINIMIZE DUST GENERATION ONSITE BY SPRINKLING THE SITE WITH WATER UNTIL SURFACE IS WET. SEE BMP C140.
6. SAWCUT CONCRETE SIDEWALK AT THE NEAREST JOINT.

GRADING NOTES

1. THE EXISTING SITE SOILS REQUIRE PROPER COMPACTION PRIOR TO PLACEMENT OF PAVING AND UTILITY IMPROVEMENTS.
2. CONTRACTOR SHALL ASSURE POSITIVE DRAINAGE AWAY FROM BUILDINGS FOR ALL PAVED AND NON-PAVED AREAS, AND SHALL GRADE ALL AREAS TO PRECLUDE PONDING OF SURFACE WATER.
3. ADA ROUTES SHALL NOT EXCEED 5% IN THE DIRECTION OF TRAVEL UNLESS HANDRAILS ARE PROVIDED. LANDINGS AT NO MORE THAN 2% SHALL BE PROVIDED FOR EVERY 2.5 FEET OF RISE. CROSS SLOPE SHALL NOT EXCEED 2%.

TESC NOTES

1. ALL LIMITS OF CLEARING AND AREAS OF VEGETATION PRESERVATION AS PRESCRIBED ON THESE PLANS SHALL BE CLEARLY FLAGGED IN THE FIELD AND OBSERVED DURING CONSTRUCTION.
2. ALL TEMPORARY SEDIMENTATION AND EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO INITIATING ANY CONSTRUCTION ACTIVITIES.
3. ALL REQUIRED SEDIMENTATION AND EROSION CONTROL FACILITIES MUST BE CONSTRUCTED AND IN OPERATION PRIOR TO ANY LAND CLEARING AND/OR OTHER CONSTRUCTION ACTIVITIES TO ENSURE THAT SEDIMENT LADEN WATER DOES NOT ENTER ANY EXISTING DRAINAGE SYSTEM. THE CONTRACTOR SHALL SCHEDULE AN INSPECTION OF THE EROSION CONTROL FACILITIES PRIOR TO ANY LAND CLEARING AND/OR OTHER CONSTRUCTION. ALL EROSION AND SEDIMENT CONTROL FACILITIES SHALL BE MAINTAINED IN A SATISFACTORY CONDITION UNTIL SUCH TIME THAT CLEARING AND/OR CONSTRUCTION IS COMPLETED AND THE POTENTIAL FOR ON-SITE EROSION HAS PASSED. THE IMPLEMENTATION, MAINTENANCE, REPLACEMENT, AND ADDITIONS TO THE EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. THE EROSION AND SEDIMENTATION CONTROL SYSTEM MEASURES DEPICTED ON THESE PLANS ARE INTENDED TO BE MINIMUM REQUIREMENTS TO MEET ANTICIPATED SITE CONDITIONS. AS CONSTRUCTION PROGRESSES AND UNEXPECTED OR SEASONAL CONDITIONS DICTATE, ADDITIONAL MEASURES MAY BE NECESSARY TO ENSURE COMPLETE SILTATION CONTROL ON THE SITE. DURING THE COURSE OF CONSTRUCTION, IT SHALL BE THE OBLIGATION AND RESPONSIBILITY OF THE CONTRACTOR TO ADDRESS ANY NEW CONDITIONS THAT MAY BE CREATED BY CONSTRUCTION RELATED ACTIVITIES AND TO PROVIDE ADDITIONAL FACILITIES, OVER AND ABOVE THE MINIMUM REQUIREMENTS, AS MAY BE NEEDED TO PROTECT ADJACENT SITES, SENSITIVE AREAS, NATURAL WATER COURSES, AND/OR STORM DRAINAGE SYSTEMS.
5. ANY DISTURBED AREA WHICH HAS BEEN STRIPPED OF VEGETATION AND WHERE NO FURTHER WORK IS ANTICIPATED FOR A PERIOD OF 10 DAYS OR MORE DURING THE DRY SEASON (MAY 1-SEPT 30) OR 5 DAYS OR MORE IN THE WET SEASON (OCT 1-APRIL 30), SHALL BE IMMEDIATELY STABILIZED WITH MULCHING, GRASS PLANTING, OR OTHER APPROVED EROSION CONTROL TREATMENT APPLICABLE TO THE TIME OF YEAR IN QUESTION. GRASS SEEDING ALONE WILL BE ACCEPTABLE ONLY DURING THE MONTHS OF MAY THROUGH SEPTEMBER INCLUSIVE. SEEDING MAY PROCEED OUTSIDE THE SPECIFIED TIME PERIOD WHENEVER IT IS IN THE INTEREST OF THE CONTRACTOR BUT SHALL BE AUGMENTED WITH MULCHING, NETTING, OR OTHER TREATMENT.
6. WATER SITE AS NECESSARY TO CONTROL DUST.
7. TOPSOIL SHALL NOT BE PLACED WHILE SUBGRADE IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBGRADE IS EXCESSIVELY WET, OR WHEN CONDITIONS EXIST THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING OR PROPOSED SODDING OR SEEDING.
8. ON-SITE EROSION CONTROL MEASURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. ANY PROBLEMS OCCURRING BEFORE FINAL STABILIZATION OF THE SITE SHALL BE CORRECTED BY THE CONTRACTOR.
9. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHOWN ON THESE DRAWINGS SHALL BE INSTALLED PRIOR TO, OR AS THE FIRST STAGE OF SITE PREPARATION.
10. SHOULD THE TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES SHOWN ON THESE DRAWINGS NOT PROVE ADEQUATE TO CONTROL EROSION AND SEDIMENTATION, THE CONTRACTOR SHALL INSTALL ADDITIONAL FACILITIES AS NECESSARY TO PROTECT ADJACENT SITES, SENSITIVE AREAS, NATURAL WATER COURSES, AND/OR STORM DRAINAGE SYSTEMS.
11. RUNOFF SHALL NOT BE ALLOWED TO DRAIN INTO THE STORM DRAINAGE SYSTEM DURING CONSTRUCTION. PROVIDE TEMPORARY PROTECTION FOR YARD DRAINS AS REQUIRED TO PREVENT RUNOFF FROM ENTERING THE STORM DRAINAGE SYSTEM.
12. ALL TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE COMPLETELY REMOVED PRIOR TO PROJECT COMPLETION.

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DAVID CHRISTOPHER MASON
STATE OF WASHINGTON
23353
REGISTERED
PROFESSIONAL ENGINEER
03/05/2025

Federal Way Public Schools

Federal Way High School

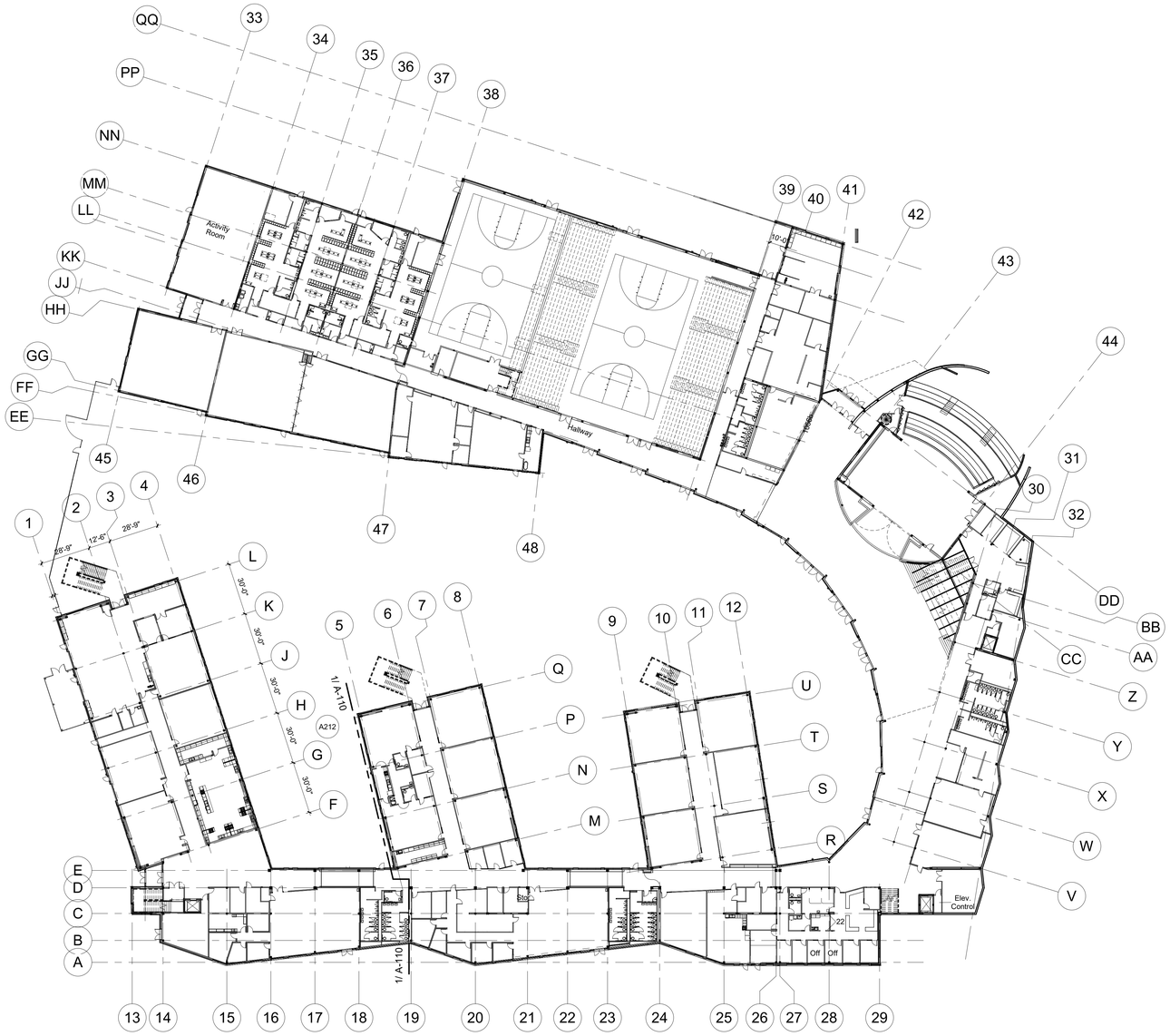
JOB NO: 2240741
ISSUE DATE: 3/5/2025

Jurisdiction Stamp Area

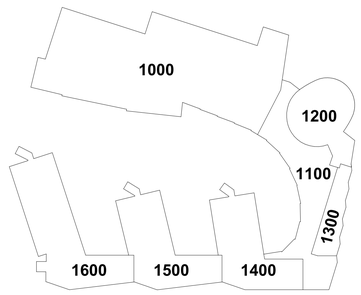
BID SET

CIVIL SITE WORK

C1.0



1 A-101 LEVEL 1
1/32" = 1'-0"



FWHS Room Number Key Level 1

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Federal Way High School CTE Storage

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ISSUE DATE: 3/7/25

Jurisdiction Stamp Area

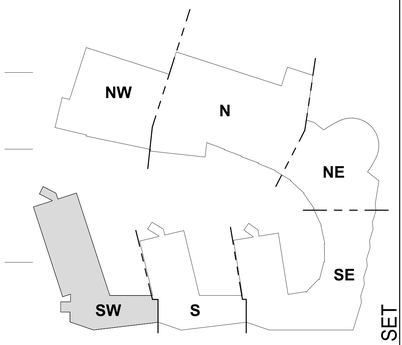
FLOOR PLAN - LEVEL 1 OVERALL

A-101



See A111 for General Floor Plan Notes

1 A-110 LEVEL 1 PARTIAL PLAN SW
1/8" = 1'-0"



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FLOOR PLAN - LEVEL 1 PARTIAL SW

A-110

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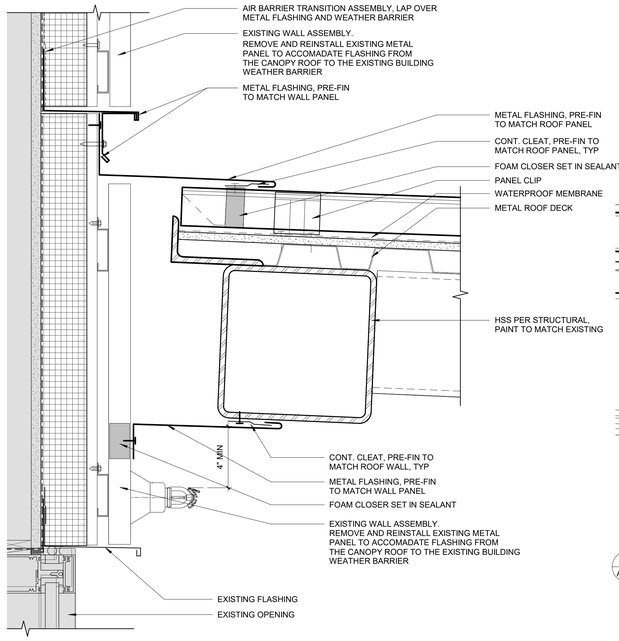
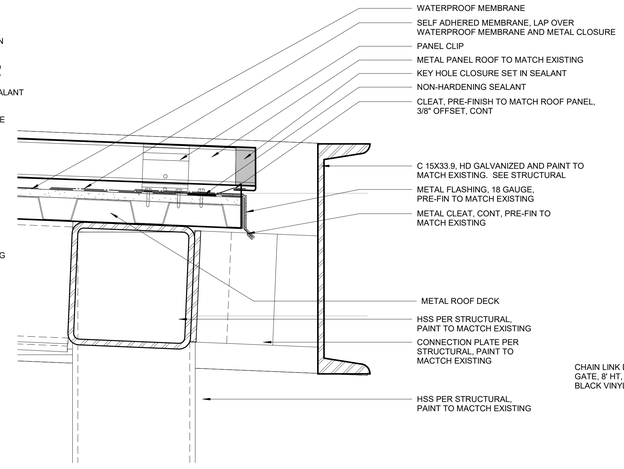
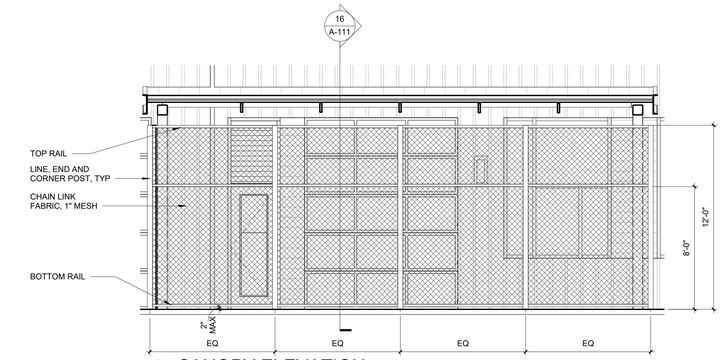


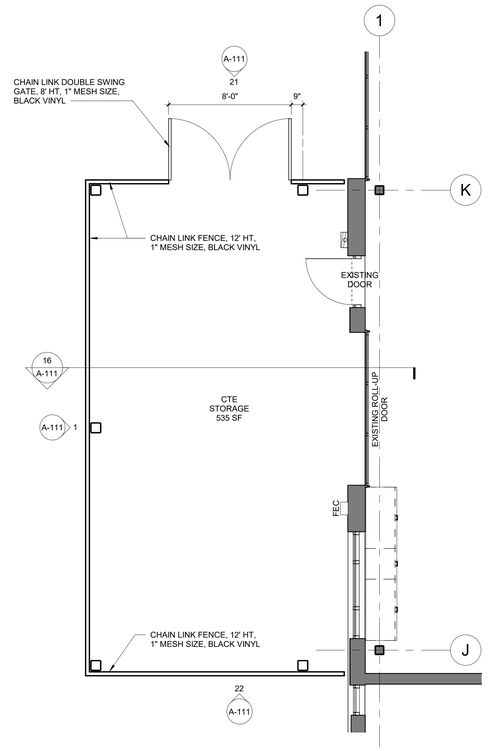
18 A-111 CTE CANOPY DETAIL
3" = 1'-0"



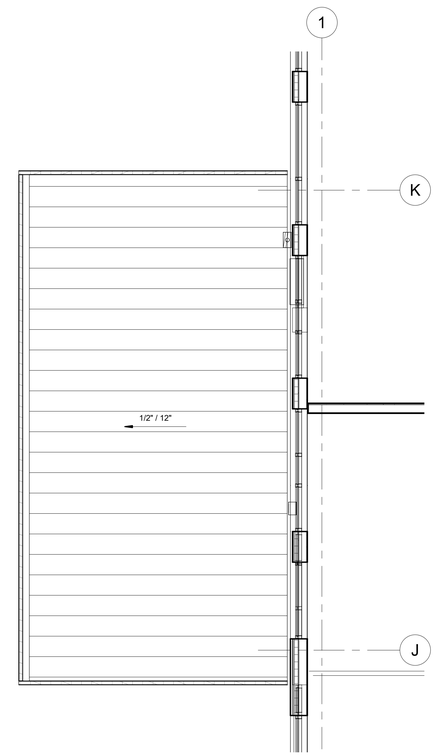
12 A-111 CANOPY EAVE DETAIL
3" = 1'-0"



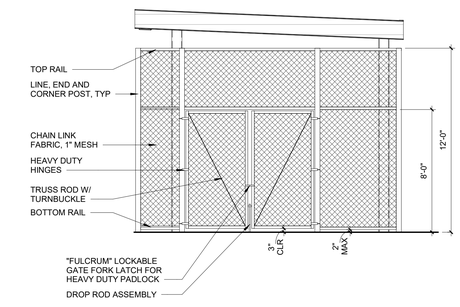
1 A-111 CANOPY ELEVATION
1/4" = 1'-0"



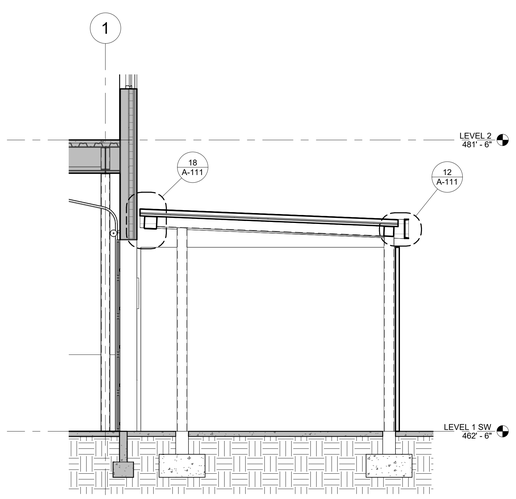
8 A-111 CTE CANOPY ENLARGED PLAN
1/4" = 1'-0"



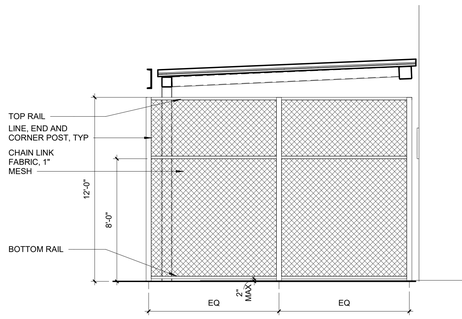
4 A-111 CTE CANOPY ENLARGED ROOF PLAN
1/4" = 1'-0"



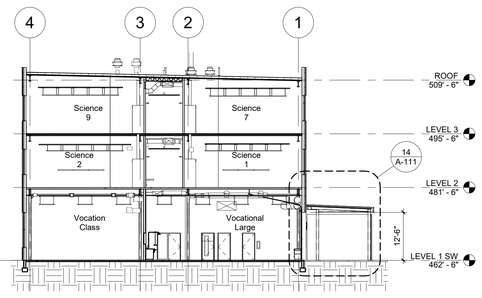
21 A-111 CANOPY ELEVATION
1/4" = 1'-0"



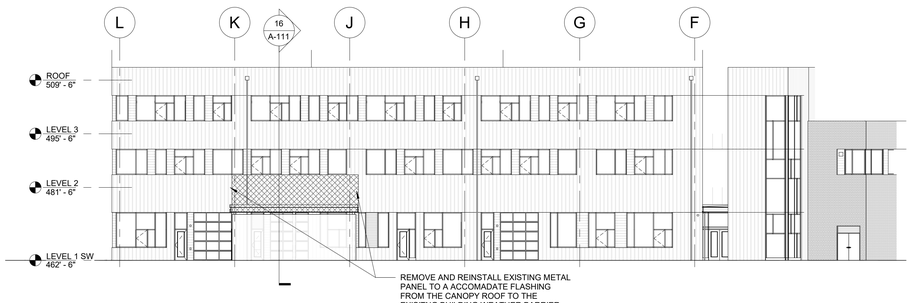
14 A-111 CTE CANOPY SECTION
1/4" = 1'-0"



22 A-111 CANOPY ELEVATION
1/4" = 1'-0"



16 A-111 WEST WING BUILDING SECTION
1/16" = 1'-0"



10 A-111 WEST ELEVATION - CLASSROOM BAR
1/16" = 1'-0"

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ENLARGED FLOOR PLANS, BUILDING ELEVATIONS & SECTIONS
A-111

General Structural Notes

(THE FOLLOWING APPLY UNLESS SHOWN OTHERWISE ON THE DRAWINGS.)

CRITERIA:

1. ALL MATERIALS, WORKMANSHIP, DESIGN, AND CONSTRUCTION SHALL CONFORM TO THE DRAWINGS, SPECIFICATIONS, AND THE INTERNATIONAL BUILDING CODE (IBC) WITH WASHINGTON STATE ADMINISTRATIVE CODE AMENDMENTS, 2021 EDITION.

2. DESIGN LOADING CRITERIA:

RISK CATEGORY IBC TABLE 1604.5	III
ROOF SNOW LOAD	28 PSF (INCLUDES I_S = 1.1)
EARTHQUAKE (NEW BUILDING DESIGN)	SEISMIC DESIGN CATEGORY D S_S = 1.33, S_1 = 0.46, S_{DS} = 1.07, S_{D1} = 0.46 I_E = 1.25, STORY DRIFT LIMIT = 0.015 * H EQUIVALENT LATERAL FORCE PROCEDURE STEEL ORDINARY MOMENT FRAMES R = 3.5, Ω_0 = 3.0, C_D = 5.5, C_s = 0.321, BASE SHEAR = 3.6 KIPS
WIND	V = 105 MPH, V_{ASD} = 63 MPH, EXPOSURE "B"

SEE DRAWINGS FOR ADDITIONAL LOADING CRITERIA

3. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH ARCHITECTURAL DRAWINGS AND ALL OTHER CONTRACT DOCUMENTS FOR BIDDING AND CONSTRUCTION. CONTRACTOR SHALL VERIFY DIMENSIONS AND CONDITIONS FOR COMPATIBILITY AND SHALL NOTIFY ARCHITECT OF ALL DISCREPANCIES PRIOR TO CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE BUILDING LAYOUT DIMENSIONS (GRID LAYOUTS, SITE COORDINATES, ETC.) AMONGST ALL TRADES, INCLUDING SHOP FABRICATED ITEMS.

4. CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS, MEMBER SIZES AND CONDITIONS PRIOR TO COMMENCING ANY WORK AND PRIOR TO SUBMITTING SHOP DRAWINGS. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS ARE INTENDED AS GUIDELINES ONLY AND MUST BE VERIFIED. THE EXISTING CONDITIONS SHOWN ON THE DRAWINGS ARE BASED EITHER ON SITE OBSERVATION, ORIGINAL DRAWINGS OR WERE ASSUMED BASED ON EXPECTED CONDITIONS. IF THE EXISTING CONDITIONS DO NOT CLOSELY MATCH THE CONDITIONS SHOWN ON THE DRAWINGS, OR IF THE EXISTING MATERIALS ARE OF QUESTIONABLE OR SUBSTANDARD QUALITY, NOTIFY THE ENGINEER PRIOR TO COMMENCING ANY WORK.

5. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING, BOTH FOR VERTICAL LOADS AND LATERAL STABILITY, FOR THE STRUCTURE AND STRUCTURAL COMPONENTS UNTIL ALL FINAL CONNECTIONS HAVE BEEN COMPLETED IN ACCORDANCE WITH THE DRAWINGS.

6. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SAFETY PRECAUTIONS AND THE METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES REQUIRED TO PERFORM THE WORK.

7. CONTRACTOR-INITIATED CHANGES SHALL BE SUBMITTED IN WRITING TO THE ARCHITECT AND STRUCTURAL ENGINEER FOR APPROVAL PRIOR TO FABRICATION OR CONSTRUCTION. CHANGES SHOWN ONLY ON SHOP DRAWINGS WILL NOT SATISFY THIS REQUIREMENT.

8. DRAWINGS INDICATE GENERAL AND TYPICAL DETAILS OF CONSTRUCTION. WHERE CONDITIONS ARE NOT SPECIFICALLY INDICATED BUT ARE OF SIMILAR CHARACTER TO DETAILS SHOWN, SIMILAR DETAILS OF CONSTRUCTION SHALL BE USED, SUBJECT TO REVIEW AND APPROVAL BY THE ARCHITECT AND THE STRUCTURAL ENGINEER.

9. SHOP DRAWINGS FOR REINFORCING STEEL AND STRUCTURAL STEEL SHALL BE SUBMITTED TO THE ARCHITECT AND STRUCTURAL ENGINEER FOR REVIEW PRIOR TO FABRICATION OF THESE ITEMS.

10. SHOP DRAWING REVIEW: DIMENSIONS AND QUANTITIES ARE NOT REVIEWED BY THE ENGINEER OF RECORD, AND THEREFORE MUST BE VERIFIED BY THE CONTRACTOR. THE CONTRACTOR SHALL REVIEW AND STAMP DRAWINGS PRIOR TO REVIEW BY ENGINEER OF RECORD. SUBMITTALS SHALL BE SUBMITTED ELECTRONICALLY IN PDF FORMAT.

    SHOP DRAWING SUBMITTALS PROCESSED BY THE ENGINEER ARE NOT CHANGE ORDERS. THE PURPOSE OF SHOP DRAWING SUBMITTALS BY THE CONTRACTOR IS TO DEMONSTRATE TO THE ENGINEER THAT THE CONTRACTOR UNDERSTANDS THE DESIGN CONCEPT BY INDICATING WHICH MATERIAL IS INTENDED TO BE FURNISHED AND INSTALLED AND BY DETAILING THE INTENDED FABRICATION AND INSTALLATION METHODS. IF DEVIATIONS, DISCREPANCIES, OR CONFLICTS BETWEEN SHOP DRAWING SUBMITTALS AND THE CONTRACT DOCUMENTS ARE DISCOVERED EITHER PRIOR TO OR AFTER SHOP DRAWING SUBMITTALS ARE PROCESSED BY THE ENGINEER, THE DESIGN DRAWINGS AND SPECIFICATIONS SHALL CONTROL AND SHALL BE FOLLOWED.

STATEMENT OF SPECIAL INSPECTIONS (STRUCTURAL):

11. STATEMENT OF SPECIAL INSPECTIONS - STRUCTURAL ITEMS (SEISMIC DESIGN CATEGORY D):

    DEFINITIONS:
    THE SEISMIC FORCE RESISTING SYSTEM FOR THIS STRUCTURE CONSISTS PRIMARILY OF MOMENT FRAMES, ROOF DIAPHRAGMS, AND STRUT MEMBERS AS SPECIFIED ON THE DRAWINGS. SEE THE LEGEND OF PLAN SHEETS FOR ADDITIONAL INFORMATION DEFINING MEMBER LOCATIONS.

    SPECIAL INSPECTIONS AND TESTING SHALL BE PERFORMED BY THE OWNER APPOINTED INSPECTION AGENCY IN ACCORDANCE WITH CHAPTER 17 OF THE IBC WITH REPORTS PER IBC SECTION 1704.2.4 SUBMITTED TO THE OWNER, ARCHITECT, STRUCTURAL ENGINEER, CONTRACTOR, AND BUILDING OFFICIAL FOR EACH DAY SPECIAL INSPECTIONS OR TESTING IS PERFORMED. THESE INSPECTIONS ARE IN ADDITION TO THE INSPECTIONS SPECIFIED IN IBC SECTION 110. SEE TABLES BELOW FOR ADDITIONAL INFORMATION.

STRUCTURAL ITEMS	SPECIAL INSPECTION FREQUENCY	IBC REFERENCE
STRUCTURAL STEEL FABRICATION, ERECTION, AND NONDESTRUCTIVE TESTING*		
SPECIAL INSPECTION AND NONDESTRUCTIVE TESTING FOR STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE QUALITY ASSURANCE (QA) INSPECTION REQUIREMENTS OF AISC 360-16 CHAPTER N. CONTINUOUS INSPECTION SHALL BE PERFORMED AT "P" TASKS DEFINED IN AISC 360-16; PERIODIC INSPECTION SHALL BE PERFORMED AT "O" TASKS DEFINED IN AISC 360-16. ADDITIONAL SPECIAL INSPECTION AND TESTING REQUIREMENTS FOR THE STRUCTURAL STEEL SEISMIC SYSTEM SHALL BE PER AISC 341-16 CHAPTER J AS INDICATED BELOW.		
SHOP AND FIELD WELDING	CONTINUOUS/PERIODIC (QA PER AISC 360 CH. N5.4)	1705.2.1
HIGH STRENGTH BOLTING	CONTINUOUS/PERIODIC (QA AISC 360 CH. N5.6)	1705.2.1
METAL DECKING	PERIODIC	1705.2.2
MATERIAL VERIFICATION (IDENTIFICATION MARKS AND MANUFACTURER'S TEST REPORTS)	PERIODIC	1705.2.1
STRUCTURAL STEEL SEISMIC SYSTEM (INSPECTION AND TESTING)	CONTINUOUS/PERIODIC (QA PER AISC 341 CH. J)	1705.13.1 & 1705.14.1
CONCRETE (SEE GENERAL STRUCTURAL NOTE 13 FOR ADDITIONAL REQUIREMENTS)**		
REINFORCING PLACEMENT	PERIODIC AND PRIOR TO ALL CONCRETE POURS	TABLE 1705.3 ITEM 1
ANCHOR BOLT PLACEMENT	PERIODIC AND PRIOR TO ALL CONCRETE POURS	TABLE 1705.3 ITEM 3
CONCRETE PLACEMENT***	CONTINUOUS	TABLE 1705.3 ITEMS 5-7
CURING & FORMWORK PROCEDURES	PERIODIC	TABLE 1705.3 ITEMS 8 & 14
SOIL COMPACTION	CONTINUOUS	1705.6

* STRUCTURAL STEEL QUALITY ASSURANCE INSPECTIONS, EXCEPT NONDESTRUCTIVE TESTING, MAY BE WAIVED IF APPROVED BY THE OWNER AND BUILDING OFFICIAL FOR WORK PERFORMED ON THE PREMISES OF A FABRICATOR REGISTERED AND APPROVED TO PERFORM SUCH WORK WITHOUT SPECIAL INSPECTION IN ACCORDANCE WITH IBC SECTION 1704.2.5.1.
** EXCEPTIONS 1 THRU 5 PER IBC SECTION 1705.3 SHALL NOT APPLY TO CONCRETE WORK ON THIS PROJECT.
*** FREQUENCY OF CONCRETE LABORATORY TESTING SHALL BE IN ACCORDANCE WITH ACI 318-19 SECTION 26.12.2 UNLESS OTHERWISE NOTED IN THE PROJECT SPECIFICATIONS.

ARCH, MECH, & ELEC ITEMS	SEISMIC DESIGN REQUIREMENTS (ASCE 7-16 CHAPTER 13)	PERIODIC SPECIAL INSPECTION AS SPECIFIED PER IBC CHAPTER 17
STEEL STORAGE RACKS	ASCE 7-16 SECTION 15.5.3	REQUIRED FOR ANCHORAGE OF RACKS > 8 FEET IN HEIGHT (IBC 1705.13.7)
ALL OTHER MECHANICAL AND ELECTRICAL COMPONENTS	ASCE 7-16 SECTION 13.6	NOT REQUIRED

STRUCTURAL OBSERVATION PER IBC SECTION 1704.6 IS NOT REQUIRED FOR THIS STRUCTURE.

CONTRACTOR STATEMENT OF RESPONSIBILITY: CONTRACTOR SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY IN ACCORDANCE WITH IBC SECTION 1704.4 TO THE BUILDING OFFICIAL AND OWNER PRIOR TO CONSTRUCTION ACKNOWLEDGING THE SPECIAL REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS.

GEOTECHNICAL:

12. FOUNDATION NOTES: SUBGRADE PREPARATION INCLUDING DRAINAGE, EXCAVATION, COMPACTION, AND FILLING REQUIREMENTS, SHALL CONFORM STRICTLY WITH THE CIVIL/STRUCTURAL DRAWINGS AND SPECIFICATIONS OR AS DIRECTED BY THE OWNER APPOINTED GEOTECHNICAL ENGINEER. FOOTINGS SHALL BEAR ON COMPACTED IMPORTED STRUCTURAL FILL PER EARTHWORK SPECIFICATIONS. FOOTINGS SHALL BEAR AT LEAST 18" BELOW LOWEST ADJACENT FINISHED GRADE. THE OWNER APPOINTED GEOTECHNICAL ENGINEER SHALL APPROVE FOOTING EXCAVATION/PREPARATION PRIOR TO PLACEMENT OF ALL FOOTINGS. PROVIDE FOR SUBSURFACE DRAINAGE AS NOTED IN THE SPECIFICATIONS.

SOIL PROFILE TYPE	SITE CLASS C
COEFFICIENT OF FRICTION	0.35 (INCLUDING FACTOR OF SAFETY)
ALLOWABLE SOIL PRESSURE	5,000 PSF
LATERAL EARTH PRESSURE (RESTRAINED/UNRESTRAINED).	50 PCF/35 PCF

GEOTECHNICAL REPORT REFERENCE: "ASSOCIATED EARTH SCIENCES, INC, REPORT # KE120504A, FEDERAL WAY HIGH SCHOOL REPLACEMENT, DATED MARCH 14, 2014."

CONCRETE:

13. CONCRETE SHALL BE MIXED, PROPORTIONED, CONVEYED AND PLACED IN ACCORDANCE WITH ACI 318-19 CHAPTER 26 AND ACI 301. CONCRETE SHALL ATTAIN A 28-DAY STRENGTH OF f'c = 4.5 KSI.

    EXPOSURE CLASSES: CONCRETE MIXES SHALL CONFORM TO EXPOSURE CLASSES F0, S0, W0, AND C0 IN ACCORDANCE WITH ACI 318-19, TABLES 19.3.1.1 AND 19.3.2.1, EXCEPT FOR THE FOLLOWING: CONCRETE EXPOSED TO EARTH SHALL CONFORM TO EXPOSURE CLASS C1. CONCRETE EXPOSED TO WEATHER AND FREEZING SHALL CONFORM TO EXPOSURE CLASS F1 (F2 FOR EXTERIOR SLABS EXPOSED TO WEATHER).

    CONCRETE MIXES SHALL MEET OR EXCEED THE REQUIREMENTS SPECIFIED ABOVE. MIXES SHALL BE SUBMITTED TO THE ENGINEER AND BUILDING OFFICIAL FOR APPROVAL TWO WEEKS PRIOR TO PLACING ANY CONCRETE AND SHALL INCLUDE THE AMOUNTS OF CEMENT, CEMENTITOUS MATERIAL, FINE AND COARSE AGGREGATE, WATER AND ADMIXTURES, AS WELL AS THE WATER-CEMENT RATIO, SLUMP, CONCRETE YIELD AND SUBSTANTIATING STRENGTH DATA IN ACCORDANCE WITH ACI 318-19, CHAPTER 26 AND 27. REVIEW OF MIX SUBMITTALS BY THE ENGINEER OF RECORD INDICATES ONLY THAT INFORMATION PRESENTED CONFORMS GENERALLY WITH CONTRACT DOCUMENTS. CONTRACTOR OR SUPPLIER MAINTAINS FULL RESPONSIBILITY FOR SPECIFIED PERFORMANCE.

14. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60, fy = 60 KSI.

    WELDED WIRE FABRIC SHALL CONFORM TO ASTM A1064.

15. REINFORCING STEEL SHALL BE DETAILED (INCLUDING HOOKS AND BENDS) IN ACCORDANCE WITH ACI 315-18 AND 318-19. LAP ALL CONTINUOUS REINFORCEMENT (#5 AND SMALLER) 40 BAR DIAMETERS OR 2'-0" MINIMUM. PROVIDE CORNER BARS AT ALL WALL AND FOOTING INTERSECTIONS. LAP CORNER BARS (#5 AND SMALLER) 40 BAR DIAMETERS OR 2'-0" MINIMUM. LAPS OF LARGER BARS SHALL BE MADE IN ACCORDANCE WITH ACI 318-19 SECTION 25.5, CLASS B. LAP ADJACENT MATS OF WELDED WIRE FABRIC A MINIMUM OF 12" AT SIDES AND ENDS.

    NO BARS PARTIALLY EMBEDDED IN HARDENED CONCRETE SHALL BE FIELD BENT UNLESS OTHERWISE NOTED ON THE DRAWINGS OR APPROVED BY THE STRUCTURAL ENGINEER.

16. CONCRETE PROTECTION (COVER) FOR REINFORCING STEEL SHALL BE AS FOLLOWS U.O.N.:

FOOTINGS AND OTHER UNFORMED SURFACES CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	3"
FORMED SURFACES EXPOSED TO EARTH (i.e. WALLS BELOW GROUND) OR WEATHER (#6 BARS OR LARGER). . .	2"
(#5 BARS OR SMALLER). . .	1 1/2"
SLAB-ON-GRADE BOTTOM REINFORCING	2"

17. CAST-IN-PLACE CONCRETE: SEE ARCHITECTURAL DRAWINGS FOR ALL GROOVES, NOTCHES, CHAMFERS, FEATURE STRIPS, COLOR, TEXTURE, AND OTHER FINISH DETAILS AT ALL EXPOSED CONCRETE SURFACES.

18. BONDING AGENT SHALL BE "MASTEREMACO ADH 326" BY BASF CORPORATION OR EQUIVALENT, AND SHALL BE USED WHERE NEW CONCRETE IS PLACED AGAINST HARDENED CONCRETE. PLACE IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, INCLUDING PREPARATION OF EXISTING SURFACES. CONCRETE SHALL BE CONSIDERED HARDENED AFTER 56 DAYS.

19. NON-SHRINK GROUT SHALL BE FURNISHED BY AN APPROVED MANUFACTURER AND SHALL BE MIXED AND PLACED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. GROUT STRENGTH SHALL BE AT LEAST EQUAL TO THE MATERIAL ON WHICH IT IS PLACED (6 KSI MINIMUM).

STEEL:

20. STRUCTURAL STEEL DESIGN, FABRICATION, AND ERECTION SHALL BE BASED ON THE LATEST EDITIONS OF THE A.I.S.C. SPECIFICATIONS AND CODES:

    1. SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS-ALLOWABLE STRESS AND PLASTIC DESIGN, OR LOAD AND RESISTANCE FACTOR DESIGN SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS.

    2. CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES, ADOPTED JUNE 15, 2016.

       IN REFERENCE TO SECTIONS 3.1.1 AND 4.4.1, THE CONTRACT DOCUMENTS (DESIGN DRAWINGS) SHOW COMPLETE CONNECTION DETAILS FOR ALL MEMBERS EXCEPT THOSE NOTED TO BE DESIGN-BUILD ITEMS. ALTERNATE CONNECTION DETAILS REQUESTED BY THE FABRICATOR SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR APPROVAL VIA A REQUEST FOR INFORMATION (RFI) PRIOR TO COMPLETION OF SHOP DRAWINGS.

       IN REFERENCE TO SECTION 3.1.6, FABRICATOR SHALL ALSO REVIEW PROJECT SPECIFICATIONS AND ARCHITECTURAL DRAWINGS TO DETERMINE PAINTING AND GALVANIZING REQUIREMENTS. MEMBERS EMBEDDED IN CONCRETE, MASONRY OR TO RECEIVE SPRAY-ON FIREPROOFING SHALL NOT BE PAINTED. DO NOT PAINT OR GALVANIZE AREAS OF PIECES TO BE FIELD WELDED, OR REMOVE PAINT AND GALVANIZING IN FIELD PRIOR TO WELDING.

       IN REFERENCE TO SECTION 3.3, IN THE EVENT OF DISCREPANCIES BETWEEN DESIGN DRAWINGS AND SPECIFICATIONS, THE DESIGN DRAWINGS GOVERN.

       IN REFERENCE TO SECTION 4.1, THE FABRICATOR SHALL NOT ASSUME BID PACKAGES CONSTITUTE RELEASING THE DRAWINGS FOR CONSTRUCTION WITHOUT EXPLICIT DIRECTION TO DO SO BY THE OWNER.

    3. SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS.

    4. QUALITY CONTROL SHALL BE IN ACCORDANCE WITH AISC 360 CHAPTER N (AISC 341 CHAPTER J FOR STEEL SEISMIC SYSTEM).

    CONTRACTOR SHALL ALSO COMPLY WITH OSHA REGULATION 29 CFR PART 1926 SUBPART R - STEEL ERECTION, PUBLISHED JANUARY 18, 2001. MISCELLANEOUS PLATES FOR GUYING CABLE ATTACHMENTS, TEMPORARY JOIST BRACING, ETC. SHALL BE ADDED AS REQUIRED. CONTRACTOR SHALL EVALUATE COLUMNS AND PROVIDE ADEQUATE BASE PLATE SHIMS, ADDITIONAL TEMPORARY ERECTION BOLTS/CLIPS, GUYS, OR TEMPORARY BRACING AS REQUIRED PER SECTION 1926.755.

21. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

TYPE OF MEMBER	ASTM SPECIFICATION	Fy
A. WIDE FLANGE AND WT SHAPES	A992	50 KSI
B. ANGLES, CHANNELS, AND RODS	A36	36 KSI
C. PLATES	A572	50 KSI
D. STRUCTURAL TUBING (HSS - SQUARE OR RECTANGULAR)	A500 (GRADE C)	50 KSI
E. ANCHOR BOLTS OR ANCHOR RODS	F1554	36 KSI (U.O.N.)
F. CONNECTION BOLTS	A325-N	

22. DIMENSIONAL TOLERANCE FOR STRUCTURAL STEEL MEMBERS SHALL BE PER THE AISC CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES, SECTION 6.4 AND ASTM SPECIFICATION A6. UNLESS SPECIFICALLY ALLOWED BY THE ENGINEER, COLUMN MEMBERS SHALL NOT BE MODIFIED BY THE ROTARY STRAIGHTENING PROCESS.

23. NOT USED.

24. HOLE SIZES IN STEEL MEMBERS FOR CONNECTIONS TO CONCRETE OR MASONRY SHALL BE AS FOLLOWS UNLESS SPECIFIED OTHERWISE ON THE DRAWINGS:

	MAXIMUM HOLE DIA. OVER NOMINAL BOLT DIA.	
ANCHOR TYPE	OTHER THAN COL. BASE PLATES	COL. BASE PLATES
CAST-IN-PLACE ANCHOR BOLTS	1/16" *	TABLE 14-2 OF AISC STEEL CONSTR. MANUAL, 15TH ED.
EXPANSION BOLTS	1/16" *	5/16"
EPOXY GROUTED BOLTS	1/8" *	5/16"

* USE OF LARGER HOLES WOULD REQUIRE THE USE OF WELDED PLATE WASHERS AND WOULD REQUIRE PRIOR APPROVAL BY THE STRUCTURAL ENGINEER.

HARDENED OR COMMON PLATE WASHERS ARE REQUIRED BELOW ALL NUTS WHERE OVERSIZED HOLES ARE USED AND SHALL BE SIZED TO COVER ENTIRE HOLE. MINIMUM WASHER SIZES FOR COLUMN BASE PLATES SHALL BE IN ACCORDANCE WITH TABLE 14-2 OF THE AISC STEEL CONSTRUCTION MANUAL, 15TH EDITION.

25. ALL WELDING SHALL BE IN CONFORMANCE WITH A.I.S.C. AND A.W.S. STANDARDS AND SHALL BE PERFORMED BY W.A.B.O. CERTIFIED WELDERS USING E70XX ELECTRODES. ONLY PREQUALIFIED WELDS (AS DEFINED BY A.W.S.) SHALL BE USED. DO NOT PAINT OR GALVANIZE AREAS OF PIECES TO BE FIELD WELDED, OR REMOVE PAINT AND GALVANIZING IN FIELD PRIOR TO WELDING
    THE WELD SYMBOLS SHOWN ON THE DRAWINGS ARE INTENDED ONLY TO AID THE CONTRACTOR IN THE DETERMINATION OF FIELD VERSUS SHOP WELDING. THE CONTRACTOR SHALL WORK WITH THE FABRICATOR AND ERECTOR TO COORDINATE THE FINAL DETERMINATION OF FIELD VERSUS SHOP WELDS TO ACCOMMODATE THE CONSTRUCTION SEQUENCING OF THE PROJECT.

    ALL WELDS SHALL BE MADE WITH A FILLER WELD METAL THAT HAS A MINIMUM CHARPY V-NOTCH TOUGHNESS OF 20 FT.-LBS. AT 0 DEGREES F. WELDS SPECIFICALLY DENOTED AS "DEMAND CRITICAL" SHALL BE MADE WITH FILLER WELD METAL THAT ADDITIONALLY HAS A MINIMUM CHARPY V-NOTCH TOUGHNESS OF 40 FT-LBS AT 70 DEGREES F. SEE AISC 341-16 CHAPTER A3 (4B) AND AWS D1.8 SECTION 6.3 FOR ADDITIONAL REQUIREMENTS. PROPOSED FILLER MATERIAL FOR BOTH SHOP AND FIELD WELDS SHALL BE SUBMITTED FOR REVIEW PRIOR TO CONSTRUCTION.

26. METAL ROOF DECKING: PROVIDE SIZE, TYPE, GAGE, AND ATTACHMENT TO THE SUPPORTING STRUCTURE AS SHOWN ON THE DRAWINGS. ALTERNATES MUST BE CONNECTED ACCORDING TO PUBLISHED ICC-ES CRITERIA FOR DIAPHRAGM SHEARS SHOWN. PROVIDE SHORING WHERE REQUIRED PER MANUFACTURER'S PUBLISHED CRITERIA. ALL DECKING SHALL CONFORM TO THE REQUIREMENTS OF THE STEEL DECK INSTITUTE. SUBMIT DECK INFORMATION TO ARCHITECT AND ENGINEER PRIOR TO BEGINNING SHOP DRAWINGS.

SHEET INDEX

S101	GENERAL STRUCTURAL NOTES
S201	CANOPY FOUNDATION AND ROOF FRAMING PLANS
S301	DETAILS

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CHRISTINE HITTLE — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER
02/18/25

#	REVISIONS	DATE

Federal Way Public Schools

Federal Way High School CTE Storage

30611 16th Ave S.
Federal Way, WA 98003

JOB NO: S24255
ISSUE DATE: 3/7/25

Jurisdiction Stamp Area

GENERAL STRUCTURAL NOTES

S101

FOUNDATION PLAN NOTES:

1. SLAB ELEVATION PER CIVIL. SLAB-ON-GRADE SHALL BE 5" THICK WITH #4 @ 14"oc EA. WAY AT CENTER, OVER FREE-DRAINING CAPILLARY BREAK MATERIAL PER GEOTECHNICAL REPORT AND SPECIFICATIONS.

   SEE ARCHITECTURAL DRAWINGS FOR SLAB DEPRESSION AND SLOPE REQUIREMENTS.

2. TOPS OF ALL FOOTINGS SHALL BE AS SHOWN ON PLAN, U.O.N. OVER EXCAVATE AND PLACE SUITABLE COMPACTED FILL AS DIRECTED BY OWNER APPROVED GEOTECHNICAL ENGINEER WHERE REQUIRED.

3. ALL STEEL TO BE HOT DIP GALVANIZED.

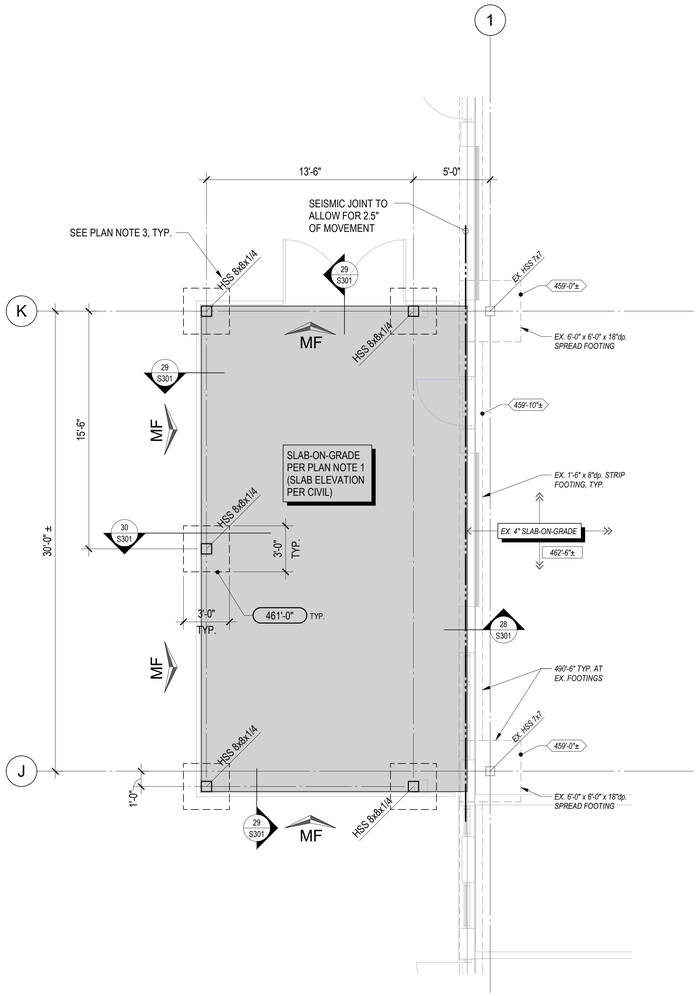
FOUNDATION LEGEND:

- x'-x"± — TOP OF EX. SLAB ELEVATION
- x'-x"± — BOTTOM OF EX. FOOTING ELEVATION
- x'-x" — TOP OF FOOTING ELEVATION
- SLAB-ON-GRADE PER PLAN NOTE 1

FOUNDATION SEISMIC FORCE RESISTING SYSTEM LEGEND:

(SEE GENERAL STRUCTURAL NOTE 11)

MF-x — MOMENT FRAME



NORTH

1 CANOPY FOUNDATION PLAN
1/4" = 1'-0"

ROOF PLAN NOTES:

1. ROOF DECKING SHALL BE 1 1/2" DEEP PER 6/S301, U.O.N.
2. IN GENERAL, THE ROOF STRUCTURE SLOPES TO DRAINS. SEE ARCH'L DRAWINGS FOR ISOLATED AREAS REQUIRING BUILT-UP INSULATION FOR DRAINAGE. PROVIDE STRAIGHT SLOPES BETWEEN ELEVATIONS SHOWN.
3. STEEL MEMBERS SHALL BE SPACED EQUALLY AS SHOWN, U.O.N.
4. SEE METAL DECKING NOTES FOR SPECIAL CONNECTION REQUIREMENTS AT MOMENT FRAMES.
5. THE GENERAL CONTRACTOR SHALL REINFORCE ALL OPENINGS AT ROOF DECKS PER 3/S301 . ALL OPENINGS MAY NOT BE SHOWN ON THE STRUCTURAL DRAWINGS. SEE ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR ADDITIONAL OPENINGS NOT SHOWN. CONTRACTOR SHALL COORDINATE OPENING DIMENSIONS AMONGST ALL TRADES.
6. ALL STEEL TO BE HOT DIP GALVANIZED.

ROOF LEGEND:

[x'-x"] — TOP OF STEEL BEAM ELEVATION

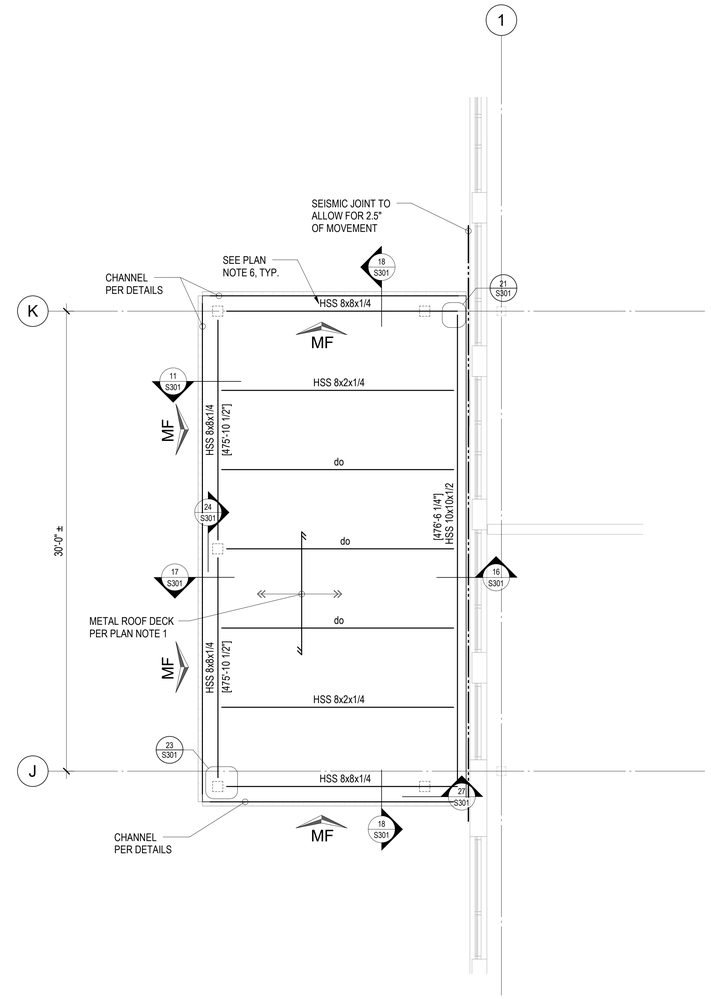
SPAN DIRECTION OF DECK

ROOF SEISMIC FORCE RESISTING SYSTEM LEGEND:

(SEE GENERAL STRUCTURAL NOTE 11)

MF-x — MOMENT FRAME

DIAPHRAGM — DIAPHRAGM AT THIS LEVEL CONSISTS OF THE ROOF DECK PER PLAN



NORTH

2 CANOPY ROOF FRAMNG PLAN
1/4" = 1'-0"

NOTE: ALL DIMENSIONS, ELEVATIONS, AND LOCATIONS OF EXISTING STRUCTURAL COMPONENTS ARE BASED ON INFORMATION GATHERED FROM ORIGINAL DRAWINGS OR CURSORY FIELD MEASUREMENTS AND ARE SHOWN FOR INFORMATION ONLY. CONTRACTOR SHALL FIELD MEASURE AND VERIFY ALL CONDITIONS PRIOR TO COMMENCING ANY WORK. NOTIFY ENGINEER WHERE CONDITIONS VARY FROM THOSE SHOWN.

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CANOPY FOUNDATION AND ROOF FRAMING PLANS

S201

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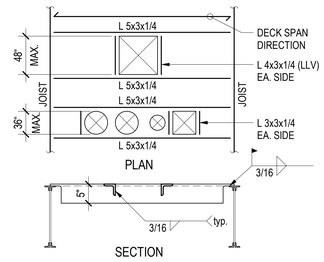
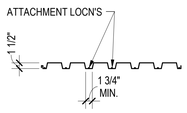


NOTES:
1. WELD DECK TO L's W/ 1/2"⌀ PUDDLE WELDS @ 6"oc ALL AROUND OPNG.
2. NO REINFORCING REQD. FOR SINGLE OPNG'S 6"⌀ or 6" SQ. or LESS.
3. LARGER OPNG'S MUST BE COORD. W/ ARCHITECT & ENGINEER.

Reinforcing at Misc. Roof Deck Openings 5802

3



DECK TYPE = ASC DGB-36 OR VERCO PLB-36, G60 GALVANIZED W/ FOLLOWING MIN. PROPERTIES: ①

F_y = 50ksi, PANEL WIDTH = 36"

ALLOWABLE SHEAR CAPACITY REQUIRED = 200 plf

20GA.	18GA.
I_a = +0.197/-0.231 $in.^4$	I_a = +0.287/-0.306 $in.^4$
S_a = +0.228/-0.236 $in.^3$	S_a = +0.311/-0.329 $in.^3$

MAXIMUM ALLOWABLE SPANS ②		
SPAN CONDITION	20GA.	18GA.
SINGLE SPAN	7'-0"	7'-6"
DOUBLE OR TRIPLE SPAN	8'-6"	9'-6"

DECK ATTACHMENT AT SUPPORTS ③			
FASTENER TYPE	FASTENER PATTERN PERP. TO DECK FLUTES	FASTENER SPACING PARALLEL TO DECK FLUTES	SIDE SEAM CONN. SPACING ④
1/2"⌀ (EFFECTIVE) PUDDLE WELDS	36/7 ((2) ROWS 36/7 AT STRUTS) ⑤	24"oc (12"oc AT STRUTS) ⑤	24"oc
POWDER ACTUATED FASTENERS (PAF) ⑥	36/7 ((2) ROWS 36/7 AT STRUTS) ⑤	24"oc (12"oc AT STRUTS) ⑤	24"oc

DECK NOTES:

① DECK MUST STRICTLY MEET CRITERIA LISTED, INCLUDING ICC-ES RESEARCH REPORT ALLOWABLE SHEAR LOADS. SUBMIT DECK INFORMATION TO ENGINEER PRIOR TO BEGINNING SHOP DRAWINGS.

② USE GAGE OF DECK PER SPAN TABLE, U.O.N PER PLAN.

③ USE DECK ATTACHMENTS AT SUPPORTS PER THE TABLE U.O.N. PER PLAN. CONTRACTOR MAY ELECT TO USE EITHER PUDDLE WELDS OR POWDER ACTUATED FASTENERS, CONTRACTOR TO UTILIZE ONLY ONE DECK ATTACHMENT TYPE PER CONTINUOUS DECKING AREA.

④ CONNECT DECK SEAMS WITH THE PUNCHLOK SYSTEM FOR VERCO DECK OR THE DELTAGRIP SYSTEM FOR ASC DECK, U.O.N PER PLAN.

⑤ STRUT ATTACHMENT PATTERNS SHALL APPLY AT MOMENT FRAME BEAMS (WHERE DECK OCCURS BOTH SIDES OF SUPPORT, EXCLUDING OVERHANGS AND CHANGES IN DECK ORIENTATION).

⑥ POWDER ACTUATED FASTENERS SHALL BE PER HILTI (ICC-ESR 2197) OR PNEUTEK (ICC-ESR 2941).

⑦ REINFORCE MISCELLANEOUS DECK OPENINGS PER 3/S301 , U.O.N. DECK OPENINGS MAY NOT BE SHOWN ON PLAN. SEE ARCH'L & MECH'L FOR ADDITIONAL INFORMATION.

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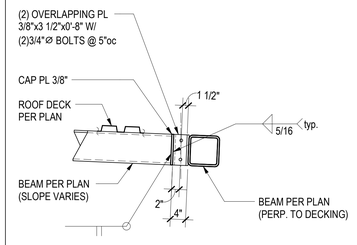

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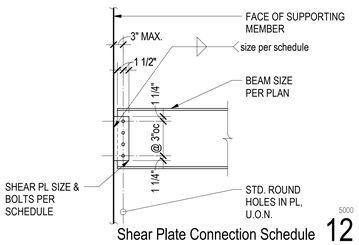
STANDARD BEAM CONNECTION SCHEDULE				
BEAM SIZE	BOLT SIZE (A325N)	NO. OF BOLTS U.O.N.	PL THICKNESS	WELD SIZE
W8	3/4"⌀	2	3/8"	3/16"



Shear Plate Connection Schedule 5000

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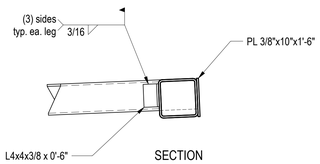

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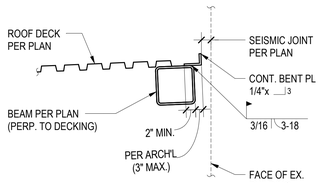

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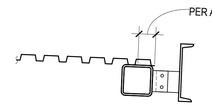

FOR CALL-OUTS IN COMMON SEE DETAIL 18/S301

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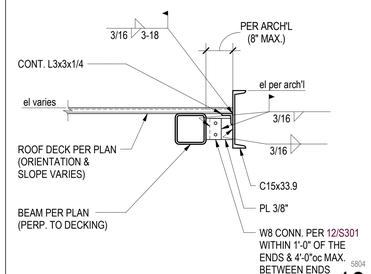

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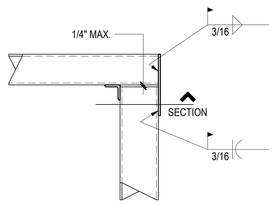

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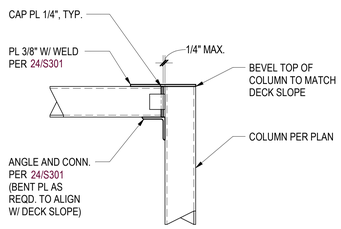

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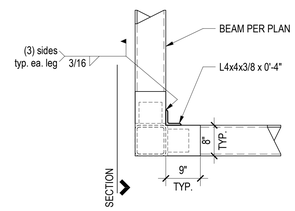

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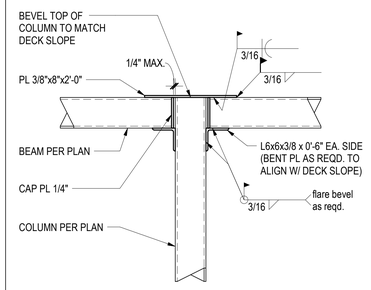

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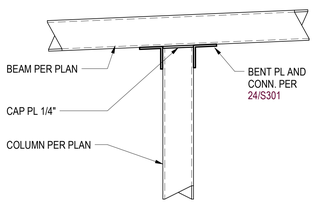

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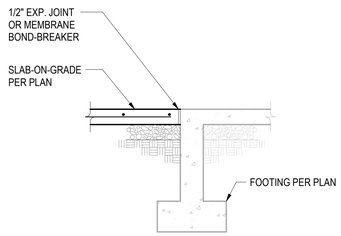

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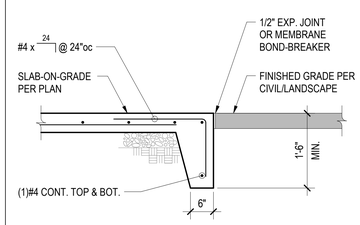

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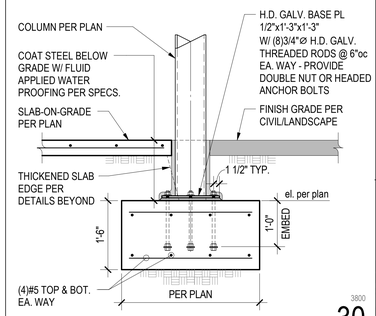

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02/18/25

#	REVISIONS	DATE

Federal Way Public Schools

Federal Way High School CTE Storage

30611 16th Ave S,
Federal Way, WA 98003

JOB NO: S24255
ISSUE DATE: 3/7/25

Jurisdiction Stamp Area

DETAILS

S301

GENERAL

- EXISTING MECHANICAL TO BE REMOVED
- EXISTING MECHANICAL TO REMAIN
- NEW MECHANICAL WORK
- MATCHLINE OR PROPERTY LINE
- ENLARGED PLAN BOUNDARY
- DETAIL/PLAN IDENTIFIER (1 / M1.01)
- SECTION IDENTIFIER (A / M1.01)
- ELEVATION IDENTIFIER (A / M1.01)
- REVISION DEFINITION AREA, AREA ENCIRCLED CONTAINS CHANGES MADE SUBSEQUENT TO PREVIOUS ISSUE
- REVISION CALLOUT (1)
- FLAG NOTE CALLOUT (1)
- AHU-01 — MECHANICAL EQUIPMENT TAG
- NORTH ARROW (N)
- INVERT ELEVATION OR POC

ACCESS, EXCAVATION, AND BACKFILLING

- ACCESS DOOR (SPECIFIED OR AS SHOWN ON DWGS)
- MECHANICAL ACCESS (SPECIFIED OR AS SHOWN ON DWGS)

PIPING

- PIPE ELBOW UP OR PIPE TEE UP AND DOWN
- PIPE ELBOW DOWN
- PIPE TEE UP
- PIPE TEE DOWN
- PIPE RISE
- PIPE CAP
- PIPE PLUG
- FLOW DIRECTION
- PIPE BREAK
- PIPE CONNECTION

VALVES

- VALVE: GATE, BALL, BUTTERFLY (REFER TO SPECIFICATIONS)

DOMESTIC WATER PIPING SYSTEM

- DOMESTIC COLD WATER
- DOMESTIC HOT WATER
- DOMESTIC HOT WATER CIRCULATION

ABBREVIATIONS

Ø	DIAMETER, PHASE
A	AIR, AMPS
ABV	ABOVE
AD	ACCESS DOOR
ADA	AMERICANS WITH DISABILITIES ACT
AFF	ABOVE FINISHED FLOOR
AG	ABOVE GROUND
AHJ	AUTHORITY HAVING JURISDICTION
AMB	AMBIENT
AP	ACCESS PANEL
ARCH	ARCHITECT
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR-CONDITIONING ENGINEERS, INC.
ASSY	ASSEMBLY
ATM	ATMOSPHERE
BF	BELOW FLOOR
BLW	BELOW
BOP	BOTTOM OF PIPE
BOT	BOTTOM
BV	BALL VALVE
CAP	CAPACITY
CD	CEILING DIFFUSER, CONDENSATE DRAIN
CKV	CHECK VALVE
CLG	CEILING, COOLING
CO	CLEANOUT, CO SENSOR
COND	CONDENSER, CONDENSATE
CONN	CONNECTOR
CONT	CONTINUE, CONTROL
COTG	CLEANOUT TO GRADE
CW	COLD WATER PIPING
D	DRAIN
DEG	DEGREE
DFU	DRAINAGE FIXTURE UNIT
DI	DUCTILE IRON
DIA	DIAMETER
DIM	DIMENSION
DN	DOWN
DWGS	DRAWINGS
DV	DRAIN VALVE
(E)	EXISTING
EFF	EFFICIENCY
EL	ELEVATION
EQUIV	EQUIVALENT
EXT	EXTERIOR, EXTERNAL
F	FAHRENHEIT, FIRE MAIN PIPING
FCO	FLOOR CLEANOUT
FFD	FUNNEL FLOOR DRAIN
FLEX	FLEXIBLE
FLR	FLOOR
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FS	FLOOR SINK
FT	FEET, FIN TUBE
G	GAS
GA	GAGE
GAL	GALLONS
GALV	GALVANIZED
GPF	GALLONS PER FLUSH
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GWB	GYPSUM WALLBOARD
H	HUMIDISTAT, HEIGHT
HB	HOSE BIBB
HD	HEAD, HUB DRAIN
HORIZ	HORIZONTAL
HW	HOT WATER PIPING
HWC	HOT WATER CIRCULATING PIPING
ID	INDIRECT DRAIN
IE	INVERT ELEVATION
IN.	INCH
IRR	IRRIGATION PIPING
L	LENGTH
LBS	POUND
MAV	MANUAL AIR VENT
MAX	MAXIMUM
MC	MECHANICAL CONTRACTOR
MECH	MECHANICAL
MIN	MINIMUM
NA	NOT APPLICABLE
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OA	OUTDOOR AIR
OC	ON CENTER
P	PUMP, PRESSURE, PLUMBING FIXTURE
POC	POINT OF CONNECTION
PRV	PRESSURE REDUCING VALVE
PSIG	POUNDS PER SQUARE INCH GAGE
QTY	QUANTITY
REF	REFERENCE, RETURN/EXHAUST FAN
RI&C	ROUGH IN AND CONNECT
RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
RV	SAFETY RELIEF VALVE
SCH	SCHEDULE
SF	SUPPLY FAN, SQUARE FOOT
SIM	SIMILAR
SOV	SHUTOFF VALVE
SS	STAINLESS STEEL, SANITARY SEWER
TD	TRENCH DRAIN, TEMPERATURE DIFFERENCE
TEMP	TEMPERATURE
TOP	TOP OF PIPE
TOS	TOP OF STEEL
TOF	TOP OF FOOTING
TYP	TYPICAL
UG	UNDERGROUND
UNO	UNLESS NOTED OTHERWISE
V	VENT PIPING, VOLT
VA	VALVE
W	WASTE, WATT, WIDE, WATER
W/	WITH
WC	WATER CLOSET, WATER COLUMN
WH	WATER HEATER, WALL HYDRANT
WHA	WATER HAMMER ARRESTOR
WSEC	WASHINGTON STATE ENERGY CODE
WSFU	WATER SUPPLY FIXTURE UNIT

GENERAL NOTES - MECHANICAL

1. COORDINATE MECHANICAL WORK WITH THAT OF OTHER TRADES (ELECTRICAL, ARCHITECTURAL, STRUCTURAL). REFER TO ELECTRICAL, ARCHITECTURAL, STRUCTURAL, DRAWINGS AND SPECIFICATIONS. COORDINATION SHALL OCCUR PRIOR TO FABRICATION, PURCHASE, AND/OR INSTALLATION OF ALL WORK.
2. COORDINATE PLUMBING, SYSTEMS ROUTING PRIOR TO INSTALLATION.
3. UNLESS OTHERWISE SPECIFIED, THE GENERAL CONTRACTOR (GC) SHALL BE RESPONSIBLE FOR PAINTING, CUTTING, AND PATCHING OF EXISTING FLOORS, WALLS, AND PARTITIONS IN THE EXISTING BUILDING.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFE KEEPING OF HIS OWN PROPERTY ON THE JOB SITE. OWNER ASSUMES NO RESPONSIBILITY FOR PROTECTION OF PROPERTIES AGAINST FIRE, THEFT, AND ENVIRONMENTAL CONDITIONS.

PIPING NOTES

1. DISASSEMBLY PROVISIONS: PROVIDE UNIONS OR FLANGES AT PIPING CONNECTIONS TO EQUIPMENT, COILS, TRAPS, CONTROL VALVES, AND OTHER COMPONENTS TO ALLOW DISASSEMBLY FOR MAINTENANCE.
2. PROVIDE 12" LONG, ½" WIDE FLUORESCENT ORANGE TAPE AT CONCEALED VALVE LOCATIONS.

PLUMBING NOTES

1. ACCESS PANELS: PROVIDE IN NON ACCESSIBLE CEILINGS AND WALLS FOR VALVES, WATER HAMMER ARRESTERS, CLEANOUTS, AND OTHER ITEMS THAT REQUIRE ACCESS TO PROPERLY MAINTAIN OR SERVICE THE BUILDING. REFER TO SPECIFICATIONS.

NON-STRUCTURAL MECHANICAL COMPONENT NOTES

1. THE COMPONENT IMPORTANCE FACTOR (Ip) FOR ALL NON-STRUCTURAL COMPONENTS SHALL BE:

   Ip = 1.0

2. THE FOLLOWING ITEMS ARE TAKEN DIRECTLY FROM THE 2018 INTERNATIONAL BUILDING CODE AND FROM THE AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) STANDARD 7-05. THE CONTRACTOR SHALL REFER TO THE ABOVE FOR ADDITIONAL INFORMATION, EXCEPTIONS, AND FURTHER DESCRIPTIONS. THE CONTRACTOR SHALL ADHERE TO REQUIREMENTS AND AS SUCH, SHALL BE INCLUDED WITHIN BID. ALSO REFER TO SPECIFICATION SECTION 230550.
3. 2018 IBC, 1613.1, SCOPE: ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND NON-STRUCTURAL COMPONENTS THAT ARE PERMANENTLY ATTACHED TO STRUCTURES AND THEIR SUPPORTS AND ATTACHMENTS SHALL BE DESIGNED AND CONSTRUCTED TO RESIST THE EFFECTS OF EARTHQUAKE MOTIONS IN ACCORDANCE WITH ASCE 7-05, EXCLUDING CHAPTER 14 AND APPENDIX 11A.
4. 2018 IBC, 1704.4, CONTRACTOR RESPONSIBILITY: THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONSTRUCTION OF A SEISMIC-FORCE-RESISTING SYSTEM, DESIGNATED SEISMIC SYSTEM, OR SEISMIC-RESISTING COMPONENT LISTED IN THE STATEMENT OF SPECIAL INSPECTIONS AND SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE BUILDING OFFICIAL AND THE OWNER PRIOR TO THE COMMENCEMENT OF WORK ON THE SYSTEM OR COMPONENT. THE CONTRACTOR'S STATEMENT OF RESPONSIBILITY SHALL INCLUDE THE FOLLOWING:
   - A. ACKNOWLEDGEMENT OF AWARENESS OF THE SPECIAL REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTIONS;
   - B. ACKNOWLEDGEMENT THAT CONTROL WILL BE EXERCISED TO OBTAIN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS APPROVED BY THE BUILDING OFFICIAL;
   - C. PROCEDURES FOR EXERCISING CONTROL WITHIN THE CONTRACTOR'S ORGANIZATION, THE METHOD AND FREQUENCY OF REPORTING AND THE DISTRIBUTION OF THE REPORTS;
   - D. IDENTIFICATION AND QUALIFICATIONS OF THE PERSON(S) EXERCISING SUCH CONTROL AND THEIR POSITION(S) IN THE ORGANIZATION.
4. DIVISION 22 RESPONSIBILITIES:
   - A. HANGERS AND SEISMIC BRACING FOR MECHANICAL SYSTEMS SHALL BE DESIGNED AND SPECIFIED BY DIVISION 22. DIVISION 22 SHALL REFER TO THE MECHANICAL DRAWINGS FOR LOCATIONS OF EQUIPMENT AND HUNG MECHANICAL SYSTEMS AS STRUCTURAL DRAWINGS DO NOT SHOW THE LOCATIONS OF PIPING, AND OTHER COMPONENTS.
   - B. DIVISION 22 SHALL COORDINATE THE SUPPORT SYSTEMS AND DESIGN LOADS FOR HUNG PIPING AND OTHER MECHANICAL SYSTEMS (INCLUDING COMBINED MULTIPLE PIPE RUNS) WITH THE GENERAL CONTRACTOR AND THE STEEL AND WOOD JOIST MANUFACTURERS IN ADDITION TO OTHER TRADES THAT MAY BE IMPACTED.

DRAWING INDEX

M001	MECHANICAL LEGEND, SHEET LIST & SCHEDULES
M002	MECHANICAL SPECIFICATIONS
M100	MECHANICAL PLAN LEVEL 1 PARTIAL SW
M101	MECHANICAL ENLARGED PLAN

SPACING OF HANGERS & SUPPORT SCHEDULE

PIPE SIZE (IN)	STEEL & IRON PIPE MAX SPAN (FT)		COPPER TUBING MAX SPAN (FT)	
	WATER SERVICES	STEAM, GAS & AIR SERVICES	WATER SERVICES	GAS & AIR SERVICES
<1/2"	7	8	5	6
3/4"	7	9	5	7

NOT ALL SYMBOLS MAY APPEAR ON THE DRAWINGS

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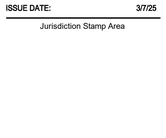

#	REVISIONS	DATE

N

Federal Way Public Schools

Federal Way High School CTE Storage

30611 16th Ave S
Federal Way, WA 98003

JOB NO: 2426
ISSUE DATE: 3/7/25

Jurisdiction Stamp Area

BID SET

MECHANICAL LEGEND, SHEET LIST & SCHEDULES

M001

DIVISION 21

SECTION 210000 - FIRE PROTECTION WORK SPECIFIED IN DIVISION 23
PART 1 - GENERAL
1.1 SECTION INCLUDES
A. Description: The following sections apply to Work in this Division with the exception of items specifically described in Division 21:
1. Section 230500 General Provisions
2. Section 230505 Project Closeout and Systems Start-Up
3. Section 230510 Basic Materials and Methods
4. Section 230520 Mechanical Demolition
6. Section 230810 Systems Training
7. Section 230820 Systems Operations and Maintenance Manuals

PART 2 - Products
Not Used.

Part 3 - Execution
Not Used.

END OF SECTION

SECTION 211000 - AUTOMATIC FIRE SUPPRESSION SYSTEMS
PART 1 - GENERAL
1.1 SECTION INCLUDES
A. Description: Work includes design and construction of complete automatic wet fire suppression systems.
B. General Requirements: Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 01, and Sections 230500 and 230510 apply to Work in this section.
1.2 QUALITY ASSURANCE
A. Regulatory Requirements: Comply with applicable city, county, and state codes and ordinances.
1. Authorities Having Jurisdiction (AHJs)
2. Local Fire Department.
B. Codes and Standards:
1. NFPA 13, Standard for the Installation of Sprinkler Systems and local jurisdiction requirements.
2. ASCE 7, Minimum Design Loads for Buildings and Other Structures.
C. Fire Sprinkler System Contractor's Qualifications for Preparation of Shop Drawings, Installations, Inspections, Maintenance, and Servicing: Only licensed fire protection sprinkler system contractors shall execute contracts for installation, inspection, maintenance, or servicing of fire protection sprinkler systems or any part of such system.
D. Fire Sprinkler System Contractor's Qualifications: Active NICET Level III (Certified Engineering Technician) Certification in Fire Protection Engineering Technology/Automatic Sprinkler System Layout.
E. Tenant Criteria: Review Mall/Tenant Criteria for additional requirements as they pertain to fire sprinkler systems.
1.3 SYSTEM DESIGN CRITERIA
A. Design, furnish, and install complete operable fire suppression systems in accordance with the latest adopted editions of IBC, IFC, NFPA 13, and applicable city, county, and state laws, codes, and standards. Include valves, flow switches, tamper switches, low air pressure switches, and accessories to meet requirements of AHJs and aforementioned codes and standards.
B. In areas where local codes require coverage by either fire sprinklers or heat detectors, provide coverage by fire sprinklers.
C. The Contractor and the fire suppression system subcontractor shall meet with the AHJs prior to preparation of Shop Drawings and hydraulic and earthquake bracing calculations to review procedures for handling submittals, inspection, testing, and for general coordination and to verify sprinkler occupancy hazard classifications.
D. Obtain latest water supply engineering test data prior to design. Include 10 percent safety margin in system design. If test data is not available, conduct test to determine available flow and pressures to hydraulically design system.
E. Coordination with Other Trades:
1. Coordinate fire suppression work with that of mechanical, sheet metal, plumbing, and electrical subcontractors so that best arrangement of equipment, piping, conduit, ducts, and similar items can be obtained.
2. Identify points of conflict between this work and that of other trades so that conflict may be properly adjusted. Fire suppression system subcontractor shall remove and re-install work which interferes with work of other trades at no additional cost to the Owner.
F. No change orders will be issued for additions and deletions of sprinkler heads and associated piping except as such additions and deletions stem from changes in building design made subsequent to approval of Shop Drawings.
1.4 SUBMITTALS
A. Comply with requirements in Division 01 and Section 230500.
B. Product Data: Submit manufacturer's technical product data and maintenance data for each item specified in this section.
C. Shop Drawings and Calculations:
1. Comply with requirements in NFPA 13.
2. Submit preliminary layout showing only head locations for review by the A/E. Include additional heads which may be required for coordinated ceiling pattern at no additional cost to the Owner, even though number of heads may exceed minimum code requirements. Indicate sprinkler head locations as follows:
a. Suspended Accessible Ceilings: Locate heads in center of ceiling tiles up to 2 foot tile dimension, and 1/4 section intervals for 4 foot tile dimension.
b. Suspended Inaccessible Ceilings: Locate heads in conjunction with light fixtures and other devices installed in ceiling in a symmetrical pattern.
c. Arrange heads in straight lines that are parallel and perpendicular to walls.
3. After A/E review of sprinkler head locations, submit Shop Drawings and hydraulic and earthquake bracing calculations to the A/E of entire sprinkler system. Shop Drawings include complete floor plans showing new work and sufficient extent of existing work, locations and types of heads, pipe sizes and cutting lengths, locations and sizes of required beam penetrations, locations and types of hangers, seismic brace(s), drain valves, and other related items. Indicate exposed work.
4. Include risers, flow switches, inside shut-off valves, tamper switches, post indicator valves, backflow preventers and vaults, and similar components.
5. Indicate location of alarm and supervisory initiating devices and other devices and electrical equipment associated with the fire suppression systems.
6. Following review and approval by the A/E, submit Shop Drawings and hydraulic and earthquake bracing calculations to the AHJs. Do not proceed with installation until Shop Drawings have been approved by the AHJs.
D. Contractor's Material and Test Certificate: Submit to certify material selection and testing results using form in NFPA 13. Complete applicable portions of form and sign and date it.
E. Obtain from each AHJ written certification that the permanent installation has been inspected and that it complies with AHJ's published regulations and requirements. Submit prior to Substantial Completion.
F. Operation and Maintenance Data:
1. Prepare complete, simple, understandable, step-by-step testing instructions with recommended and required testing frequency of equipment with methods for testing equipment. Include trouble-shooting manual.
2. Prepare complete, easy-to-read, understandable maintenance instructions including the following information:
a. Instruction on replacing components of system including internal parts.
b. List of equipment and components with address and phone number of both manufacturer and local supplier of each item.
3. Include fire suppression system pressure and alarm system tests.
4. Include copies of the following publications:
a. NFPA 25, Standard for Inspection, Testing, and Maintenance of Water Based Fire Protection.
5. Submit one week minimum prior to system training.
G. Record Drawings:
1. Provide in accordance with Division 01 and Section 230500.
2. Submit one week minimum prior to system training.
PART 2 - PRODUCTS
2.1 MANUFACTURERS
A. Manufacturer of equipment regularly engaged in the manufacture of components specified and with published catalogs listing pertinent specifications of items manufactured.
B. Manufacturer names and model identifications used throughout this section are to establish general configuration, function, size, performance and quality.
C. Manufacturers: Tyco Fire & Building Products (Grinnell Grooved Products, Central Sprinkler, Gem Sprinkler, and Star Sprinkler), The Viking Corp., Reliable Automatic Sprinkler Co., Globe Fire Sprinkler Corp., System Sensor, or approved.
2.2 GENERAL
A. Equipment, Material, and Components Required by NFPA to be Listed: UL listed and labeled and approved by FM and AHJs.
2.3 PIPE AND FITTINGS
A. Pipe:
1. Comply with requirements in NFPA 13.
2. Black steel, ASTM A 53, ASTM A 135, or ASTM A 795.
3. Pipe, other than Schedule 40 or Schedule 10, acceptable if UL listed and labeled, FM approved, and approved by AHJs. CPVC pipe not acceptable.
4. Schedule 40 pipe used in cut groove joints.
5. Schedule 10 pipe used for rolled grooved joints. Rolled grooved joints for dry pipe sprinkler systems not acceptable.
6. Internal and external galvanized steel for exterior pipes, dry pipe sprinkler systems, and drains.
7. Flexible head drop couplings may be used at Contractor's option. If used, shall be braided type. Install with union joint threaded fittings. Include ceiling attachment bracket to allow sprinkler connection installation prior to installation of ceiling tile. Pressure fit type fittings not acceptable.
8. Ductile iron, cement lined, Class 52, mechanical or push-on restrained joints for underground pipe.
B. Fittings:
1. Comply with requirements in NFPA 13.
2. Minimum 125 psi class.
3. 2 Inch and Smaller: 150 pound black malleable or ductile iron, screwed, ANSI B16.3 and ASTM A 197.
4. 2-1/2 Inch and Larger: Grooved joint fittings, malleable iron ASTM A 47 or ductile iron ASTM A 536 bodies. Flanged fittings, forged steel, or ductile iron.
5. Grooved Joint Couplings: UL listed and labeled for sprinkler service. Malleable iron ASTM A 47 or ductile iron ASTM A 536 housing. Chlorinated butyl gasket. Nuts and bolts ASTM A 183. Minimum 110,000 psi tensile.
6. Internal and external galvanized steel fittings for exterior pipes, dry pipe sprinkler systems, and drains.
7. Plain End Couplings: Plain end couplings (Roust-A-Bouts, Plainloks or similar couplings) not acceptable.
8. Hole Cut Outlets:
a. Hole Cut Outlets: Hole cut bolted branch outlet couplings may be used as approved by the AHJs. Hole cut outlets full bodied outlet (U-bolt outlets not acceptable). Victaulic Style 920 and 920N.
2.4 VALVES
A. General: UL listed and labeled and FM approved, minimum 175 psi class.
2.5 SPRINKLER HEADS
A. Automatic sprinkler quick response heads of the type as required by the AHJs and finish for the areas and ceiling construction designated in schedule on the drawings.
B. Operating Temperature: Comply with requirements in NFPA 13. Select to compensate for the maximum temperatures which occur in a particular area during either winter or summer conditions from such sources as unit heaters and sunlight. In no case use heads rated less than 50 F higher than anticipated ambient temperature.
C. Extended coverage sprinkler heads may be used subject to approval by the AHJs.
D. Include escutcheon, self-adjusting type, spring-loaded, or friction fit for each pendant sprinkler head fitting against ceiling.
E. Sprinkler Head Guards: Include where sprinkler heads are subject to damage and for sprinkler heads installed lower than 7 feet above finished floor, grating, and maintenance access area. Wire basket type with screw type fastener. Spring clip type fastener not acceptable. Chrome or nickel plated in finished areas.
F. Sprinkler Cabinet: Include with required number of sprinkler heads of ratings and types installed. Also include escutcheons and sprinkler wrench.
2.9 SPECIALTIES
A. Pipe Supports: Include metal pipe supports, flexible connections, sway braces, hangers, clamps, and other pipe support items in accordance with requirements in NFPA 13. Seismically design pipe hangers and braces per IBC, ASCE 7-05, and NFPA 13. Do not use "C-Clamp" hangers unless they include integral seismic retaining strap.
B. Identification Signs: Enameled signs for drain valves, test valves, control valves, and alarm valves indicating their use.
C. Miscellaneous Connections and Fittings: Drain valves, inspector's test connections, flushing connections, discharge outlets, sight glasses, and other items in accordance with requirements in NFPA 13.
D. Pipe Sleeves: Comply with requirements in Section 230510.
E. Pipe Escutcheon Plates: Comply with requirements in Section 232116.
PART 3 - EXECUTION
3.1 INSPECTION
A. General: Verify installation conditions as satisfactory to receive work of this section. Do not install until unsatisfactory conditions are corrected. Beginning work constitutes acceptance of conditions as satisfactory.
3.2 PREPARATION
A. Field Measurements: Field verify locations of new and existing work prior to commencing work of this section.
B. Protection: Protect surrounding areas and surfaces to preclude damage from work of this section.
3.3 INSTALLATION, APPLICATION, ERECTION, AND PERFORMANCE
A. General: Install, apply, erect, and perform the work in accordance with specifications, and manufacturer's installation instructions and directions. Where these may be in conflict, the more stringent requirements govern.
B. Cooperate with other trades to ensure adequate space for piping placement.
C. Review drawings, specifications, and Shop Drawings of other trades to coordinate work and minimize unnecessary offsets and revisions to approved Shop Drawings. Failure to coordinate does not relieve fire suppression subcontractor from meeting performance standards specified in this section.
1. Fire suppression piping shall not:
a. Reduce headroom to less than 7'-0", except above catwalks.
b. Project into any catwalk, passageway, ladder run, access or egress.
c. Interfere with electrical equipment or access to mechanical units (including filters).
D. Relocate piping and sprinkler heads which, in the opinion of the A/E, do not comply with the above in a manner acceptable to the A/E.
E. Do not order, fabricate, or install materials until approvals are received from AHJs.
F. Install material in strict accordance with Shop Drawings approved by the AHJs and reviewed by the A/E.
G. Service Interruptions: Obtain advance approval from the Owner and local fire department.
3.4 FIRE SUPPRESSION SYSTEMS INSTALLATION
A. Install piping concealed above furred ceilings to minimize obstructions.
B. Support piping only from structural members and not from work of other trades.
C. Install piping system braced to withstand damage from earthquakes. Install flexible couplings and earthquake bracing in accordance with IBC, ASCE 7-05, and NFPA 13.
D. Hole Cut Outlets: Use cutting tool to form opening in pipe. After "coupon" has been removed, securely attach it to bottom of pipe as evidence that it has not been left in pipe.
E. Install system and auxiliary drains to discharge to paved areas, concrete splash blocks, suitable waste within building, or to other locations as indicated or required by the A/E.
F. Install ball drip valve on check valve to drain piping for fire department connection. Drain to floor drain or outside building.
G. Escutcheon Plates: Install at exposed pipe penetrations of ceilings, floors, and walls.
H. Install head guards on sprinkler heads installed lower than 7 feet above finished floor, grating, and maintenance access area. Install on exterior sprinkler heads.
I. Install sprinkler cabinet adjacent to alarm valve assembly.
J. Install inspector test valve at highest and most hydraulically remote part of system in relation to riser assembly. Locate test valves to be accessible from floor. Coordinate locations with A/E. Pipe to standpipe drain or exterior concrete splash block.
K. Install sleeves through walls and floors. Comply with requirements in Section 230510.
L. Identification Signs: Install with chain on stem of valves. Comply with requirements in NFPA 13.
3.5 FIELD QUALITY CONTROL
A. Flush, test, and inspect fire suppression and standpipe systems according to NFPA 13.
B. Test complete alarm system, including control and signal circuits.
C. Notice: Give 1 week notice and arrange for field tests and inspections by AHJs, including paying for inspection fees and securing permits for same.
D. Approval and Acceptance: After fire suppression systems have been completely installed, tested, and substantial completion review items corrected, obtain approval and acceptance of system by AHJs in accordance with NFPA 13. Retests due to failure to meet design requirements shall be at no additional cost to the Owner. Submit completed Contractor's Material and Test Certificate using form in NFPA 13.
3.6 CLEANING AND PROTECTION
A. Clean dirt and debris from sprinklers.
B. Apply masking tape or paper cover to protect sprinkler heads, cover plates, and sprinkler escutcheons to protect from field painting. Remove after painting. Remove sprinkler heads having paint other than factory finish and provide new. Cleaning and reuse of painted sprinkler heads not acceptable.
C. Protect sprinkler heads from damage until Substantial Completion.
D. Fire suppression system subcontractor shall be responsible during installation and testing periods of sprinkler systems for any damage to work of others and to building and its contents caused by leaks in equipment, by unplugged or disconnected pipes, fittings or by overflow, and shall pay for necessary replacements or repairs to work of others damaged by such leakage.

END OF SECTION

DIVISION 23

SECTION 230500 - GENERAL MECHANICAL PROVISIONS
PART 1 - GENERAL
1.1 SECTION INCLUDES
A. Description: Work includes materials, equipment, labor, supervision, tools and items necessary for the construction, installation, connection, testing and operation of mechanical work.
1.2 CODES AND STANDARDS
A. Perform work in accordance with requirements in the state in which the work is performed.
B. Conform to applicable industry standards.
C. Notify the A/E of deviations in Contract Documents to applicable codes and ordinances prior to installation of the Work.
1.3 SUBMITTALS
A. Product Data:
1. Submit prior to fabrication of assemblies and delivery of purchased items.
2. Clearly mark catalog pages, equipment, model number and accessories.
1.4 STANDARDS OF QUALITY
A. Equipment shall be manufacturer's regularly catalogued items and shall be supplied as a complete unit in accordance with manufacturer's standard specifications and any optional items required for proper installation for equipment unless otherwise noted. Equipment and materials shall be installed in accordance with the manufacturer's recommendations and best trade practices.
B. Products shall be new unless indicated otherwise in the Contract Documents.
1.5 SUBSTITUTIONS
A. Where "Manufacturer" paragraphs include the words "or approved", prior approval of the proposed substitution by A/E is required.
B. When the A/E approves a substitution request, the approval is given with the understanding that the Bidder:
1. Has determined that it meets or exceeds the quality level of the specified Product, will provide the same warranty, and will coordinate installation and make changes with no additional cost to Owner.
C. Whenever a Product is described by detail, specification, trade name, manufacturer's name or catalog reference, use only such Product.
1.6 DRAWINGS AND SPECIFICATIONS
A. General: The mechanical drawings are diagrammatic. Complete details of building features which affect fire suppression, plumbing, and HVAC installations may not be shown. For additional details, refer to other Contract Documents. Report any discrepancies to the A/E along with suggested revisions.
1.7 RECORD DRAWINGS
A. Prepare Record Drawings. Record Drawings shall be new red lined prints and show the measured locations of portions of the Work and changes the Contractor has made.
B. Record Drawings shall show addendum items, change orders, clarifications, supplemental instructions, and deviations from the Drawings.
1.8 COORDINATION
A. Coordinate work with other trades.
B. Be aware of restricted space for installation of fire suppression, plumbing, and HVAC systems. Include offsets and perform rerouting and coordination to fit elements in available space. Include provisions for such requirements in bid.
C. Equipment, ductwork, and piping shown are based on existing drawings as available and on limited project site observations to the extent possible under current conditions. Field verify existing conditions prior to commencement of work.
D. Coordinate attachments to structure to verify that attachment points on equipment and structure can accept seismic, weight, and other loads imposed.
1.9 WARRANTY
A. Warranty periods shall not commence until Substantial Completion. Minimum period shall be one year. Contractor shall extend longer warranties specified in other sections.
1.10 DEMONSTRATION
A. Following installation of fire suppression, plumbing, and HVAC work and prior to final acceptance, demonstrate that equipment and systems operate as indicated in the Contract Documents and in accordance with manufacturer's recommendations.

END OF SECTION

SECTION 230505 - PROJECT CLOSEOUT AND SYSTEMS START-UP
PART 1 - GENERAL
1.1 SECTION INCLUDES
A. Description: Work includes material and labor required to perform start-up of equipment and systems installed in project, to perform checkout of systems and to verify completeness of project requirements.
PART 2 - PRODUCTS
Not used.
PART 3 - EXECUTION
3.1 PROJECT CLOSEOUT PROCEDURES
A. Complete Work described in this section prior to time of Substantial Completion.
B. Mechanical subcontractor shall bear prime responsibility for startup of heating and cooling and plumbing systems.
C. Include documentation required by the governing codes.
3.2 SYSTEM START-UP PROCEDURES
A. Provide start up by authorized factory representative when indicated.
B. Complete adjustments and cleaning of mechanical items per manufacturer's recommendations prior to equipment start up.
3.3 FINAL ACCEPTANCE
A. Final acceptance of Work will not occur until functional testing is complete and outstanding issues resolved.

END OF SECTION

SECTION 230510 - BASIC MATERIALS AND METHODS
PART 1 - GENERAL
1.1 SECTION INCLUDES
A. Description: Work includes equipment supports, sleeves, identification, appurtenances, and miscellaneous work.
1.2 QUALITY ASSURANCE
A. UL Compliance: Where UL fire-resistance rating is indicated for construction penetrated by access units, furnish UL listed and labeled units, except for those units which are smaller than minimum size requiring ratings as recognized by governing authority.
B. ANSI Compliance: Comply with ANSI A13.1 for lettering size, colors and installed viewing angles of identification devices unless other requirements are specified.
1.3 SUBMITTALS
A. Product Data: Pipe markers, Access doors, Valve tags.
1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING
A. Deliver, store, and handle products in accordance with manufacturer's recommendations, using means and methods to prevent damage, deterioration, and loss, including theft.
B. Deliver products to site in manufacturer's original containers, complete with labels.
C. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
D. Store products subject to damage by weather conditions above ground, under cover in weather-tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.
E. Close open ends of equipment and work with temporary covers or plugs during storage and construction to prevent entry of foreign material.
PART 2 - PRODUCTS
2.1 MATERIALS
A. Materials shall be new and of manufacturers specified herein. They shall be U.S. made and bear the UL, ETL, or CSA labels where possible.
2.2 EQUIPMENT SUPPORTS
A. Select and size supports, expansion shells and bolts, concrete inserts, and anchor bolts per requirements for seismic restraints specified in Section 230548. Hot dipped or mechanically galvanized where installed outdoors unless noted otherwise on the Drawings. Damaged galvanized surfaces repaired with ZRC Galvilite.
2.3 SLEEVES
A. Materials, General: Schedule 40 galvanized steel pipe with unthreaded ends, cast iron pipe, or minimum 26 gage galvanized sheet steel. Use steel pipe for sleeves at floor slabs.
2.4 PIPE MARKERS AND COLOR BANDS
A. General: Manufacturer's standard preprinted, flexible or semi-rigid, permanent, color-coded, plastic sheet pipe markers. Comply with ANSI A13.1. Seton, Brady, Craftmark, Marking Services or approved.
B. Pipes: Full band pipe markers.
C. Lettering: Manufacturer's standard pre-printed nomenclature which best describes piping system in each instance, as selected by the A/E in cases of variance with names shown or specified.
2.5 VALVE TAGS
A. General: Manufacturer's standard solid plastic valve tags with printed enamel lettering, piping system abbreviation in approximately 3/16 inch high letters.
B. Fasteners: Manufacturer's standard solid brass beaded type chain, length as required for proper attachment of tags to valves manufactured specifically for that purpose.
2.6 ACCESS TO FIRE SUPPRESSION EQUIPMENT
A. General: Universal 1-piece frame, flush type, welded steel ground smooth rounded safety corners, 1-piece spring hinge, slot screwdriver type cam latches, shallow 1-1/4 inch mounting flange. Where located in a painted surface area, units primed for painting; otherwise, polished chrome or stainless steel units, unless another type of finish is indicated.
B. UL Compliance: Where UL fire-resistance rating is indicated, doors UL listed and labeled, except for those doors which are smaller than minimum size requiring fire ratings as recognized by governing authority.
2.7 PERSONNEL PROTECTION
A. General: Where support angles, hangers, equipment supports and appurtenances, and similar items are exposed above floors, walkways, and maintenance access ways, cover such protrusions less than 6'-6" above floor with protective padding.
2.8 PAINTING
A. General: Painting of work specified in mechanical sections which is exposed, including exterior exposed mechanical work, is specified in Division 09.
PART 3 - EXECUTION
3.1 MEASUREMENTS
A. Verify measurements at job site. Locate equipment and fixtures on centers of walls, openings, spaces, and similar locations except where noted otherwise. Check that piping, ducts, and similar elements clear openings.
3.2 INSTALLATION OF EQUIPMENT
A. Equipment Installation:
1. General: Install supports for equipment and appurtenances.
3.3 ACCESSIBILITY
A. General: Locate valves, dampers, controls, and similar components to be readily accessible. Install access doors to achieve accessibility.
B. Equipment:
1. Install equipment which requires periodic servicing or repairs to be readily accessible.
2. Piping, ducts, and conduit shall not interfere with required access.
3.4 PIPE MARKERS AND COLOR BANDS
A. Install identification after completion of covering and painting.
3.5 VALVE TAGS
A. Install valve tags on valves and control devices in each piping system.
3.6 EQUIPMENT NAMEPLATES
A. Install nameplates on or near each major item.
3.7 PAINTING
A. Touch-up: Cover scratches, abrasions, and similar damages to equipment with factory finished surfaces using matching factory furnished paint.
B. Grilles, Registers and Diffusers: Paint inside surface of ducts, visible through grilles, registers, diffusers, and other openings with 1 coat of flat black paint to a point 2 feet from opening on straight ducts or around bend. Similarly, paint pipes and conduits visible through ceiling relief grilles.
3.8 SLEEVES AND SEALING OF SLEEVES
A. Install sleeves for pipes for penetrations through cast-in-place concrete floors. Seal air and watertight.
3.9 EARTHWORK
A. Perform earthwork required for installation of mechanical work below grade.
3.10 CLEANING AND HOUSEKEEPING
A. Remove debris, cuttings, crates, cartons, and similar items, at regular intervals.
B. Before Substantial Completion, carefully clean equipment, fixtures, exposed ducts and piping, and similar items. Remove construction labels, dirt, dust, cuttings, paint, plaster, mortar, concrete, and similar items.

END OF SECTION

SECTION 230520 - MECHANICAL DEMOLITION
PART 1 - GENERAL
1.1 SECTION INCLUDES
A. Description: Work includes demolition of existing fire suppression, plumbing, and HVAC work as indicated in the Contract Documents.
1.2 QUALITY ASSURANCE
A. Comply with applicable city, county, and state codes and ordinances.
1.3 SUBMITTALS
A. Certification: Submit certificate of removal and delivery of refrigerant to the Owner, with copy to A/E.
PART 2 - PRODUCTS
NOT USED
PART 3 - EXECUTION
3.1 GENERAL
A. Dust Control: Provide protective measures to minimize transfer of noise, dust, dirt, and refuse to adjacent areas of building. Such measure may include dusttight barriers, temporary walls, portable exhaust fans, vacuum systems, and temporary partitioning.
B. Extent: Keep areas of demolition as clean and orderly as physically possible. Do not allow demolition debris to accumulate. Gather debris and dispose daily. Broom or vacuum-clean work areas on a daily basis.
C. Protection: Protect existing equipment, furnishing, and systems with protective coverings. Protect finished surfaces including floors, ceilings, and walls.
3.2 DAMAGES:
A. Repairs: Promptly repair damage to existing surfaces, equipment, finishes, or adjacent facilities at no cost to the Owner and to the satisfaction of the A/E and the Owner.
3.3 CONTINUITY OF EXISTING UTILITY SERVICES
A. Comply with requirements in Section 230500.
3.4 DEMOLITION
A. General: Provide demolition work required in existing building for removal of existing fire suppression, plumbing, and HVAC equipment, ductwork, controls, and piping and for installation of new equipment, ductwork, controls, and piping. Relocate and modify existing equipment, controls, piping, and ductwork as required by general construction alterations and by installation of new equipment, ductwork, controls, and piping in existing building to achieve a complete and functioning installation.
B. Extent: Remove and dispose of existing materials indicated on the Drawings to be removed.
C. Termination of Demolition: Where existing piping and ductwork is removed, cut back to stack or riser. Provide isolation valve and cap piping and ductwork behind wall or below the floor. Remove unused branch piping and ductwork and piping in walls to be demolished, and cap remaining piping and ductwork.
D. Insulation: Replace damaged sections as specified for new systems where existing insulation is damaged due to cutting and connection to new systems.
E. Reuse: Do not reuse existing products unless indicated on the Drawings.
F. Materials to Owner: Deliver items to the Owner's Representative as indicated in the Contract Documents.
G. Materials to Contractor: Materials other than those reserved by the Owner.
H. Existing Conditions: Comply with requirements in Division 01. Verify specific demolition work and operating conditions to be encountered from on-site review and coordination with the Owner. Maintain service to existing equipment and devices during new construction work as required by construction sequencing/scheduling provisions. In areas adjacent to new construction work, provide temporary services as necessary to meet these conditions. Protect active piping and wiring encountered. Notify the A/E of utilities encountered whose services are not known.
I. Repair of Damages to Underground Utilities: Exact location of existing underground utilities is not definitely known. Should any underground utilities be damaged in excavations, restore such utilities without additional cost to the Owner.
J. Drilling of Concrete: Drill openings through existing concrete with diamond tipped rotary core-drilling equipment or carbide tipped drills. In existing post tensioned slabs, locate and mark post tensioned strand locations with subsurface interface radar type locating equipment prior to drilling, cutting, and sawing operations.
K. Saw-Cutting of Concrete: Saw cut through existing concrete with diamond tipped or carbide tipped saw blade. In existing post tensioned slabs, locate and mark post tensioned strand locations with subsurface interface radar type locating equipment prior to drilling, cutting, and sawing operations.
L. Underground Ducts: Where shown on the Drawings to be abandoned, provide 2'-0" long foam insert in horizontal duct and fill remainder of duct with concrete to floor elevation. Refer to architectural drawings for floor finish.
3.5 DISPOSAL OF DEMOLISHED MATERIALS
A. Disposal: Remove debris, rubbish, and other materials resulting from demolition operations from building site unless reinstalled or delivered to the Owner as indicated in the Contract Documents. Transport and legally dispose of material off site.
B. Burning: Burning of removed materials is not permitted on project site.
C. Refrigerant: Remove refrigerant from existing refrigeration equipment indicated to be removed. Furnish cylinders approved by DOT of sufficient size and quantity to hold entire charge and deliver cylinders to the Owner within building as directed. Furnish certificate signed by the Owner that entire charge has been transferred to cylinders and that cylinders have been received.
3.6 CLEAN-UP AND REPAIR
A. Clean-Up: Upon completion of demolition work, remove tools, equipment and demolished materials from site. Remove protection and leave interior areas clean.
B. Repair: Repair demolition performed in excess of that required at no additional cost to Owner. Return structures and surfaces to conditions existing prior to commencement of demolition work or as directed by the Owner.

END OF SECTION

SECTION 230820 - SYSTEMS OPERATIONS AND MAINTENANCE MANUALS
PART 1 - GENERAL
1.1 SECTION INCLUDES
A. Description: Work includes preparation of mechanical systems Operation and Maintenance Manuals.
1.2 SCOPE OF WORK
A. Product Data and Parts List: Include local source of supply for parts and replacement. List parts and components of equipment stating catalog number (serial number and ratings, such as HP, voltage, and GPM) and size of part used in or on equipment.
B. Troubleshooting Guide.
C. Manufacturer's Installation and Service Instructions.
D. Manufacturer's Service Instructions.
E. Start-up Instructions with Certificates of Start-up and Verification.
F. Test Reports.
G. Final approved submittals.
H. Warranties.
PART 2 - PRODUCTS
2.1 FORMAT
A. Assemble Operation and Maintenance Manual in 3-ring binder(s) and CD's.

END OF SECTION

SECTION 232116 - PIPING SPECIALTIES
PART 1 - GENERAL
1.1 SECTION INCLUDES
A. Description: Work includes pipe hangers and supports, strainers, thermometers, pressure gages, temperature/pressure test ports (Pete's Plugs), air vents, alignment guides, and associated appurtenances for piping that apply to multiple systems. Specialty components specific to a single system are specified in that particular section.
1.2 QUALITY ASSURANCE
A. Codes and Standards:
1. ASME B31.1, Power Piping.
2. ASTM E 84, Standard Test Method for Surface Burning Characteristics of Building Materials.
3. NFPA 255, Surface Burning Characteristics Building Materials.
4. UL 723, Test for Surface Burning Characteristics of Building Materials.
B. MSS Compliance: Comply with MSS SP-58 for materials, design, and manufacture of pipe hangers and supports. Comply with MSS SP-69 for fabrication and installation of pipe hangers and supports. Refer to MSS SP-90 for terminology used in this section.
C. Pipe hangers and clamps and related components installed in ceiling spaces used as a return air plenum shall have ratings per NFPA 255, ASTM E 84, and UL 723 with flame spread rating not greater than 25 and smoke developed rating not greater than 50.
PART 2 - PRODUCTS
2.1 GENERAL
A. Furnish factory-fabricated piping specialties, pipe hangers, pipe supports, anchors, dielectric unions, thermometers, pressure gauges and pipe escutcheons recommended by manufacturers for use in services indicated.
B. Materials: Match piping material at point of contact with piping.
PART 3 - EXECUTION
3.1 PIPE HANGERS AND SUPPORTS
A. General: Install building attachments at required locations within concrete or on structure steel for proper piping support. Install additional supports at concentrated loads, including valves, flanges, guides, strainers, expansion joints and at changes in direction of piping.
B. Install hangers and supports complete with necessary insert, bolts, rods, nuts, washers and other accessories.
3.2 DIELECTRIC UNIONS AND NIPPLES
A. Install at the Following Locations:
1. At black and galvanized steel piping connections to copper tubing.
2. At black steel piping connections to bronze valves and similar devices.
3.3 PIPE ESCUTCHEONS
A. Install escutcheons at wall, floor, and ceiling penetrations in exposed finished locations and within cabinets and millwork. Use deep-pattern escutcheons if required to conceal protruding pipe fittings. Escutcheons not required where sleeves project above floor.

END OF SECTION

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JORDAN F. CAMPBELL
STATE OF WASHINGTON
25536
REGISTERED
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3/7/25

REVISIONS DATE

Federal Way Public Schools

Federal Way High School CTE Storage

30611 16th Ave S
Federal Way, WA 98003

JOB NO: 2426
ISSUE DATE: 3/7/25

Jurisdiction Stamp Area

BID SET

MECHANICAL SPECIFICATIONS

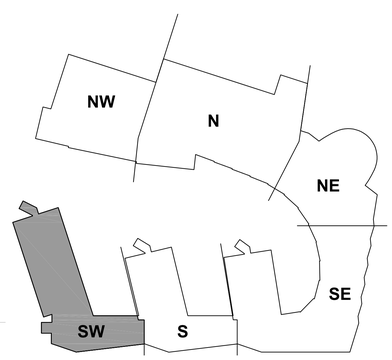
M002

GENERAL NOTES:

1. MECHANICAL ITEMS SHOWN AND NOTED ON PLAN WERE TAKEN FROM EXISTING DRAWINGS AND FIELD SURVEYS. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO BID AND REFERENCE ARCHITECTURAL & CIVIL DRAWINGS FOR COMPLETE SCOPE OF WORK AND INCLUDE WITHIN BID.
2. CONTRACTOR SHALL CAP PIPING TO KEEP EXISTING SYSTEMS TO REMAIN IN SERVICE AND/OR TO FACILITATE NEW WORK AS NECESSARY.
3. CONTRACTOR SHALL MAKE ALL CONNECTIONS TO EXISTING COLD WATER PIPING AS NECESSARY TO ALL EXISTING SYSTEMS TO ALLOW SYSTEMS TO OPERATE WITHOUT SHUTDOWN DURING SCHOOL YEAR. PROVIDE VALVES AS NECESSARY TO FACILITATE THIS WORK.
4. SHUTOFF VALVE LOCATIONS ARE SHOWN DIAGRAMMATICALLY. LOCATE AT ACCESSIBLE LOCATIONS AS SPECIFIED.
5. HANGER ATTACHMENT FOR MECHANICAL SYSTEMS TO STRUCTURE SHALL BE PER OPEN-WEB STEEL TRUSS AND JOIST MANUFACTURER. SEE STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION.



MECHANICAL SITE PLAN - OVERALL
SCALE: 1" = 10'-0"



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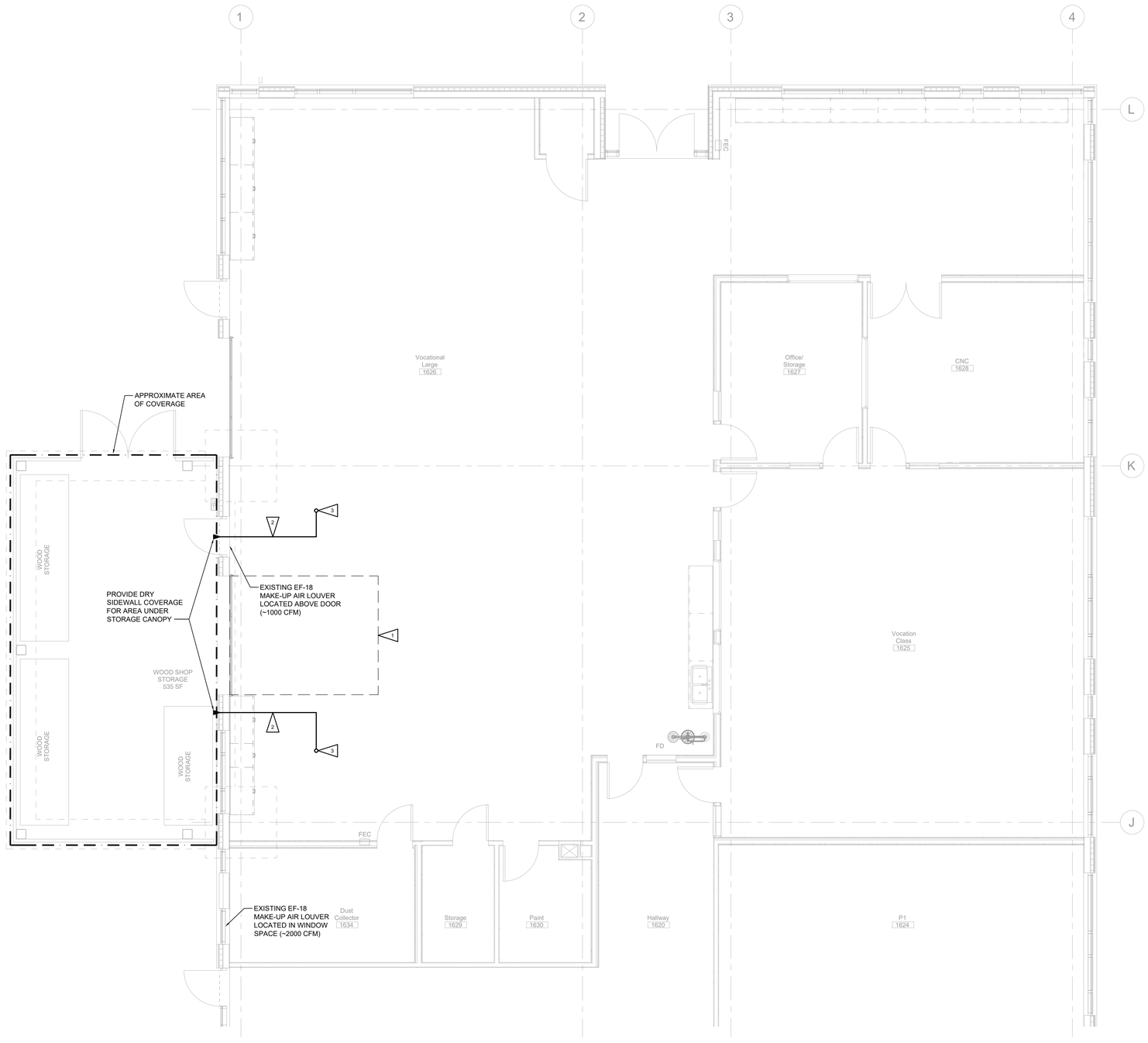
MECHANICAL PLAN LEVEL 1 PARTIAL SW

M100

BID SET



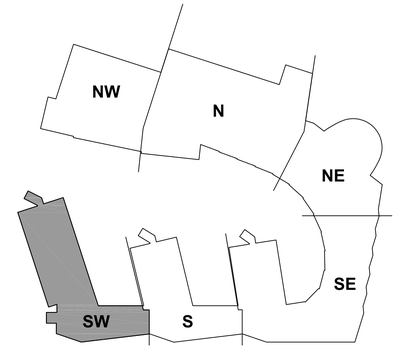
N 1 M1.1 **MECHANICAL FLOOR PLAN**
SCALE: 1/4" = 1'-0"

SHEET NOTES:

1. MECHANICAL ITEMS SHOWN AND NOTED ON PLAN WERE TAKEN FROM EXISTING DRAWINGS AND FIELD SURVEYS. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO BID AND REFERENCE ARCHITECTURAL & CIVIL DRAWINGS FOR COMPLETE SCOPE OF WORK AND INCLUDE WITHIN BID.
2. CONTRACTOR SHALL CAP PIPING TO KEEP EXISTING SYSTEMS TO REMAIN IN SERVICE AND/OR TO FACILITATE NEW WORK AS NECESSARY.
3. CONTRACTOR SHALL MAKE ALL CONNECTIONS TO EXISTING COLD WATER PIPING AS NECESSARY TO ALL EXISTING SYSTEMS TO ALLOW SYSTEMS TO OPERATE WITHOUT SHUTDOWN DURING SCHOOL YEAR. PROVIDE VALVES AS NECESSARY TO FACILITATE THIS WORK.
4. SHUTOFF VALVE LOCATIONS ARE SHOWN DIAGRAMMATICALLY. LOCATE AT ACCESSIBLE LOCATIONS AS SPECIFIED.
5. HANGER ATTACHMENT FOR MECHANICAL SYSTEMS TO STRUCTURE SHALL BE PER OPEN-WEB STEEL TRUSS AND JOIST MANUFACTURER. SEE STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION.

FLAG NOTES:

1. NEW FIRE SPRINKLER PIPING SHALL AVOID ROUTING IN AREA ABOVE EXISTING ROLL-UP GARAGE DOOR.
2. ROUTE NEW FIRE SPRINKLER PIPING BELOW FIRE RATED LID.
3. APPROXIMATE LOCATION FOR CONNECTION TO EXISTING FIRE SPRINKLER PIPING. EXISTING FIRE SPRINKLER PIPING IS LOCATED ABOVE THE FIRE RATED CEILING. CONTRACTOR SHALL DEMOLISH CEILING AS REQUIRED FOR CONNECTION TO EXISTING FIRE SPRINKLER PIPING. CONTRACTOR SHALL PATCH CEILING TO MAINTAIN FIRE RATING AND PAINT TO MATCH SURROUNDING SURFACES.



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BRIAN F. CAMPBELL — STATE OF WASHINGTON — 55336 — REGISTERED PROFESSIONAL ENGINEER

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BID SET

MECHANICAL ENLARGED PLAN

M101

GENERAL

- EXISTING ELECTRICAL TO BE REMOVED
- EXISTING ELECTRICAL TO REMAIN
- NEW ELECTRICAL WORK
- MATCHLINE OR PROPERTY LINE
- ENLARGED PLAN BOUNDARY
- 1 / E1.1 — DETAIL/PLAN IDENTIFIER
- A / E1.1 — SECTION IDENTIFIER
- A / E1.1 — ELEVATION IDENTIFIER
- REVISION DEFINITION AREA, AREA ENCIRCLED CONTAINS CHANGES MADE SUBSEQUENT TO PREVIOUS ISSUE
- 1 — REVISION CALLOUT
- 1 — FLAG NOTE TAG
- 1 — DEMOLITION NOTE TAG
- 1 — EQUIPMENT TAG
- AHU-01 — MECHANICAL EQUIPMENT TAG
- N — NORTH ARROW

LIGHTING

- A / 12 / F — DEVICE SUBSCRIPTS (LIGHT FIXTURE TYPE) (SWITCHLEG) (CIRCUIT NUMBER)
- LIGHTING FIXTURES (REFER TO LIGHTING FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION)
- STRIP LIGHTING FIXTURE
- WALL-MOUNTED LIGHTING FIXTURE
- EMERGENCY LIGHTING FIXTURES (REFER TO LIGHTING FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION)
- POLE-MOUNTED LIGHTING FIXTURE, QUANTITY OF HEADS AS INDICATED
- DOUBLE HEAD, POLE-MOUNTED, LIGHTING FIXTURE

LIGHTING CONTROL

- S — SWITCH, AS DEFINED BY SUBSCRIPT
  - # = SWITCH LOCATED WITHIN THE SPACE IT IS CONTROLLING
  - a = SWITCH LOCATED REMOTE FROM THE SPACE IT IS CONTROLLING
  - MW = LINE VOLTAGE THREE-WAY OR FOUR-WAY
  - OSD = OCCUPANCY SENSOR OR VACANCY SENSOR WITH DIMMER
  - OS = OCCUPANCY SENSOR OR VACANCY SENSOR
  - K = KEYED
  - LH = LIGHTED HANDLE
  - P = PILOT LIGHT
  - T = TIMER

GROUNDING

- G — GROUNDING CONDUCTOR
- GROUND ROD
- GROUNDING BUSBAR
- EQUIPMENT GROUNDING CONNECTION
- GROUNDING STRAP

RACEWAYS AND BOXES

- JUNCTION BOX
- F — FURNITURE WALL FEED OUTLET BOX
- PB / XX — PULL BOX (WHERE INDICATED, SUBSCRIPT INDICATES PULL BOX TYPE)
- HH / XX — HANDHOLE (WHERE INDICATED, SUBSCRIPT INDICATES VAULT TYPE)
- XX — VAULT (WHERE INDICATED, SUBSCRIPT INDICATES VAULT TYPE)
- RACEWAY CONCEALED IN WALL OR IN CEILING (EXPOSED IN UNFINISHED AREAS)
- RACEWAY RUN BELOW FLOOR OR BELOW GRADE
- FLEXIBLE RACEWAY
- RACEWAY (CIRCLE DENOTES VERTICAL TRANSITION)
- RACEWAY CONTINUATION
- RACEWAY STUB WITH BUSHING
- HA-3 — HOMERUN TO PANEL (INDICATES PANEL DESIGNATION AND CIRCUIT NUMBER)
- #10 — (GAUGE OF WIRE OTHER THAN AWG#12) NUMBER OF CONDUCTORS (GROUND CONDUCTOR) (PHASE CONDUCTORS) (NEUTRAL CONDUCTOR)

POWER

- SWITCHBOARD/SWITCHGEAR
- PANELBOARD, FLUSH-MOUNTED
- PANELBOARD, SURFACE-MOUNTED
- (FRONT) TRANSFORMER
- EQUIPMENT CONNECTION - CONFIRM CONNECTION WITH EQUIPMENT MANUFACTURER

RECEPTACLES

- P1A-12 / +42" GF — DEVICE SUBSCRIPTS (CIRCUIT NUMBER) (AC,CR,D,EM,GB,GF,IG,SB,TP,USB,WP OR OTHER SUBSCRIPT) (NON-STANDARD MOUNTING HEIGHT OR AC)
- SPECIAL RECEPTACLE
- DUPLEX RECEPTACLE
- FOURPLEX RECEPTACLE
- SPLIT WIRED DUPLEX RECEPTACLE
- SIMPLEX RECEPTACLE
- CORD DROP CORD RECEPTACLE
- RETRACTABLE CORD REEL RECEPTACLE

ONE-LINE DIAGRAM

- EQUIPMENT ENCLOSURE
- BUS
- WIRE
- TERMINAL / LUG
- CONNECTION
- DELTA
- WYE
- CURRENT TRANSFORMER
- TRANSFER SWITCH
- CIRCUIT BREAKER, FIXED
- CIRCUIT BREAKER, DRAWOUT
- DISCONNECT SWITCH
- FUSED SWITCH
- FUSE
- FUSED CUTOUTS
- GF — CIRCUIT BREAKER WITH GROUND FAULT PROTECTION
- ST — CIRCUIT BREAKER WITH SHUNT TRIP OPERATOR
- K — CIRCUIT BREAKER WITH KIRK KEY
- GF — FUSED SWITCH WITH GROUND FAULT PROTECTION
- MOTOR CONNECTION
- G — GENERATOR
- X — METERING DEVICE (M = METER) (WH = WATT HOUR METER) (A = AMMETER) (V = VOLTMETER)
- ST — SHUNT TRIP
- GF — GROUND FAULT PROTECTION
- EPM — ELECTRONIC POWER METER
- SPD — SURGE PROTECTIVE DEVICE
- GROUND
- 12,241 — AVAILABLE FAULT CURRENT (SYMMETRICAL) TAG
- 225 — FEEDER TAG
- PAD-MOUNT TRANSFORMER
- 480V / 208Y / 120V — TRANSFORMER
- PANELBOARD - MAIN LUGS ONLY
- PANELBOARD - MAIN CIRCUIT BREAKER

NOT ALL SYMBOLS MAY APPEAR ON THE DRAWINGS

GENERAL NOTES

1. PERFORM WORK IN ACCORDANCE WITH APPLICABLE NATIONAL AND STATE CODES AS AMENDED LOCALLY AND ENFORCED BY THE AHJ.
2. OBTAIN AND PAY FOR PERMITS REQUIRED FOR INSTALLATION OF WORK. ARRANGE AND SCHEDULE REQUIRED INSPECTIONS.
3. DEVICE LOCATIONS ARE APPROXIMATE. COORDINATE DEVICE LOCATIONS AND ELEVATIONS WITH APPROPRIATE DOCUMENTS INCLUDING CASEWORK SHOP DRAWINGS AND ARCHITECT'S INTERIOR ELEVATIONS PRIOR TO ROUGH-IN.
4. COORDINATE ELECTRICAL WORK WITH THAT OF OTHER TRADES. REFER TO MECHANICAL AND ARCHITECTURAL DRAWINGS AND SPECIFICATIONS. COORDINATION SHALL OCCUR PRIOR TO FABRICATION, PURCHASE, AND INSTALLATION OF WORK.
5. COORDINATE LOCATION OF LIGHT FIXTURES AND CEILING-MOUNTED DEVICES WITH ARCHITECTURAL REFLECTED CEILING PLANS AND ELEVATIONS.
6. COMPLETION OF WORK SHALL BE EXECUTED IN ACCORDANCE WITH THE PROJECT SCHEDULE. SCHEDULE INSTALLATION WITH OTHER TRADES TO ENSURE PROJECT MILESTONES ARE MET.
7. DRAWINGS ARE DIAGRAMMATIC AND DO NOT SHOW ALL COMPONENTS REQUIRED FOR A COMPLETE INSTALLATION. PROVIDE COMPONENTS REQUIRED FOR COMPLETE AND OPERATIONAL SYSTEMS INCLUDING RACEWAYS, CONDUCTORS, BOXES, SUPPORTS AND SIMILAR ITEMS.
8. BRANCH CIRCUIT HOMERUNS ARE SHOWN TO INDICATE CIRCUIT PROPERTIES AND CONFIGURATION. SINGLE-CIRCUIT HOMERUNS SERVED FROM THE SAME PANELBOARD MAY BE COMBINED IN ACCORDANCE WITH THE DIVISION 26 SPECIFICATIONS, UNLESS INDICATED OTHERWISE. EXTEND AND CONNECT BRANCH CIRCUIT RACEWAY AND WIRING FROM HOMERUN TO DEVICES AND EQUIPMENT WITH CIRCUIT NUMBERS INDICATED. CONDUCTOR QUANTITIES AND SIZES ARE INDICATED AT HOMERUNS ONLY. SHOW ACTUAL RACEWAY ROUTING AND CIRCUITING ON RECORD DRAWINGS. MINIMUM CONDUCTOR SIZE #12 AWG.

NON-STRUCTURAL ELECTRICAL NOTES

1. THE FOLLOWING ITEMS ARE TAKEN DIRECTLY FROM THE 2021 INTERNATIONAL BUILDING CODE AND FROM THE AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) STANDARD 7. THE CONTRACTOR SHALL REFER TO THE ABOVE FOR ADDITIONAL INFORMATION, EXCEPTIONS, AND FURTHER DESCRIPTIONS. THE CONTRACTOR SHALL ADHERE TO REQUIREMENTS AND AS SUCH, SHALL BE INCLUDED WITHIN BID. ALSO REFER TO SPECIFICATIONS.
2. 2021 IBC, 1613.1, SCOPE: ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND NON-STRUCTURAL COMPONENTS THAT ARE PERMANENTLY ATTACHED TO STRUCTURES AND THEIR SUPPORTS AND ATTACHMENTS SHALL BE DESIGNED AND CONSTRUCTED TO RESIST THE EFFECTS OF EARTHQUAKE MOTIONS IN ACCORDANCE WITH CHAPTERS 11, 12, 13, 15, 17 AND 18 OF ASCE 7.
3. ASCE 7 CONTRACTOR RESPONSIBILITY: THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONSTRUCTION OF A SEISMIC-FORCE-RESISTING SYSTEM, DESIGNATED SEISMIC SYSTEM, OR COMPONENT LISTED IN THE QUALITY ASSURANCE PLAN SHALL SUBMIT A WRITTEN CONTRACTOR'S STATEMENT OF RESPONSIBILITY TO THE REGULATORY AUTHORITY HAVING JURISDICTION AND TO THE OWNER PRIOR TO THE COMMENCEMENT OF WORK ON THE SYSTEM OR COMPONENT. THE CONTRACTOR'S STATEMENT OF RESPONSIBILITY SHALL INCLUDE THE FOLLOWING:
   - A. ACKNOWLEDGMENT OF AWARENESS OF THE SPECIAL REQUIREMENTS CONTAINED IN THE QUALITY ASSURANCE PLAN;
   - B. ACKNOWLEDGMENT THAT CONTROL WILL BE EXERCISED TO OBTAIN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS APPROVED BY THE AUTHORITY HAVING JURISDICTION;
   - C. PROCEDURES FOR EXERCISING CONTROL WITHIN THE CONTRACTOR'S ORGANIZATION, THE METHOD AND FREQUENCY OF REPORTING AND THE DISTRIBUTION OF THE REPORTS; AND
   - D. IDENTIFICATION AND QUALIFICATIONS OF THE PERSON(S) EXERCISING SUCH CONTROL AND THEIR POSITION(S) IN THE ORGANIZATION.
4. DIVISION 26 RESPONSIBILITIES:
   - A. HANGERS AND SEISMIC BRACING FOR ELECTRICAL SYSTEMS SHALL BE DESIGNED AND SPECIFIED BY DIVISION 26. DIVISION 26 SHALL REFER TO THE ELECTRICAL DRAWINGS FOR LOCATIONS OF EQUIPMENT AND ELECTRICAL SYSTEMS AS STRUCTURAL DRAWINGS DO NOT SHOW THE LOCATIONS OF ELECTRICAL EQUIPMENT, RACEWAYS, AND OTHER COMPONENTS.
   - B. DIVISION 26 SHALL COORDINATE THE SUPPORT SYSTEMS AND DESIGN LOADS FOR HUNG RACEWAYS AND OTHER ELECTRICAL SYSTEMS (INCLUDING COMBINED MULTIPLE RACEWAY RUNS) WITH THE GENERAL CONTRACTOR AND THE STEEL AND WOOD JOIST MANUFACTURERS IN ADDITION TO OTHER TRADES THAT MAY BE IMPACTED.

ENERGY CODE NOTES

1. RECORD DRAWINGS: SUBMIT TO THE BUILDING OWNER PER ENERGY CODE ENFORCED BY THE LOCAL AHJ.
2. OPERATION AND MAINTENANCE MANUALS: SUBMIT TO THE BUILDING OWNER PER ENERGY CODE ENFORCED BY THE LOCAL AHJ.
3. THIS BUILDING AND ITS ENERGY SYSTEMS HAVE BEEN DESIGNED TO COMPLY WITH ENERGY CODE ENFORCED BY THE LOCAL AHJ. CONTRACTOR IS RESPONSIBLE FOR CORRECT INSTALLATION OF ENERGY CONSERVATION MEASURES.
4. LIGHTING CONTROL SYSTEMS COMMISSIONING AND COMPLETION REQUIREMENTS: TEST SYSTEMS TO ENSURE THAT BUILDING SYSTEMS HAVE BEEN INSTALLED AND FUNCTION PROPERLY AND EFFICIENTLY, AND CAN BE MAINTAINED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND OPERATIONAL REQUIREMENTS PER ENERGY CODE ENFORCED BY THE AHJ. REFER TO SPECIFICATIONS FOR ADDITIONAL COMMISSIONING REQUIREMENTS.

ABBREVIATIONS

A	AMPERE
AC	AIR CONDITIONING; ALTERNATING CURRENT; ABOVE COUNTER
AF	AMP FUSE; AMP FRAME
AFC	AVAILABLE FAULT CURRENT
AFF	ABOVE FINISHED FLOOR
AG	ABOVE GRADE
AHJ	AUTHORITIES HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CURRENT
AL	ALUMINUM
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AS	AMP SWITCH
AT	AMP TRIP
ATM	ASYNCHRONOUS TRANSFER MODE
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIO VISUAL
AWG	AMERICAN WIRE GAUGE
BAS	BUILDING AUTOMATION SYSTEM
BATT	BATTERIES
BIL	BASIC IMPULSE INSULATION LEVEL
BKBD	BACKBOARD
BKR	BREAKER
BLDG	BUILDING
C	CONDUIT; DEGREES CELSIUS
CAB	CABINET
CAT	CATEGORY
CATV	COMMUNITY ANTENNA TELEVISION
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CLG	CEILING
CM	CEILING-MOUNTED
CO	CONDUIT ONLY
COW	COMPUTER ON WHEELS
CR	CONTROLLED RECEPTACLE
CT	CURRENT TRANSFORMER
CU	COPPER
D	DEDICATED
DDC	DIRECT DIGITAL CONTROL
DEMARC	DEMARCATION POINT
DISC	DISCONNECT
DIST	DISTRIBUTION
DSL	DIGITAL SUBSCRIBER LINE
DWG	DRAWING
(E)	EXISTING
EA	EACH
EF	EXHAUST FAN
EIA	ELECTRONIC INDUSTRIES ASSOCIATION
ELEV	ELEVATION
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
EPM	ELECTRONIC POWER METER
EPO	EMERGENCY POWER OFF
EQUIP	EQUIPMENT
ETR	EXISTING TO REMAIN
EWC	ELECTRIC WATER COOLER
F	FUSE; DEGREES FAHRENHEIT
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FBO	FURNISHED BY OWNER
FC	FOOT-CANDLE
FOIC	FURNISHED BY OWNER INSTALLED BY CONTRACTOR
FOIO	FURNISHED BY OWNER INSTALLED BY OWNER
FSD	FIRE SMOKE DAMPER
G	GROUND
GB	GROUND FAULT CIRCUIT BREAKER
GF	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTION
GND	GROUND
GRS	GALVANIZED RIGID STEEL
HC	HORIZONTAL CROSS CONNECT
HID	HIGH INTENSITY DISCHARGE
HP	HORSEPOWER
HTR	HEATER
Hz	HERTZ
IBC	INTERNATIONAL BUILDING CODE
IC	INTERMEDIATE CROSS CONNECT
IDF	INTERMEDIATE DISTRIBUTION FRAME
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS
IG	ISOLATED GROUND
IMC	INTERMEDIATE METALLIC CONDUIT
ISDN	INTEGRATED SERVICES DIGITAL NETWORK
J	JUNCTION
K	KIRK KEY
KCMIL	THOUSAND CIRCULAR MILS
kVA	KILOVOLT AMPERE
KVAR	KILOVOLT AMPERE REACTIVE
kW	KILOWATT
LAN	LOCAL AREA NETWORK
LCP	LIGHTING CONTROL PANEL
LEC	LOCAL EXCHANGE CARRIER
LT	LIGHT
LTG	LIGHTING
M	METER
MAN	METROPOLITAN AREA NETWORK
MAX	MAXIMUM
MC	MAIN CROSS CONNECT; METAL CLAD (CABLE)
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDF	MAIN DISTRIBUTION FRAME
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MM	MULTIMODE
MPOE	MAIN POINT OF ENTRY
MPOP	MAIN POINT OF PRESENCE
MTD	MOUNTED
MTS	MANUAL TRANSFER SWITCH
(N)	NEW
N	NEUTRAL
NAC	NOTIFICATION APPLIANCE CIRCUIT
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NF	NON-FUSED
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
OFC	OPTICAL FIBER CABLE
OHL	OVERHEAD LINE
OL	OVERLOAD
OS	OCCUPANCY SENSOR
OSP	OUTSIDE PLANT
P	POLE
PBX	PRIVATE BRANCH EXCHANGE
PF	POWER FACTOR
PH	PHASE
PIR	PASSIVE INFRARED
PIV	POST INDICATING VALVE
PNL	PANEL
PP	PATCH PANEL
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE
RC	ROOM CONTROLLER
RCP	REFLECTED CEILING PLAN
REC	RECEPTACLE
REF	REFER TO
REV	REVISION
RM	ROOM
RTRC	REINFORCED THERMORESETTING RESIN CONDUIT
RU	RACK UNIT
SB	STANDBY
SHT	SHEET
SLC	SIGNALING LINE CIRCUIT
SM	SINGLEMODE
SMFC	SURFACE-MOUNTED OPTICAL FIBER CABINET
SMR	SURFACE METAL RACEWAY
SONET	SYNCHRONOUS OPTICAL NETWORK
SP	SERVICE PROVIDER
SPD	SURGE PROTECTIVE DEVICE
SPEC	SPECIFICATIONS
SPST	SINGLE POLE SINGLE THROW
ST	SHUNT TRIP
STP	SHIELDED TWISTED PAIR
SVGA	SUPER VIDEO GRAPHICS ARRAY
SW	SWITCH
SWBD	SWITCHBOARD
TBB	TELECOMMUNICATIONS BONDING BACKBONE
TEL	TELEPHONE
TELCO	TELEPHONE COMPANY
TGB	TELECOMMUNICATIONS GROUNDING BUSBAR
TIA	TELECOMMUNICATIONS INDUSTRY ASSOCIATION
TMGB	TELECOMMUNICATIONS MAIN GROUNDING BUSBAR
TP	TAMPERPROOF
TR	TELECOMMUNICATIONS ROOM
TTB	TELEPHONE TERMINAL BOARD
TV	TELEVISION
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORIES
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
USB	UNIVERSAL SERIAL BUS
UTP	UNSHIELDED TWISTED PAIR
UV	UNIT VENTILATOR
V	VOLTS
VA	VOLT AMPERES
VFD	VARIABLE FREQUENCY DRIVE
W	WATT; WIRE
W/	WITH
W/O	WITHOUT
WA	WORKSTATION AREA
WAN	WIDE AREA NETWORK
WG	WIRE GUARD
WH	WATT HOUR METER
WP	WEATHERPROOF
XMFR	TRANSFORMER
Y	WYE
Z	IMPEDANCE

DRAWING INDEX

E001	ELECTRICAL LEGEND, GENERAL NOTES, ABBREVIATIONS AND DRAWING INDEX
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E100	ELECTRICAL OVERALL PLAN
E101	ELECTRICAL ENLARGED PLAN AND LIGHT FIXTURE SCHEDULE
E901	ELECTRICAL ONE-LINE DIAGRAM
E1001	PANEL SCHEDULES

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02/18/2025

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Federal Way Public Schools

Federal Way High School CTE Storage

30611 16th Ave S
Federal Way, WA 98003

JOB NO: 2426
ISSUE DATE: 3/7/25

Jurisdiction Stamp Area

BID SET

ELECTRICAL LEGEND, GEN. NOTES, ABBREV. & DRAWING INDEX

E001

DIVISION 26 - ELECTRICAL
SECTION 260510
GENERAL ELECTRICAL PROVISIONS

A. GENERAL REQUIREMENTS

1. PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, SERVICES, TOOLS, TRANSPORTATION, INCIDENTALS AND DETAILS NECESSARY TO PROVIDE COMPLETE ELECTRICAL SYSTEMS AS SHOWN ON THE DRAWINGS, CALLED FOR IN THE SPECIFICATIONS, AND AS REQUIRED BY JOB CONDITIONS. PROVIDE ALL WORK NOT SPECIFICALLY NOTED AS BEING BY THE LANDLORD OR THE OWNER. CLOSELY COORDINATE THE ENTIRE INSTALLATION WITH LANDLORD AND OWNER. FURNISH AND INSTALL EQUIPMENT THAT IS RATED FOR AVAILABLE FAULT CURRENT LEVELS.

2. UNLESS SPECIFICALLY NOTED OTHERWISE, MATERIALS, PRODUCTS, AND EQUIPMENT, INCLUDING ALL COMPONENTS THEREOF, SHALL BE NEW, UNDERWRITERS LABORATORIES LISTED AND LABELED AND SIZED IN CONFORMITY WITH REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE, STATE AND LOCAL CODES, WHICHEVER IS MORE STRINGENT.

3. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO SUPPLEMENT EACH OTHER AND ANY MATERIAL OR LABOR CALLED FOR IN ONE SHALL BE PROVIDED EVEN THOUGH NOT SPECIFICALLY MENTIONED IN BOTH. ANY MATERIAL OR LABOR WHICH IS NEITHER SHOWN ON THE DRAWINGS NOR CALLED FOR IN THE SPECIFICATIONS, BUT WHICH IS OBVIOUSLY NECESSARY TO COMPLETE THE WORK OR WHICH IS USUALLY INCLUDED IN WORK OF SIMILAR CHARACTER, SHALL BE PROVIDED AS PART OF CONTRACT.

4. WHERE THE DRAWINGS OR SPECIFICATIONS CALL FOR ITEMS WHICH EXCEED CODES OR THE LANDLORD'S TENANT CRITERIA, THE CONTRACTOR IS RESPONSIBLE FOR FURNISHING AND INSTALLING THE SYSTEM WITH THE MORE STRINGENT REQUIREMENTS AS DESIGNED AND DESCRIBED ON THESE DRAWINGS, UNLESS NOTED OTHERWISE.

5. ALL WORK SHALL BE INSTALLED SO AS TO BE READILY ACCESSIBLE FOR OPERATING, SERVICING, MAINTAINING AND REPAIRING. THIS CONTRACTOR IS RESPONSIBLE FOR PROVIDING SUFFICIENT SERVICE ACCESS TO ALL EQUIPMENT.

6. PROVIDE ALL CUTTING, CHASING, OR CHANNELING AND PATCHING REQUIRED FOR ANY WORK UNDER THIS DIVISION. CUTTING SHALL HAVE PRIOR APPROVAL BY OWNER AND THE LANDLORD. PATCHING IS TO MATCH SURROUNDING SURFACES.

7. PROVIDE DEMOLITION OF ALL EQUIPMENT AND DEVICES NOT SCHEDULED FOR REVISE. REMOVE WIRING BACK TO POINT OF SUPPLY.

8. MAKE ALL FINAL ELECTRICAL CONNECTIONS AS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM.

B. TEMPORARY LIGHT AND POWER

1. PROVIDE WIRING FOR TEMPORARY LIGHTING AND POWER FOR ALL CONTRACTORS AND BE RESPONSIBLE FOR IT'S REMOVAL.

C. CODES

1. ALL WORK SHALL BE PERFORMED IN A NEAT AND PROFESSIONAL MANNER AND CONFORM TO THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE, LANDLORD'S CRITERIA, THE STATE'S, COUNTY'S, CITY'S AND LOCAL CODES AND ORDINANCES, SAFETY AND HEALTH CODES, NFPA CODES, ENERGY CODES, AND ALL OTHER APPLICABLE CODES AND REQUIREMENTS. INQUIRE INTO AND COMPLY WITH ALL APPLICABLE CODES, ORDINANCES, AND REGULATIONS. INCLUDE ANY CHANGES REQUIRED BY CODES IN THE BID AND IF THESE CHANGES ARE NOT INCLUDED IN THE BID, THEY MUST BE QUALIFIED AS A SEPARATE LINE ITEM IN THE BID. AFTER CONTRACT IS ISSUED, NO ADDITIONAL COST DUE TO CODE ISSUES SHALL BE REIMBURSED BY THE OWNER TO THE CONTRACTOR.

D. LICENSES, PERMITS, INSPECTIONS & FEES

1. OBTAIN AND PAY FOR ALL LICENSES, PERMITS, INSPECTIONS, AND FEES REQUIRED OR RELATED TO HIS WORK.

2. FURNISH TO OWNER ALL CERTIFICATES OF INSPECTION AND FINAL INSPECTION APPROVAL AT COMPLETION OF PROJECT.

E. TRADE NAMES, MANUFACTURERS AND SHOP DRAWINGS

1. WHERE TRADE NAMES AND MANUFACTURERS ARE USED ON THE DRAWINGS OR IN THE SPECIFICATIONS, THE EXACT EQUIPMENT SHALL BE USED AS A MINIMUM FOR THE BASE BID. ALL SUBSTITUTIONS ARE SUBJECT TO APPROVAL IN WRITING, THROUGH SHOP DRAWINGS PROCESS, BY THE OWNER/ARCHITECT PRIOR TO ACCEPTANCE. THE OWNER RESERVES THE RIGHT TO REJECT ANY PROPOSED SUBSTITUTIONS. THE USE OF ANY UNAUTHORIZED EQUIPMENT SHALL BE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.

F. GUARANTEE

1. GUARANTEE ALL MATERIALS AND WORK PROVIDED AND MAKE GOOD, REPAIR OR REPLACE AT YOUR OWN EXPENSE, ANY DEFECTIVE WORK, MATERIAL, OR EQUIPMENT WHICH MAY BE DISCOVERED WITHIN A PERIOD OF 12 MONTHS FROM THE DATE OF ACCEPTANCE. PROVIDE WRITTEN GURANTEE IN FORMAT ACCEPTABLE TO OWNER.

G. RECORD DRAWINGS

1. MAINTAIN ONE COPY OF DRAWINGS ON THE JOB SITE TO RECORD DEVIATIONS FROM CONTRACT DRAWINGS, SUCH AS:
   A. LOCATION OF JUNCTION BOXES AND RECEPTACLES.
   B. REVISIONS, ADDENDUMS, AND CHANGE ORDERS
   C. DEVIATIONS MADE NECESSARY BY FIELD CONDITIONS, APPROVED EQUIPMENT SUBSTITUTIONS, AND CONTRACTOR'S COORDINATION WITH OTHER TRADES.

2. AT COMPLETION OF PROJECT AND BEFORE FINAL APPROVAL, MAKE ANY FINAL CORRECTIONS TO DRAWINGS AND CERTIFY THE ACCURACY OF EACH PRINT BY SIGNATURE THEREON. ONE COPY OF DRAWINGS STAMPED SHALL BE PLACED "DO NOT REMOVE" IN DRAWING TUBE LOCATED NEXT TO THE ELECTRICAL PANELS.

H. DISCREPANCIES IN DOCUMENTS

1. DRAWINGS (PLANS, SPECIFICATIONS, AND DETAILS ARE DIAGRAMMATIC AND INDICATE THE GENERAL LOCATION AND INTENT OF THE ELECTRICAL SYSTEMS. WHERE DRAWINGS, EXISTING SITE CONDITIONS, SPECIFICATIONS OR OTHER TRADES CONFLICT OR ARE UNCLEAR, ADVISE THE OWNER/ARCHITECT IN WRITING PRIOR TO SUBMITTAL OF BID. OTHERWISE, THE OWNER/ARCHITECT'S INTERPRETATION OF CONTRACT DOCUMENTS OR CONDITIONS SHALL BE FINAL WITH NO ADDITIONAL COMPENSATION PERMITTED.

2. THE LOCATION OF OUTLETS AND EQUIPMENT SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SCHEMATIC IN NATURE. THE OWNER SHALL HAVE THE RIGHT TO RELOCATE ANY OUTLETS OR FIXTURES BEFORE THEY ARE INSTALLED WITHOUT ADDITIONAL COST.

J. SLEEVES

1. PROVIDE SLEEVES TO PROTECT EQUIPMENT OR FACILITIES IN THE INSTALLATION. EACH SLEEVE SHALL EXTEND THROUGH IT'S RESPECTIVE FLOOR, WALL OR PARTITION AND SHALL BE CUT FLUSH WITH EACH SURFACE EXCEPT SLEEVES THAT PENETRATE THE FLOOR, WHICH SHALL EXTEND 4" ABOVE THE FLOOR.

2. ALL SLEEVES AND OPENINGS THROUGH FIRE RATED WALLS AND/OR FLOORS SHALL BE FIRE SEALED WITH CALCIUM SILICATE, SILICONE "RTV" FOAM, "3M" FIRE RATED SEALANTS OR EQUAL, SO AS TO RETAIN THEIR FIRE RATING.

3. SLEEVES IN BEARING AND MASONRY WALLS, FLOORS AND PARTITIONS SHALL BE STANDARD WEIGHT STEEL PIPE FINISHED WITH SMOOTH EDGES. FOR OTHER THAN MASONRY PARTITIONS, THROUGH SUSPENDED CEILINGS, OR FOR CONCEALED VERTICAL CONDUIT, SLEEVES SHALL BE NO 22 U.S.G GALVANIZED STEEL MINIMUM.

K. HANGERS

1. HANGERS SHALL INCLUDE ALL MISCELLANEOUS STEEL SUCH AS ANGLE IRON, WIRE, UNISTRUT, C-CLAMPS WITH RETAINING CLIPS, CHANNELS, HANGER RODS, ETC., NECESSARY FOR THE INSTALLATION OF WORK.

2. HANGERS SHALL BE FASTENED TO BUILDING STEEL, CONCRETE, OR MASONRY, BUT NOT TO OTHER CONDUIT OR PIPING. HANGERS UPPER ATTACHMENT MUST BE SUPPORTED FROM THE TOP OF THE BAR JOIST. HANGING FROM METAL DECK IS NOT PERMITTED. WHERE INTERFERENCES OCCUR, IN ORDER TO SUPPORT CONDUIT, THE CONTRACTOR MUST INSTALL TRAPEZE TYPE HANGERS OR SUPPORTS WHICH SHALL BE LOCATED WHERE THEY DO NOT INTERFERE WITH ACCESS TO FIRE DAMPERS, VALVES, JUNCTION BOXES, ACCESS DOORS, OTHER EQUIPMENT SERVICE REQUIREMENTS AND/OR OTHER TRADES. HANGER TYPES AND INSTALLATION METHODS ARE SUBJECT TO LANDLORD CRITERIA.

DIVISION 26 - ELECTRICAL
SECTION 260500
BASIC ELECTRICAL MATERIALS AND METHODS

A SCOPE OF WORK

1. PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, SERVICES, TOOLS, TRANSPORTATION, AND FACILITIES NECESSARY FOR, REASONABLY IMPLIED AND INCIDENTAL TO, THE FURNISHING, INSTALLATION, COMPLETION AND TESTING OF ALL THE WORK FOR THE ELECTRICAL SYSTEMS AS SHOWN ON THE DRAWINGS, CALLED FOR IN THE SPECIFICATIONS, AND AS REQUIRED BY JOB CONDITIONS, TO INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:
   A. A COMPLETE ELECTRICAL DISTRIBUTION SYSTEM INCLUDING PANELBOARDS, TRANSFORMER, FEEDERS, BRANCH CIRCUITS, JUNCTION BOXES, OUTLET BOXES, WIRING DEVICES, COVERPLATES, CONDUITS, ETC.
   B. THE WIRING OF MECHANICAL EQUIPMENT AS OUTLINED ON THE BID SET DRAWINGS AND IN THE SPECIFICATIONS. WORK SHALL INCLUDE WIRING OF ALL STARTERS, DISCONNECTS, AND POWER WIRING OF MECHANICAL EQUIPMENT EXCEPT AS SPECIFICALLY NOTED OTHERWISE.

B. CONDUIT

1. PROVIDE CONDUITS SERVING ALL EQUIPMENT, INCLUDING BUT NOT LIMITED TO RECEPTACLES, HEATING, AIR CONDITIONING, PLUMBING EQUIPMENT, AND ELECTRICAL EQUIPMENT.

2. ALL CONDUITS SHALL BE GALVANIZED RIGID IMC OR EMT UNLESS OTHERWISE NOTED. CONDUIT SHALL BE UL LABELED. EMT CONNECTORS SHALL BE STEEL COMPRESSION OR SET SCREW TYPE. CONDUIT UNDER SLAB ON GRADE SHALL BE RIGID STEEL, OR SCHEDULE 40 PVC WITH RIGID STEEL ELLS WHERE PERMITTED BY LANDLORD OR CODE.

3. CONTRACTOR MAY USE METAL CLAD IN LIEU OF EMT ON BRANCH CIRCUITS OF #12AWG SIZE ONLY.
   A. CONDUCTORS SHALL BE STRANDED COPPER PER UL STANDARD FOR METAL CLAD CABLES AND ASTM B-3.
   B. ALL CONDUCTORS TO BE INSULATED WITH POLYVINALCHLORIDE ALUMINIMUM ALLOY SHEATH THAT MEETS ASTM B-221 SPECIFICATIONS.
   C. METAL CLAD CABLES SHALL MEET ALL REQUIREMENTS OF LATEST NEC SECTION 334 AND MUST BE SUPPORTED AND SECURED AT MAXIMUM INTERVALS OF 6'-0".
   D. METAL CLAD CABLE MAY BE USED FOR ISOLATED GROUND CIRCUITS IF PROVIDED WITH BOTH INSULATED EQUIPMENT GROUND AND ISOLATED GROUND CONDUCTORS.
   E. METAL CLAD CABLE MAY BE USED IN CONCEALED SPACES ONLY. EXPOSED CABLES ARE NOT PERMITTED.

4. IF HVAC CONTROL WIRING IS REQUIRED TO BE RUN IN CONDUIT, IT SHALL BE A MINIMUM OF 3/4", UNLESS NOTED OTHERWISE ON DRAWINGS. ALL IN/UNDER FLOOR CONDUIT SHALL BE OF MINIMUM 3/4" SIZE.

5. SUPPORT ALL CONDUIT, INCLUDING SEISMIC AND SWAY BRACING, IN ACCORDANCE WITH THE NEC AND LOCAL CODES.

6. GENERALLY, ALL CONDUIT SHALL BE CONCEALED EXCEPT FOR UNFINISHED AREAS, SUCH AS EQUIPMENT ROOMS. EXPOSED CONDUIT SHALL BE ALLOWED ONLY AS NOTED ON PLAN AND AS APPROVED BY THE OWNER.

7. FLEXIBLE METAL CONDUIT:
   A. FLEXIBLE CONDUIT SHALL BE USED FOR THE FOLLOWING APPLICATIONS ONLY:
      1. FINAL CONNECTIONS TO MOTORS
      2. FINAL CONNECTIONS INTO AND OUT OF THE TRANSFORMER
      3. FINAL CONNECTIONS TO VIBRATING EQUIPMENT
   B. FLEXIBLE METAL CONDUIT SHALL BE THE SAME SIZE AS THE IMC OR EMT CONDUIT TO WHICH IT IS CONNECTED. BOTH THE FLEXIBLE METAL CONDUIT AND IT'S FITTINGS ARE TO BE LISTED FOR GROUNDING. A GREEN GROUNDING CONDUCTOR SHALL BE INSTALLED. ALL CONNECTORS ARE TO BE OF A NEMA APPROVED TYPE.
   C. THE USE OF ROMEX, BX, ETC IS NOT PERMITTED.
   D. CONNECTION TO OUTDOOR EQUIPMENT MUST BE WEATHERPROOF, I.E LIQUIDTIGHT OR SEALTIGHT.

8. PROVIDE PULL-WIRE IN ALL EMPTY CONDUITS.

9. HOME RUNS AND MAIN CONDUIT RUNS ARE TO BE HELD TIGHT TO STRUCTURE ABOVE OR AS REQUIRED TO ALLOW PROPER SERVICE ACCESS AND OTHER TRADES WORK. CONDUIT MUST BE TRAPEZOID TO ALLOW 3 FEET MINIMUM CLEARANCE ABOVE CEILING.

10. ALL CONDUITS MUST BE SIZED PER NEC AND LOCAL CODES.

C. OUTLET BOXES

1. ALL OUTLET BOXES SHALL BE GALVANIZED PRESSED STEEL OF THE STANDARD KNOCKOUT TYPE. NO ROUND OUTLET BOXES SHALL BE PERMITTED, EXCEPT AS SPECIFICALLY NOTED ON DRAWINGS. CONCEALED BOXES SHALL NOT BE LESS THAN 4" SQUARE AND 1-1/2" DEEP, WITH PLASTER RINGS.

2. EXTERIOR BOXES SHALL BE CAST RUST-RESISTING METAL WITH GASKETED COVERS.

3. INSTALL BOXES RIGIDLY FROM BUILDING STRUCTURE AND SUPPORT INDEPENDENTLY OF THE CONDUIT SYSTEM. ALSO PROVIDE SUITABLE BOX EXTENSIONS TO EXTEND BOXES TO FINISHED FACES OF FLOORS, CEILINGS, WALLS ETC. ALL OUTLET BOXES TO BE PROVIDED WITH CADDY "QUICK-MOUNT BOX SUPPORT" TO MINIMIZE THE DEFLECTION THAT OCCURS WHEN PLUGGING/UNPLUGGING INTO THESE DEVICES.

4. UNLESS OTHERWISE NOTED ON DRAWINGS OR OTHERWISE REQUIRED BY THE NATIONAL ELECTRICAL CODE, HANDICAP CODES OR LOCAL CODES, OUTLET HEIGHTS SHALL BE AS FOLLOWS:
   A. SWITCH HEIGHT 48" FROM FINISHED FLOOR TO CENTERLINE OF OUTLET.
   B. CONVENIENCE OUTLETS: SALES & NON-SALES: 18" FROM FINISHED FLOOR TO CENTERLINE OF OUTLET

D. JUNCTION AND PULL BOXES

1. THE PLANS INDICATE ONLY SCHEMATIC ROUTINGS FOR CONDUIT RUNS. PROVIDE ADDITIONAL BOXES WHERE REQUIRED BY FIELD CONDITIONS OR BY CODE.

2. BOXES AND COVERS SHALL BE GALVANIZED STEEL OF CODE GAUGE SIZE.

3. INSTALL BOXES RIGIDLY SUPPORTED FROM THE BUILDING STRUCTURE AND SUPPORTED INDEPENDENT OF THE CONDUIT SYSTEM.

4. ARRANGE CIRCUITS TO AVOID THE USE OF JUNCTION BOXES IN INACCESSIBLE LOCATIONS. THE USE OF JUNCTION BOXES ABOVE DRYWALL CEILINGS SHOULD BE IN LOCATIONS NEAR ACCESS FRAMES USED FOR DIFFUSERS AND RETURN AIR GRILLES OR ACCESS PANELS AS LOCATED ON PLANS.

5. JUNCTION AND PULL BOXES SHALL BE LABELED WITH CIRCUIT NUMBER IDENTIFICATION AND SYSTEM TYPE ON COVER.

E. WIRING

1. CONDUCTORS FOR FEEDERS AND BRANCH CIRCUITS SHALL BE COPPER AND THE AWG SIZE AND TYPE AS SHOWN ON DRAWINGS. MINIMUM WIRE SIZE #12. THE CONDUCTORS SHALL BE 600 VOLT INSULATION, TYPE THHN/THWN DUAL RATED.

2. MINIMUM WIRE SIZE - 20 AMP BRANCH CIRCUIT SHALL BE AWG LISTED SIZE PER DISTANCE SHOWN BELOW. DISTANCE SHALL BE MEASURED FROM THE PANELBOARD CIRCUIT BREAKER TO THE FURTHEST OUTLET.
   A #12 LESS THAN 100 FEET
   B #10 BETWEEN 100-150 FEET
   C #8 BETWEEN 150 - 250 FEET
   D #6 OVER 250 FEET

3. ON ALL 20 AMP BRANCH CIRCUITS, CONDUCTORS LARGER THAN #10 AWG SHALL BE REDUCED TO #10 AWG WITHIN 10 FEET OF PANEL BOARD AND DEVICE IN JUNCTION BOXES ON RATED TERMINAL STRIPS.

4. CONDUCTORS SHALL BE STRANDED.

5. ALUMINUM CONDUCTORS ARE NOT PERMITTED.

6. ALL WIRING SHALL BE IN CONDUIT, UNLESS SPECIFICALLY NOTED OTHERWISE.

7. THE USE OF SHARED NEUTRALS IS REQUIRED FOR LIGHTING CIRCUITS AND SHALL BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND LOCAL CODES.

8. THE USE OF ROMEX, BX, ETC IS NOT PERMITTED.

9. WIRE CONNECTORS SHALL "SCOTCH LOCK" FOR #8 AWG WIRE AND SMALLER AND SHALL BE T & B "LOCKTIGHT" FOR #6 AWG AND LARGER.

10. ALL WIRING TO BE COLOR-CODED AS FOLLOWS:

120/208 VOLT SYSTEM	277/480 VOLT SYSTEM
NEUTRAL - WHITE	NEUTRAL - GRAY
PHASE A OR L1 - BLACK	PHASE A OR L1-BROWN
PHASE B OR L2 - RED	PHASE B OR L2-ORANGE
PHASE C OR L3 - BLUE	PHASE C OR L3-YELLOW
GROUND - GREEN	GROUND - GREEN WITH YELLOW TRACER

F. SAFETY AND DISCONNECT SWITCHES

1. SAFETY AND DISCONNECT SWITCHES SHALL BE HEAVY DUTY TYPE, QUICK-MAKE, QUICK-BREAK, WIREJECTION TYPE FUSE CLIPS, FUSED OR NON-FUSIBLE WITH RATINGS AND SIZES AS NOTED ON PLANS AND REQUIRED BY CODES. ALL FUSES SHALL BE RK-1 REJECTION TYPE WITH TIME DELAY RATED AT 200K AMPERES RMS SYMMETRICAL. FUSE MANUFACTURER AND FUSE TYPE IN INDIVIDUAL EQUIPMENT'S FUSES SHALL BE MANUFACTURED BY BUSSMAN, LITTLE, OR GOULD-SHAWMUT

2. SWITCHES SHALL BE WEATHERPROOF IN OUTDOOR LOCATIONS OR AS REQUIRED BY LOCAL CODES. DISCONNECT SWITCHES THAT ARE INSTALLED AT HEATING, VENTILATING AND AIR CONDITIONING (HVAC) EQUIPMENT SHALL BE FUSED IF NOT PROTECTED WITH A "HACR" BREAKER IN ACCORDANCE WITH THE EQUIPMENT'S NAMEPLATE AND MANUFACTURER'S REQUIREMENTS PER THE NATIONAL ELECTRICAL CODE, STATE AND LOCAL CODES.

3. AT SERVICE ENTRANCE, DISCONNECT SHALL BEAR THE MANUFACTURER'S LABEL INDICATING THE EQUIPMENT IS UL RATED FOR APPLICATION IN ACCORDANCE WITH ALL CODES.

G. GROUNDING

1. FURNISH AND INSTALL COMPLETE WIRED GROUNDING CONDUCTOR SYSTEM, SIZED AND INSTALLED IN ACCORDANCE WITH THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE, STATE AND LOCAL CODES, THE LANDLORD'S TENANT CRITERIA AND AS NOTED IN THE SPECIFICATIONS AND AS INDICATED ON THE DRAWINGS.

2. ALL CONDUIT, INCLUDING FLEXIBLE CONDUIT, SHALL BE GROUNDED.

3. ALL POWER CIRCUITS SHALL INCLUDE AN EQUIPMENT GROUND CONDUCTOR. #12 AWG MINIMUM. GREEN ISULATION.

4. GROUNDING CONNECTIONS MADE TO THE WATER PIPING SYSTEM SHALL BE COORDINATED WITH THE PLUMBING CONTRACTOR AND A BONDING JUMPERS INSTALLED AROUND WATER METER PER CODES AND AS INDICATED ON DRAWINGS.

5. ALL DEVICES SHALL BE BONDED TO THE CONDUIT SYSTEM. USE A BONDING JUMPER BETWEEN THE OUTLET BOX AND THE DEVICE GROUNDING TERMINAL. METAL-TO-METAL CONTACT BETWEEN THE DEVICE YOKE AND THE OUTLET BOX IS NOT ACCEPTABLE AS A BOND FOR EITHER SURFACE MOUNTED BOXES OR FLUSH TYPE BOXES. ALL JUNCTION BOXES, OUTLET BOXES, AND PULL BOXES SHALL BE BONDED TO THE CONDUIT SYSTEM.

6. RUN A SEPARATE ISOLATED GROUNDING CONDUCTOR, #12 AWG MINIMUM, IN EACH CONDUIT SERVING ISOLATED GROUND RECEPTACLES.

7. FOR PANEL FEEDERS, BOND THE GROUNDING CONDUCTOR TO THE CONDUIT, WHERE ENTERING AND LEAVING THE CONDUIT. THE GROUNDING CONDUCTOR SHALL BE COPPER WITH GREEN IDENTIFICATION AND SIZED PER N.E.C.

8. ALL ENCLOSURES AND NON-CURRENT CARRYING METAL PARTS ARE TO BE GROUNDED CONDUIT SYSTEM IS TO BE ELECTRICALLY CONTINUOUS. ALL LOCKNUTS MUST CUT THROUGH ENAMELED OR PAINTED SURFACES ON ENCLOSURES WHERE ENCLOSURES AND NON- CURRENT CARRYING METAL PARTS ARE ISOLATED FROM THE CONDUIT SYSTEM, USE BONDING JUMPERS WITH APPROVED CLAMPS. ALL GROUND CLAMPS SHALL BE "PENN-UNION" "GPL" TYPE.

9. SYSTEM GROUND NOT TO EXCEED 25 OHMS PER NEC.

10. SIZE MAIN GROUNDING SYSTEM PER NEC, WAC AND LOCAL CODES. PROVIDE CONDUIT TO PROTECT GROUND WIRE FROM DAMAGE TO MAIN DISTRIBUTION PANEL.

11. INSTALL GROUND CONDUCTORS IN NON-METLLIC CONDUIT.

12. INSPECT GROUNDING AND BONDING SYSTEM CONDUCTORS AND CONNECTIONS FOR TIGHTNESS AND PROPER INSTALLATION.

H. MAGNETIC MOTOR STARTER

1. NEMA RATED. NEMA SIZE RATED FOR MOTOR HORSEPOWER OR AS INDICATED, NEMA SIZE 1 MINIMUM. FULL VOLTAGE, NON-REVERSING (FVNR).

2. CONTACT AND OVERLOAD RELAY. CONTACTOR WITH MINIMUM NO AND 1 NC AUXILIARY CONTACT AND SOLID STATE ELECTRONIC OVERLAOD RELAY TO PROTECT ALL PHASES WITH FIELD ADJUSTABLE CURRENT SETTING AND TRIP CLASS FOR SPECIFIRI MOTOR FULL LOAD AMPS. OVERLOAD RELAY WITH PHASE FAILURE, PHASE LOSS, LOCKED ROTOR, AND STALL PROTECTION. INCLUDE MANUAL RESET PUSHBUTTON ON STARTER COVER TO RESTORE NORMAL OPERATION AFTER TRIP OF FAULT CONDITION.

3. INTEGRAL CONTROL POWER TRANSFORMER: 50VA CAPACITY WITH CIRCUIT BREAKER PROTECTED SECONDARY SELECTED FOR AVAILABLE LINE VOLTAGE AND MAXIMUM 120B CONTROL VOLTAGE.

4. AUTOMATION SYSTEM CONTROL: INCLUDE REMOTE RUN TERMINALS ON STARTER TO ACCEPT VOLTAGE INPUT SIGNAL AN CONTACT CLOSURE. INPUT VOLTAGE SHALL ACCEPT 24VAC, 120VAC, 24VDC, AND 48VDC TO ALLOW DIRECTION CONNECTION OF INPUT SIGNAL TO STARTER.

5. INTERLOCKS: WHERE MOTOR IS INTERLOCKED WITH A CONTROL DAMPER OR CONTROL VALVE, ACTUATOR CONTROL SHALL RESIDE WITHIN STARTER ENCLOSURE. STARTER SHALL PROVIDE VOLTAGE OUTPUT TO OPERATE ACTUATOR WITHOUT CLOSING MOTOR CIRCUIT. STARTER SHALL CLOSE MOTOR CIRCUIT AND START MOTOR UPON RECEIPT OF CONTACT CLOSURE FROM LIMIT OR E4ND SWITCH CONFIRMING CONTROL DAMPER OR CONTROL VALVE POSITION.

I. MANUAL MOTOR STARTER

1. HORSE POWER RATED TOGGLE SWITCH TYPE, LOCKABLE IN THE 'OFF' POSITION, WITH MELTING ALLOW OVERLOAD RELAYS, RED 'RUNNING' PILOT LIGHT, NAMEPLATE AND ENCLOSURE. SQUARE D, CLASS 2510 OR EQUIVALENT.

2. ENCLOSURES: SURFACE MOUNTED, NEMA 1 ENCLOSURE FOR INDOOR AND MENA-3R FOR LOCATIONS SUBJECT TO MOISTURE, UNLESS INDICATED OTHERWISE.

3. ACCEPTABLE FOR SINGLE PHASE MOTORS OF 1 HP AND SMALLER. NOT ACCEPTABLE FOR 3-PHASE MOTORS.

END OF SECTION 260000

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BRANDON M. INMAN
STATE OF WASHINGTON
40443
REGISTERED
PROFESSIONAL ENGINEER

02/18/2025

REVISIONS DATE

Federal Way Public Schools

Federal Way High School CTE Storage

30611 16th Ave S
Federal Way, WA 98003

JOB NO: 2426
ISSUE DATE: 3/7/25

Jurisdiction Stamp Area

BID SET

ELECTRICAL SPECIFICATIONS

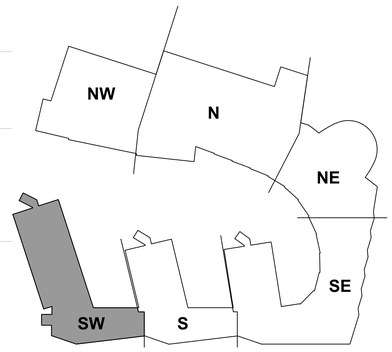
E002



1 E100 ELECTRICAL OVERALL PLAN
1/8" = 1'-0"

SHEET NOTES

1. SEE ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.



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ELECTRICAL OVERALL PLAN

BID SET

E100

LIGHT FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER	MODEL SERIES	LIGHT SOURCE	COLOR TEMP	DELIVERED LUMENS	INPUT WATTS	FINISH
S1	4' LED NEMA 4X STRIP LIGHT FIXTURE, WIDE DISTRIBUTION, SURFACE MOUNTED ACCESSORIES, INTEGRAL DRIVER	COOPER METALUX	4VT3 SERIES	LED	4,000 K	4,366	32	WHITE



1 E101 ELECTRICAL ENLARGED PLAN
1/4" = 1'-0"

SHEET NOTES

1. REFER TO CIVIL, LANDSCAPE, AND SURVEY DRAWINGS FOR ADDITIONAL INFORMATION.
2. PROVIDE RMC AS REQUIRED BY CODE WITHIN 2-1/2" OF THE CANOPY ROOF STRUCTURE.
3. PROVIDE SUPPORTING METHODS, RACEWAY, AND BOXES FOR SURFACE-MOUNTED DEVICES AND LUMINAIRES.
4. SEAL BUILDING PENETRATIONS WITH APPROVED FIRE PROOFING AND WEATHER PROOFING MATERIALS.
5. SEE ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.
6. PROVIDE EMT CONDUIT UNLESS OTHERWISE NOTED.
7. PROVIDE THHN-2/THWN COPPER CONDUCTORS.

FLAG NOTES

1. REMOVE EXISTING EXIT SIGN. PROVIDE BLANK COVER OVER EXISTING ROUGH-IN EXPOSED BY SIGN REMOVAL. TURN OVER EXIT SIGN TO THE OWNER.
2. PROVIDE CONDUIT AND CONDUCTORS TO EXTEND UNSWITCHED CIRCUIT FROM EXISTING ROOM LIGHTING CIRCUIT TO EXTERIOR STORAGE AREA AS INDICATED. ROUTE CONDUIT SURFACE ON PLYWOOD CEILING AS INDICATED.
3. TRANSITION DOWN FROM CEILING TO ELEVATION TO ROUTE THROUGH EXTERIOR WALL UNDER THE BOTTOM SIDE OF THE STORAGE CANOPY ROOF. PROVIDE CORE DRILL OF EXISTING BUILDING.
4. PROVIDE WEATHERPROOF 2-HOUR TIME SWITCH, INTERMATIC #DF2HW OR APPROVED. LABEL SWITCH 'CTE STORAGE'.
5. PROVIDE UNISTRUT AND SUPPORTING MEANS TO MOUNT LIGHT FIXTURE TO UNDERSIDE OF STORAGE CANOPY ROOF STRUCTURE. ROUTE SURFACE CONDUIT EXPOSED WITHIN STORAGE AREA.

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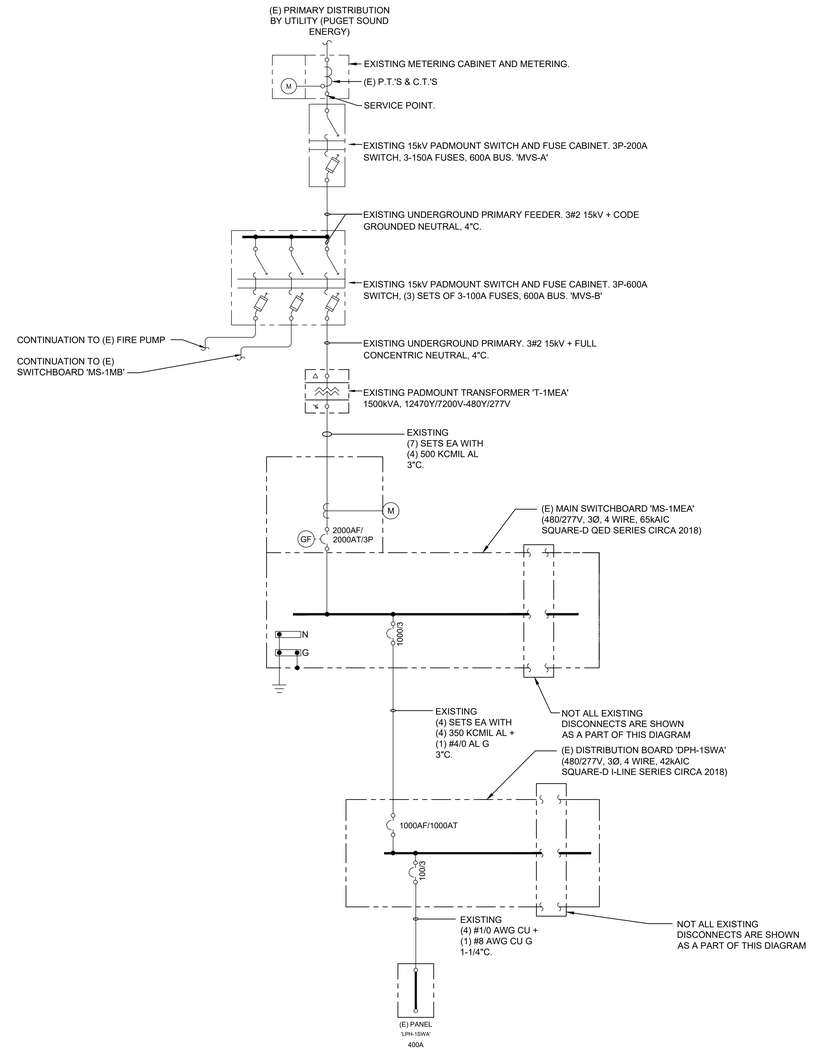
BID SET

ELECTRICAL ENLARGED PLAN AND LIGHT FIXTURE SCHEDULE

E101



1 E9.0 **ELECTRICAL ONE-LINE DIAGRAM**

SCALE: NONE

SHEET NOTES:

1. NEW BREAKERS SHALL MATCH EXISTING PANEL MANUFACTURER AND AIC RATING.

FLAG NOTES:

1. GROUND PER NEC & WAC STANDARDS.
2. PANEL SHALL BE SERVICE ENTRANCE RATED.
3. PROVIDE EQUIPMENT NAMEPLATES PER DETAIL 2 ON THIS SHEET.
4. AVAILABLE FAULT CURRENT AT EQUIPMENT INDICATED IS BASED UPON RECORD DRAWINGS.

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ELECTRICAL ONE-LINE DIAGRAM

E901

BID SET

PRIMARY SWITCH SUMMARY : 07/30/2021 | **(E) PRIMARY SWITCH 'MVS-A'** | **PROJECT: FWHS - Pre-Apprenticeship Program**

FED FROM: UTILITY
VOLTAGE: 12470Y/7200V 3Ø, 4-WIRE
MAINS: 150A SWITCH

LOAD CALCULATIONS

LOAD DESCRIPTION	CONNECTED LOAD		DEMAND FACTOR		CALCULATED LOAD
MISCELLANEOUS CONTINUOUS:	-	X	125%	=	-
EQUIPMENT & MISCELLANEOUS:	712634	X	100%	=	712634
LIGHTING:	366873	X	125%	=	458591
LARGEST MOTOR:	129702	X	125%	=	162128
MOTORS:	896453	X	100%	=	896453
RECEPTACLE:	10000	X	100%	=	10000
RECEPTACLES OVER 10kVA:	451012	X	50%	=	225506
COMPUTER:	12000	X	100%	=	12000
ELECTRIC HEATING:	4870	X	100%	=	4870
KITCHEN (EQUIP = 68):	191607	X	65%	=	124545

LOAD SUMMARY

TOTAL CONNECTED LOAD	AMPS
PHASE A: 950,478 VA	132 A
PHASE B: 934,018 VA	130 A
PHASE C: 890,655 VA	124 A

TOTAL CONNECTED LOAD (VA): 2,775,151 VA
TOTAL CONNECTED AMPS: 128 A
TOTAL CALCULATED LOAD (VA): 2,606,727 VA
TOTAL CALCULATED AMPS: 121 A

NOTES:
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PRIMARY SWITCH SUMMARY : 07/30/2021 | **(E) PRIMARY SWITCH 'MVS-B-A'** | **PROJECT: FWHS - Pre-Apprenticeship Program**

FED FROM: (E) PRIMARY SWITCH 'MVS-A'
VOLTAGE: 12470Y/7200V 3Ø, 4-WIRE
MAINS: 100A SWITCH

LOAD CALCULATIONS

LOAD DESCRIPTION	CONNECTED LOAD		DEMAND FACTOR		CALCULATED LOAD
MISCELLANEOUS CONTINUOUS:	-	X	125%	=	-
EQUIPMENT & MISCELLANEOUS:	311354	X	100%	=	311354
LIGHTING:	117810	X	125%	=	147263
LARGEST MOTOR:	129702	X	125%	=	162128
MOTORS:	466785	X	100%	=	466785
RECEPTACLE:	10000	X	100%	=	10000
RECEPTACLES OVER 10kVA:	271849	X	50%	=	135925
COMPUTER:	12000	X	100%	=	12000
ELECTRIC HEATING:	4430	X	100%	=	4430
KITCHEN (EQUIP = 32):	173607	X	65%	=	112845

LOAD SUMMARY

TOTAL CONNECTED LOAD	AMPS
PHASE A: 513,238 VA	71 A
PHASE B: 504,724 VA	70 A
PHASE C: 479,575 VA	67 A

TOTAL CONNECTED LOAD (VA): 1,497,537 VA
TOTAL CONNECTED AMPS: 69 A
TOTAL CALCULATED LOAD (VA): 1,362,730 VA
TOTAL CALCULATED AMPS: 63 A

NOTES:
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TRANSFORMER SUMMARY : 07/28/2021 | **(E) TRANSFORMER 'T-1MEA'** | **PROJECT: FWHS - Pre-Apprenticeship Program**

CLASSIFICATION: NORMAL
FED FROM: (E) PRIMARY SWITCH 'MVS-B-A'
PRIMARY VOLTAGE: 12470Y/7200V 3Ø, 4-WIRE
SECONDARY VOLTAGE: 480Y/277V 3Ø, 4-WIRE
KVA RATING: 1,500 KVA

LOAD CALCULATIONS

LOAD DESCRIPTION	CONNECTED LOAD		DEMAND FACTOR		CALCULATED LOAD
MISCELLANEOUS CONTINUOUS:	-	X	125%	=	-
EQUIPMENT & MISCELLANEOUS:	311354	X	100%	=	311354
LIGHTING:	117810	X	125%	=	147263
LARGEST MOTOR:	129702	X	125%	=	162128
MOTORS:	466785	X	100%	=	466785
RECEPTACLE:	10000	X	100%	=	10000
RECEPTACLES OVER 10kVA:	271849	X	50%	=	135925
COMPUTER:	12000	X	100%	=	12000
ELECTRIC HEATING:	4430	X	100%	=	4430
KITCHEN (EQUIP = 32):	173607	X	65%	=	112845

LOAD SUMMARY

TOTAL CONNECTED LOAD	PRIMARY AMPS	SECONDARY AMPS
PHASE A: 513,238 VA	71 A	1,833 A
PHASE B: 504,724 VA	70 A	1,822 A
PHASE C: 479,575 VA	67 A	1,731 A

TOTAL CONNECTED LOAD (VA): 1,497,537 VA
TOTAL CONNECTED AMPS: PRI: 69 A SEC: 1,802 A
TOTAL CALCULATED LOAD (VA): 1,362,730 VA
TOTAL CALCULATED AMPS: PRI: 63 A SEC: 1,640 A

NOTES:
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HARGIS ENGINEERS, INC.
1201 THIRD AVENUE, SUITE 600
SEATTLE, WA 98101

PH. (206) 448-3376
FAX. (206) 448-4450

MAIN SWITCHBOARD SUMMARY : 07/28/2021 | **(E) MAIN SWITCHBOARD 'MS-1MEA'** | **PROJECT: FWHS - Pre-Apprenticeship Program**

CLASSIFICATION: NORMAL
FED FROM: (E) TRANSFORMER 'T-1MEA'
MOUNTING: SURFACE
VOLTAGE: 480Y/277V 3Ø, 4-WIRE
MAINS: 2000A MAIN CIRCUIT BREAKER

LOAD CALCULATIONS

LOAD DESCRIPTION	CONNECTED LOAD		DEMAND FACTOR		CALCULATED LOAD
MISCELLANEOUS CONTINUOUS:	-	X	125%	=	-
EQUIPMENT & MISCELLANEOUS:	311354	X	100%	=	311354
LIGHTING:	117810	X	125%	=	147263
LARGEST MOTOR:	129702	X	125%	=	162128
MOTORS:	466785	X	100%	=	466785
RECEPTACLE:	10000	X	100%	=	10000
RECEPTACLES OVER 10kVA:	271849	X	50%	=	135925
COMPUTER:	12000	X	100%	=	12000
ELECTRIC HEATING:	4430	X	100%	=	4430
KITCHEN (EQUIP = 32):	173607	X	65%	=	112845

LOAD SUMMARY

TOTAL CONNECTED LOAD	AMPS
PHASE A: 513,238 VA	1,853 A
PHASE B: 504,724 VA	1,822 A
PHASE C: 479,575 VA	1,731 A

TOTAL CONNECTED LOAD (VA): 1,497,537 VA
TOTAL CONNECTED AMPS: 1,802 A
TOTAL CALCULATED LOAD (VA): 1,362,730 VA
TOTAL CALCULATED AMPS: 1,640 A

NOTES:
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HARGIS ENGINEERS, INC.
1201 THIRD AVENUE, SUITE 600
SEATTLE, WA 98101

PH. (206) 448-3376
FAX. (206) 448-4450

DIST. PANEL SCHEDULE : 07/28/2021 | **(E) DIST. PANEL 'DPH-1SWA'** | **PROJECT: FWHS - Pre-Apprenticeship Program**

CLASSIFICATION: NORMAL
FED FROM: (E) MAIN SWITCHBOARD 'MS-1MEA'
MOUNTING: SURFACE
VOLTAGE: 480Y/277V 3Ø, 4-WIRE
MAINS: 1000A MAIN CIRCUIT BREAKER
NEUTRAL: 100% RATED
SECTION: 1 OF 1
TYPE: SQAURE-D I-LINE (CIRCA 2018)
ENCLOSURE: NEMA 1
LOCATION: ELEC 1611

NOTE	ITEM DESCRIPTION	CKT NO.	BREAKER AMPS	BREAKER POLE	LOAD (VA)	Ø	LOAD (VA)	BREAKER AMPS	BREAKER POLE	CKT NO.	ITEM DESCRIPTION	NOTE
	SPACE	1	-	-		A		70	3	2	SPARE	
	SPACE	3	-	-		B		-	-	4	-	
	SPACE	5	-	-		C		-	-	6	-	
	SPACE	7	-	-		A	5873	100	3	8	(E) PANEL 'LPH-1SWA'	
	SPACE	9	-	-		B	4270	-	-	10	-	
	SPACE	11	-	-		C	5098	-	-	12	-	
	SPACE	13	-	-		A		110	3	14	SPARE	
	SPACE	15	-	-		B		-	-	16	-	
	SPACE	17	-	-		C		-	-	18	-	
	SPACE	19	-	-		A	20956	110	3	20	(E) TRANSFORMER 'T-1SWA'	
	SPACE	21	-	-		B	22532	-	-	22	-	
	SPACE	23	-	-		C	25672	-	-	24	-	
	SPACE	25	-	-		A	33646	175	3	26	(E) TRANSFORMER 'T-1SWB'	
	SPACE	27	-	-		B	33309	-	-	28	-	
	SPACE	29	-	-		C	31809	-	-	30	-	
	METERING	31	20	3		A		225	3	32	SPARE	
	-	33	-	-		B		-	-	34	-	
	-	35	-	-		C		-	-	36	-	
	SPARE	37	400	3		A	28147	225	3	38	(E) DIST. PANEL 'DPH-2SWA'	
	-	39	-	-		B	28147	-	-	40	-	
	-	41	-	-		C	28147	-	-	42	-	
	(E) PANEL 'MPH-1SWA'	43	400	3	21142	A	24837	225	3	44	(E) DIST. PANEL 'DPH-3SWA'	
	-	45	-	-	15182	B	24837	-	-	46	-	
	-	47	-	-	13602	C	24837	-	-	48	-	
	MAIN DISCONNECT	49	1000	3		A	58262	225	3	50	(E) DIST. PANEL 'LPH-1SWV'	
	-	51	-	-		B	56072	-	-	52	-	
	-	53	-	-		C	42789	-	-	54	-	

LOAD CALCULATIONS

LOAD DESCRIPTION	CONN. (VA)	DEMAND FACTOR	CALC. (VA)
MISCELLANEOUS CONTINUOUS	-	125%	-
EQUIPMENT & MISCELLANEOUS	209204	100%	209204
LIGHTING	44460	125%	55575
LARGEST MOTOR	9144	125%	11430
MOTORS	56361	100%	56361
RECEPTACLE	10000	100%	10000
RECEPTACLES OVER 10KVA	121510	50%	60755
COMPUTER	12000	100%	12000
ELECTRIC HEATING	2880	100%	2880
KITCHEN (EQUIP = 20)	83607	65%	54345
TOTALS:	**549,166**		**472,550**

LOAD SUMMARY

TOTAL CONNECTED LOAD	AMPS
PHASE A: 192,863 VA	696 A
PHASE B: 184,349 VA	666 A
PHASE C: 171,954 VA	621 A

TOTAL CALCULATED LOAD: 472,550 VA

TOTAL CALCULATED AMPS: 569 A

NOTES:
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HARGIS ENGINEERS, INC.
1201 THIRD AVENUE, SUITE 600
SEATTLE, WA 98101

PH. (206) 448-3376
FAX. (206) 448-4450

PANEL SCHEDULE : 12/05/2024 | **(E) PANEL 'LPH-1SWA'** | **PROJECT: FWHS - Pre-Apprenticeship Program**

CLASSIFICATION: NORMAL
FED FROM: (E) DIST. PANEL 'DPH-1SWA'
MOUNTING: SURFACE
VOLTAGE: 480Y/277V 3Ø, 4-WIRE
MAINS: 100A MAIN LUGS ONLY
NEUTRAL: 100% RATED
SECTION: 1 OF 1
TYPE: SQUARE-D NF (CIRCA 2018)
ENCLOSURE: NEMA 1
LOCATION: ELEC 1611

NOTE	ITEM DESCRIPTION	CKT NO.	BREAKER AMPS	BREAKER POLE	LOAD (VA)	Ø	LOAD (VA)	BREAKER AMPS	BREAKER POLE	CKT NO.	ITEM DESCRIPTION	NOTE
	LIGHTING - HALLWAY 1600, VESTIBULE	1	20	1	348	A	102	20	1	2	LIGHTING - SW EXTERIOR STAIR	
	LIGHTING 1600, 3RD PLACE 1621	3	20	1	576	B	89	20	1	4	LIGHTING - FIRST FLOOR SW EXTERIOR	
	LIGHTING - HALLWAY 1620, 1620.1	5	20	1	492	C	438	20	1	6	LIGHTING - SW MAIN STAIR	
	LIGHTING - COOK, LAB 1622, LAUN. 1623, P1 162	7	20	1	1782	A		20	1	8	SPARE	
	LIGHTING - ENG. 1 1632, ENG. 2 1633	9	20	1	1440	B	2165	20	1	10	LIGHTING - PAINT 1630, STOR. 1626, VOC. 1625	
	LIGHTING - ROOMS 1605 - 1614	11	20	1	1322	C	2346	20	1	12	LIGHTING - ROOMS 1627-1628	
1	**LIGHTING - VOCATION LARGE 1626 & STORAGE**	13	20	1	**1321**	A	2320	20	1	14	LIGHTING - ROOMS 1601-1604	
	SPARE	15	20	1		B		20	1	16	SPARE	
	SPARE	17	20	1		C		20	1	18	SPARE	
	SPARE	19	20	1		A		20	1	20	SPARE	
	SPARE	21	20	1		B		20	1	22	SPARE	
	SPARE	23	20	1		C		20	1	24	SPARE	
	SPARE	25	20	1		A		20	1	26	SPARE	
	SPARE	27	20	1		B		20	1	28	SPARE	
	SPARE	29	20	1		C	500	20	1	30	LIGHTING - SW SITE LIGHTS	
	SPARE	31	20	1		A		20	1	32	SPARE	
	SPARE	33	20	1		B		20	1	34	SPARE	
	SPARE	35	20	1		C		20	1	36	SPARE	
	SPARE	37	20	1		A		15	3	38	POWER MONITORING	
	SPARE	39	20	1		B		-	-	40	-	
	LRC SENSING POWER	41	20	1		C		-	-	42	-	

LOAD CALCULATIONS

LOAD DESCRIPTION	CONN. (VA)	DEMAND FACTOR	CALC. (VA)
MISCELLANEOUS CONTINUOUS	-	125%	-
EQUIPMENT & MISCELLANEOUS	-	100%	-
LIGHTING	15241	125%	19051
LARGEST MOTOR	-	125%	-
MOTORS	-	100%	-
RECEPTACLE	-	100%	-
RECEPTACLES OVER 10KVA	-	50%	-
TOTALS:	**15,241**		**19,051**

LOAD SUMMARY

TOTAL CONNECTED LOAD	AMPS
PHASE A: 5,873 VA	21 A
PHASE B: 4,270 VA	15 A
PHASE C: 5,098 VA	18 A

TOTAL CALCULATED LOAD: 19,051 VA

TOTAL CALCULATED AMPS: 23 A

NOTES:
1. REVISED (ADDED) LOAD ON EXISTING CIRCUIT.
2.
3.
4.
5.

HARGIS ENGINEERS, INC.
1201 THIRD AVENUE, SUITE 600
SEATTLE, WA 98101

PH. (206) 448-3376
FAX. (206) 448-4450

BID SET

bassetti architects
71 Columbia Street, Suite 500
Seattle, Washington 98104
T (206) 340 9500
www.bassettiarch.com

CIVIL ENGINEER
AHBL
2215 North 30th Street, Suite 300
Tacoma, WA 98403-3350
T (253) 383 2242

STRUCTURAL ENGINEER
Couglin Porter Lundeen
801 Second Avenue Suite 900
Seattke, WA 98104
T (206) 343 0460

MECHANICAL ENGINEER
Hargis Engineers Inc
1201 3rd Avenue, Suite 600
Seattle, WA 98101
T (206) 448 3376

ELECTRICAL ENGINEERS
Hargis Engineers Inc
1201 3rd Avenue, Suite 600
Seattle, WA 98101
T (206) 448 3376

ONE INCH
AT FULL SIZE

BRANDON M. INMAN
STATE OF WASHINGTON
40443
REGISTERED
PROFESSIONAL ENGINEER
02/18/2025

#	REVISIONS	DATE

N

Federal Way Public Schools

Federal Way High School CTE Storage

30611 16th Ave S
Federal Way, WA 98003

JOB NO: 2426
ISSUE DATE: 3/7/25

Jurisdiction Stamp Area

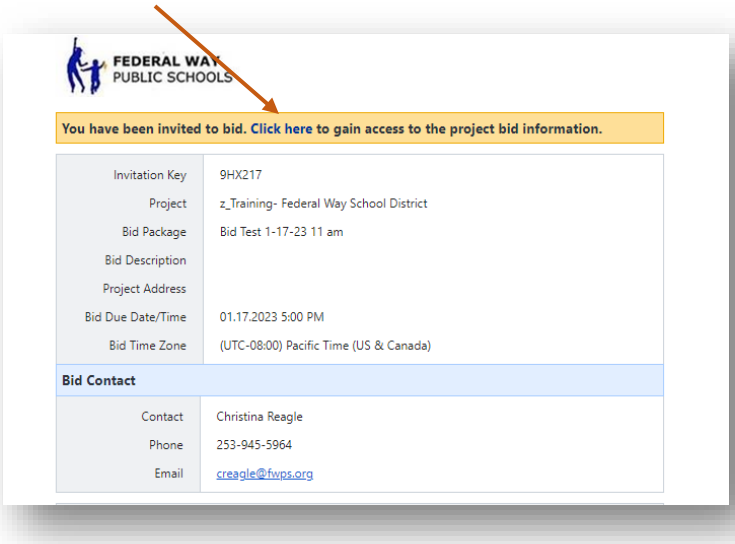
PANEL SCHEDULES

E1001

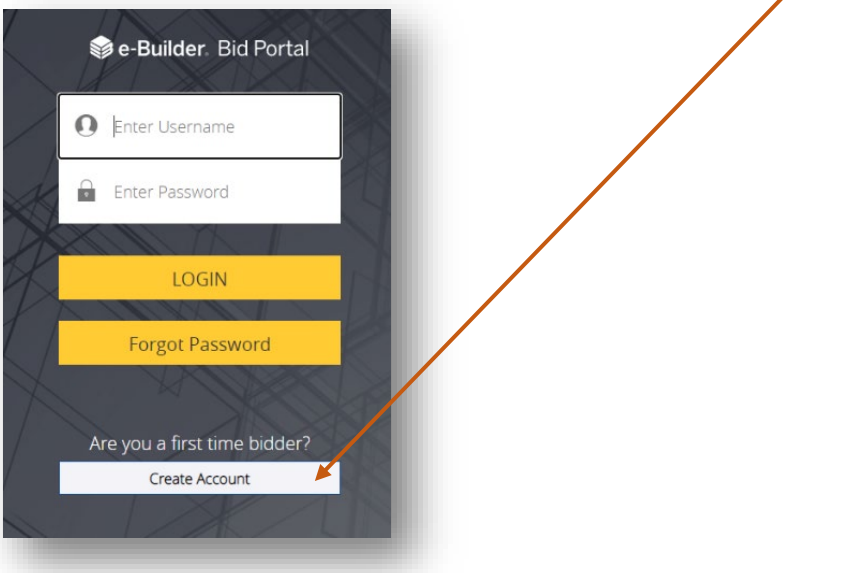
FEDERAL WAY
PUBLIC SCHOOLS

Small Works Project
Bidding Instructions

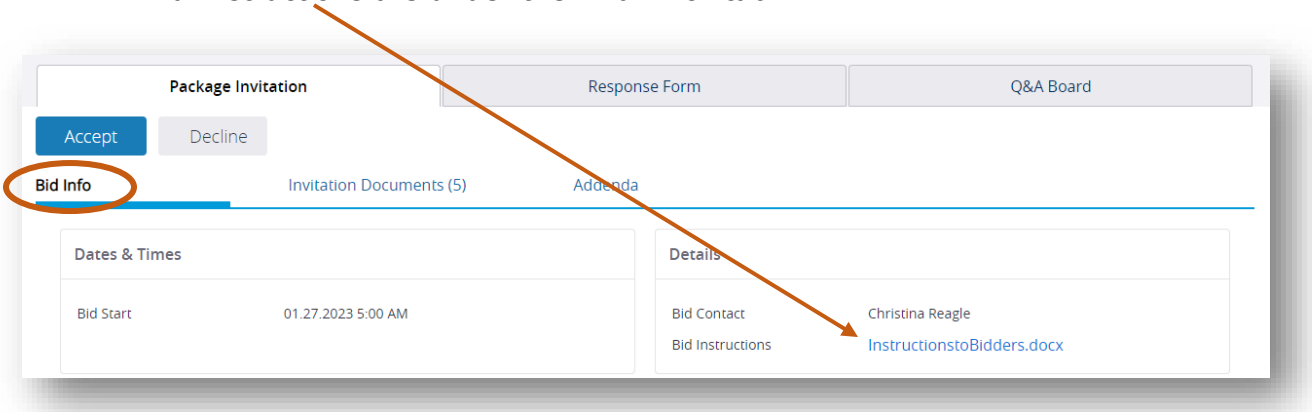
1. You will receive an email from Christina Reagle
2. Click on "Click here"



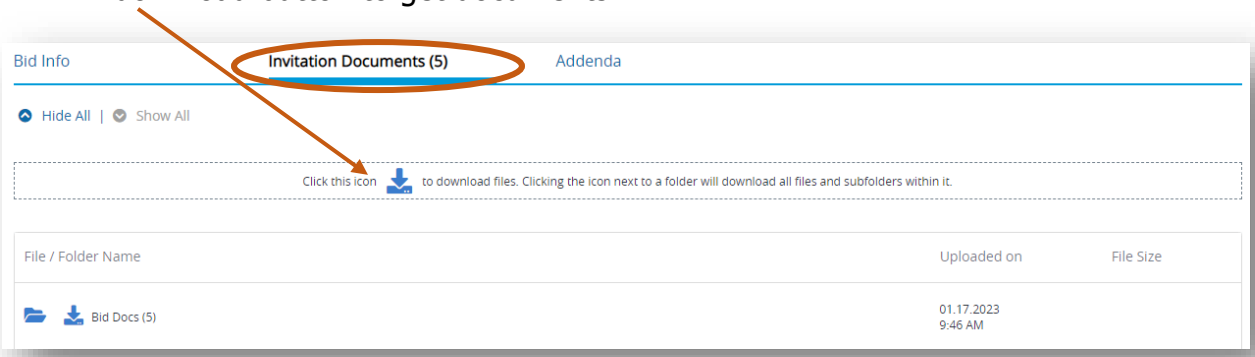
3. If you have not previously registered to bid, you will need to create an account. Otherwise, just log in.



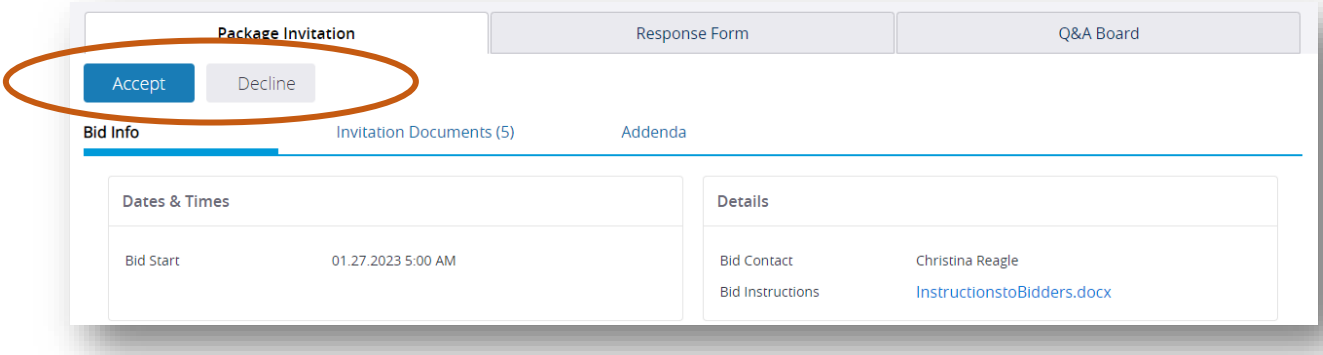
4. Bid Instructions are under the "Bid Info" tab



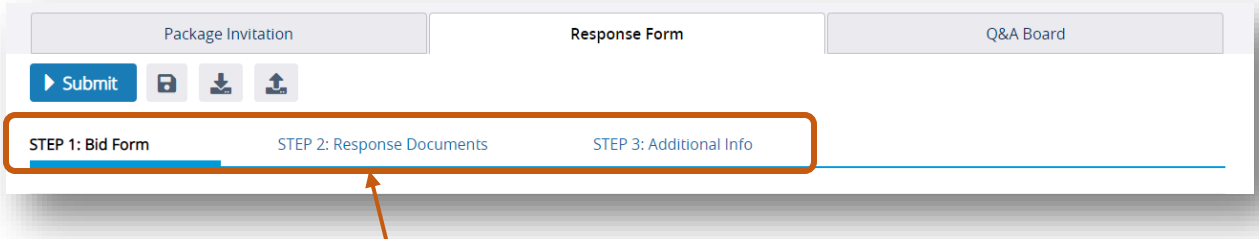
5. You can view project details under the "Invitation Documents" tab. Click the download button to get documents.



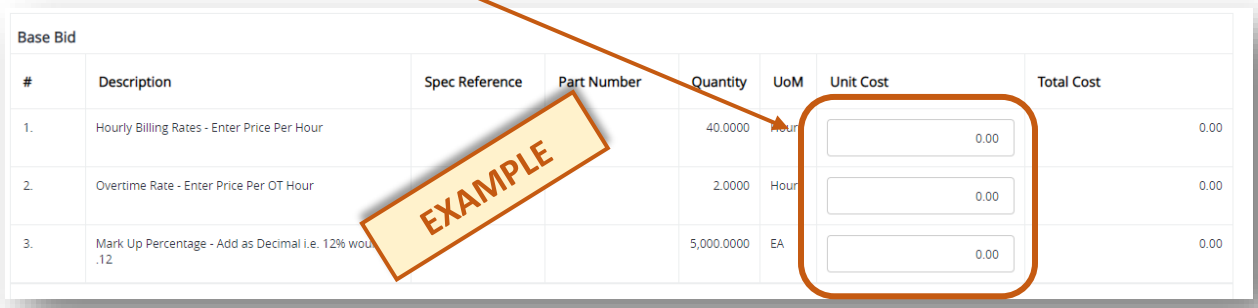
6. If you wish to participate in the bidding, press the "Accept" button, otherwise, please press the "Decline" button.



7. Once you accept the invitation, go to the "Response Form" tab

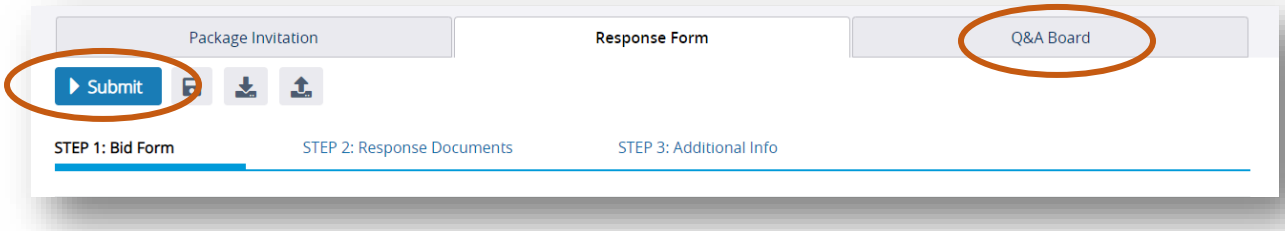


8. Make sure to check each tab and fill in any requested information:
    a. STEP 1 – fill in **all** boxes



    b. STEP 2 – upload any requested documents – not always used
    c. STEP 3 – complete any fields – not always used

9. Once your bid is entered, you can press the "Submit" button.



10. Use the Q&A Board to ask/view questions. Make sure to check back frequently to view any addenda and/or questions.

FEDERAL WAY
PUBLIC SCHOOLS
Each Scholar: A voice. A dream. A **BRIGHT** future.

AGREEMENT

BETWEEN
FEDERAL WAY PUBLIC SCHOOLS
AND CONTRACTOR

PUBLIC WORKS CONTRACT

This AGREEMENT is made as of September 1, 2024, by and between:

The "School District":	**Federal Way Public Schools No. 210** Maintenance and Operations 1211 S. 332nd Street Federal Way, Washington 98003 Attn: FWPS 253-945-5930
and the "Contractor":	Test Contractor 1234 ABC Road Federal Way, WA 98003
A general description of the Project is:	Sample Project Contract - <$350,000
Contract Sum for the Work:	$150,000.00 plus sales tax

Retainage:

Per RCW 60.28.011, the School District will retain 5% of the Contract Sum. Retainage will be released upon approval of the Department of Revenue, the Employment Security Department, Labor and Industries and as required by statute and this Agreement. Per RCW 39.08.010(3), the Contractor may choose to have 10% retainage withheld in lieu of providing Payment and Performance Bonds (only allowable for projects $150,000 and less).

Payment and Performance Bond:

Payment and Performance Bonds are required for this project. Per RCW 39.08.010(3), the Contractor may choose to have 10% retainage withheld in lieu of providing Payment and Performance Bonds (only allowable for projects $150,000 and less).

Date of Final Completion of the Work: August 31, 2025

Liquidated Damages, if any: $1.00 per calendar day

The School District and Contractor agree as set forth herein and below

ARTICLE 1 - THE WORK. The Contractor shall fully execute and complete the entire Work described in the Contract Documents.

ARTICLE 2 - COMMENCEMENT AND SUBSTANTIAL AND FINAL COMPLETION

2.1 The date of commencement of the Work (the date from which the Contract Time is measured) is the date of the School District's delivery of its Purchase Order to Contractor. Contractor shall not commence performance of any Work under this Agreement until Contractor's receipt of an executed Purchase Order from the School District. The School District's Purchase Order must be issued to the Contractor in order for the School District to be fully obligated to this Agreement.

SAMPLE

2.2 The Contractor shall achieve Final Completion of the entire Work as specified above, subject to adjustments of the Contract Time as provided in the Contract Documents.

ARTICLE 3 - THE CONTRACT SUM. The School District shall pay the Contractor for the Contractor's performance of the Contract the Contract Sum stated above, subject to additions and deductions as provided in the Contract Documents. Sales tax is not included in and shall be added to the Contract Sum.

ARTICLE 4 - PAYMENT. The School District will pay the Contractor within thirty days of receipt of approved monthly Applications for Payment in accordance with the Agreement. The School District will make final payment after Final Completion, within thirty days of receipt of a final Application for Payment, provided that an approved "Statement of Intent to Pay Prevailing Wages," an approved "Affidavit of Wages Paid," and all releases have been submitted. Retention shall be paid per statute. Contractor and each subcontractor shall electronically file a Statement of Intent to Pay Prevailing Wages with the Washington State Department of Labor and Industries complying with the requirements of RCW 39.12.040. Payments provided by authorities providing grant monies shall also be subject to those authorities' requirements.

ARTICLE 5 - ENUMERATION OF CONTRACT DOCUMENTS. The Contract Documents include this executed Agreement, including the attached General Conditions, any Supplementary and other Conditions of the Agreement, any Specifications, any Drawings, any Addenda, and the prevailing wage rates. In the event of a conflict or discrepancy among or in the Contract Documents, interpretation shall be governed in the following order of priority:

1. This Agreement
2. The School District's Purchase Order
3. Any Special or Supplemental Conditions
4. The attached General Conditions
5. Scope of Work
6. Specifications
7. Drawings
8. Any other documents forming part of the Contract Documents.

This Agreement entered into as of the day and year first written above.

FEDERAL WAY PUBLIC SCHOOLS No. 210 Test Contractor

By _____ By _____

(Signature) *(Signature)*

_____ _____

(Printed name and title)

SAMPLE

ARTICLE 6 - THE CONTRACT DOCUMENTS

6.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contractor's performance is required to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the intended results.

6.2 "Work" means the construction and services required by the Contract Documents and includes all labor, materials, equipment and services to be provided by the Contractor to fulfill the Contractor's obligations.

ARTICLE 7 - ADMINISTRATION OF THE AGREEMENT

7.1 The School District and/or A/E will provide administration of the Agreement. Neither any Project Manager or A/E representatives are authorized to revoke, alter, relax or release any requirements of the Contract Documents, to issue instructions contrary to the Contract Documents, or to approve or accept any portion of the Work not executed in accordance with the Contract Documents. Any such changes may only be effective if in writing and by the School District's representative listed on the front page of this Agreement.

7.2 The School District or A/E may reject Work that, in its opinion, does not conform to the Contract Documents. The School District or A/E may visit the site at intervals it considers appropriate to the stage of the Work to become generally familiar with the progress and quality of the completed Work. However, neither the School District nor the A/E will be required to make exhaustive or continuous on-site inspections to check quality or quantity of the Work.

7.3 The A/E and School District will not have control over or charge of and will not be responsible for means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility.

7.4 The A/E or School District will issue such written clarifications or interpretations as to matters of design interpretation (in the form of Drawings or otherwise) as the A/E or School District may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents.

7.5 The A/E or School District may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Sum or the Contract Time and are consistent with the overall intent of the Contract Documents. These will be accomplished by a Minor Change in the Work instrument and will be binding on the Contractor, who shall perform the Work involved promptly.

7.6 If the Contractor believes that a written clarification or interpretation, a Construction Change Directive or any interpretation justifies an increase in the Contract Sum or an extension of the Contract Time, and the parties are unable to agree to its amount or extent, the Contractor may make a Claim therefor as provided in this Agreement, as soon as possible and no later than fourteen days after receipt of the clarification, interpretation, or Construction Change Directive.

SAMPLE

7.7 The A/E and School District will also have authority to require special inspection or testing of the Work, whether or not the Work is fabricated, installed or completed.

7.8 Neither the A/E's or School District's authority to act under this Article 8 nor elsewhere in the Contract Documents, nor any decision made by the A/E or School District in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of the A/E or the School District to the Contractor, any Subcontractor of any tier, or any other person or organization performing any of the Work, or to any surety for any of them.

ARTICLE 8 - THE CONTRACTOR

8.1 Using its best skill and attention, the Contractor shall perform, supervise and direct the Work. The Contractor shall provide and pay for all labor, materials, equipment, tools and machinery, transportation, and other facilities and services necessary for the proper execution and completion of the Work.

8.2 **Safety Precautions and Programs.** The Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract. The Contractor shall have the right to control and shall be solely and completely responsible for conditions of the Work site, including safety of all persons and property, during performance of the Work. The Contractor shall maintain the Work site and perform the Work in a manner that meets statutory and common-law requirements for the provision of a safe place to work. This requirement shall apply continuously and not be limited to working hours.

8.3 **Subcontractors.** 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 or to supply materials or equipment. A "Subcontractor of any tier" includes Subcontractors and all lower level subcontractors and suppliers. As soon as practicable and no later than five days after award of the Agreement, the Contractor shall confirm in writing to the School District the names of the Subcontractors for each portion of the Work.

8.4 **Compliance with Law.** The Contractor, its employees, Subcontractors of any tier and representatives, shall comply with all applicable laws, ordinances, statutes, rules and regulations, federal and state, county and municipal, and particularly those relating to wages, hours, fair employment practices, non-discrimination, safety and working conditions.

8.4.1 Hours of Labor. The Contractor shall comply with all applicable provisions of RCW 49.28.

8.4.2 Workers' Right to Know. The Contractor shall comply with RCW 49.70 and WAC 296-62-054 regarding workplace surveys and material safety data sheets for "hazardous" chemicals at the Site.

8.5 **Nondiscrimination.**

8.5.1 Nondiscrimination Requirement. During the term of this Contract, Contractor, including any subcontractor, shall not discriminate on the bases enumerated at RCW 49.60.530(3). In addition, Contractor, including any subcontractor, shall give written notice of this nondiscrimination requirement to any labor organizations with which Contractor, or subcontractor, has a collective bargaining or other agreement.

SAMPLE

8.5.2 Obligation to Cooperate. Contractor, including any subcontractor, shall cooperate and comply with any Washington state agency investigation regarding any allegation that Contractor, including any subcontractor, has engaged in discrimination prohibited by this Contract pursuant to RCW 49.60.530(3).

8.5.3 Default. Notwithstanding any provision to the contrary, Agency may suspend Contractor, including any subcontractor, upon notice of a failure to participate and cooperate with any state agency investigation into alleged discrimination prohibited by this Contract, pursuant to RCW 49.60.530(3). Any such suspension will remain in place until Agency receives notification that Contractor, including any subcontractor, is cooperating with the investigating state agency. In the event Contractor, or subcontractor, is determined to have engaged in discrimination identified at RCW 49.60.530(3), Agency may terminate this Contract in whole or in part, and Contractor, subcontractor, or both, may be referred for debarment as provided in RCW 39.26.200. Contractor or subcontractor may be given a reasonable time in which to cure this noncompliance, including implementing conditions consistent with any court-ordered injunctive relief or settlement agreement.

8.5.4 Remedies for Breach. Notwithstanding any provision to the contrary, in the event of Contract termination or suspension for engaging in discrimination, Contractor, subcontractor, or both, shall be liable for contract damages as authorized by law including, but not limited to, any cost difference between the original contract and the replacement or cover contract and all administrative costs directly related to the replacement contract, which damages are distinct from any penalties imposed under Chapter 49.60, RCW. Agency shall have the right to deduct from any monies due to Contractor or subcontractor, or that thereafter become due, an amount for damages Contractor or subcontractor will owe Agency for default under this provision.

8.6 **Workers.** The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them. The Contractor shall be responsible to the School District for the acts and omissions of the Contractor's employees, Subcontractors of any tier and their agents and employees, and other persons performing portions of the Work under a contract with the Contractor.

8.6.1 Background Checks. In the event Contractor or any of their agents or employees will have regularly scheduled unsupervised access to children, the District will conduct a record check through the Washington State Patrol criminal investigation system under RCW 43.43.830-43.43.834, 10.97.030 and 10.97.050, and through the Federal Bureau of Investigation before allowing the individual onto the Project site. The record check shall include a fingerprint check using a complete Washington State criminal identification fingerprint card. This record check shall be valid for two (2) years. The Contractor shall pay for the requirements set forth in this paragraph.

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8.6.2 Crimes Against Children. In accordance with RCW 28A.400.330, contractor shall prohibit any employee of the Contractor from working at a public school who has or may have contact with children at a public school during the course of his or her employment and who has pled guilty to or been convicted of any felony crime involving the physical neglect of a child under chapter 9A.42 RCW, the physical injury or death of a child under chapter 9A.32 or 9A.36 RCW (except motor vehicle violations under chapter 46.61 RCW), sexual exploitation of a child under chapter 9.68A RCW, sexual offenses under chapter 9A.44 RCW where a minor is the victim, promoting prostitution of a minor under chapter 9A.88 RCW, the sale or purchase of a minor child under RCW 9A.64.030, or violation of similar laws of another jurisdiction. Any failure to comply with this section shall be grounds for the school district immediately terminating the contract for cause.

8.6.3 Subcontractor Compliance. Contractor shall require any of its Subcontractors to fully comply with the requirements of this section.

8.7 **Warranty.** The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or explicitly permit otherwise. The Contractor further warrants that the Work will be performed in a skillful and workmanlike manner, will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or explicitly permit. Work, materials, or equipment not conforming to these requirements, including substitutions not properly approved and authorized, is considered defective.

8.8 **Submittals.** The Contractor shall review, approve and submit to the School District with reasonable promptness Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents. The Work shall be in accordance with approved submittals.

8.9 **Progress Schedule.** Within five days of execution of this Agreement, the Contractor shall submit a schedule of the Work to the School District.

8.10 **Clean-Up.** The Contractor shall keep the premises and surrounding area free from accumulation of waste materials caused by operations under the Agreement.

8.11 **Indemnification.** Subject to the following conditions, the Contractor shall defend, indemnify, and hold harmless the School District, any listed A/E, and their respective agents, employees, consultants, successors and assigns ("Indemnified Parties") from and against all claims, damages, losses and expenses, direct and indirect, or consequential, including costs and attorneys' fees incurred on such claims and in proving the right to indemnification, arising out of or resulting from any act or omission of the Contractor, its agents, any of its Subcontractors of any tier, and anyone directly or indirectly employed by the Contractor or Subcontractors of any tier ("Indemnitor"). The Contractor will fully indemnify the Indemnified Parties for the sole negligence of the Indemnitor. The Contractor will indemnify the Indemnified Parties for the concurrent negligence of the Indemnitor to the extent of the Indemnitor's negligence. The Contractor has no duty to indemnify the Indemnified Parties for the sole negligence of the Indemnified Parties. The Contractor agrees to being added by the School District as a party to any arbitration or litigation with third parties in which the School District alleges indemnification or contribution from an Indemnitor. The Contractor agrees that all of its Subcontractors of any tier will, in the subcontracts, similarly stipulate; in the event any does not, the Contractor shall be liable in place of such Subcontractor(s). PROVIDED FURTHER that the Contractor agrees to waive its immunity under the Washington State Industrial Act (Title 51 RCW) as to the

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Indemnified Parties only. To the extent a court or arbitrator strikes any portion of this indemnification provision for any reason, all remaining provisions shall retain their vitality and effect.

8.12 **Records.** The Contractor shall maintain and preserve books, ledgers, records, estimates, correspondence, logs, schedules, electronic data and other documents relating or pertaining to the costs and/or performance of the Agreement ("records"). Within seven days of the School District's request, the Contractor shall make available at the Contractor's office all records for inspection, audit and reproduction (including electronic reproduction) by the School District's representatives. These requirements apply to each Subcontractor of any tier. The Contractor agrees, on behalf of itself and Subcontractors of any tier, that the invocation of any rights under RCW 42.56 shall initiate an equivalent right to disclosures from the Contractor and Subcontractors of any tier for the benefit of the School District.

ARTICLE 9 - CONSTRUCTION NOT BY THE CONTRACTOR

9.1 The School District may perform construction or operations related to the Project with its own forces and to award separate contracts in connection with other portions of the Project.

9.2 The Contractor shall afford the School District and separate contractors reasonable opportunity for the introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations as required by the Contract Documents.

ARTICLE 10 - CHANGES IN THE WORK

10.1 The School District, without invalidating the Agreement, may order changes in the Work consisting of additions, deletions or modifications ("Changes"), and the Contract Sum and Contract Time will be adjusted accordingly. Changes in the Work, the Contract Sum and/or the Contract Time shall be authorized only in writing, through a Change Order or a Construction Change Directive.

10.1.1 Change Orders. A Change Order is a written instrument signed by the School District and the Contractor stating their agreement upon a change in the Work, the itemized amount of any adjustment in the Contract Sum as defined in this Article, and the extent of any adjustment in the Contract Time.

10.1.2 Construction Change Directives. A Construction Change Directive is a written order prepared and signed by the School District that directs a change in the Work and states a proposed basis for any adjustment in the Contract Sum and/or Contract Time. It is used in the absence of total agreement on the terms of a Change Order. The Contractor shall promptly proceed with the change in the Work described in the Construction Change Directive. As soon as possible, and within seven days of receipt, the Contractor shall advise the School District in writing of the Contractor's agreement or disagreement with the cost or the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

10.2 If the parties cannot agree on the cost or credit to the School District from a Change in the Work, the Contractor shall keep and present an itemized accounting with supporting data. The total cost of any Change or Claim shall be limited to the reasonable value of the direct labor costs, material costs, construction equipment usage costs for the actual time equipment appropriate for the Work is used solely on the Change in the Work, the cost of any change in

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insurance. Subcontractor costs, and a Fee for all combined overhead and profit, including impact costs of any kind, limited to 12% of the cost for any materials or work performed by a Contractor's or Subcontractor's own forces, and 7% on amounts due to lower-tier Subcontractors

10.3 **Claims for Concealed or Unknown Conditions.** If conditions unknown to the Contractor are encountered at the site that are (1) concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found and generally recognized as inherent in activities of the character provided for in the Contract Documents, then the Contractor shall give written notice to the School District promptly before conditions are disturbed and in no event later than seven days after the first observance on the conditions. Any Claim arising from such condition shall be made in accordance with the dispute resolution procedures of Article 19.

ARTICLE 11 - TIME

11.1 If, through no fault of the Contractor or a Subcontractor of any tier, the Work is delayed by changes ordered in the Work, unanticipated general labor disputes, fire, unforeseeable delay in deliveries, abnormal adverse weather conditions not reasonably anticipatable, unavoidable casualties or any other causes beyond the Contractor's control, then the Contract Time shall be extended by Change Order to the extent the critical path is affected. The Contractor is entitled to damages for delay only if the School District's actions or inactions were the actual, substantial cause of the delay and if the Contractor could not have reasonably avoided the delay by the exercise of due diligence. The Contractor is not entitled to an increase in the Contract Time or Contract Sum if a delay was caused by the Contractor, a Subcontractor of any tier, or anyone acting on behalf of any of them.

11.2 The timely completion of this Project is essential to the School District. The School District will incur serious and substantial damages if Substantial Completion of the Work does not occur within the Contract Time; however, it may be difficult if not impossible to determine the amount of such damages. Consequently, the Agreement may include provisions for liquidated damages, which are not affected by partial completion, occupancy, or beneficial occupancy. If this Agreement does not include liquidated damages, then the School District may pursue its actual damages resulting from delay.

ARTICLE 12 - PAYMENTS AND COMPLETION

12.1 **Payments.** Payment shall be made as provided in this Agreement. If progress payments are specified, they will be made as specified in the Specifications Section, Application for Payment, and, pursuant to RCW 60.28, the School District will reserve five percent (5%) from the moneys the Contractor earns on estimates during the progress of the Work, to be retained as a trust fund for the protection and payment of the claims of any person arising under the Agreement and the state with respect to taxes imposed pursuant to Title 82 RCW that may be due from the Contractor. The moneys reserved may, at the option of the Contractor, be (1) retained in a fund by the School District until forty-five days following Final Acceptance; or (2) deposited by the School District in an interest-bearing account in a bank, mutual savings bank, or savings and loan association, not subject to withdrawal until forty-five days following Final Acceptance, with interest to the Contractor; or (3) placed in escrow with a bank or trust company until forty-five days following the Final Acceptance, by the School District's joint check to the bank or trust company and the Contractor, to be converted into bonds and securities chosen by the Contractor, approved by the School District, and held in escrow, with interest on the bonds and securities paid to the Contractor as it accrues. If moneys are retained from the Contractor, it may retain payment of not more than five percent (5%) from the moneys earned by any Subcontractor, provided that the Contractor pays interest to

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the Subcontractor at the same interest rate it receives from its reserved funds. If the 10% retainage option is selected on the cover page of this Agreement, then 10% retainage instead of 5% retainage shall be withheld, and the requirements of RCW 39.08.010(3) must also be followed for the release of retainage.

12.2 **Prevailing Wages.** Pursuant to RCW 39.12, no worker, laborer, or mechanic employed in the performance of any part of this Agreement shall be paid less than the "prevailing rate of wage" (in effect as of the date that bids are due) as determined by the Industrial Statistician of the Department of Labor and Industries, ESAC Division, PO Box 44540, Olympia WA 98504-4540, Telephone (360) 902 5335. The schedule of the prevailing wage rates for the locality or localities where this Work will be performed is attached and made a part of this Agreement by reference as though fully set forth herein; if not attached, then the applicable prevailing wages are determined as of the Bid Date or as otherwise prescribed under WAC 296-127-011 for the county in which the Project is located and are available at http://www.lni.wa.gov/TradesLicensing/PrevWage/WageRates/default.asp. A copy is available for viewing at the School District's office, and a hard copy will be mailed upon request. To the extent that there is any discrepancy between the attached or provided schedule of prevailing wage rates and the published rates as are applicable under WAC 296-127-011, or if no schedule is attached, then the applicable published rates shall apply at no increase to the Contract Sum. The Contractor shall provide the respective Subcontractors with a schedule of the applicable prevailing wage rates. The Industrial Statistician will answer questions relating to prevailing wage data upon request.

12.3 **Withheld Payment.** Payment may be withheld on account of (1) defective Work not remedied, (2) claims filed by third parties, (3) failure of the Contractor to make payments properly for labor, materials or equipment, (4) damage to the School District or another contractor, (5) reasonable evidence that the unpaid balance would not be adequate to cover delay damages for which the Contractor is responsible, (6) failure to carry out the Work in accordance with the Contract Documents, or (7) liquidated damages.

12.4 **Substantial Completion.**

12.4.1 When the Contractor believes that the Work is Substantially Complete, it shall notify the School District in writing. When the School District agrees, it will issue a Certificate of Substantial Completion. Substantial Completion is the stage in the progress of the Work when the construction is sufficiently complete, in accordance with the Contract Documents, so the School District can fully utilize the Work (or a designated portion) for its intended use. All Work other than incidental corrective or punch list work and final cleaning shall have been completed. The Work is not Substantially Complete if all systems and parts affected by the Work are not usable. The fact that the School District may use or occupy the Work or designated portion thereof does not indicate that the Work is Substantially Complete, nor does such occupation toll or change any liquidated damages due the School District.

12.4.2 Immediately before any occupancy, the School District will schedule an inspection tour of the area to be occupied. Representatives of the School District and Contractor will jointly tour the area and record items still remaining to be finished or corrected. The Contractor shall supply and install any items missed by the inspection but required or necessary for Final Completion as a part of the Contract Sum.

12.5 **Final Payment.** Pursuant to RCW 60.28, completion of the contract Work shall occur and final payment shall become due after the Contractor has been notified that the Work has been concluded and submits the items listed below to the School

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District, any required occupancy permit has been issued and the School District's Board of Directors formally accepts the Project.

12.5.1 An affidavit that all payrolls, Subcontractors, bills for materials and equipment, and other indebtedness connected with the Work for which the School District might be responsible or encumbered, have been paid or otherwise satisfied.

12.5.2 A certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least thirty days' prior written notice has been given to the School District.

12.5.3 Other data establishing payment or satisfaction of or protection (satisfactory to the School District) against all obligations, such as receipts, releases and waivers of liens arising out of the Agreement, satisfactorily demonstrating to the School District that the claims of Subcontractors and laborers who have filed claims have been paid.

12.5.4 Pursuant to RCW 39.12.040, required "Affidavits of Wages Paid."

12.5.5 Pursuant to RCW 50.24, a certificate from the Department of Employment Security. A certified statement that the Contractor has closed all necessary permits or otherwise met the requirements of all governing jurisdictions related to this Project.

12.5.6 All warranties, guarantees, certificates, spare parts, specified excess material, and other documents or items required by the Contract Documents.

12.5.7 A legible hard copy of the as-built drawings.

12.5.8 Original permits and permit documents.

If any Subcontractor of any tier refuses to furnish a release or waiver required by the School District, the School District may retain such amount as to defray the cost of foreclosing the liens of such claims and to pay attorneys' fees, the total of which shall be no less than 150% of the claimed amount. If any such lien remains unsatisfied after all payments are made, the Contractor shall refund to the School District all moneys that the School District may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

12.6 **Waivers.**

12.6.1 Final Payment by School District. The making of final payment shall constitute a waiver of claims by the School District except those arising from (1) claims or encumbrances arising out of the Agreement and unsettled; (2) failure of the Work to comply with the requirements of the Contract Documents; or (3) terms of warranties required by the Contract Documents or law.

12.6.2 Final Payment to Contractor. Acceptance of final payment by the Contractor shall constitute a waiver of Claims except those previously made in writing and identified in writing as unsettled on the final Application for Payment.

12.6.3 Change Orders. The execution of a Change Order shall constitute a waiver of Claims by the Contractor arising out of the Work to be performed or deleted pursuant to the Change Order, except as specifically described in the Change Order. If the Contractor adds a reservation of rights that has not been initialed by the School District,

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any amounts previously agreed to shall be considered disputed and not payable.

12.7 **Warranty of Title**. The Contractor warrants and guarantees that title to Work, materials and equipment covered by payment, whether incorporated in the Project or not, will pass to the School District no later than the time of payment, free and clear of liens.

ARTICLE 13 - PROTECTION OF PERSONS AND PROPERTY

13.1 The Contractor shall have the right to control and shall be solely responsible, and the School District shall not have responsibility, for all aspects of safety. The Contractor shall take reasonable precautions for safety on site, and shall provide reasonable protection to prevent damage, injury or loss.

13.2 The Contractor shall not be required to perform Work relating to asbestos or polychlorinated biphenyl ("PCB"), unless identified as the Contractor's responsibility in the Contract Documents.

ARTICLE 14 - INSURANCE AND BONDS

14.1 **Contractor's Liability Insurance.** The Contractor shall purchase from and maintain during the life of this Agreement, at its own cost in a company or companies admitted to do business in the State of Washington, possessing a Best's policy holder's rating of A- or better and a financial rating of no less than VIII, and reasonably acceptable to the School District, an occurrence-based Commercial General Liability Insurance Policy which shall provide bodily injury and property damage liability on the Contractor's operations, including its Subcontractors of any tier; owned, non-owned and hired vehicles; and on work the Contractor may subcontract or sublet to others; and on the indemnity provisions of this Agreement. This insurance will name the School District, the A/E, and their employees as additional insureds per Additional Insured Owner's (Form B) for Work performed under this Agreement. The Contractor's policy shall be designated primary coverage for both defense and indemnity, and any School District policies excess. Such limits of liability insurance shall have per project general aggregate provisions and shall not be less than the following:

Commercial General Liability
Each Occurrence $1,000,000
Damage to Rented Premises $100,000
Medical Expenditures.....$5,000
Personal and Advertising Injury $1,000,000
General Aggregate.....$2,000,000
Products-Completed Operations Aggregate $2,000,000

Automobile Liability (Any Owned) $1,000,000

Excess/Umbrella Liability Coverage – Each Occurrence $2,000,000

Workers' Compensation.....Statutory

Employer's Liability
Each Accident $1,000,000
Disease – Each Employee $1,000,000
Disease – Policy Limit $1,000,000

14.1.1 The insurance described above shall include coverage for underground, collapse and explosion exposures.

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14.1.2 Before the School District executes the Agreement, the Contractor shall furnish the School District with Certificates of Insurance, in duplicate, as evidence of all insurance required by the Contract Documents. All policies and certificates must be signed copies. Coverages afforded under the policies shall not be materially altered, allowed to expire or canceled without the Contractor first giving 45 days written notice by certified mail to the School District. The Contractor shall furnish to the School District copies of any subsequently issued endorsements amending, modifying, altering, or restricting coverage of limits.

14.1.3 Coverage shall be maintained without interruption from the date of commencement of the Work until the date of Final Acceptance, except for any coverage required to be maintained after Final Acceptance. Completed operations coverage, including additional insured completed operations, shall remain in force for three years after Final Acceptance.

14.1.4 If the School District is damaged by the failure of the Contractor to maintain any of the above insurance or to so notify the School District, then the Contractor shall bear all costs properly attributable thereto. THE SCHOOL DISTRICT MAY WITHHOLD PAYMENT PENDING RECEIPT OF ALL CERTIFICATES OF INSURANCE. Failure to withhold payment shall not constitute a waiver.

14.1.5 The School District's specification or approval of the insurance in this Agreement or of its amount shall not relieve or decrease the liability of the Contractor under the Contract Documents or otherwise. Coverages are the minimum to be provided and are not limitations of liability under the Contract, indemnification, or applicable law provisions. The Contractor may, at its expense, purchase larger coverage amounts or additional insurance.

14.2 **Property Insurance.** The School District shall include this project in its existing property insurance coverage for loss or damage to the property in the course of construction. This may be a standard property policy and is not necessarily a builder's risk policy. The Contractor shall be responsible for securing property insurance for its own equipment. This property insurance shall be on an "all-risk" or equivalent policy form and shall include, but not be limited to, coverage for fire and extended coverage, theft, vandalism, malicious mischief, collapse and windstorm. Any deductible shall be the sole responsibility of the Contractor.

14.3 **Payment and Performance Bond.** If the Contractor is required to secure a payment and performance bond (see cover page), it shall be in the amount of the Contract Sum plus sales tax; it shall comply with RCW 39.08 in a form and with a surety approved by the School District; and it shall be submitted to the School District before the School District executes the Agreement.

ARTICLE 15 - CORRECTION OF WORK

15.1 If, within one year after the later of the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under the Contract Documents, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it according to the requirements of this Section with no increase to the reimbursable Cost of the Work (i.e. at no cost to the Owner) promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition.

15.2 If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal

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and correction, in which case the Contract Sum will be reduced by the greater of the (1) cost of correction or (2) diminution of value of the Work that is not in accordance with the requirements of the Contract Documents. Such adjustment shall be effected whether or not final payment has been made.

15.3 Nothing in this Article shall establish a period of limitation with respect to other obligations that the Contractor might have under the Contract Documents.

ARTICLE 16 - MISCELLANEOUS PROVISIONS

16.1 **Applicable Law and Venue.** The Agreement shall be governed by the laws of the State of Washington, without regard to its choice of law provisions. The exclusive venue for any litigation regarding this Agreement shall be in Superior Court in the county in which the Project is located.

16.2 The Contractor shall comply with and give notices required by applicable laws, statues, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

16.3 The Contractor must submit its Wage Prevention Certification prior to the School District executing this Agreement.

ARTICLE 17 - TERMINATION OF THE CONTRACT

17.1 **Termination for Cause by Contractor.** If the School District fails to make payment for a period of sixty days through no fault of the Contractor, the Contractor may, upon seven additional days' written notice, terminate the Agreement and recover from the School District payment for all Work executed, in accordance with the Agreement.

17.2 **Termination for Cause by School District.** The School District may, upon seven days' written notice to the Contractor, terminate without prejudice the whole or any portion of the Work for cause, including but not limited to the Contractor's material breach of this Agreement; the Contractor's failure to prosecute the Work or any portion thereof with sufficient diligence to ensure the Substantial Completion of the Work within the Contract Time; the Contractor's material disregard of laws, ordinances, rules, regulations or orders of any public authority having jurisdiction; the Contractor's being adjudged bankrupt, making a general assignment for the benefit of its creditors, a receiver being appointed on account of the Contractor's insolvency; or the Contractor's failure to comply with RCW 28A.400.330 (generally, a worker having contact with children who has been found guilty of a felony crime involving children).

17.3 **Termination for Convenience by School District.** The School District may, at any time upon ten days' written notice to the Contractor, terminate without prejudice the whole or any portion of the Work for the convenience of the School District. The School District shall be liable to Contractor only for (1) the amount due under this Agreement for the Work properly performed prior to the termination and (2) other pre-approved costs, consistent with Paragraph 11.2, necessary and reasonably incurred in connection with the termination.

17.4 **Effects of Termination.**

17.4.1 The total sum to be paid to the Contractor under this Article shall not exceed the Contract Sum as reduced by the amount of payments otherwise made.

17.4.2 Unless the School District directs otherwise, after receipt of a Notice of Termination by the School District, the Contractor shall: promptly stop Work as specified in the Notice of Termination; place no further orders or subcontracts, except as necessary for completion of non-terminated

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Work; procure cancellation of all orders and subcontracts to the extent related to the performance of terminated Work; assign to the School District all of its right, title and interest under all orders and subcontracts; with the School District's approval, settle outstanding liabilities and claims arising out of the termination of orders and subcontracts not assigned to the School District; transfer title and deliver to the entity or entities designated by the School District the fabricated or un-fabricated parts, Work in process or completed, partially completed supplies and equipment, materials, tools, dies, jigs and other fixtures, supplies and other material produced as part of, or acquired in connection with the performance of, the Work terminated, and the completed or partially completed plans, drawings, information and other property related to the Work; take such action as may be necessary or directed by the School District to preserve and protect the Work and property related to this Project in the possession of the Contractor in which the School District has an interest; and continue performance only to the extent not terminated.

17.4.3 The damages and relief from termination under this Paragraph 18.4 shall be the Contractor's sole entitlement in the event of termination.

ARTICLE 18 - DISPUTE RESOLUTION

18.1 All claims, disputes and other matters in question of the Contractor arising out of, or relating to, the Contract Documents or the breach thereof ("Claims") shall be decided exclusively by the following dispute resolution procedure. The Contractor shall diligently carry on the Work and maintain the progress schedule during the dispute resolution procedure, unless the parties mutually agree in writing otherwise.

18.2 **Notice of Claim.** The Contractor shall submit notice of all Claims to the School District in writing within seven days of the event giving rise to them.

18.3 **Claim Submission.** Within fifteen days of the Notice of Claim, the Contractor shall provide the School District with a written Claim that includes a clear description of the Claim, all changes sought in cost and in time, and data supporting the Claim. Failure to timely file either the Notice of Claim to the Claim itself shall constitute a waiver of the Contractor's right to pursue the Claim.

18.4 **Mediation.** The Contractor may bring no Claim against the School District unless the Claim is first subject to mediation under the Construction Mediation Rules of the American Arbitration Association ("AAA"). To initiate the mediation process, the Contractor shall submit a written mediation request to the School District. If the parties are unable to agree upon a mediator within thirty days after the School District's receipt of the written request for mediation, either party may submit a request for mediation to the AAA. Other parties in interest, such as Subcontractors, shall also attend the mediation session. All unresolved Claims in the Project shall be considered at a single mediation session that shall occur prior to Final Acceptance by the School District.

18.5 **Litigation.** The Contractor may not bring litigation on a Claim unless it has been properly addressed in the above dispute resolution procedure and the Contractor must also file its lawsuit within 120 days after the Date of Substantial Completion. The pendency of mediation shall toll these filing requirements.

End of Section

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ACORD®

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME:	
Name/contact information of insurance agency/broker shall be indicated here.	PHONE (A/C, No, Ext):	FAX (A/C, No):
	E-MAIL ADDRESS:	
	INSURER(S) AFFORDING COVERAGE	NAIC #
	INSURER A :	
INSURED	INSURER B :	
Name/contact information of the vendor/ contractor shall be indicated here	INSURER C :	
	INSURER D :	
	INSURER E :	
	INSURER F :	

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY [X] PRO-JECT [ ] LOC OTHER:	X		Insurance Broker to complete this section			EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG $	$ 1,000,000.00 $ 100,000.00 $ 5,000.00 $ 1,000,000.00 $ 2,000,000.00 $ 2,000,000.00 $
A	AUTOMOBILE LIABILITY X ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS HIRED AUTOS NON-OWNED AUTOS	X		Insurance Broker to complete this section			COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident) $	$ 1,000,000.00 $ $ $ $
A	X UMBRELLA LIAB [X] OCCUR X EXCESS LIAB [ ] CLAIMS-MADE DED [X] RETENTION $ 10,000	X		Insurance Broker to complete this section			EACH OCCURRENCE AGGREGATE $	$ 2,000,000.00 $ $
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y / N [ ] **(Mandatory in NH)** If yes, describe under DESCRIPTION OF OPERATIONS below	N / A		Insurance Broker to complete this section			PER STATUTE [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 1,000,000.00 $ 1,000,000.00 $ 1,000,000.00
	Builder's Risk/Installation Floater	X		***Contractors:*** *For construction/remodeling projects over $35,000, please provide Builder's Risk coverage in an amount equal to project value*			Enter Contract Dollar Value Here	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Shall be named here as additional insured on primary and non-contributory basis:
Federal Way Public Schools
33330 8th Avenue S
Federal Way, WA 98003

CERTIFICATE HOLDER

Shall be named here as:
Federal Way Public Schools
33330 8th Avenue S
Federal Way, WA 98003

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Sample

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